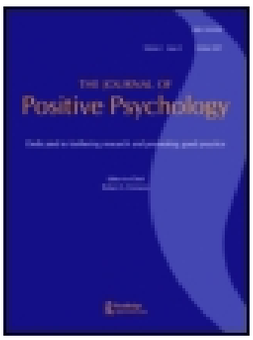

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'Journey in the world of professions and work': A career intervention for children

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ABSTRACT

A structured ten-unit training was devised to stimulate some career adaptability resources such as optimism and hope toward the future, curiosity, career exploration, and occupational knowledge in children. Ten classes, for a total of 154 children (79 boys and 75 girls) with a mean age of 10.65 years (SD = 1.24), were randomly assigned to either the experimental, who was the focus of the intervention, or control group. At post-test the experimental group held significantly more hope, optimism, curiosity, career exploration, occupational knowledge, information, planning, and time perspective than the control group. The pattern of effect sizes strengthens the idea that the training enhanced experimental participants' some career adaptability resources.

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Children; career intervention; career adaptability; Life Design; Italy

Globalization, technological progression, and societal changes have produced substantial changes in the labor market: Employment and work are more flexible, career transitions are more recurrent, and career paths are far less predictable than two decades ago (Savickas, 2015). Similarly to other Western countries, nowadays in Italy temporary work contracts are widely used and permanent contracts no longer have the requirements of open-ended contracts (National Institute of Statistics [ISTAT], 2016).

According to this, an international group of scholars has given rise to the Life Design approach (Savickas et al., 2009), that is a new theoretical framework to comprehend the challenges of the contemporary occupational landscape. It is based on career construction theory, self-construction theory, and social-constructivist theories (Rossier, 2015) and devotes attention to resources for managing occupational transitions, career constraints, and unpredictability (Savickas, 2015).

Among these, career adaptability is considered a crucial resource of individuals in the modern world and for the future of the younger generation. It is a psychosocial construct focused on a number of resources needed along the entire span of life to help the individual to adapt to unforeseen needs and changes in the job market (Savickas & Porfeli, 2012). It includes the propensity to consider life within a time perspective anchored in hope and optimism (Concern), the tendency to explore the environment (Curiosity), the conviction that the future is at least partially controllable (Control), and the belief in the self to achieve one's career goals and solve problems (Confidence) (Savickas, 2005).

A growing number of studies with samples of preadolescents, adolescents and adults have found that career adaptability impacts career related outcomes and vocational psychological construct (e.g. Soresi, Nota, & Ferrari, 2012; Tolentino et al., 2014; Urbanaviciute, Kairys, Pociute, & Liniauskaite, 2014). These studies involve individuals aged from 13 to 14 years old. For example, Hirschi (2009) identified four career adaptability predictors (i.e. goal decidedness, capability beliefs, beliefs and social context) and found that it predicted the level of control over own life and perceived well-being. In an additional study with Swiss students, aged from 13 to 15 years, Hirschi (2010) observed that career adaptability predicted realism and stability of the aspirations. More recently, Di Maggio, Ginevra, Nota, Ferrari, and Soresi (2015) found that career adaptability positively correlated with hope, optimism, resilience, future orientation, and life satisfaction in Italian middle school students. Yuen and Yau (2015) observed that career adaptability was positively related to presence and search of meaning in life and connectedness with school, teachers, peers or parents in Hong Kong grade 9 students. Lastly, Santilli, Marcionetti, Rochat, Rossier, and Nota (2017) showed that career adaptability predicted life satisfaction both directly and indirectly among Italian preadolescents and only indirectly among Swiss preadolescents.

With adolescents and adults, studies have showed for example that career adaptability is positively related

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to employability skills (de Guzman & Choi, 2013), career decidedness (Ginevra, Pallini, Vecchio, Nota, & Soresi, 2016), career aspirations (Urbanaviciute et al., 2014), broader range of career interests and fewer career barriers (Soresi et al., 2012), and academic achievements (Negru-Subtirica & Pop, 2016).

The Life Design approach has underlined the need to adopt a lifespan and preventive perspective and considers childhood as a crucial formative period in the core life design process of career adaptability (Hartung, 2015). According to Hartung (2015) four career adaptability resources grow at varying rates starting in childhood and consolidate during adolescence and adulthood.

During childhood, it is therefore crucial to help children develop these resources to prepare them for their career future and to cope with any difficult times that they may be going through. Although it is not urgent for children to make imminent career decisions, it is important to start promoting positive career development trajectories during childhood (Nota, Ginevra, & Santilli, 2015; Savickas et al., 2009).

In this phase of development, it is important to stimulate *concern* by supporting children in beginning to see their future, to positively plan for it, to feel hopeful and optimistic about it (Hartung, 2015). It is also essential to increase children's *curiosity*, open mindedness, and exploration of the world so that they can improve their knowledge of the world of work, pay attention to its complexity, and avoid errors and simplistic or stereotyped views. Other relevant objectives are the promotion of *career control* through children's self-directed activities to encourage their feeling of being able to manage their own future, and of self-efficacy beliefs for achieving career aspirations *(career confidence)* (Hartung, 2015; Porfeli, Hartung, & Vondracek, 2008).

According to this, the aim of this work was to evaluate the effectiveness of an intervention for fostering two career adaptability resources in children, i.e. children's hope and optimism toward the future (career concern), curiosity and career exploration, and accurate occupational knowledge (career curiosity).

Childhood, optimism, and hope

Career concern involves orientation to the future and the feeling of optimism and hope toward it (Porfeli et al., 2008). Optimism and hope are two correlating but distinct constructs, with optimism defined as a general expectancy of positive future outcomes and hope as an affective-motivational state that affects thoughts and behaviors dedicated to achieving future goals and wishes (Bryant & Cvengros, 2004; Carver, Scheier, & Segerstrom, 2010). Both hope and optimism emerge in childhood, persist into the adult years (Masten & Tellegen, 2012), and may be considered as antecedents of career and self-construction. Research has highlighted that these constructs are related to health and career outcomes from childhood. Specifically, they correlate positively with life satisfaction, personal adaptation, adaptive achievement, positive social relationships, social acceptance, and negatively with social isolation, behavior problems and depressive symptoms (Reivich, Gillham, Chaplin, & Seligman, 2013; Schmid et al., 2011). Moreover, optimism and hope are associated with higher school achievement and higher levels of adjustment to the school context. Specifically, the children who are hopeful and optimistic are characterized by stronger motivation to achieve their goals, high school achievement, and they obtain greater satisfaction from their education (Gilman, Dooley, & Florell, 2006).

Childhood, curiosity, career exploration and occupational knowledge

In career and life designing an important role is given to curiosity and career exploration as they are both capable of supporting positive childhood activities (Hartung, 2015). Research indicates that exploration has a great influence on several aspects of career development and career decision-making (Flum & Blustein, 2000; Taveira & Moreno, 2003). In particular, it has been found to predict career decision-making self-efficacy, vocational interests and future time perspective. It also impacts self-construction, vocational adaptation and work satisfaction, and fosters vocational maturity and self-concept crystallization. Career exploration also encourages open-mindedness, which stimulates increased self-knowledge and increased awareness of one's own living context, educational and occupational options, thus making it easier to plan career goals and a fulfilling work life (Ferrari et al., 2015; Flum & Blustein, 2000). Some research suggests that career exploration increases with age, thus making older adolescents and young adults more likely than their younger counterpart to engage in self- and environment exploration (Taveira & Moreno, 2003).

During this age period, knowledge of the world of work and occupations is also relevant for career construction (Hartung, 2015). The amount of knowledge that individuals think they have about work and occupations goes by the name of occupational knowledge: it can be considered a perception of occupational knowledge with regards to the amount of knowledge that people *think* they have about jobs vs. the amount of knowledge they *actually* have about jobs (Rohlfing, Nota, Ferrari, Soresi, & Tracey, 2012). It is important because it favors the development of a truthful representation of the world of work and enables people to make career decisions based on knowledge (Hawkins, Hertweck, Salls, Laird, & Goreczny, 2012). Research studies

on children's knowledge of careers and occupations are few and far between (Rohlfing et al., 2012; Schmitt-Wilson & Welsh, 2012) and fragmented in the way they are carried out (Schultheiss, 2005). However, the small number of studies conducted on this issue agreed that occupational knowledge develops by the age of 10 or 11 and is likely to expand with age (Hartung, Porfeli, & Vondracek, 2005). In this sense, Ferrari et al. (2015) did not find an increase in actual occupational knowledge with age, but their results indicated that older girls had higher scores in perceptions of occupational knowledge for artistic jobs. This led the scholars to point to an increase in attention for fashion and show business among females, which females tend to get more interested in as they grow up. Occupational knowledge was also higher for jobs that children had come into contact with, such as social occupations (e.g. nurse and teacher), and lower for conventional jobs (e.g. accountant and secretary). In addition, occupational knowledge was related to occupational preferences and gender stereotypes: boys' knowledge is greater for investigative jobs, whereas girls' knowledge is greater for social welfare jobs (Miller & Hayward, 2006).

Research aims

The training *Journey in the world of professions and work* was devised for and implemented with children. It is based on Hartung' (2015) suggestions that childhood should be considered within career and life-designing research and intervention activities and on the Life Design approach centered on the relevance of enhancing the career adaptability resources starting from childhood (Savickas et al., 2009). It is a ten-unit training aimed at stimulating two career adaptability resources, i.e. career concern and curiosity. Specifically, the children are stimulated to recognize hopeful and optimistic thoughts, to plan goals for their own future, and produce hopeful and optimistic ideas to pursue these goals. In addition, they are encouraged to get to know the world of work, to acquire information about occupations, to go beyond professional 'labels', and not to be influenced by gender stereotypes about occupations. Special emphasis is placed on the workers of the future, that is, on the characteristics they should have to lead a better life in a continually evolving world of work. Lastly, the training also seeks to stimulate children to use a grid for work analysis, increase their knowledge on a number of occupations through specific interviews with workers, and compare collected data.

Taking this into account, compared to the control group, the experimental group was expected to show at post-test higher levels of hope, optimism, curiosity, career exploration, career information, planning for the future, time perspective, and greater occupational knowledge, immediately after the training.

Method

Design, participants and procedure

According to Shadish, Cook, and Campbell (2002) in order to test the research hypotheses we designed an experimental study with two repeated measures done in an experimental and a control group. The study was conducted in two public elementary schools located in the same neighborhood of a northern Italian province with a largely industrial economy, for a total of 10 classes. All children of 10 participating classes were pretested before the intervention. The research team then randomly assigned classes to experimental and control groups. Statistical comparisons were conducted between the pretest results of the experimental and control groups to determine their relative scores before the intervention. Children of 5 classes of the experimental group were further assigned to small groups (no more than 15 children for group) in order to guarantee personalized reinforcements and feedbacks to each participant during the intervention.

Specifically, participants were 154 Italian elementary school students (79 boys and 75 girls), with a mean age of 10.65 years (SD = 1.24). The experimental group, which was targeted by the intervention, was made up of 77 children (37 boys and 40 girls; M_{age} = 10.84; SD = 1.22), and the control group was made of 77 children (42 boys and 35 girls; M_{age} = 10.47; SD = 1.24). No significant differences were recorded between the experimental and the control group as regards gender, $\chi^2(1) = 0.650$, $p = 0.260$, and age, $t(152) = -1.845$, $p = 0.067$.

Prior to the study parents of all participating students received a letter about the study in which they were asked if their child could participate in the training. All parents signed the consent form. While the experimental group participated to the intervention, the control group attended typical school activities, during which issues related to world of work and parents' jobs were discussed. Two weeks after the intervention, children from both the experimental and control groups were again administered the instruments used at pre-test.

Measures

Absent a single instrument able to measure career adaptability in elementary school students, we used the following instruments to assess the efficacy of intervention.

My Hope (Nota et al., 2014) was administered to measure hope toward the future. The scale consists of 5 items (e.g. 'I think the things I have done so far I will need for when I grow up'), scored on a 5 point-Likert scale (1 = *never,* 5 = *very often*). A series of exploratory and confirmatory factor analyses provided support for a mono-factorial structure, accounting for 46.56% of the total variance.

Cronbach's alpha was 0.77. In this study, Cronbach's alpha was 0.71 at pre-test and 0.74 at post-test.

What Will Happen to me? (Nota et al., 2014) was used to measure optimism toward the future. The scale consists of 6 items (e.g. 'I think more good things to will happen to me than bad'), scored on a 5 point-Likert scale (1 = *I do not think this*, 5 = *I think always in this way*). A series of exploratory and confirmatory factor analyses provided support for a mono-factorial structure, accounting for 58.76% of the total variance. Cronbach's alpha was 0.86. In this study, Cronbach's alpha was 0.81 at pre-test and 0.88 at post-test.

The Career Exploration Scale (Tracey, Lent, Brown, Soresi, & Nota, 2006) was used to assess career exploration. The instrument consists of 10 items (e.g. 'Talked to my friends about jobs or careers'). Participants rate on a 5-point scale how often they engage in each of these behaviors over the last three months (1 = *never*; 5 = *lots of times*). The scale has good internal consistency estimate (α = 0.80). Evidence for validity was suggested by predictable relationships of the instrument with the correspondence index which measures the extent to which scores fit a circular order model (Tracey et al., 2006). An Italian study carried out by Nota (2012), involving elementary and middle school children, confirmed the factorial structure and reliability of the instrument (α = 0.83). In this study, Cronbach's alpha was 0.79 at pre-test and 0.84 at post-test.

Childhood Career Development Scale (Schultheiss & Stead, 2004). The CCDS is a 52-item instrument designed to assess career progress. The items are scored on a 5 point-Likert scale and comprise eight subscales: Information (6 items, e.g. 'I want to get more information about jobs'; α = 0.72), Curiosity (7 items, e.g. 'I am curious about the things I learn in school'; α = 0.66), Interests (6 items, e.g. 'I know what sports I like to play'; α = 0.68), Locus of Control (7 items, e.g. 'I have control over how much I study for tests'; α = 0.79), Key Figures (5 items, e.g. 'I want to do the same job as someone I look up to'; α = 0.68), Time perspective (4 items, e.g. 'I think a lot about what I will be when I grow up'; α = 0.69), Planning (11 items, e.g. 'It is important to plan for the future'; α = 0.84), and Self-Concept (6 items, e.g. 'I know what type of person I am'; α = 0.84). A study carried out by Authors (under review) involving middle school children, confirmed the factorial structure and reliability of the subscales, ranging from 0.60 to 0.81. For this study, only the subtests Information, Curiosity, Time Perspective and Planning were used, with Cronbach's alpha ranging from 0.76 to 0.88 at pre-test and from 0.73 to 0.89 at post-test.

Occupational Knowledge Interview (Soresi & Nota, 2013). The interview examines participants' perception of occupational knowledge and actual occupational knowledge. It had been developed based on Rohlfing et al. (2012) work, which suggests the relevance of studying developmental patterns in both perception of occupational knowledge and in actual occupational knowledge related to Holland's categories. It is composed by 12 cards, each depicting one occupation, 2 for every category: Realistic (airplane pilot, fireman), Investigative (pharmacist, veterinary), Artistic (actor/actress, journalist), Social (nurse, school teacher), Enterprising (shop assistant, taxi driver) and Conventional (accountant, secretary). The first part of the interview probes perception of knowledge in 12 occupation. Each participant was asked: 'How much do you think you already know this job?' and to answer using a 4 point Likert scale (from 1 = *I do not know*; to 4 = *I know very well*). The perception of occupational knowledge on each of the six Holland's categories was computed summing values children attributed to the professions included in each category. The second part of the interview investigates actual occupational knowledge: the same cards described above were presented, with the question 'Tell me any action, task or activity that is carried out by a person working as…'. After the answer, the interviewer asked: 'Have you in mind anything else?', until the children did not add other information. For each occupation the number of correct activities provided by children (i.e. for instance, for a fireman: extinguish the fire, helping people, rescuing animals, etc.) was independently examined by two raters and calculated. Then, the number of correct activities for the two jobs of every Holland's category were summed. The percentage of agreement reached by the two raters was over 96% for each of the analyzed occupations. In an Italian study (Ferrari et al., 2015) involving elementary and middle school children, this interview allowed to observe higher levels of actual knowledge and perception of occupational knowledge in social category and lower levels in conventional category. For this study, only participants' actual occupational knowledge was investigated.

Intervention

The training *Journey in the world of professions and work* differs from other career interventions for children (see for a review Prideaux, Creed, Muller, & Patton, 2000), because, rather than focusing attention on the match between personal characteristics and contextual factors, it aims at developing resources to prepare children to cope with the complexity of the job market: optimism and hope toward the future, curiosity, career exploration, and occupational knowledge.

The training consists of 10-didactic units, of two hours each at once, on a weekly basis, for a total of 10 weeks. The 10 chosen didactic units were as follows:

First Didactic Unit (focused mainly on career concern): *Let's get to know each other to work together*. The first meeting favors reciprocal acquaintance and stimulates

children's attention on the issues that will be dealt with and on ways of working. The children are given the book of the course entitled 'We build ideas, paths, trajectories for the future' which will be assembled together over the scheduled meetings and begin to be challenged on the idea of the future and their dreams for the future.

Second Didactic Unit (focused mainly on career curiosity): *Let's think about work*: the focus is on the analysis of the idea of work, of the rights and duties that characterize it, the advantages that work brings into people's existence and their quality of life. The work is described as a component of people's lives, which is related to study and social life.

Third Didactic Unit (focused mainly on career curiosity): *Exploring professions beyond their labels*. The children are encouraged to go beyond professional labels and distinguish between professions on the basis of working activities (functions and tasks), of the place where work is done (from the classic ones, indoor or outdoor, to the least considered ones, e.g. fixed workplaces or ubiquitous work environments), the instruments used (from the most traditional to the most high-tech, from the most to the least used ones, from those common in many jobs to those specific to each job, etc.), and the people with whom work is done (from colleagues, to clients and users).

Fourth Didactic Unit (focused mainly on career concern): *Hurrah for school… for our future*. The children are encouraged to recognize the importance of education and training for their growth; to examine the contribution that each school subject can give to the development of professional activities; and to reflect on the role of keeping up to date throughout one's working life. Attention is given to all school subjects study and how these can help prepare young people to do better diverse works. Issues also dealt with are innovation, creativity, and the importance of 'getting ready' to cope with what said above.

Fifth Didactic Unit (focused mainly on career concern): *Work changes… let's look for change and think about the future*. Here the focus is on the changes that characterize the job market (in relation to progress, legislation, etc.), on what is needed to 'sense' changes and make good use of them. The children are invited to think of change as a constant, and give emphasis to diverse abilities (social, artistic, etc.) in order to give their best during their working life.

Sixth Didactic Unit (focused mainly on career curiosity): *Let's continue to explore… probing jobs and workers*. The children are encouraged to explore occupations, keeping on going beyond labels given to jobs and grasping differences between them. They are stimulated to interview workers, with the aim of highlighting their working activities, the competences acquired to carry out their jobs, the places where they work, the instruments they use, individuals they work with, the sense that they give to their work, and the contribution they think they give to society and to their life.

Seventh Didactic Unit (focused mainly on career curiosity): *Diversity makes work more meaningful*. The children are encouraged to continue to analyze jobs, highlighting as they can be pursued by different individuals (for gender, disability or impairment, religion, and culture); the advantages associated with the presence of different individuals at the workplace; and to reflect on how diversity is an added value to working life.

Eighth Didactic Unit (focused mainly on career curiosity): *Work, family, community... hurrah for different relationships*. The children are invited to explore the interplay between contexts – work, family, community – in which life is carried out, and the importance of fostering relationships in all these contexts to improve one's own and others' quality of life. Special emphasis is placed on the fact that activities in which they engage (e.g. hobbies, leisure time activities, sports, school activities) can be useful to develop passions, competences, skills for their career life. Moreover, the children are invited to consider how the skills and attitudes acquired in a job sector can help them to do better in another and to examine the interactions among these sectors in their lives.

Ninth Didactic Unit (focused mainly on career concern): *Let's project ourselves into the future*. Attention is focused on the profile of the worker of the future, that is, on the characteristics workers will need to have for a better life in a continually evolving world of work, and on ways to set professional goals for one's own future. The children were advised to take into consideration the previous didactic units and to think about their future, to imagine themselves into their future. With verbal instructions, they were invited to formulate almost two images of themselves performing the working activities, in specific places, using specific instruments, and interacting with diverse people. Then, they were asked to write and detail their professional goals.

Tenth Didactic Unit (focused mainly on career concern): *Nuggets of optimism and hope*. The children are invited to think of optimism and hope as two fellow travelers, also and above all to form groups of hopeful and optimistic individuals that support one another, and come up with highly creative ideas.

The career intervention was conducted by a career counselor, who was unaware of the goal of the study and the hypotheses formulated about the efficacy of intervention.

A specific goal was described for each didactic unit, articulated in terms of conditions related to the context in which the skill was to be applied, performances regarding the behaviors to be learned, and a mastery criterion describing expected performances at end of the unit.

Specifically, in each didactic unit, children were asked to answer 10 multiple-choice questions on the issues focused on in the didactic unit. Mastery criterion was achieved if the participant answered correctly 8 on 10 questions; additional meetings were planned for those who had not been successful. Moreover, a 'guide to learning' was developed for each didactic unit, which described the non-verbal and verbal behaviors the trainer should use during the unit.

Social reinforcements, informational feedback, and modeling were used as teaching techniques (Taylor, Russ-Eft, & Chan, 2005). Moreover, as suggested by Nota et al. (2015) and Savickas et al. (2009), special emphasis was given to active participation of children, using stories, group work, exercises, and practice. During the units, attention was placed to narration, and the students were invited to write stories and reflections, and complete activities about their personal situations (Hartung, 2015; McMahon & Watson, 2012). One or two stories were used in each didactic unit, as further example of the topic discussed, to favor reflections on how generalize the skills acquired to their daily lives. These stories presented characters, describing episodes and activities about the analysis of different jobs they carried out and their goals for the future. Stories of young adults who narrated episodes of their professional lives in which they returned to study and upgrade, and benefits associated with that, were presented. Moreover, the importance to cultivate more interests to do jobs well, the importance of taking advantage and inspiration by different situations of own working, personal, and family lives were emphasized.

Reliability of intervention

Two evaluators, who were unaware of the research goals and hypotheses, viewed the video recordings of each didactic unit. The degree of correspondence between what had been specified in the guide to learning of each didactic unit about for example the teaching techniques to be used, and times for the various phases of each didactic unit, and what was realized by the trainer was calculated by comparing the guide to learning of each didactic unit and the implementation of it. The agreement index (number of agreements/number of agreements + number of disagreements) of the number of unit didactic singled out was 96%. Instead, the agreement index of the teaching techniques used in unit didactic was found to be 93%.

Results

Preliminary analysis

Intercorrelations among study variables at pre-test were summarized in Table 1. Weak to strong significant

Table 1. Summary of intercorrelations.

	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Hope	0.65**	0.19*	0.17*	0.31**	0.32**	0.24**	0.03	0.05	−0.05	0.07	−0.11	−0.06	−0.01
2. Optimism		0.24**	0.20*	0.39**	0.26**	0.37**	0.10	0.06	0.05	0.19*	−0.03	0.06	0.11
3. Career exploration			0.55**	0.48**	0.44**	0.40**	0.19*	0.01	0.03	−0.01	−0.012	0.06	0.06
4. Information				0.58**	0.58**	0.63**	0.16	−0.01	0.12	−0.02	0.05	0.04	0.07
5. Curiosity					0.44**	0.55**	0.24**	0.14	0.17*	0.11	0.07	0.05	0.19*
6. Time perspective						0.59**	0.02	−0.05	−0.09	−0.12	−0.13	−0.16	−0.12
7. Planning							0.21**	0.09	0.12	0.03	0.03	0.03	0.12
8. Actual realistic occupational knowledge								0.37**	0.38**	0.42**	0.38**	0.35**	0.67**
9. Actual investigative occupational knowledge									0.42**	0.51**	0.51**	0.27**	0.72**
10. Actual artistic occupational knowledge										0.39**	0.62**	0.33**	0.75**
11. Actual social occupational knowledge											0.45**	0.39**	0.76**
12. Actual enterprising occupational knowledge												0.41**	0.78**
13. Actual conventional occupational knowledge												1	0.602**
14. Total score occupational knowledge													1

*$p < 0.05$;
**$p < 0.01$.

correlations were found between Optimism, Hope, Career exploration, Information, Curiosity, Time perspective, and Planning. As strong correlations between Hope and Optimism and between Information and Planning were observed, discriminant validity for these dimensions was tested by calculating the average variance extracted (AVE). The analysis carried out showed that the AVE for Optimism (AVE = 0.58) and Hope (AVE = 0.66) exceed the recommended AVE value of .5 and the squared correlation between Hope and Optimism, suggesting that multicollinearity is not a problem (Farrell, 2010; Fornell & Larcker, 1981). In addition, also the AVE for Information (AVE = 0.55) and Planning (AVE = 0.59) exceed the recommended AVE value of .5 and the squared correlation between these two constructs.

Pre-test data

A series of *t*-tests were conducted to determine if there were significant between-group differences at pretest on any of the dependent variables. The Bonferroni correction for multiple comparisons was used. The *t*-tests revealed that there were not significant differences between two groups on Hope $t(152) = 0.722$, $p = 0.472$; Optimism $t(152) = 0.739$, $p = 0.461$; Career exploration $t(152) = 0.569$, $p = 0.570$; Information $t(152) = 0.202$, $p = 0.840$; Curiosity $t(152) = 1.058$, $p = 0.292$; Time perspective $t(152) = 2.533$, $p = 0.012$; Planning $t(152) = 1.080$, $p = 0.282$; Realistic actual occupational knowledge $t(152) = 1.474$, $p = 0.142$; Investigative actual occupational knowledge $t(152) = 1.323$, $p = 0.188$; Artistic actual occupational knowledge $t(152) = -0.679$, $p = 0.498$; Social actual occupational knowledge $t(152) = 0.879$, $p = 0.381$; Enterprising actual occupational knowledge $t(152) = -1.378$, $p = 0.170$; Conventional actual occupational knowledge $t(152) = -0.953$, $p = 0.342$; and Total score actual occupational knowledge $t(152) = 1.453$, $p = 0.148$ (see Table 2).

Intervention effects

Mastery criterion

In nine out of ten meetings, all 77 (100%) participants reached the mastery criterion; in the fifth meeting, 75 (97.4%) students did. That allows us to say that goals of didactic units were reached overall for most of the children involved.

Empirical outcomes

According to Fitzmaurice, Laird, and Ware (2004), three mixed-effects ANOVAs, with one between-groups factor (Treatment condition) and one within-groups factor (Time), were used to evaluate changes on hope, optimism and career exploration, over time and as a function

Table 2. Means and standard deviations of experimental and control group at pre- and post-test.

	Pre-test				Post-test			
	Control group		Experimental group		Control group		Experimental group	
Measure	*M*	SD	*M*	SD	*M*	SD	*M*	SD
Hope	**23.14**	**4.18**	**22.68**	**3.85**	**22.84**	**4.98**	**23.83**	**3.30**
Optimism	**21.35**	**4.83**	**20.81**	**4.31**	**20.94**	**5.92**	**22.10**	**4.40**
Career exploration	**23.17**	**6.97**	**22.53**	**6.90**	**24.16**	**7.93**	**29.68**	**7.83**
Information	**19.31**	**5.42**	**19.14**	**4.95**	**18.62**	**5.35**	**20.61**	**5.01**
Curiosity	**22.74**	**5.57**	**21.79**	**5.54**	**22.30**	**5.46**	**23.00**	**5.26**
Time perspective	**15.26**	**3.79**	**13.74**	**3.66**	**14.26**	**3.55**	**15.08**	**3.15**
Planning	**41.68**	**8.21**	**40.27**	**7.90**	**39.31**	**8.60**	**41.23**	**7.53**
Actual realistic occupational knowledge	**3.57**	**1.69**	**3.17**	**1.36**	**3.68**	**1.66**	**4.68**	**1.85**
Actual investigative occupational knowledge	**3.35**	**1.64**	**3.01**	**1.41**	**3.28**	**1.36**	**3.84**	**1.99**
Actual artistic occupational knowledge	3.23	1.78	3.39	1.80	3.05	1.56	4.03	2.06
Actual social occupational knowledge	**4.24**	**2.25**	**3.92**	**1.55**	**3.88**	**2.02**	**5.27**	**2.00**
Actual enterprising occupational knowledge	**2.84**	**1.46**	**3.16**	**1.48**	**2.92**	**1.30**	**4.13**	**1.96**
Actual conventional occupational knowledge	1.45	1.18	1.60	1.18	1.88	1.46	2.45	1.92
Total score occupational knowledge	**18.51**	**7.55**	**18.25**	**5.94**	**18.52**	**6.65**	**24.40**	**9.26**

Note: In bold significant interaction effects of the Treatment condition (experimental group and control group) × Time (pre-test and post-test measurement).

of treatment condition. Moreover, two mixed-effects MANOVAs, with one between-groups factor (Treatment condition) and one within-groups factor (Time), were used to evaluate changes on subscales considered of the Childhood Career Development Scale and occupational knowledge, allowing to look at all dimensions simultaneously. Only the Treatment Condition x Time interaction produced effects of interest for the study and will be reported. The Bonferroni correction ($p = 0.05/4$ for career progress and $p = 0.05/6$ for occupational knowledge) was used. The effect size was evaluated using the partial eta squared (η_p^2), which assesses the percentage of variance explained by each dimension. The threshold values for the index η_p^2 are 0.01, 0.06, and 0.14, which mean respectively, a small, moderate and large effect size (Green & Salkind, 2003).

Mixed-effects ANOVAs carried out showed an interaction effect on Hope Wilks' $\Lambda = 0.958$, $F(1,152) = 6.663$, $p = 0.011$, $\eta_p^2 = 0.042$; Optimism Wilks' $\Lambda = 0.951$, $F(1,152) = 7.765$, $p = 0.006$, $\eta_p^2 = 0.049$; and Career exploration Wilks' $\Lambda = 0.860$, $F(1,152) = 24.710$, $p < 0.001$, $\eta_p^2 = 0.140$. Tests of within-subjects indicated that for the three variable considered, the overall effect of time was significant within the experimental group, but not within the control group. Specifically, at post-test the experimental group showed higher levels of hope, optimism and career exploration than the control group.

As regards subscales considered of the Childhood Career Development Scale, the mixed-effects MANOVA showed a significant interaction effect Wilks' $\Lambda = 0.892$, $F(4,149) = 4.497$, $p = 0.002$, $\eta_p^2 = 0.108$. Univariate analyses showed an interaction effect for Information $F(1,152) = 8.780$, $p = 0.004$, $\eta_p^2 = 0.055$; Curiosity $F(1,152) = 5.579$, $p = 0.01$, $\eta_p^2 = 0.035$; Time perspective $F(1,152) = 15.806$, $p < .001$, $\eta_p^2 = 0.094$; and Planning $F(1,152) = 6.453$, $p = 0.01$, $\eta_p^2 = 0.041$. Tests of within-subjects indicated that for Information, Curiosity, Time perspective, and Planning the overall effect of time was significant within the experimental group, but not within the control group. Specifically, at post-test the experimental group showed higher levels of information, curiosity, time perspective and planning for the future than the control group.

As regards actual occupational knowledge the mixed-effects MANOVA showed an interaction effect Wilks' $\Lambda = 0.746$, $F(6,147) = 8.333$, $p < 0.001$, $\eta_p^2 = 0.254$. Univariate analyses showed an interaction effect for Realistic $F(1,52) = 23.285$, $p < 0.001$, $\eta_p^2 = 0.133$; Investigative $F(1,152) = 12.327$, $p = 0.001$, $\eta_p^2 = 0.075$; Social $F(1,152) = 27.222$, $p < .001$, $\eta_p^2 = 0.152$; and Enterprising category $F(1,152) = 13.092$, $p < 0.001$, $\eta_p^2 = 0.079$. Tests of within-subjects indicated that for Realistic, Investigative, Social and Enterprising categories the overall effect of time was significant within the experimental group, but not within the control group. An additional mixed-effects ANOVA for the total score of actual knowledge showed a significant interaction effect Wilks' $\Lambda = 807$, $F(1,152) = 36.313$, $p < 0.001$, $\eta_p^2 = 0.193$. Specifically, at post-test the experimental group showed more extensive actual occupational knowledge in realistic, investigative, social, enterprising Holland's categories and overall actual knowledge than the control group.

Discussion

The goal of the study was to develop a training that contributed to two career adaptability resources in children, i.e. career concern and career curiosity. In this way, we answered to a request in the field to conduct studies and interventions with children, focusing in particular on career adaptability resources (e.g. Hartung, 2015; Savickas et al., 2009).

The results carried out support the idea that the experimental group increased in hope, optimism, curiosity, career exploration, information, occupational knowledge, planning, and time perspective. The higher levels of hope, optimism, planning, and time perspective found among the experimental participants may have been favored by stimulating the children to recognize hopeful and optimistic thoughts and distinguish them from negative ones, to make plans for their future, to recognize strategies to pursue them and think of alternative plans, as suggested by Firpo (2001), Nota et al. (2015) and McDermott and Hastings (2000).

In turn, the children were trained to analyze occupations and explore the world of work by going beyond 'occupational labels' – through specific interviews with working individuals – and distinguish between occupations on the basis of working activities, the place where the work is done, and the instruments used. This may well have contributed to the higher levels of curiosity, career exploration, information, and occupational knowledge, shown by the experimental group compared with the control group.

Overall, the results carried out seem to emphasize that this intervention can develop some career adaptability resources in children, enhancing a positive attitude (hope and optimism) toward the future, curiosity, career exploration and occupational knowledge, which are crucial resources for a future career, and essential to cope with the difficult times we are going through (Nota et al., 2015). However, the pattern of effect sizes showed small to large effects, with moderate and large effects for time perspective, career exploration, and actual realistic, investigative, social, enterprising and total occupational knowledge. The small effects obtained for hope, optimism, information, curiosity, and planning could suggest the need for more actions during the didactic units in order to stimulate children to reflect on those dimensions.

Implication for theory and practice

As regards implications for theory, our results suggest that in childhood hope and optimism toward the future, curiosity, career exploration, and knowledge of occupations can be changed and developed in such a way as to be further enhanced in adolescence and pre-adolescence. Thus, the childhood years can be seen as the antecedents of life designing and construction processes (Hartung, 2015). Increasing hope and optimism toward the future (career concern) allows children to see specific and interesting possibilities in their future, acquire positive emotions toward their future, and start to imagine realistic steps toward developing that future. In adolescent and adult years, all that can favor fruitful engagement in educational and professional planning and construction (Hirschi, 2014). In addition, increased curiosity and exploration can encourage a more realistic and accurate analysis of training and professional realities, which in turn allows one to make future analyses of educational and vocational options without the influence of stereotyped beliefs, thus leading to consider a greater number of options. It may also favor the identification of numerous activities – also leisure ones – that can contribute to a person's professional development and quality of life (Porfeli et al., 2008; Savickas et al., 2009).

From a theoretical perspective, this Life Design intervention has been efficacious in increasing crucial resources for promoting the development of positive life trajectories in children, and area which positive psychology is also focusing on for improving personal wellbeing and professional potential (Roberts, Brown, Johnson, & Reinke, 2002).

In terms of practice, this type of intervention provides educational resources that could be used in school contexts at the end of elementary school. Career counselors may directly implement the training or train teachers on the basic ideas of the Life Design approach, on the constructs under observation in the training, and on ways for involving students and implementing the didactic units. In addition, parents could be trained to provide specific educational activities to their children. For example, they could be trained to talk with their children about occupations, by going beyond 'occupational labels', and discussing the changing job market. Moreover, Life Design counselors could present the concept of optimism and hope to parents and train them on how support and sustain these resources in their children.

Limitations and future research

Even if the results are encouraging, the study presents some limitations. Firstly, the training efficacy was tested examining only changes occurred between the beginning and the end of the intervention. Therefore, future studies should also include 6- and 12-month follow-ups to verify whether the experimental group maintained and generalized the skills developed in the intervention. Secondly, the control group carried out typical school activities. It could be that added attention to the experimental group could have contributed to the increased scores. Therefore, it would be suitable, even from an ethical point of view, to offer other kinds of training sessions for the control group. Thirdly, future studies could focus on the other two resources of career adaptability not focused on in the current study, i.e. career control and confidence, through specific educational activities that prepare children to take responsibility for their future and to solve problems and surpass barriers.

Disclosure statement

No potential conflict of interest was reported by the authors.

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