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A longitudinal study on relations among adolescents' self-esteem, general self-efficacy, career adaptability and life satisfaction

Abstract

Self-esteem, general self-efficacy and career adaptability, that includes career concern, control, curiosity and confidence, are important resources for adolescents who are required to make important educational and professional choices. No studies have investigated how these resources co-develop over time, and their impact on life satisfaction. In order to study more precisely this co-development and the impact of these resources on well-being, 357 Swiss adolescents were assessed three times during the last 17 months of compulsory school. The results showed an interrelationship between career adaptability and self-efficacy and a unidirectional effect of self-esteem on life satisfaction over time. They also highlighted the importance of career adapt-ability concern in predicting the other three career adapt-abilities. Overall, the results suggested that, in adolescents, higher levels of career adaptability may favor higher levels of general self-efficacy and that higher levels of self-esteem may induce higher levels of life satisfaction. Implications for practice are discussed.

Keywords: Self-esteem, general self-efficacy, career adaptability, global life satisfaction, adolescents

Among the developmental tasks that permit adolescents to achieve personal autonomy (Havighurst, 1952), the choice of an education or vocation is certainly a very important and challenging task. This might be especially the case in education system requiring early decisions. Personal resources such as high levels of self-esteem, general self-efficacy, and career adaptability may be important because they help adolescents to cope with their developmental challenges and have an impact on their life satisfaction (Bradley & Corwyn, 2004; Furnham & Cheng, 2000; Johnston, 2018; Proctor, Linley, & Maltby, 2009). Despite the importance of these resources for adolescents and the interest in understanding how they co-develop, only a few studies have investigated these constructs longitudinally in adolescents having to make early educational or career choices. In Southern Switzerland, adolescents, at about age 14 or 15, have to choose between continuing a general education in a high school (chosen by approximately 45% of adolescents) or start an apprenticeship with usually 3 days in the company and 2 at a vocational school (chosen by approximately 55% of adolescents). Some vocational schools also offer the entire training of an apprenticeship. The choice can be difficult, indeed, the access to high school and to some apprenticeships is limited to only those students with good academic achievement, moreover, apprenticeships that provide part of the training in a company are available only to those having found an employer. In this context, the personal resources that we considered above, might be crucial to prevent early dropout from education and to maintain acceptable levels of life satisfaction. Thus, this study aims to investigate the co-development of self-esteem, general self-efficacy, and career adaptability, and their impact on life satisfaction, in Southern Swiss adolescents facing this challenging period.

Self-esteem

Self-esteem was defined by Rosenberg (1965) as a favorable or unfavorable attitude toward the self. It includes self-acceptance and self-respect and thus represents an affective

evaluation of the self (Chen, Gully, & Eden, 2004). Self-esteem was found to be relatively unstable during early childhood and to become more stable throughout adolescence and adulthood (Donnellan, Kenny, Trzesniewski, Lucas, & Conger 2012). For this reason, self-esteem is considered by some researchers as an enduring personality characteristic.

Concerning career choices, several studies have shown that low self-esteem is associated with difficulties with the career decision-making process (e.g. Vignoli, 2009). Self-esteem seems also conceptually related to career adaptability (Rossier, 2015). The cross-sectional study by van Vianen and colleagues (2012) showed from moderate to strong correlations between self-esteem and both the whole score and the four dimensions of career adaptability, particularly strong with control and weak with concern. In the study by Öncel (2014), self-esteem correlated the most with control and concern, and slightly less with confidence and curiosity. Moreover, the longitudinal study of Cai et al. (2015) confirmed a positive link between self-esteem and career adaptability. These studies were done with adult participants, and the question remains to know if the associations are similar in adolescents that have to make early educational and professional choices. Finally, several studies have shown that one of the most important outcomes associated with self-esteem is global life satisfaction both for adults (for a review see Baumeister, Campbell, Krueger, & Vohs, 2003) and adolescents (Furnham & Cheng, 2000; Gilman & Huebner, 2006; Marcionetti & Rossier, 2016; Proctor, Linley, & Maltby, 2009).

General Self-efficacy

General self-efficacy was defined by Judge, Locke, Durham, and Kluger (1998, p. 19) as “one’s estimate of one’s capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise general control over events in one’s life”. Schwarzer, Boehmer, Luszczynska, Mohamed, and Knoll (2005) moreover stated that general self-efficacy “represents a belief in one’s competence in dealing with all kinds of demands. This

implies an internal-stable attribution of successful action and a prospective view." (p. 808). Hence, the general sense of self-efficacy (in contrast to domain specific self-efficacy), refers to a global confidence in one's coping ability across a wide range of demanding, unexpected and novel situations and reflects an individual general problem-solving ability. Therefore, general self-efficacy could be an important resource for adolescents who have to make particularly important educational and professional choices. Indeed, according to Savickas (2005) it is essential to have positive general self-efficacy beliefs to visualize being able to overcome obstacles. Moreover general self-efficacy should be related to the career adapt-abilities dimensions, and in particular with the confidence dimension (Rossier, 2015). The study by Öncel (2014) showed that general self-efficacy correlated highest to confidence then control, curiosity and concern, supporting this hypothesis. Moreover, other cross-sectional studies investigating the predictive value of general self-efficacy on career planning (Zikic & Klehe, 2006) or career optimism (McIlveen, Beccaria, & Burton, 2013), two constructs similar to concern, indicated that self-efficacy might predict this adaptability dimension. An adult or an adolescent who think that he has control over events in her/his life should likely be more satisfied of his/her life than one having the feeling of being at the mercy of events. Nevertheless, to our knowledge, only a study (i.e. the one by Bradley & Corwyn, 2004) has been conducted that confirmed an effect of general self-efficacy on life satisfaction.

Career Adaptability

According to Savickas' (2005) career construction theory, career adaptability is an important construct to consider when studying career-related outcomes. "Whether in adolescents or in adults, [career adaptability] involves planful attitudes, self and environmental exploration, and informed decision making" (Savickas, 1997, p. 254). Hence, it involves attitudes and skills that should facilitate the career decision-making process. In particular, this construct integrates four specific abilities or "adapt-abilities". The first, career

concern, promotes coping behaviors such as awareness and preparation, which help an individual to imagine his/her future as a worker. The second, control, encourages an individual to acknowledge his/her ability to make decisions and to take personal responsibility for his/her future decisions. A third construct, curiosity, encourages the exploration of the self and of the environment, thus facilitating a good fit between the self and the world of work. Finally, confidence is the belief that an individual has in his/her own ability to master challenges and solve problems. As already said, this ability has been linked to self-esteem and general self-efficacy (Rossier, 2015; Savickas, 2005).

Career adapt-abilities should help people to plan their future, explore their different options, and make informed career choices. Adolescents having higher levels of career adaptability should have less difficulty to make decisions regarding their future education or vocation. According to Savickas (1997, 2005) concern is the most important dimension among the four career adapt-abilities. This ability allows taking future plans into account. Some longitudinal studies investigating the link between career adaptability and academic achievement (Negru-Subtirica & Pop, 2016), vocational identity (Negru-Subtirica, Pop, & Crocetti, 2015), or career-decision making difficulties, career planning, career exploration, and occupational self-efficacy (Hirschi, Herrmann, & Keller, 2015) have confirmed the specific contribution of career concern over the other career adapt-abilities.

Overall career adaptability has also shown to have positive associations with life satisfaction. This association was observed in Swiss employed adults (Maggiori, Johnston, Krings, Massoudi, & Rossier, 2013), Italian workers with intellectual disability (Santilli, Nota, Ginevra, & Soresi, 2014) or adolescents. For example, results of the cross-sectional study by Santilli, Marcionetti, Rochat, Rossier, and Nota (2017) indicated a direct effect of career adaptability on life satisfaction in Italian adolescents and a fully mediated effect through time perspective in Swiss adolescents. Ginevra and colleagues (2017) found that

courage partially mediated the relationship between career adaptability and life satisfaction in Italian adolescents. Finally, Hirschi (2009) observed that an increase in career adaptability predicted an increase in life satisfaction in Swiss eighth graders. The control and confidence dimensions of career adaptability were also found to be related to life satisfaction in unemployed emerging adults (Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015). Thus, career adapt-abilities can be conceived as a set of psycho-social resources that can be activated in situations that implies to make early educational and professional choices and help people taking advantage of their environmental resources and thus affect overall life satisfaction.

Global Life Satisfaction

Pavot and Diener (1993) defined global life satisfaction as "a conscious cognitive judgment of one's life in which the criteria for judgment are up to the person" (p. 164). As already mentioned, studies suggest that self-esteem and general self-efficacy contribute to life satisfaction particularly in adults but also in adolescents (Baumeister et al., 2003; Bradley & Corwyn, 2004; Furnham & Cheng, 2000). Recent studies have also noted that variables such as career adaptability, courage, hope, and optimism might be important predictors of life satisfaction in adolescents (Ginevra et al., 2017; Santilli et al., 2017).

Aims of the Study

This study analyzes the interplay between self-esteem, general self-efficacy, career adaptability, which are considered as more process-oriented variables (Rossier, 2015), and how they influence life satisfaction in adolescents. The first aim of this study was thus to examine the co-development of self-esteem, general self-efficacy, career adaptability, and their impact on global life satisfaction, in a population of adolescents that have to make early educational and professional choices. Previous studies suggest that self-esteem and general self-efficacy would be linked to career adaptability and that self-esteem, general self-efficacy

and career adaptability, would predict life satisfaction to some extent. The second aim of this study, was to analyze more specifically the inter-relations between career adaptability and general self-efficacy, that are known to be particularly closely related (Savickas, 2005). We supposed that these two resources reinforce each other in a circular dynamic. Finally, the third aim of the study was to investigate the relationships over time among the four career adaptability dimensions, i.e. concern, control, curiosity and confidence. Considering that concern may play a particularly important role (Savickas, 1997, 2005), we investigated if this specific career adapt-ability could have an impact on the development of the three other career adapt-abilities. Finally, the fact of having already made a vocational choice or not (choosing an apprenticeship vs going to high school) could induce an early or, respectively, late development of these resources. The adolescent's situation with respect to the choice will be taken into account. Hence, for each of the considered relationships, an analysis was carried out to detect the possible moderating impact of the choice time.

Method

Participants and Procedure

The study was conducted in the Swiss Canton of Ticino, where the official language is Italian. Students from 7 of 35 compulsory schools of different sizes that are situated in various geographic locations (urban, periphery, and valley) participated in the study. The initial sample included 437 students in the middle of their 8th grade (the 10th year of compulsory school), 204 (47%) were girls. Their age ranged from 12 to 16 years, with a mean age of 13.37 and a standard deviation of 0.61. The majority of the students were 13-years old (n = 298; 68%); 316 were Swiss (72%) and 121 non-Swiss. Only the students who completed the questionnaire all three times (n = 357), i.e. in the middle of their 8th grade (T1) and at the beginning (T2 = T1 + 9 months) and at the end (T3 = T2 + 8 months) of the 9th grade (the 11th -and last- year of compulsory school) were considered for the subsequent

analyses. The transition from the 8th to the 9th grade was one cause of attrition (34 students had to repeat their 8th grade), attending another school was another cause of attrition with the fact of being ill the day of the data collection. Hence, the final sample consisted of 172 (48%) girls and 185 boys. Their age ranged from 12 to 16 years, with a mean age of 13.32, and a standard deviation of 0.56. The modal value was 13 years old (n = 254; 71%). The students of Swiss nationality were 266 (75%). Chi-square tests showed no difference in gender, $\chi^2(1) = 0.122$, $p = .727$, and in the national belongingness, $\chi^2(1) = 0.466$, $p = .495$ between the initial and the final sample.

During each questionnaire administration, the pupils received information about the aim of the study and were reassured about the confidentiality of their answers. The questionnaires were completed in an IT classroom during an ordinary lesson and under the supervision of the first author. Concerning the 357 completed questionnaires, there were no missing values because the software for the online administration that was used permits to "force" responders to answer to all the questions. This research complied with the ethical rules of the Swiss Society of Psychology.

Measures

Career Adapt-Abilities Scale. To measure career adaptability, we used the Career Adapt-Abilities Scale (CAAS; Savickas & Porfeli, 2012), which consists of 24 items that can be combined to form a total career adaptability score or that can be used separately to measure the four career adapt-abilities dimensions, i.e., concern, control, curiosity and confidence. Participants answer each item using a 5-point Likert-type scale ranging from 1 (not strong) to 5 (strongest). In the present study, the Italian version was used (Soresi, Nota, & Ferrari, 2012). The Cronbach's alpha reported in the Italian validation study was .91 for the total score, .80 for concern, .74 for control, .77 for curiosity, and .85 for confidence.

General Self-Efficacy Scale. To measure self-efficacy, we used the Italian version of the General Self-Efficacy scale (GSE; Schwarzer & Gerusalem, 1995; Sibilia et al., 1995). This scale contains 10 items that are rated using a 4-point Likert-type scale ranging from 1 (not at all true) to 4 (exactly true). It was validated in a sample of 25 countries. The Cronbach's alphas ranged from .75 to .91, with the majority in the high .80s. The psychometric qualities of the Italian version are similar to those of the English version (Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002).

Rosenberg Self-Esteem Scale. To assess self-esteem, we used the Italian version of the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The scale consists of 10 items that are rated using a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The Italian version was validated by Prezza, Trombaccia, and Armento (1997). The Cronbach's alpha reported for both the original (English) and the Italian version is .84.

Satisfaction with Life Scale. To measure global life satisfaction, the Italian version of the Satisfaction with Life Scale (SWL; Diener et al., 1985) developed by Di Fabio and Palazzeschi (2012) was used. This 5-item unidimensional scale measures life satisfaction using a 7-point Likert-type response scale ranging from 1 (strongly disagree) to 7 (strongly agree). The Cronbach's alpha is .87 for the original English version (Diener, Emmons, Larsen, & Griffin, 1985) and .88 for the Italian version (Di Fabio & Palazzeschi, 2012).

Choice time. To create the groups of adolescents with respect to the choice time, we asked the adolescents to report their degree of decision by choosing one of the six statements adapted from Gati, Saka and Krausz (2001): from 1) "I don't even have a general direction" to 6) "I made a choice and I'm sure of it". Groups were then composed categorizing adolescents in those having early made and maintained an education or vocational choice

from T1 to T3, those having made a choice in the laps of time between T2 and T3, and those always undecided about their choice.

Results

Preliminary Analyses

Cronbach's alphas were computed to assess the internal consistency of the measures used. The scores are reported in Table 1, are in line with those reported in the Italian validation studies, and confirm good reliability of the measures at each time point. Asymmetry and kurtosis values ranged always between -0.85 and 1.16 indicating a roughly normal distribution of the scores for each scale at each time point. In Table 1, we also reported the means and standard deviations for each scale and the calculated correlations between them. The variables generally exhibited moderate to high correlation when inspected at a cross-sectional level. The correlations between the variables at different points in time were modestly correlated, with the exception of the correlations between the same constructs, which were always above .41, and the correlations between career adaptability and general self-efficacy, which remained above .40. Concerning the correlations with gender and nationality, in line with previous literature, a difference in self-esteem was detected between boys and girls (Baumeister et al., 2003).

To assess the quality of our measurement model across our three waves, a multigroup CFA with the four latent variables correlated and time as the grouping variable was performed to test for invariance of the measures used. The raw data were used for this multigroup CFA. The configural invariance model showed a good fit to the data χ^2 (252) = 522.64, $p < .001$, TLI = .963, CFI = .970, RMSEA = .032. Weak factorial invariance, χ^2 (274) = 560.83, $p < .001$, TLI = .964, CFI = .969, RMSEA = .031, ΔCFI = .001, ΔRMSEA = .001, and strong factorial invariance, χ^2 (304) = 663.73, $p < .001$, TLI = .959, CFI = .961, RMSEA = .033, ΔCFI = .008, ΔRMSEA = .002 were confirmed considering the cut-off values of

ΔCFI < .01 and ΔRMSEA < .015 (Chen, 2007), justifying the relevance of the following longitudinal analyses.

Cross-lagged Analyses

The purpose of this study was, first, to examine the longitudinal reciprocal associations between self-esteem, general self-efficacy, and career adaptability, and their impact on global life satisfaction, second, to specifically analyze the relationship between career adaptability and general self-efficacy, and third, to investigate the relationships among concern, control, curiosity and confidence over time. Thus, in a first stage, a cross-lagged model was specified that included all constructs as latent variables. To simplify the cross-lagged models, three parcels were created for each of the latent variables of self-esteem and general self-efficacy using the item-to-construct balancing technique (Little, Cunningham, Shahar, & Widaman, 2002). We considered the four career adapt-abilities as the observed variables for career adaptability (Kishton & Widaman, 1994), whereas we used the original items for life satisfaction. In the model, the latent variables at T1 predicted the latent variables at T2 and the latent variables at T2 predicted the latent variables at T3 (Figure 1). The model was computed with the raw data. Considering that the χ^2 per degree of freedom (χ^2/df) is good when lower than 3; the comparative fit index (CFI) and the Tucker–Lewis index (TLI) are appropriate when approximately .90 or above (Medsker, Williams, & Holahan, 1994) and the root mean square error of approximation (RMSEA) is good when its value is .05 or lower (RMSEA of about .08 or less being acceptable, Byrne, 2001), the model adequately fitted the data, χ^2 (851) = 1351.68, p < .001, TLI = .945, CFI = .953, RMSEA = .041. As expected, self-esteem remained rather stable over time, whereas life satisfaction remained only moderately stable. Self-esteem at T1 was found to significantly predict general self-efficacy and career adaptability at T2. General self-efficacy predicted career adaptability at both points in time, whereas career adaptability predicted general self-efficacy only from

T1 to T2. Finally, self-esteem was found to predict life satisfaction at both points in time. Neither general self-efficacy nor career adaptability had an impact on life satisfaction. Results of the multigroup analysis indicated that the model did not vary across the three groups of adolescents (73 adolescents having made a choice at T1, 205 having made a choice in the laps of time between T2 and T3, and 79 always undecided about their choice), $\Delta\chi 2$ (64) = 98.226, p = .000, ΔCFI = -.003, ΔRMSEA = <.001. Indeed, invariance between groups is to consider to be achieved if ΔCFI < .01 and ΔRMSEA < .015 (Chen, 2007).

In a second stage, a cross-lagged model was specified that included only general self-efficacy and career adaptability as latent variables. The fit of this model was adequate, χ^2 (157) = 299.57, p < .001, TLI = .959, CFI = .970, RMSEA = .051. All the relationships were significant. As shown in Figure 2, the autoregression values were moderately high for general self-efficacy and career adaptability. Moreover, general self-efficacy at T1 predicted career adapt-abilities at T2 (β = .21), and general self-efficacy at T2 predicted career adapt-abilities at T3 (β = .35), whereas career adapt-abilities at T1 predicted general self-efficacy at T2 (β = .25), and career adapt-abilities at T2 predicted general self-efficacy at T3 (β = .20). This pattern of relationships showed that these constructs are interrelated and moderately stable over time. Also in this case, results of the multigroup analysis excluded a moderating effect of the choice time, $\Delta\chi 2$ (16) = 48.527, p = .000, ΔCFI < .001, ΔRMSEA < .001.

In a third stage, a cross-lagged path model including only the four career adapt-abilities was specified. This model was computed considering the raw mean scores and adequately fitted the data, χ^2 (16) = 46.22, p < *.001*, TLI = .954, CFI = .989, RMSEA = .073. As reported in Figure 3, autoregression paths were all significant; scores were higher for concern and confidence. Moreover, only concern emerged as a significant predictor of the other dimensions of career adaptability. Indeed, concern at T1 predicted control, curiosity and confidence at T2, whereas concern at T2 only predicted curiosity at T3. Results of the

multigroup analysis, $\Delta\chi^2$ (64) = 18.832, $p < .001$, ΔCFI =.006, ΔRMSEA = .025, and specifically the ΔRMSEA value above .015, highlighted a moderating effect of the choice time on the model. Further multigroup analyses confirmed that the model differed for each of the adolescent groups. The analysis performed showed a good fit of the model for those having made an early decision, an acceptable fit for those having made a decision in the laps of time between T2 and T3, and a poor fit for those who never made a decision. Beta values substantially differed across the three groups, especially those concerning the stability of the four career adapt-abilities over time. Indeed, concern was the only career adapt-ability whose auto-regression path's beta score was always significant. However, the importance of concern in predicting curiosity was confirmed in each group, particularly for those making a choice between T2 and T3 (concern predicted curiosity at both points in time), and less for those having made an early decision (concern predicted curiosity only from T2 to T3). Concern also predicted confidence from T1 to T2 in the group of adolescents having made a choice in the laps of time between T2 and T3 and among those never having made a choice. In this last group, the impact of concern and curiosity seemed to be reciprocal (concern predicted curiosity from T1 to T2 and curiosity predicted concern at both points in time). However, the poor fit of this last model makes us be cautious in considering these results. Indeed, if the career adaptability seemed to be clearly structured and differentiated for the other two groups of adolescents, its structure was less clear for those who were having more difficulties in making a choice.

Discussion

In the Swiss education system, where adolescents have to choose if to continue a general education in a high school or to start an apprenticeship/vocational training at the end of compulsory school, adolescents need to rely on several career choice related resources quite early. For this reason, it is of interest to study the co-development of these resources

and how they impact life satisfaction. This study has indeed shown that self-esteem has a particular impact on life satisfaction, that self-efficacy and career adaptability co-develop, and concern has particular importance on the development of the three other career adapt-abilities.

Self-esteem, General Self-efficacy, Career Adaptability, and Global Life Satisfaction

The results emerging in terms of the relationships between self-esteem, general self-efficacy, career adaptability, and life satisfaction over time highlighted a strong interrelationship between career adaptability and self-efficacy, a constant and unidirectional effect of self-esteem on life satisfaction, a weak effect of self-esteem (T1) on career adaptability and general self-efficacy (T2), and finally, no effect of career adaptability and general self-efficacy on life satisfaction. The fact of having done a choice or not did not influence these relationships. Our results are consistent with those of previous studies that have noted the important effect of self-esteem on life satisfaction (Baumeister et al., 2003; Furnham & Cheng, 2000). However, our results differ from those of other studies conducted on adolescents that observed that career adaptability (Ginevra et al., 2017; Hirschi, 2009; Maggiori et al., 2013; Santilli et al., 2014) or general self-efficacy (Bradley & Corwyn, 2004) had an impact on life satisfaction. These differences could be due to the cross-sectional nature of these previous studies and, concerning the one on self-efficacy, to the different scale used to measure it. Moreover, concerning the effect of career adaptability on life satisfaction, the study by Santilli et al. (2017) showed that this effect was direct in Italian adolescents but was completely mediated by a positive orientation toward the future in Swiss adolescents. This might explain why in our study career adaptability did not directly influence life satisfaction and illustrate the possible impact of context on how career adaptability affects life satisfaction. In fact, in Switzerland, vocational choices are usually made earlier than in Italy. Hence, at age 15-16, more than a half of Swiss students have chosen a specific

profession and started an apprenticeship within a limited range of possibilities. Self-esteem at T1 had also a weak effect on self-efficacy and career adaptability at T2, in line with previous cross-sectional studies (van Vianen et al., 2012; Judge, Erez, Bono, & Thoresen, 2002). Our results seem, however, to show that the longitudinal effects are unidirectional and time dependent (effects were significant from T1 to T2 but not from T2 to T3).

Career Adaptability and General Self-efficacy

Career adaptability and general self-efficacy showed a strong interrelationship, with one influencing the other across time. Career adaptability at T1 seemed to more strongly influence self-efficacy at T2, and self-efficacy at T2 appeared to even more strongly influence career adaptability at T3. These relationships were not affected by the fact of having done a choice or not. Thus, during developmental periods where people have to make educational and professional choices, these two resources seem to co-develop. It has to be noted that these two constructs are conceptually related, particularly with respect to self-confidence (Rossier, 2015; Savickas, 2005). Thus, feeling confident over one's career would also likely be predictive of feeling confident about being able to cope with life events. In this study, career adaptability seemed to trigger a virtuous circle in which its adaptive properties had long lasting effects on general self-efficacy, which in turn strongly sustained a high perception of career adaptability. Fiori, Bollmann, and Rossier (2015) obtained a similar result and suggested that the adaptive properties of career adaptability might trigger a virtuous circle in which they have long lasting effects on job attitudes through their impact on affective responses. Therefore, interventions aimed at reinforcing these career adapt-abilities could have positive effects not only on the career decision-making abilities, but also on people's perception of being able to manage their developmental tasks and challenges.

Concern, Control, Curiosity, and Confidence

Finally, the analysis of the co-development of the four career adapt-abilities confirmed the importance of career concern (Savickas, 1997, 2005) especially in predicting career curiosity (at both points in time), but also control and confidence (only from T1 to T2). Despite the moderating effect of the choice time revealed by multigroups analyses, concern was the only career adapt-ability clearly having an effect on the others. In particular, the effect of concern on curiosity was confirmed in each group. However, concern seemed to be less predictive of the other dimensions (aside of curiosity from T2 to T3) in the group of those having early made a choice. This make sense, indeed, the fact of having already made a choice at T1 might imply that the fact of being concerned about the future career has already had a positive effect on levels of curiosity about possible education and vocations and of control and confidence about career choices. Thus, at the moment where the adolescent think to have made a choice, the effect of concern on the other career adaptability's dimensions might be suspended (in this case, between T1 and T2), to be reactivated only at the moment where the choice has to be confirmed and implemented (i.e. between T2 and T3). Consistently with this hypothesis, this suspension of the effect of concern on the other dimensions between T1 and T2 does not seem to take place among the adolescents making a choice between T2 and T3 and among those who at T3 always have difficulties in making a choice. However, the doubt concerning the reliability of results concerning this last group of adolescents, highlights the need for further studies analyzing the co-development of the four career adapt-abilities in adolescents having to make educational and professional choices. Moreover, this result further highlights the importance to conduct analysis investigating the differential effects of the four different career adaptability dimensions on specific outcomes (Hirschi et al., 2015).

Implications for practice

The results of this study have several practical implications. First of all, in order to effectively enhance adolescents' life satisfaction, results of this study confirm the importance to foster situations where they can improve or maintain adequate levels of self-esteem (Haney & Durlak, 1998; van Genugten, Dusseldorp, & van Empelen, 2016). Moreover, according to the results of this study, the general improvement in career adaptability might increase the adolescent perception of being able to cope with different life events (general self-efficacy), that could in turn enhance the teenager's perception of his/her career adaptabilities. Adolescents who perceive educational and vocational choices as threatening, and who, according with appraisal theory (Lazarus & Folkman, 1984), are more likely to consider their resources as insufficient and give sub-optimal responding, should be the focus population for these interventions. In particular, it seems important to promote interventions enhancing career concern. Career counselors might use time perspective interventions to foster career concern by improving awareness, nurturing optimism, and promoting future planning orientation and behaviors (Hartung & Cadaret, 2017). Enhancing this ability that in this study was found predicting the other three, might in turn foster career curiosity, control and confidence. Even if in this study a specific and direct link between career adaptability and life satisfaction did not emerged, the importance of these resources to enhance adolescents' well-being cannot be excluded in some other contexts. Moreover, as suggested by a previously study, for Swiss adolescents the effect of career adaptability on life satisfaction might be fully mediated by a positive orientation toward the future (Santilli et al., 2017).

Limitations of the study and future directions

The study has some limitations that should be considered when interpreting the results and could result into some new research perspectives. First, further studies are needed to answer to some pending questions. For example, although no direct effect of career adaptability and self-efficacy on life satisfaction was found, future studies might further

investigate possible mediators of these relationships, such as hope and optimism (Santilli et al., 2017), or consider more career-related outcomes, such as level of satisfaction with the selected training track (high school or vocational training). In particular, because they are rare, studies are needed investigating the relation between general self-efficacy and life satisfaction in adults and adolescents. More research is also needed to analyze more in details the co-development of the career adapt-abilities and the moderating effect of the choice time on the relationships between them. A larger sample of adolescents might also permit more reliable multigroup analysis. Concerning in particular the research design, longitudinal studies that follow adolescents over a longer period of time, for instance, from the beginning of compulsory school until the end of their first post-compulsory education, would permit a deeper understanding of the relationships between the variables in this study. Furthermore, the time lag used in this study may have been too short or too long to reveal some slowly or rapidly evolving relationships. Hence, further studies using different time lags might be helpful in confirming or weaken the relationships emerged in this study. Finally, this study involved adolescents in a specific region of Switzerland, Switzerland having a quite specific education system. We hypothesize that our findings might be generalizable to similar contexts, i.e. where adolescents aged of 14 or 15 have already to choose a post-compulsory education across a wide range of possibilities. Comparative longitudinal studies involving adolescents in different Countries, might be useful to assess the generalization of our findings to adolescents in similar but also in different educational contexts and systems. In fact, our findings might be not age specific but rather related with the fact of being confronted with a contextual pressure for making a career choice.

Conclusion

To conclude, the results of this study contributed to highlighting the strong relations that exist over time between general self-efficacy and career adaptability, and between

concern and curiosity in adolescents inserted in an education system requiring them to make educational and vocational decisions before the end of compulsory school. They also confirmed that self-esteem strongly influences adolescents' life satisfaction.

Table 1

Means, standard deviations, Cronbach's alphas and correlations

					2	3	4	5	6	7	8	9	10	1
1	Gender				-.05	-.17	-.06	.07	0.10	.04	.08	.07	.02	-.3
2	Nationality					.03	.06	-.01	-.05	-.00	.02	-.00	.05	.(
3	T1 Self-esteem						.40	.40	.30	.39	.30	.37	.47	.5
4	T1 Self-efficacy							.59	.44	.58	.50	.52	.39	.2
5	T1 Career adapt.								.82	.84	.88	.88	.36	.2
6	T1 Concern									.58	.61	.59	.31	.1
7	T1 Control										.65	.67	.30	.2
8	T1 Curiosity											.75	.32	.
9	T1 Confidence												.30	.
10	T1 Life sat.													.
11	T2 Self-esteem													
12	T2 Self-efficacy													

		M	*SD*	α	14	15	16	17	18	19	20	21	22	2
1	Gender				.05	-.09	.01	.02	-.13	-.25	-.08	.06	.11	.(
2	Nationality				-.13	-.03	-.01	-.03	.05	.10	.06	-.01	-.06	.(
3	T1 Self-esteem	29.69	4.90	.83	.23	.42	.30	.32	.36	.48	.33	.21	.10	.2
4	T1 Self-efficacy	28.49	4.37	.83	.32	.38	.39	.40	.22	.25	.35	.43	.35	.3
5	T1 Career adapt.	3.68	0.57	.94	.51	.41	.48	.50	.27	.19	.31	.42	.36	.2
6	T1 Concern	3.67	0.71	.87	.58	.34	.45	.42	.22	.14	.23	.37	.39	.1
7	T1 Control	3.73	0.61	.75	.34	.42	.34	.36	.19	.20	.28	.36	.29	.3
8	T1 Curiosity	3.58	0.66	.83	.41	.30	.47	.41	.24	.14	.27	.37	.30	.
9	T1 Confidence	3.76	0.71	.89	.40	.35	.38	.52	.27	.16	.29	.33	.25	.

10	T1 Life sat.	24.86	6.02	.85	.30	.21	.30	.20	.52	.27	.17	.21	.19	.
11	T2 Self-esteem	29.94	5.12	.85	.22	.40	.29	.30	.57	.68	.39	.25	.19	.
12	T2 Self-efficacy	29.13	4.29	.84	.40	.55	.52	.54	.40	.37	.48	.51	.40	.
13	T2 Career adapt.	3.57	0.56	.92	.83	.80	.87	.85	.31	.29	.41	.56	.47	.
14	T2 Concern	3.58	0.69	.83		.49	.68	.59	.27	.16	.28	.47	.52	.
15	T2 Control	3.63	0.64	.75			.59	.63	.24	.34	.36	.43	.27	.
16	T2 Curiosity	3.36	0.68	.82				.63	.27	.24	.36	.48	.41	.
17	T2 Confidence	3.72	0.68	.86					.25	.26	.38	.49	.38	.
18	T2 Life sat.	24.35	6.04	.87						.48	.33	.21	.20	.
19	T3 Self-esteem	29.57	5.58	.89							.53	.31	.21	.
20	T3 Self-efficacy	29.22	4.75	.88								.57	.42	.
21	T3 Career adapt.	3.61	0.62	.94									.87	.
22	T3 Concern	3.56	0.77	.86										.
23	T3 Control	3.68	0.67	.77										
24	T3 Curiosity	3.42	0.71	.84										
25	T3 Confidence	3.77	0.75	.90										
26	T3 Life sat.	24.22	6.16	.88										

Note. M = mean; SD = standard deviation. Gender and nationality are dichotomous variables and for this reason point-biserial correlations were computed between these and the other variables. All correlations equal or below of |.10| were non-significant; correlations ranging from |.11| till |.14| were significant at $p < .05$; correlations ranging from |.15| till |.18| were significant at $p < .01$; correlations equal or above |.19| were significant at $p < .001$.

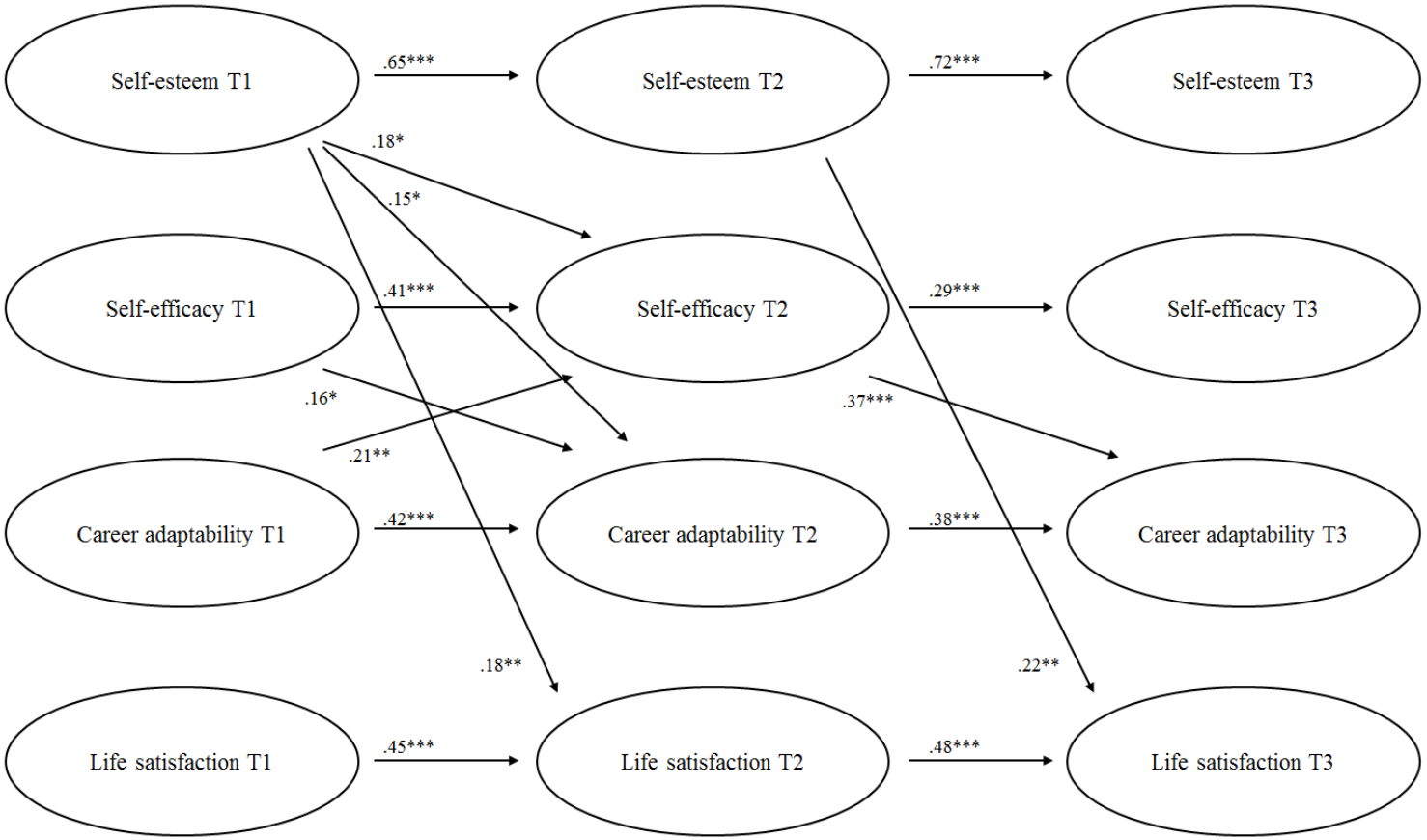

Figure 1. Cross-lagged SEM model with career adaptability, self-efficacy, self-esteem and life satisfaction. Only significant paths are reported. The participants completed the questionnaire in the middle of the 8th grade (T1) and at the beginning (T2 = T1 + 9 months) and at the end (T3 = T2 + 8 months) of the 9th grade.

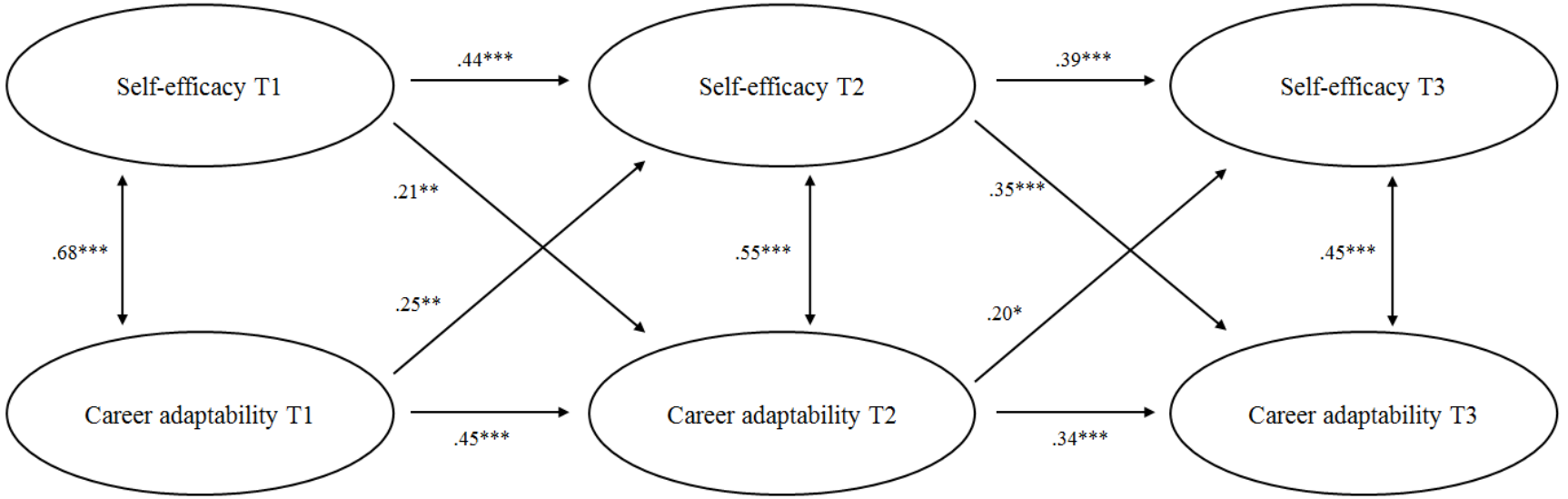

Figure 2. Cross-lagged SEM model with career adaptability and self-efficacy. The participants completed the questionnaire in the middle of the 8th grade (T1) and at the beginning (T2 = T1 + 9 months) and at the end (T3 = T2 + 8 months) of the 9th grade.

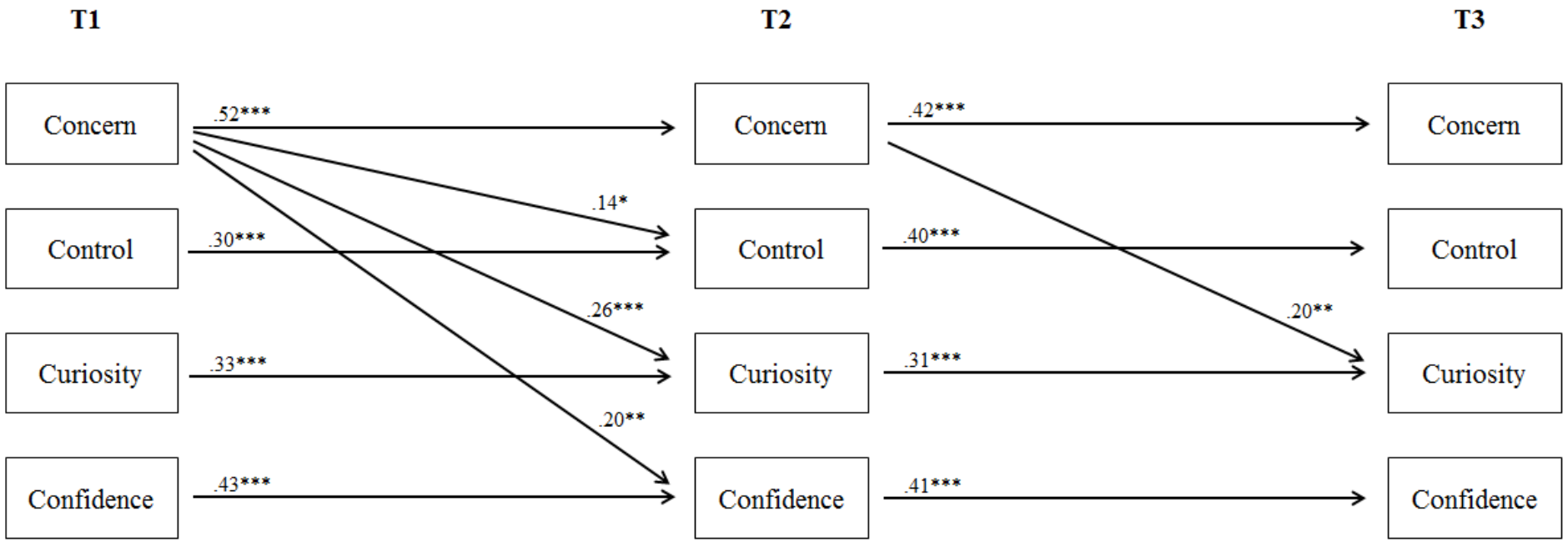

Figure 3. Cross-lagged SEM model with the four career adaptabilities. The participants completed the questionnaire in the middle of the 8th grade (T1) and at the beginning (T2 = T1 + 9 months) and at the end (T3 = T2 + 8 months) of the 9th grade.