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Adaptivity, adaptability, adapting response, and adaptation result: testing with structural equation modelling on pre-service teachers

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Abstract

The aim of this research is to propose a structural equation model that empirically deals with the applicability of the career construction model in explaining the academic and life satisfaction of special education teacher candidates and tests this model. This research studying at a public university located in Turkey, 165 (71.1%) were female and 67 (29.9%) of 232 volunteers participated in a pre-service special education teachers. Two-Dimensional Self-Esteem Scale, Career Adaptability Scale, Career Decision Self-Efficacy Scale, Academic Satisfaction Scale and Life Satisfaction Scale were used as data collection tools. Data analysis was carried out with two-stage structural equation modelling. According to the results, the final structural model accepted proposed indirect effects of adaptivity on adaptation results via adaptability and adapting responses. Also the final structural model observed direct effects of adaptivity on adapting responses and adaptability on adapting responses, adaptivity on adaptability and adaptability on adaptation results.

Keywords Career adaptability · Career decision-making self-efficacy · Life satisfaction · Academic satisfaction · Self-esteem · Pre-service special education teachers

Evidence Based for the Career Construction Model

In its most general definition, the career construction model describes the process in which the individual structures himself / herself, guides his / her professional behaviours, and interprets his / her career by making sense (Savickas, 2013). In recent years, the focus of researchers has been shifting from career adaptability to career construction model, and it has been conducted on four dimensions related to adaptation. These four dimensions are adaptivity, adaptability, adapting responses, and adaptation results.

Adaptivity is conceptualized as cognitive ability and personality trait (Hirschi et al., 2015). Adaptability resources are expressed as psychological resources that affect self-regulation in coping with tasks, transitions and traumas (Savickas & Porfeli, 2012). Adapting responses are adapting behaviours such as career exploration, career planning and career decision-making self-efficacy used to address career development tasks, changing job and career conditions. (Neureiter & Traut-Mattausch, 2017). Adaptation results are generally evaluated with variables such as career identity, academic satisfaction and life satisfaction as results of adapting behaviours (Šverko & Babarović, 2019). The studies were conducted by examining these four dimensions of the model (Hirschi et al., 2015; Rudolph et al., 2017; Savickas et al., 2018). These studies enabled the experimental evidence of the career construction model to be seen, to define the four dimensions in detail and to give suggestions for future research. Nevertheless, the findings emphasize that studies in four dimensions should be carried out in order to reveal the experimental evidence of the model (Hirschi et al., 2015; Rudolph et al., 2017b). In this study, it is aimed to address all four dimensions.

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Life Satisfaction

Happiness (subjective well-being) has three important dimensions. First, individuals must experience positive emotions frequently. As the second dimension, individuals need to experience very little negative emotions. Finally, individuals need to be satisfied with their lives (Diener, 2000). Life satisfaction, which is considered as a dimension of subjective well-being, is defined as the meaning and attitude that an individual attributes to his / her life in his / her job and leisure time (Rhoades & Eisenberger, 2002; Schalock, 2004). Life satisfaction is important for individuals in all life stages, as well as for pre-service special education teachers in young adulthood. Because studies in the literature (Aydemir et al., 2015; Çattık & Aksoy, 2018; Hamama et al., 2013; Karabulut & Özer, 2003; Selçukoğlu, 2001) show that individuals with high life satisfaction function better both socially, professionally and physically. (Diener, 1984; Myers & Diener, 1995).

Life satisfaction is accepted as the cognitive component of subjective well-being. Life satisfaction is considered as an important outcome variable in the career development process in empirical studies (Buyukgoze-Kavas et al., 2015; Hirschi, 2009). In addition, life satisfaction is examined as an indicator of adaptation in the career transition process (Ramos & Lopez, 2018; Santilli et al., 2017). Especially, in studies conducted on experts working with individuals with intellectual disability, it was found that in parallel with the increase in career adaptability, the life satisfaction of these professionals also increased (Santilli et al., 2014).

Academic Satisfaction

Academic satisfaction can be defined as the level of satisfaction an individual achieves in school life by fulfilling important academic goals or wishes. In another definition, academic satisfaction can be explained as a subjective evaluation of the individual's educational experience and whether he / she approves or disapproves his / her expectations regarding academic status. Academic satisfaction is an important variable in the level of an individual's harmony with his environment and academic success (Duru & Balkıs, 2015).

Academic satisfaction is considered as an important outcome variable in the career development process in empirical studies (Duffy et al., 2015). Academic satisfaction is studied as an element of career transition process (Ghosh et al., 2019). It has been found that individuals' academic satisfaction levels increase in parallel with their career adaptability (Wilkins-Yel et al., 2018). In different studies, the relationships between various mediator variables and career adaptability and academic satisfaction were examined (Celik & Storme, 2018; Wilkins-Yel et al., 2018).

Career Adaptability

Career adaptability, a key concept in career counselling, is the ability of individuals to adapt and cope with predictable or unforeseen changes in their careers (such as job change, unexpected tasks, dismissal) (Savickas, 2013). Career adaptability is discussed in four dimensions in Savickas' career construction theory. These; career concern, career curiosity, career control and career confidence. (Savickas & Porfeli, 2012).

Career adaptability is described as a psycho-social structure in the career construction model (Savickas, 2013). Career adaptability is an important concept in the career development process. With the increase of career adaptability, individuals' career optimism and self-efficacy (McLennan et al., 2017), career determination (Hirschi, 2010) and career satisfaction (Ocampo et al., 2018).

Career Decision-Making Self-Efficacy

It is defined as an individual's beliefs about his own abilities regarding his career decisions (Taylor & Betz, 1983). Lent et al., (2008) explained career decision-making self-efficacy in five dimensions in social cognitive career theory. These are self-appraisal, occupational information, goal selection, planning and problem solving.

Career decision-making self-efficacy is considered as a reflection of the career maturity of individuals in the career development process (Bozgeyikli et al., 2009). In studies conducted, career decision-making self-efficacy enhancement positively affects individuals' career transition processes (Guan et al., 2016). In studies conducted in different cultures, career decision-making self-efficacy enhances individuals' career adaptability (Hou et al., 2014; Kim & Lee, 2018).

Self-Esteem

Self-esteem, which is an important part of personality development, is the subjective perception, feelings and thoughts about how an individual evaluates himself according to conditions, situations and developments and whether he is satisfied with himself or not (Sivribaskara, 2003). In other words, it is the individual's positive and negative attitudes towards himself (Rosenberg et al., 1965). Self-esteem has two important dimensions. These are self-liking ve self-competence (Doğan, 2011).

Self-esteem is considered as a positive indicator affecting career development process (Eryilmaz & Mutlu, 2017; Marcionetti & Rossier, 2019). Studies have found that higher self-esteem levels of individuals increase their career adaptability (Hui et al., 2018). In some studies, self-esteem is

considered as a mediating variable that affects career adaptability (Ismail et al., 2016).

The Rationale for Testing the Career Construction Model

Unlike other professions, teaching is a stressful profession that requires more dedication, patience and plays a critical role in the construction of a society's future (Greenglass et al., 1997; Pascual et al., 2003). Teaching requires psychological and affective competences (such as behaviors, attitudes) as well as cognitive competencies (such as knowledge, skill level) (Çeliköz & Çetin, 2004; Gürbüz & Kışoğlu, 2007). Increasing the level of the mentioned competencies also positively affects the quality and continuity of education (Erdem et al., 2005; Memişoğlu, 2006).

Considering that the way to ensure the quality and continuity of education is mostly dependent on teachers; Teachers' vital, academic and professional satisfaction, career expectations, career adaptability, self-esteem for themselves and their professions, and the level of these variables are very important (Eryilmaz & Mutlu, 2017; Hamama et al., 2013; Vorkapic et al., 2016). As in other professional groups, teachers also have expectations such as experiencing positive experiences in their professional lives, creating positive effects on their students, establishing good relations with their colleagues, and assimilating their profession (Çokluk, 2001). For teachers working with individuals with special needs, it is thought that the level of these expectations is more important when looking at the characteristics of the group they work with (Aydemir et al., 2015). According to the findings obtained from researches on teacher qualifications, it has been revealed that individual characteristics, behaviors, attitudes, interests, and academic characteristics make significant differences in educational processes (Dolfing et al., 2021; Gürbüz & Kışoğlu, 2007; Hsu et al., 2021).

As in other teaching fields, all of the variables (life satisfaction, self-esteem, career decidedness, etc.) mentioned above and that can directly affect the individual are also valid for the career processes of special education teachers and are very important for them to perform their professions better. As a result, the purpose of this study is to propose a structural equation modelling that empirically deals with the applicability of the career construction model in explaining the academic and life satisfaction of pre-service special education teachers and tests this model. (Fig. 1). To test the career construction model of adaptation, it is focused on the relations between all four dimensions of adaptation. In addition, four adaptability resources were explained, measurement for adapting responses of career decision-making self-efficacy was introduced, and measurements of academic satisfaction and life satisfaction for adaptation results were discovered.

Adaptation dimensions in the research are shown in Fig. 1. In addition, the research was based on the conceptualization of the career construction model of adaptation as suggested in the meta-analysis study of Rudolph, Rudolph and their colleagues (Rudolph et al., 2017) (Rudolph et al., 2017). Self-esteem was used to measure adaptivity. In the study of Rudolph et al. (2017), it is stated that self-esteem can be used to explain adaptivity. Four career adaptability resources were used to measure adaptability. In Hirschi et al. (2015) study, four career adaptability resources were used to measure adaptability. Career decision-making self-efficacy was used as proposed by Rudolph et al. (2017) in measuring adapting responses. Finally, academic satisfaction and life satisfaction were used to measure adaptation results. In the study of Rudolph et al. (2017), it was stated that adaptation results can be evaluated using academic satisfaction and life satisfaction.

Method

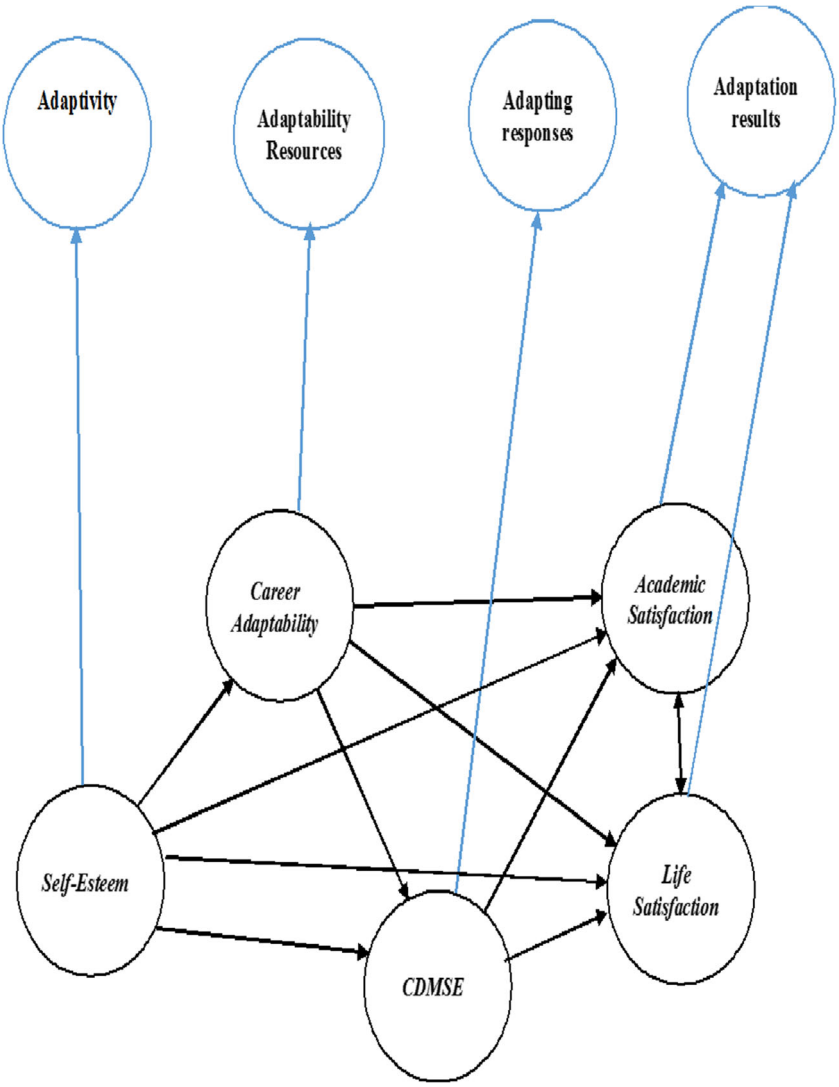
Participants and Procedure

The data obtained within the scope of the research were collected through Google Docs. At this point, while collecting the data, the participants were presented with an informed consent form and were asked to tick the box prepared for their voluntary or involuntary participation in the study. Also, using a feature of the Google Docs system, a value is not allowed to be missing data when filling out the survey questions. In addition to these, data indicating that they are reluctant (4) were obtained and the analysis was conducted with 232 special education teacher candidates. As a result of this research, Turkey's faculty of education at a public university studying special education department of the Central Anatolia Region 232,232 [Age^{ranj} = 19–34, Age^{Mean} = 22.48, Age^{Sd} = 2.71] were voluntarily participated in pre-service special education teachers. 165 (71.1%) of the participants are girls and 67 (29.9%) are boys.

Measures

Two-Dimensional Self-Esteem Scale (TDSES): TDSES, It was developed by Tafarodi and Swann Jr (2001). Adaptation to Turkish, validity and reliability studies were carried out by Doğan (2011). It is two dimensional. These are self-liking and self-competence. It has 16-item and 5-item rating feature. TDSES validity and reliability studies were carried out by Doğan (2011). Confirmatory factor analysis technique was used in the construct validity study. In the findings of the confirmatory factor analysis, it was determined that the goodness of fit indices ($\chi 2$: 258.93, df: 98) = 2.64, AGFI = 0.91, GFI = 0.94, NFI = 0.95, RFI = 0.94, RMSEA = 0.049) were at acceptable levels. In the reliability analysis findings by Doğan

Fig. 1 The proposed model



(2011), it was determined as 0.83 for self-liking and 0.74 for self-competence. The Cronbach Alpha reliability coefficient calculated for the reliability analysis in this research is $\alpha = .90$ for the whole scale.

Career Adaptabilities Scale: (CAS): CAS, It was developed by Savickas and Porfeli (2012) and adaptation to Turkish, validity and reliability studies were carried out by Kanten (2012). Its original form is 24-item and 5-point Likert type. There are 4 sizes. These; concern, control, curiosity and confidence. Considering the validity and reliability studies conducted by Kanten (2012), the confirmatory factor analysis technique was used for construct validity. In the findings of the confirmatory factor analysis, 5 items were removed from the CAS, 4-dimensional, 19-item and good-of-fit indices ($\chi 2$ / df = 3.5, GFI = 0.90, NFI = 0.90, NNFI = 0.92, IFI = 0.93 and RMSEA = 0.074) are accepted. It was found to be level. In the reliability analysis findings of CAS, concern was found as $\alpha = .61$, control $\alpha = .77$, curiosity $\alpha = .79$ and trust $\alpha = .81$. In this research, the reliability analysis was evaluated with the Cronbach Alpha reliability coefficient. In the analysis results, it is $\alpha = .92$ for the whole scale.

Career Decision Self-Efficacy Scale (CDSS): CDSS was developed by Betz et al. (1996). Its adaptation to Turkish, validity and reliability studies were carried out by Işık (2010). The CDSS is a 5-item Likert rating type with 25 items. The CDSS consists of 25 items in total and has dimensions of self-appraisal, occupational information, and goal selection, problem solving and planning. In addition, CDSS can be calculated on a total score. The internal consistency coefficient of CDSS was found as Cronbach alpha .88. In addition, it is stated that the value obtained by the test-retest method is .81. It is stated that the total variance of the scale is 49% (Işık, 2010). In this research, Cronbach Alpha reliability analysis results are $\alpha = .95$ for the whole scale.

Academic Satisfaction Scale (ASS): It was developed by Schmitt et al. (2008). Adaptation into Turkish, validity and reliability studies were carried out by Balkıs (2013). It consists of 5 questions and has a 5-Likert type feature. It consists of

Table 1 Means, Standard Deviations, Skewness and Kurtosis

Variable	*M*	*SD*	Skewness	Kurtosis
SE				
SL	30.48	6.30	−.49	.07
SC	26.81	5.05	.12	.26
CA				
Concern	12.07	2.13	−.74	.17
Control	22.43	2.47	−1.48	3.33
Curiosity	19.76	3.41	−.70	.57
Confidence	26.46	3.38	−1.24	2.16
CDMSE				
SA	20.67	3.38	−.89	1.06
OI	20.27	3.05	−.66	.62
GS	20.33	3.37	−.93	1.26
Planning	20.18	3.33	−.72	.79
PS	19.31	3.71	−.64	.53
AS				
ASp1	7.25	1.95	−.48	−.25
ASp2	7.58	1.91	−.58	−.16
ASp3	3.62	1.06	−.61	−.02
LS				
LSp1	9.39	2.74	−.46	−.14
LSp2	7.40	2.84	−.08	−.71
LSp3	4.72	1.43	−.71	.38

Note. M: mean, SD: standard deviation, SE: Self- Esteem, SL: Self-Liking; SC: Self- Competence, CA: Career Adaptability CDMSE: Career Decision-Making Self-Efficacy, SA: Self-Appraisal, OI: Occupational Information, GS: Goal Selection, PS: Problem Solving, AS: Academic Satisfaction, ASp1, ASp2, ASp3 = Parcels of Academic Satisfaction, LS: Life Satisfaction, LSp1, LSp2, LSp3 = Parcels of Life Satisfaction

one dimension. Considering the validity and reliability studies by Balkıs (2013), it was evaluated using exploratory factor analysis for construct validity. In the exploratory factor analysis findings, it was determined that the common variance was 63.70% and the eigenvalue = 3.19. In reliability studies, the internal consistency coefficient was calculated as .86. The Cronbach Alpha reliability coefficient made within the scope of the reliability analysis in this research is $\alpha = .94$ for the whole scale.

Life Satisfaction Scale (LSS): It was developed by Diener (1984). It was adapted to Turkish by Köker (1991). LSS is a 5-item and 7-point rating type. It is one dimensional. Exploratory factor analysis and confirmatory factor analysis were used for the construct validity study. In the exploratory factor analysis finding, the explained variance of LSS was found to be 66%, and in the confirmatory factor analysis findings, it was revealed that LSS had one-dimensional and acceptable goodness of fit index values. In the reliability study, the internal consistency coefficient value was determined as .87 (Durak et al., 2010). The Cronbach Alpha reliability coefficient calculated for the reliability analysis in this research is $\alpha = .88$ for the whole scale.

Table 2 Correlations among the Latent Variables for the Measurement Model

Latent variables	1	2	3	4	5
1. Self- Esteem	–				
2. Career Adaptability	.60*	–			
3. Career Decision-Making Self-Efficacy	.59*	.72*	–		
4. Academic Satisfaction	.19*	.33*	.28*	–	
5. Life Satisfaction	.46*	.51*	.61*	.37*	–

*$p < .01$

Statistical Analyses

In this research, kurtosis, skewness and descriptive statistical values were examined within the scope of preliminary analyses. After the preliminary analysis, the analysis of the data was carried out with two-stage structural equation modelling (Kline, 2019). In this context, the measurement model was tested first. After the measurement model was verified, the structural model was tested. Estimation method was determined as "Maxiumum Likelihood". The goodness of fit indices ($\chi 2$, df, CMIN / df, CFI, RFI, IFI, NFI, TLI, GFI, AGFI, and RMSEA) used in this study and their acceptance criteria and interpretation are presented in Table 5.

Among the data collection tools used in this research, academic satisfaction and life satisfaction scales have a one-dimensional structure. Due to the mentioned one-dimensional scale structures of the vehicles, the parcelling method was used in this research. The parcelling method is named as parcel assignment depending on the item-total correlation values within the framework of the number of parcels of the scale items with a unidimensional structure (Bandalos, 2002). In this direction, three plots were derived for the implicit variables of academic satisfaction and life satisfaction. In addition, according to Alhija and Wisenbaker (2006), it contributes to the normal distribution of data and to increase the reliability of the measurements by reducing the number of variables observed with the parcelling method.

In this research, the bootstrapping analysis proposed by Shrout and Bolger (2002) was used to test the significance of its indirect effects. In this direction, 1000 bootstapp (resampling) was created and lower and upper limit confidence intervals were obtained. According to Hayes (2017), the fact that the lower and upper limit confidence intervals do not include zero in the bootstrapping analysis proves that the indirect effects are significant.

Table 3 Factor Loadings, Standard Errors, t-Values, and R^2 for the Measurement Model

Measure and variable	Unstandardized Factor Loadings	SE	Standardized Factor Loadings	t	R^2
SE					
SL	1.268	0.106	0.844	11.949*	0.712
SC	1.000		0.831		0.691
CA					
Concern	0.821	0.076	0.718	10.745*	0.516
Control	1.000		0.757		0.573
Curiosity	1.361	0.122	0.745	11.181*	0.555
Confidence	1.416	0.120	0.783	11.785*	0.613
CDMSE					
SA	1.299	0.077	0.929	16.842*	0.864
OI	1.000		0.790		0.625
GS	1.246	0.078	0.893	15.920*	0.798
Planning	1.237	0.077	0.898	16.039*	0.806
PS	1.204	0.090	0.784	13.312*	0.614
AS					
ASp1	1.000		0.923		0.852
ASp2	0.995	0.042	0.938	23.632*	0.880
ASp3	0.509	0.026	0.857	19.529*	0.735
LS					
LSp1	1.000		0.893		0.797
LSp2	0.908	0.064	0.782	14.091*	0.611
LSp3	0.471	0.032	0.806	14.719*	0.650

Note. *p < .001, SE: Standard Error, SE: Self- Esteem, SL: Self-Liking; SC: Self- Competence, CA: Career Adaptability CDMSE: Career Decision-Making Self-Efficacy, SA: Self-Appraisal, OI: Occupational Information, GS: Goal Selection, PS: Problem Solving, AS: Academic Satisfaction, ASp1, ASp2, ASp3 = Parcels of Academic Satisfaction, LS: Life Satisfaction, LSp1, LSp2, LSp3 = Parcels of Life Satisfaction

Results

Preliminary Analysis

Means, standard deviation, skewness, and kurtosis for participants' scores on the 5 latent variables (i.e., 2 self-esteem indicators, 4 career adaptability indicators, 5 Career Decision-Making Self-Efficacy, 3 academic satisfaction, and 3 life satisfaction) are presented in Table 1.

When the values in Table 1 are examined, it is seen that the skewness values are below ± 2 and the kurtosis values are below ± 7. The fact that the skewness value is not greater than ± 2 and the kurtosis value not greater than ± 7 is considered as a criterion in the assumptions of multivariate normality (Finney & DiStefano, 2006). According to these findings, it can be said that the skewness and kurtosis values in this study are within the normality criteria.

Testing the Measurement Model

In the first stage, the measurement model is tested. The goodness of fit indexes of the measurement model tested ($\chi 2$= = 182.20, df = 109, CMIN / df = 1.67, p = .00; CFI = .98, RFI = .93, IFI = .98, NFI = .94, TLI =. 97, GFI = .91, AGFI = .88, RMSEA = .05 (90% CI for RMSEA = [.04, .06]). In addition, the latent variables were significantly associated with each other (p < .001, see Table 2 below) Thus, the factor loadings, standard errors, t values and explained variances of the measurement model are presented in Table 3.

Testing the Structural Model

After the measurement model was verified, the structural model was analyzed. In this context, the hypothetical structural model was tested. The hypothetical structural model tested had an acceptable fit to the data, ($\chi 2$ = 182.20, df = 109, CMIN / df = 1.67, p = .00; CFI = .98, RFI = .93, IFI = .98, NFI = .94, TLI = .97, GFI = .91, AGFI = .88, RMSEA = .05 (90% CI for RMSEA = [.04, .07]). However, in the hypothetical structural model, it was found that some standardized path coefficients were not statistically significant (see Table 4 below). Meaningless path coefficients are omitted from the analysis. While the final structural model formed after repeating the analysis is shown in Fig. 2, the goodness of fit indices are presented in Table 5.

Table 4 Findings of the Hypothetical Structural Model

Paths			Estimate	S.E.	C.R.	*p*
CA	<---	SE	.441	.051	8.704	***
CDMSE	<---	SE	.104	.050	2.085	,037
CDMSE	<---	CA	.658	.096	6.883	***
AS	<---	CA	.165	.062	2.634	,008
LF	<---	CDMSE	.296	.059	5.011	***
AS	**<---**	**CDMSE**	**.008**	**.054**	**.146**	**,884**
LF	**<---**	**CA**	**.002**	**.062**	**.035**	**,972**
LF	**<---**	**SE**	**.040**	**.027**	**1.483**	**,138**
AS	**<---**	**SE**	**−.029**	**.027**	**−1.091**	**,275**
SC	<---	SE	1.000			
SL	<---	SE	1.268	.106	11.949	***
Curiosity	<---	CA	1.000			
Confidence	<---	CA	1.041	.090	11.570	***
Control	<---	CA	.735	.066	11.181	***
Concern	<---	CA	.603	.057	10.581	***
OI	<---	CDMSE	1.000			
SA	<---	CDMSE	1.299	.077	16.842	***
GS	<---	CDMSE	1.246	.078	15.920	***
Planning	<---	CDMSE	1.237	.077	16.039	***
PS	<---	CDMSE	1.204	.090	13.312	***
ASp3	<---	AS	1.000			
ASp2	<---	AS	1.956	.098	19.967	***
ASp1	<---	AS	1.966	.101	19.529	***
LSp3	<---	LS	1.000			
LSp2	<---	LS	1.927	.150	12.827	***
LSp1	<---	LS	2.123	.144	14.719	***

Note. ***p < .001, **p < .01, *p < .05, SE: Standard Error, SE: Self-Esteem, SL: Self-Liking; SC: Self- Competence, CA: Career Adaptability CDMSE: Career Decision-Making Self-Efficacy, SA: Self-Appraisal, OI: Occupational Information, GS: Goal Selection, PS: Problem Solving, AS: Academic Satisfaction, ASp1, ASp2, ASp3 = Parcels of Academic Satisfaction, LS: Life Satisfaction, LSp1, LSp2, LSp3 = Parcels of Life Satisfaction

If we evaluate the standardized path coefficients (β) of the final structural model in Fig. 2, self-esteem, career adaptability (β = .72, p < .001) and career decision-making self-efficacy (β = .20, p < .05); career adaptability, career decision-making self-efficacy (β = .68, p < .001) and academic satisfaction (β = .36, p < .001), and finally career decision-making self-efficacy, academic satisfaction (β = .68, p < .001) predicts significantly and positively. If the analysis results are interpreted in terms of variances (R^2), self-esteem accounts for approximately 52% of career adaptability; self-esteem and career adaptability together explain about 70% of career decision-making self-efficacy and about 13% of academic satisfaction, and finally, self-esteem, career adaptability and career decision-making self-efficacy together explain about 53% of life satisfaction.

Significance Levels of Indirect Effects-Bootstrapping

The significance of the indirect effects was tested with Bootstrapping Analyses by performing 1000 resampling. Analysis results are presented in Table 6.

The indirect effect of self-esteem on career adaptability, career decision-making self-efficacy and life satisfaction [β = 0.72 × 0.68 × 0.73 = .50, 95% CI (.403, .590)] was significant (Table 6). In addition, there was a significant indirect effect of self-esteem on academic satisfaction via career adaptability [β = 0.72 × 0.36 = .26, 95% CI (.182, .366)]. Likewise, the indirect effect of self-esteem on career decision-making self-efficacy through career adaptability [β = 0.72 × 0.68 = .49, 95% CI (.336, .678)] was found to be significant. In addition, career adaptability was found to have a significant indirect effect on life satisfaction through career decision-making self-efficacy [β = 0.68 × 0.73 = .49, 95% CI (.330, .641)].

Table 5 Goodness of Fit Indices of the Final Structural Model

Goodness of Fit Indices	Fit Criteria	Values of the Model	State of the Fit
[1]χ^2/sd	0≤χ2/sd≤2	1.65	Good fit
[2]RMSEA	0≤RMSEA ≤ .05	.05	Good fit
[3]GFI	.90≤GFI≤.95	.91	Acceptable fit
[3]NFI	.90≤NFI≤.95	.94	Acceptable fit
[3]CFI	.97≤CFI≤1.00	.98	Good fit
[3]AGFI	85≤AGFI ≤ .90	.88	Acceptable fit
[4]RFI	.90≤RFI≤.95	.93	Acceptable fit
[4]IFI	.90≤IFI≤.95	.98	Good fit
[5]TLI	.95≤TLI≤1.00	.97	Good fit

Source: ([1] Kline, 2019; [2] Browne & Cudeck, 1993; [3] Schermelleh-Engel et al., 2003; [4] Bentler & Bonett, 1980; [5] Marsh et al., 2006)

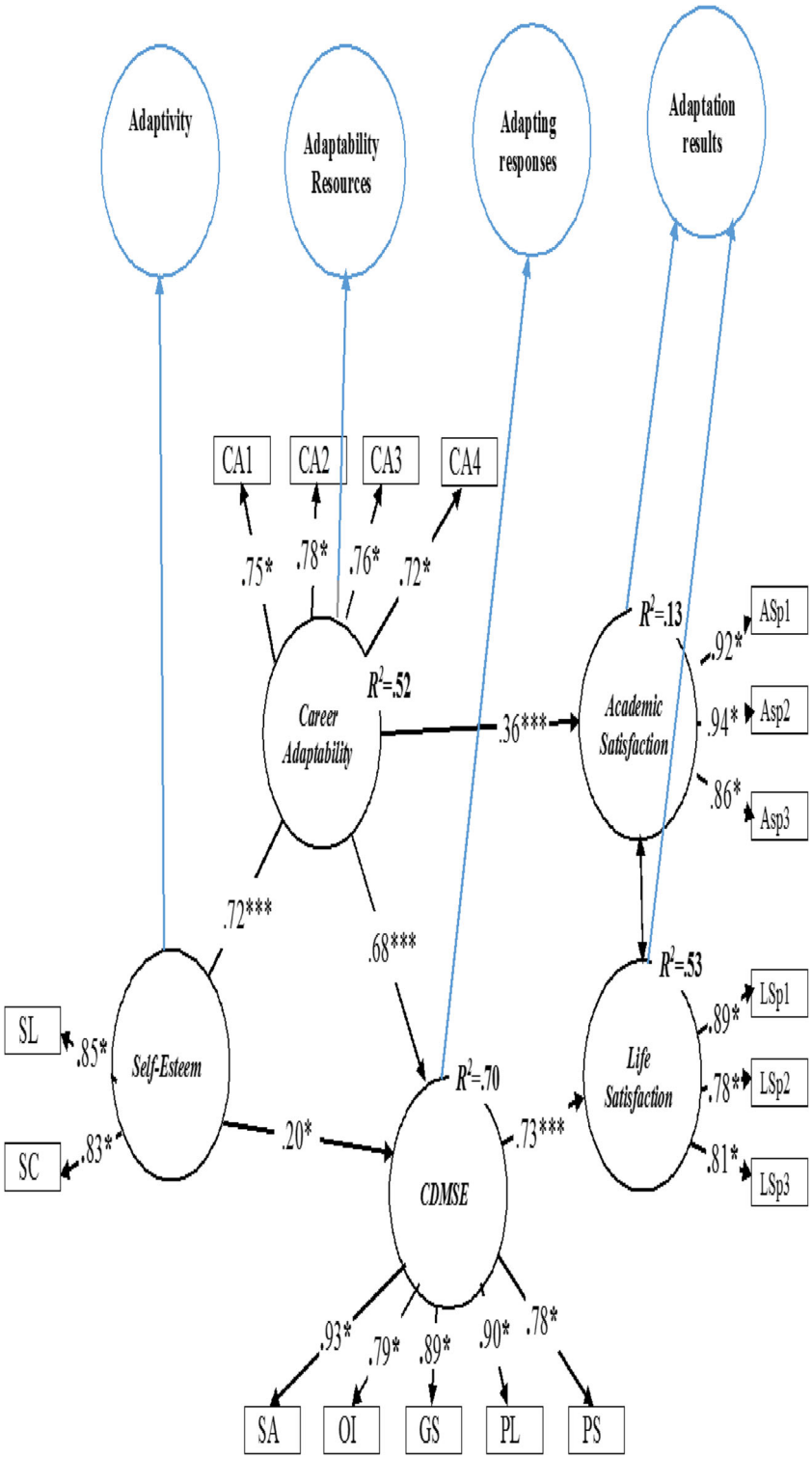


Fig. 2 Final Structural Model. **Note.** ***p < .001, **p < .01, *p < .05, SL: Self-Liking; SC: Self-Competence, CA1: Curiosity, CA2: Confidence, CA3: Control, CA4: Concern, CDMSE: Career Decision-Making Self-Efficacy, SA: Self-Appraisal, OI: Occupational Information, GS: Goal Selection, PL: Planning PS: Problem Solving, ASp1, ASp2, ASp3 = Parcels of Academic Satisfaction, LSp1, LSp2, LSp3 = Parcels of Life Satisfaction

Discussion

The data supported the career construction model of adaptation as a framework to explain the academic and life satisfaction of pre-service special education teachers. The fit indexes and standardized path coefficients obtained in the research revealed the adequacy of the final structural model. According to the results, the final structural model accepted proposed indirect effects of adaptivity (self-esteem) on adaptation results (academic satisfaction and life satisfaction) via adaptability (career adaptability) and adapting responses (career decision-making self-efficacy. Also the final structural

Table 6 Bootstrapping Analyses of Results of Mediation Effects

Independent variable	Mediator variable	Dependent variable	Standardized path coefficient (β)	SE	Estimate (95% *CI*)
Self-Esteem➔	Career Adaptability➔	CDMSE	.49	.08	[.336, .678]
Career Adaptability ➔	CDMSE➔	Life Satisfaction	.49	.07	[.330, .641]
Self-Esteem➔	Career Adaptability➔	Academic Satisfaction	.26	.04	[.182, .366]
Self-Esteem➔	Career Adaptability➔ CDMSE➔	Life Satisfaction	.50	.04	[.403, .590]

Note. *p < .05, SE: Standard Error, CDMSE: Career Decision-Making Self-Efficacy Bootstrap is based on 1000 resamples (Hayes, 2017)

model observed direct effects of adaptivity on adapting responses (self- esteem on career decision-making self-efficacy) and adaptability on adapting responses (career adaptability on career decision-making self-efficacy), adaptivity on adaptability (self- esteem on career adaptability) and adaptability on adaptation results (career adaptability on academic satisfaction). There are studies that support these direct impact results of our research. For example, Hirschi et al. (2015) have a direct effect on adaptability (career adaptability (i.e., concern) on adapting (occupational self-efficacy). Also adaptivity (core self-evaluations and proactivity) has a direct effect on adaptability (career adaptability). Looking at bootstrapping analysis of results of mediation effects, the indirect effect of adaptability (career adaptability) between adaptivity (self-esteem) and

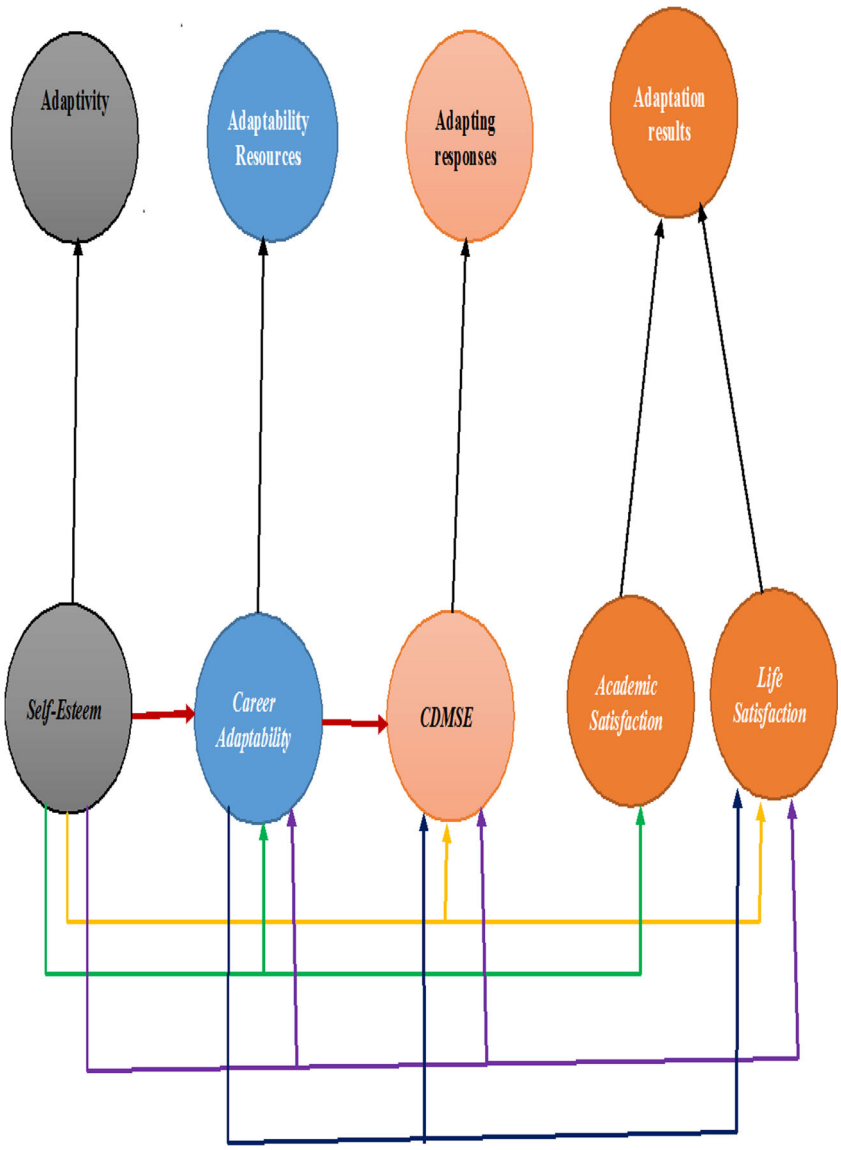


Fig. 3 Conceptual framework and research based model. **Note.** CDMSE: Career Decision-Making Self-Efficacy

adaptation results (academic satisfaction) has been proven. However, its indirect effect was confirmed between adapting responses (career decision-making self-efficacy), adaptability (career adaptability) and adaptation results (life satisfaction). Finally, it was revealed that there is an indirect effect between adaptability (career adaptability) adaptivity (self-esteem) and adapting responses (career decision-making self-efficacy). In a study similar to the results of this research, Hirschi et al. (2015) found that adaptability (career adaptability), adaptivity (core self-evaluations and proactivity) and adaptation (career planning, career decision-making difficulties, career exploration, and occupational self-efficacy) beliefs). Also Neureiter and Traut-Mattausch (2017) revealed the indirect effect of adaptability (career adaptability) between adaptivity (core self-evaluation) and adapting (career planning, career decision-making difficulties, career exploration, and occupational self-efficacy beliefs).

Šverko and Babarović (2019) observed indirect effects on adaptability (career adaptability on adaptation results (satisfaction, engagement and self-reported study performance). Also the indirect effects of the two mediating variables between adaptability (career adaptability) and adapting responses (career decision-making self-efficacy) are significant. In the research mentioned above, the indirect effect of adaptability (career adaptability) and career construction model of adaptation was generally evaluated. However, this research took a step further from the research mentioned above by measuring the indirect effect of adaptation responses (career decision-making self-efficacy) as well as adaptation adaptability into the career construction model. Therefore, the different importance of adaptability (career adaptability) and adapting responses (career decision-making self-efficacy) variables on adaptation results (life satisfaction) has been confirmed. We explored two adaptation results (i.e., academic satisfaction and life satisfaction) one adaptivity (i.e., self-esteem) and adapting responses (i.e., career decision-making self-efficacy). Our results are in line with the theoretical explanation of Rudolph and his colleagues (Rudolph et al., 2017), who draws attention to the conceptual framework for meta-analysis based on the career construction model of adaptation. However, this research went beyond the work mentioned above and was enlightening by introducing a structural model that empirically tests the relationships between adaptivity, adaptability, adapting responses and adaptation results (Figure 3). In the literature are experimental studies to increase career adaptability of prospective counsellors (Eryilmaz & Kara, 2020; Eryılmaz & Kara, 2020). In this research, career construction model of adaptation was validated as a framework to explain the academic and life satisfaction of pre-service special education teachers. These aforementioned actors can use the dimensions of the structural model obtained in the mentioned study in the programs of increasing the adaptation results of pre-service special education teachers. Also, career counselling practices can be created for young adults in this research to both strengthen adapting responses and contribute to their development and use of adaptation results during their transition to work. In addition, this research was carried out on teacher candidates in career transition process. Similar research can be done on teachers. This research has some limitations. The first of these is not selected on the basis of the probabilistic sample, which takes into account the equal chances of the sample being selected among university students; it is the use of easily accessible sampling method. Second, the data collection method is the survey application that provides cross-sectional instantaneous data.

Data Availability Data availability the datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations All procedures performed in studies involving human participants were in accordance with the ethical standards and with the Helsinki Declaration and its later amendments or comparable ethical standards.

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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