



Character strengths and psychological vulnerability: The mediating role of resilience

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Abstract

The present study examined the relationships between character strengths and psychological resilience and psychological vulnerability. The sample consisted of 381 high school students (164 males and 217 females) ranging in age from 14 to 18 years (Mean = 15.63, SD = 1.12). Character Growth Index, the Brief Resilience Scale and Psychological Vulnerability Scale were used as measures to collect the data. Structural Equation Modeling and bootstrapping methods were used to examine the mediating role of psychological resilience in relationships between character strengths and psychological vulnerability. In the structural model, certain character strengths i.e. wisdom, courage, optimism, and, calmness were found to increase psychological resilience, and psychological resilience decreased psychological vulnerability. Also, psychological resilience fully mediated the relationship between the character strengths of wisdom, courage, optimism, and calmness and psychological vulnerability. The results of the bootstrapping analysis showed that the indirect effects of the character strengths of wisdom, courage, optimism, and calmness on psychological vulnerability were significant. Based on these results, we conclude that high levels of wisdom, courage, optimism and calmness accompanied by psychological resilience may lead to decreased psychological vulnerability. The theoretical and practical implications for researchers and practitioners and limitations are discussed.

Keywords Character strengths · Psychological vulnerability · Resilience · Adolescents

Positive psychology has diverged from traditional psychological trends by claiming to focus on positive personality traits, positive subjective experiences, and positive foundations, all to increase the quality of life, functioning and well-being.

Understanding the nature of the positive traits would enable developing these characteristics and fuel improvements in many areas, from individual characteristics to social contexts, from educational settings to health settings (Snyder and Lopez 2015). Understanding and developing character traits is one of the most fundamental research areas of positive psychology (Carr 2011). One of the most important objectives of positive psychology interventions is to develop and nurture the character strengths (Ghielen et al. 2018).

Individuals with high levels of character strengths have better psychological and physiological adaptation to stress (Li et al. 2017). Longitudinal studies show that character strengths protect mental health by reducing depression and anxiety, and increasing flourishing in stressed situations (Duan 2016). Trauma-informed positive education has the potential to increase psychological resources. Enhancing daily resilience strengthen trauma-affected vulnerable students (Brunzell et al. 2016). The development of high scores regarding growth mindsets (beliefs about enhancing abilities) predicts higher psychological well-being and school engagement through the enhancement of resilience (Zeng et al. 2016).

Character strengths have the potential to improve well-being and prevent psychopathology (Gander et al. 2013;

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Gillham et al. 2011). It can be proposed that character strengths are one of the important foundations of psychological resilience and well-being (Martínez-Martí and Ruch 2014; Martínez-Martí and Ruch 2017). Interpersonal and cognitive character strengths show linear relationships with post-traumatic healing and development (Peterson et al. 2008). The positive traits such as hope, self-efficacy, and problem-solving skills, contribute to the development of psychological resilience (Wright et al. 2013). Understanding the concepts of character strength and psychological resilience is crucial for promoting positive development in children and adolescents. Intervention studies to improve character strengths and psychological resilience reveal its importance on positive youth development (Brownlee et al. 2013). Investigating nuanced relationships among character strengths, resilience and psychological vulnerability can contribute to a better understanding of well-being and ill-being (Huta and Hawley 2010).

Character Strengths and Psychological Vulnerability

Character strengths can be defined as “positive attributes that can be observed in mental, emotional and behavioral dimensions” (Peterson and Seligman 2004). These traits are considered valuable in themselves, regardless of their benefits for mental health and well-being (McCullough and Snyder 2000; Peterson and Park 2004; Peterson and Seligman 2004). Classifications character strengths can serve as a foundation for objective, observable, and measurable criteria for optimal human functioning, similar to the function of DSM versions (such as DSM V; APA 2013) used in the classification of psychopathology.

Liston (2014) devised the Character Growth Index that focuses on character strength development in adolescents building on studies such as the classification of character strengths by Peterson and Seligman (2004), positive youth development (Lerner et al. 2009; Park 2004) and character education (Lickona 2009). Liston (2014) suggested that the character development approach may enable us to see how character strengths of adolescents change over time and to assess individual differences. The Character Growth Index evaluates the character strengths in 11 categories: perseverance, humility, optimism, kindness, love/care, peace, courage, wisdom, spirituality, forgiveness, and honesty (Liston 2014).

Character strengths and related behaviors have potential to improve adolescents’ well-being and block or mitigate psychopathology (Freidlin et al. 2017; Park and Peterson 2009; Proctor et al. 2011). Similarly, these strengths can have a preventive role for risk factors concerning adolescent mental health. For this reason; adults, such as parents and educators, are encouraged to provide adolescents opportunities to develop and nurture traits that will empower them in a life filled with challenges, risks and stressors, in addition to performing

their traditional roles such as protecting youth from adversities (Niemiec 2013; Park 2004).

One prominent example of such risk factors is psychological vulnerability, which is defined as the set of cognitive schemes that increase the sensitivity to stress and leads to a sense of dependence upon success or the approval of the others (Sinclair and Wallston 1999). Psychologically vulnerable individuals can feel worthless if they fail and do not get approval from others (Sinclair and Wallston 1999). Genetic factors, personality traits, psychopathology story, traumatic events (Wang 2006), disadvantaged socioeconomic status, lack of social support and developmental problems (Mechanic and Tanner 2007) play important roles in the formation of psychological vulnerability. Some individuals are more susceptible to maladaptive outcomes. For example, anxious students become more open to psychological disorders and physiological diseases when they change schools (Wright et al. 2013). Drawing on the relevant literature, it can be argued that psychological vulnerability is critical for mental health and well-being. Therefore, it may be useful to identify character strengths that are associated with lower levels of psychological vulnerability.

Psychological Resilience as a Mediator

Studies on (psychological) resilience have begun after exploring the phenomenon of positive adaptation of some children at risk for developing psychopathology (Luthar et al. 2014). It is hard to find an agreed-upon definition on resilience. Meredith et al. (2011), found 112 different definitions related to resilience in a literature review. Bonanno (2012) argued that definitions handling resilience as a personality variable, as an absence of pathology or as average adjustment were invalid and defined resilience as a “stable trajectory of healthy functioning” (p. 753). Resilience, with a concise definition, is the ability to adapt despite challenging conditions and threats (Masten et al. 1990). With a behavioral definition, it is the ability to get through negative events using positive feelings and can be used to explain the psychological state of those who can successfully deal with the negativity (Tugade et al. 2004). Resilience can be envisioned as a potential, involving dynamic systems and skills such as positive adaptation to risky or adverse situations, ending discomfort, having the necessary determination to heal and thrive (Masten 2001, 2013; Wright et al. 2013). Resilience has been considered as a crucial adaptive construct in psychological research for many years. Diverse types and dimensions of resilience show positive relationships with positive mental health variables (Masten et al. 1990; Connor and Davidson 2003; Bonanno et al. 2015).

Physical, psychological, and social changes and the burden of developmental tasks such as identity building (Havighurst

1948) experienced during adolescence may induce a great deal of stress in this period. The concept of psychological resilience in terms of struggling with stress can be regarded as a protective factor and an important potential mediating mechanism within the formation of psychological vulnerability in this population. A substantial quantity of research indicate that psychological vulnerability is strongly related to different indicators of ill-being (Nogueira et al. 2017; Satici and Uysal 2017; Sinclair and Wallston 1999) and resilience is strongly related to different indicators of well-being (Bonanno et al. 2015; Doğan 2015; Smith et al. 2008). There are several studies emphasized the preventive role of resilience on psychological vulnerability. Previous studies indicate that resilience and psychological vulnerability correlated negatively (Haddadi and Besharat 2010; Satici 2016). These studies imply that resilience may be an important intermediary process in the formation of vulnerability.

Niemiec (2019) revealed six important functions of the character strengths, both theoretically and empirically. One of the essential functions of character powers strengths is nurturing psychological resilience. Another function of character strengths is the serving as a potential to prevent psychological vulnerability. In line with these findings, Martinez-Marti and Ruch (2017) also found that all character strengths were positively associated with psychological resilience. It was found that even when sociodemographic variables, positive affect, self-efficacy, optimism, social support, self-esteem, and life satisfaction are controlled; emotional (i.e. bravery, authenticity, zest, and persistence) and restraint (i.e. self-regulation, modesty, forgiveness, and prudence) character strengths predicted psychological resilience. The current study may contribute to the literature by explaining the relationships between character strengths, resilience, and psychological vulnerability constructs.

Character strengths play important roles in developing the resilience of adolescents (Shoshani and Slone 2016). Studies have shown that low levels of character strengths can induce psychological vulnerability (Tehranchi et al. 2018). Also, studies found that character strengths' role in preventing and decreasing psychological vulnerability that can cause anxiety and depression (Gillham et al. 2011; Huta and Hawley 2010). Character strengths serve as resources in the face of negative effects of stressful and traumatic events (Park and Peterson 2009). Research on character strengths imply the role of resilience as an important mediating process which explain the effects of these strengths on vulnerability.

Current Study

Character strengths are associated with higher levels of well-being and lower levels of psychopathological symptoms in the positive psychology literature. It has been shown in previous

studies that character strengths are positively associated with psychological resilience and negatively associated with psychological vulnerability. However, the mediating role of psychological resilience between character strengths and psychological vulnerability, to our knowledge, has not yet been investigated. In this study, we aim to examine the relationships between character strengths, resilience, and psychological vulnerability constructs.

In our framework, we assert that people with higher levels of character strengths would build cognitive and behavioral resources that nurture the resilience capability; and this repertoire of resources and behaviors will prevent the formation of self-destructive cognitive distortions, which characterize a component of psychological vulnerability. Increasing the resilience that helps coping with difficulties and thus reducing psychological vulnerability is one of the most important goals of theory and practice of psychology. The aim of this study is to examine the mediating role of resilience in relation to character strengths and psychological vulnerability constructs. It is hypothesized that character strengths may facilitate an increase in resilience, and resilience may facilitate a decrease in psychological vulnerability. In other words, resilience may have a mediating role in the relationships between character strengths and psychological vulnerability. Aside from dealing the general question of whether character strengths predict vulnerability through resilience, the present study also aims to determine which individual character strengths reduce psychological vulnerability through psychological resilience. This study has potential to help educators or mental health professionals by offering a more elaborate pathway to understand the interplay of strengths, resilience and vulnerability rather than opposites within a continuum.

Method

The Participants

The sample of the study consisted of 381 high school students whose ages ranged from 14 to 18 (Mean = 15.63, SD = 1.12). 164 of the participants were male (43%) and 217 were female (57%). 130 of the participants (34.1%) were in 9th grade, 117 (30.7%) were in 10th grade, 96 (25.2%) were in 11th grade, and 38 (10%) were in 12th grade. The convenience sampling was utilized for data collection. Informed consent from the participants was taken and voluntary participation was ensured for all participants.

Measures

Character Growth Index (CGI) The Character Growth Index (CGI) which was developed by Liston (2014) and adapted to

Turkish by Ekşi et al. 2017 aims to evaluate the character strengths traits of the adolescents in a valid and reliable way. The scale consists of 11 categories: stability, humility, optimism, kindness, intimacy, calmness, courage, wisdom, spirituality, forgiveness, and honesty. Confirmatory factor analysis carried on Turkish adaptation study has shown that the 11-category model is acceptable. The internal consistency reliability coefficient of the index is .92. Internal consistency reliability coefficients of the index subcategories vary between .60 and .83. In terms of criterion-related validity, the correlation coefficients between the Humanitarian Values Scale sub-scale scores and the CGI sub-scale scores vary between .30 and .65 (Ekşi et al. 2017). In this study, the internal consistency reliability coefficient .90, Guttman λ_6 reliability coefficient was calculated as .94. Internal consistency coefficients of the subscales ranged from .53 to .79. Cronbach's alpha coefficients of subscales are presented in Table 1.

Brief Resilience Scale The scale was developed by Smith et al. (2008) and adapted to Turkish by Doğan (2015) as a measure for the psychological resilience of individuals. It consists of 6 items under one category. The scale is scored using 5 different ratings. High scores on the scale indicate high psychological resilience. In order to determine the validity of the scale, exploratory factor analysis was performed in 4 different sample groups and a one-factor structure was obtained explaining 61%, 61%, 57%, and 67% of the total variance. For the scale's adaptation into Turkish, exploratory and confirmatory factor analysis

was carried out and it was concluded that the scale had a one-factor structure. The internal consistency coefficient of the scale is calculated as .83. In this study, as a result of exploratory factor analysis in the adolescent sample, it was found that the scale has a dimensional structure that accounts for 50.75% of the total variance, with an eigenvalue of 3.05 and the factor loadings of the scale varies between .61 and .75. In this study, the internal consistency coefficient of the scale is calculated as .81.

Psychological Vulnerability Scale The scale was developed by Sinclair and Wallston (1999) and adapted to Turkish by Akın and Eker (2011). It consists of 6 items under one category. The scale is scored using 5 different ratings. High scores on the scale show high psychological vulnerability. Confirmatory Factor Analysis results in the adaptation study show that the one-dimensional structure of the scale is confirmed in university students. Confirmatory factor analysis was applied for the Turkish adaptation of the scale and it was concluded that the scale had a one-factor structure. The internal consistency coefficient of the scale is calculated as .75. In exploratory factor analysis carried on the adolescent sample, it was found that the scale has a one-dimensional structure that accounts for 37.23% of the total variance, with an eigenvalue of 2.23 and the factor loads of the scale varies between .53 and .67. In this study, the internal consistency coefficient of the scale is calculated as .66.

Table 1 Correlation matrix and descriptive statistics of variables

Scales	1	2	3	4	5	6	7	8	9	10	11	12	13
1. perseverance	1												
2. humility	.39**	1											
3. optimism	.34**	.23**	1										
4. kindness	.40**	.32**	.34**	1									
5. love/care	.23**	.25**	.40**	.42**	1								
6. peace	.18**	.29**	.46**	.06	.16**	1							
7. courage	.34**	.20**	.28**	.22**	.15**	.34**	1						
8. wisdom	.54**	.35**	.43**	.35**	.3**	.38**	.49**	1					
9. spirituality	.35**	.29**	.30**	.38**	.29**	.10	.18**	.31**	1				
10. forgiveness	-.04	.27**	.23**	.17**	.28**	.33**	-.09	.10*	.08	1			
11. honesty	.37**	.43**	.24**	.29**	.34**	.20**	.17**	.29**	.27**	.16**	1		
12. resilience	.19**	.12*	.35**	-.02	.11*	.41**	.32**	.34**	.040	.05	.12*	1	
13. vulnerability	-.19**	-.14**	-.21**	.02	-.03	-.21**	-.25**	-.19**	-.08	.03	-.10*	-.35**	1
Mean	4.00	3.89	3.62	4.43	4.42	3.20	3.71	3.89	4.21	3.43	3.92	18.06	18.04
Std. Deviation	0.64	0.66	0.92	0.55	0.50	0.85	0.69	0.64	0.66	0.87	0.68	5.20	4.88
Skewness	-0.49	-0.45	-0.68	-1.11	-0.96	-0.17	-0.02	-0.27	-0.91	-0.37	-0.65	-0.01	0.08
Kurtosis	-0.03	0.04	0.23	1.16	0.47	-0.36	-0.65	-0.29	0.87	-0.21	0.22	0.12	-0.45
Cronbach Alpha	.78	.57	.84	.71	.60	.75	.73	.79	.78	.77	.53	.81	.66

$N = 381$; ** $p < 0.01$, * $p < 0.05$

Procedure

This study examined the relationship between character strengths and psychological resilience and psychological vulnerability. A structural equation model was used to examine the role of psychological resilience in the relationships between character strengths and psychological vulnerability. First, descriptive statistics (mean, standard deviation, skewness, and kurtosis) were calculated. Then the multiple linear relationships between the variables were examined. Before the analysis, the VIF values were below 10 and correlation values were below .85. This finding indicates that there were no multiple linear relationships (Kline 2015).

Various goodness of fit indices are used to evaluate the structural equation model. The χ^2 / df ratio, SRMR, RMSEA, CFI, and TLI indices are suggested to be calculated to examine the model fit (Kline 2015). The acceptable values should be below .08 for RMSEA (Byrne and Campbell 1999), .10 for SRMR (Brown and Cudeck 1993). In addition, the acceptable values should be over .90 for CFI and TLI (Bentler 1980; Bentler and Bonett 1980; Schermelleh-Engel and Moosbrugger 2003). For the Chi-Square Compliance Test, χ^2 sd values should be below 3 (Schermelleh-Engel and Moosbrugger 2003) for an acceptable fit.

According to the recommendations of Preacher and Hayes (2008), in order to ensure the significance of the mediation coefficients regarding the decrease in psychological vulnerability affected by psychological resilience thanks to character strengths, a bootstrapping analysis was performed by 10,000 re-sampling. Confidence intervals of coefficients did not include zero in upper and lower limits; therefore, the effect of psychological resilience is found to be significant (Preacher and Hayes 2008). In mediation analyses, classroom was used as a control variable. Data analysis was performed using IBM SPSS Statistics and AMOS Graphics packet programs.

Results

Correlation Analysis and Descriptive Statistics

Findings showing correlation coefficients and descriptive statistics between scales and sub-dimensions are given in Table 1. As shown in Table 1, the correlation results showed that the relationship between character strengths and psychological resilience varies between $r = .11$, $p < .05$, (care/love) and $r = .42$, $p < .01$ (peace). Psychological resilience was found to be unrelated to the character strengths of kindness, spirituality, and forgiveness ($p > .05$). Relationships between character strengths and psychological vulnerability varies between $r = -.10$, $p < .05$, (honesty) and $r = -.25$, $p < .01$ (courage). Psychological vulnerability was found to be unrelated to the character strengths of kindness, love/care, spirituality, and

forgiveness ($p > .05$). Psychological resilience and psychological vulnerability were negatively related ($r = -.55$, $p < .01$). The kurtosis values of the variables vary between -1.11 and $.08$, the skewness values vary between -0.45 and 1.16 .

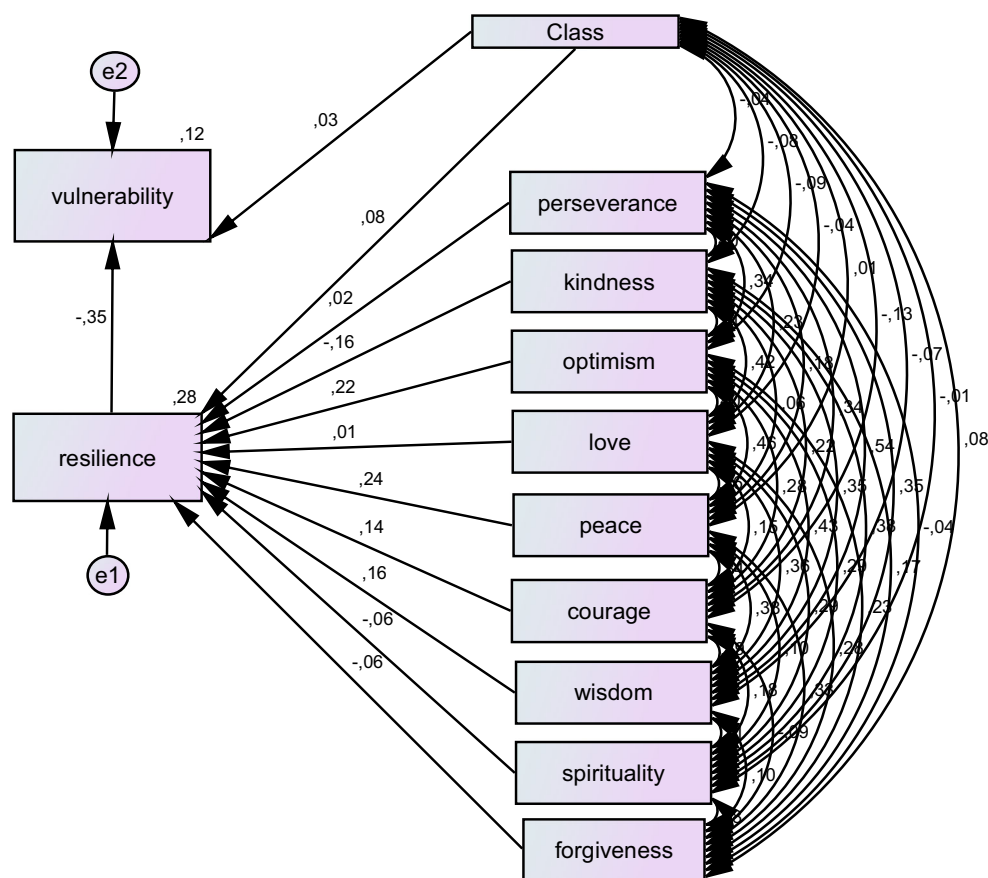
Structural Model

According to the results of reliability analyses humility and honesty subscales were found to have low internal consistency coefficients. Therefore, in the model where character strengths were tested for predicting psychological vulnerability through psychological resilience, humility and honesty the character strengths were not included. In the structural equation model, perseverance, optimism, love, peace, courage, wisdom, kindness, spirituality, and forgiveness was tested to determine their effects in decreasing psychological vulnerability through psychological resilience. It was found that, in the model established, the character strengths of wisdom, courage, optimism, and calmness increased psychological resilience; kindness decreased psychological resilience and psychological resilience significantly decreased psychological vulnerability. The goodness of fit indices of the model were as follows; $\chi^2_{(9)} = 19.406$, $p < .05$; χ^2 / df = 2.16, CFI = .99; TLI = .93; SRMR = .027, RMSEA = .055, % 90 CI (.020–.089). The structural equation model for the role of character strengths in decreasing psychological vulnerability through psychological resilience and the path coefficients between variables are shown in Fig. 1.

Alternative models tested outside this model did not provide fit indices within acceptable ranges. The model hypothesizing a full mediation of psychological vulnerability on the relationship between and character strengths resilience ($\chi^2_{(10)} = 96.501$, $p < .05$; χ^2 / df = 9.65, CFI = .92; TLI = .440; SRMR = .068, RMSEA = .151, % 90 CI (.124–.179) had low levels of fit to the data. In addition, a full mediation of character strengths on the relationship between resilience and psychological vulnerability ($\chi^2_{(37)} = 786.623$, $p < .05$; χ^2 / df = 21.26, CFI = .26; TLI = $-.31$; SRMR = .184, RMSEA = .231, % 90 CI (.217–.245); a full mediation model of character strengths on the relationship between psychological vulnerability and resilience ($\chi^2_{(36)} = 874.603$, $p < .05$; χ^2 / df = 22.42, CFI = .18; TLI = $-.89$; SRMR = .209, RMSEA = .237, % 90 CI (.224–.251) had low levels of fit when tested against the data.

In order to test the significance of the coefficients pointing to a decrease in psychological vulnerability through psychological resilience thanks to character strengths a bootstrapping analysis was performed by 10,000 re-sampling. Based on the bootstrapping analysis, character strengths of wisdom ($\beta = .16$, $p < .05$, 95% CI = .014, .300), courage ($\beta = .14$, $p < .05$, 95% CI = .016, .267), optimism ($\beta = .22$, $p < .01$, 95% CI = .096, .340), and peace ($\beta = .24$, $p < .01$, 95% CI = .101, .364) directly increased psychological resilience

Fig. 1 The structural equation model for the full mediating role of character strengths in decreasing psychological vulnerability through resilience. Note. $N = 381$



significantly. Psychological resilience ($\beta = -.35$, $p < .001$, 95% CI = $-.437, -.251$) reduced psychological vulnerability directly and significantly. In addition, wisdom ($\beta = -0.056$, $p < .05$, 95% CI = $-0.113, -0.07$), courage ($\beta = -0.048$, $p < .05$, 95% CI = $-0.101, -0.006$), optimism ($\beta = -0.077$, $p < .01$, 95% CI = $-0.132, -0.032$) and peace ($\beta = -0.083$, $p < .001$, 95% CI = $-0.138, -0.038$) character strengths indirectly reduced psychological vulnerability significantly. Also kindness ($\beta = 0.058$, $p < .001$, 95% CI = $0.019, 0.105$) strength indirectly increased psychological vulnerability significantly. The lower and upper limits of the 95% confidence intervals of the coefficients did not include zero. Findings regarding standardized path coefficients for the model are given in Table 2.

Discussion

This study examined the relationships between character strengths, psychological resilience, and psychological vulnerability with emphasis on the mediational role of resilience. Structural equation modeling was used to determine whether character strengths predicted psychological vulnerability through psychological resilience. Character strengths of wisdom, courage, optimism, and peace increased the level of

psychological resilience; kindness decreased resilience; and psychological resilience significantly decreased the level of psychological vulnerability. According to the SEM test of the model, the goodness of fit indices of the model are at acceptable levels. Bootstrapping analysis has shown that the indirect effects of character strengths wisdom, courage, optimism, calmness, and kindness on psychological vulnerability were significant. These result reveal that our hypotheses for character strengths of wisdom, courage, optimism, and peace were confirmed. However, our hypotheses for perseverance, kindness, spirituality, and forgiveness were not confirmed. Moreover, the anticipated effect for kindness was found the opposite way.

It is intuitive that wisdom, courage, optimism, and peace increase resilience. The character trait of wisdom represents awareness of common sense, the point of view, and results that lead to good decisions. Confidence on one's ability to make the right decisions can positively affect the adolescent's psychological resilience. The character trait of calmness represents staying calm despite the hardships and stress in life. This ability may function as basis for the development of psychological resilience. Optimism encompasses qualities of being hopeful, having positive expectations about the future, and feeling self-confident about the future. It is important for adolescents to have positive expectations about the future for

Table 2 Estimated parameters and 95% CIs for the paths of the structural model

					% 95 CI			
					Lower	Upper	<i>p</i>	
Direct Link					Estimated			
peace	→		resilience	.239	.101	.364	.001	
love	→		resilience	.009	-.108	.119	.882	
optimism	→		resilience	.220	.096	.340	.001	
kindness	→		resilience	-.165	-.280	-.053	.005	
courage	→		resilience	.138	.016	.267	.028	
wisdom	→		resilience	.161	.014	.300	.031	
spirituality	→		resilience	-.065	-.185	.062	.314	
forgiveness			resilience	-.059	-.171	.055	.304	
perseverance	→		resilience	-.010	-.119	.102	.854	
resilience	→		vulnerability	-.349	-.437	-.251	.000	
					% 95 CI			
Indirect Link					Estimated	Lower	Upper	<i>p</i>
forgiveness	→	resilience	→	vulnerability	0.021	-.018	.063	.288
wisdom	→	resilience	→	vulnerability	-0.056	-.113	-.007	.027
courage	→	resilience	→	vulnerability	-0.048	-.101	-.006	.025
peace	→	resilience	→	vulnerability	-0.083	-.138	-.038	.001
love/care	→	resilience	→	vulnerability	-0.003	-.042	.039	.880
optimism	→	resilience	→	vulnerability	-0.077	-.132	-.032	.001
perseverance	→	resilience	→	vulnerability	-0.007	-.049	.028	.672
spirituality	→	resilience	→	vulnerability	0.023	-.021	.069	.900
kindness	→	resilience	→	vulnerability	0.058	.019	.105	.004

them to think that they have the problem-solving skills necessary to cope with their problems. The character trait of courage is the ability to make sensible and courageous choices while staying calm in the face of danger. If the adolescents can act bravely, they can gain the motivation and determination to get over the difficulties.

The relationships between character strengths, psychological resilience, and psychological vulnerability has not been considered within a single mediation model, in the related literature. However, the direct and indirect relationships embedded in the current model were established by many studies in the in PP literature. Earlier studies have shown that character strengths have a positive association with psychological resilience (Hutchinson et al. 2011). Optimism, self-efficacy, social support, self-esteem, life satisfaction, and certain demographic variables are related to resilience, but the contribution of character strengths is much greater. Vitality, love, hope, humor, and social intelligence have a significant positive impact on psychological well-being (Martinez-Marti and Ruch 2017). Character strengths contribute to well-being in all dimensions but character strengths of love, hope, vitality, curiosity, gratitude are emphasized to have a stronger relationship with the life satisfaction (Park and Peterson 2006, 2009; Park et al. 2004). Hope, gratitude, love, and vitality are found to be positively associated with students' life satisfaction (Ruch et al. 2014). It is emphasized that hope, vitality, and

courage show stronger relations with resilience (Martinez-Marti and Ruch 2017). Hutchinson et al. (2010) found that the virtue of courage was highly correlated with resilience. In addition, intervention studies related to character strengths indicate that interventions in this field have an impact on psychological functioning. Brownlee et al. (2013) in their review of effectiveness studies of character strength interventions report that there were three experimental studies qualified to pass their inclusion criteria. These studies on the positive relation of character strength with well-being and resilience are in line with our findings regarding the endogenous-exogenous relationship proposed in the present study.

Previous research shows that resilience and psychological vulnerability are negatively related (Haddadi and Besharat 2010). Furthermore, while resilience increases subjective well-being through hope, psychological vulnerability can weaken subjective well-being through hope (Satici 2016). In previous research, resilience was positively correlated with positive emotions and optimism; and negatively associated with pessimism, depression, anxiety, and stress (Smith et al. 2008). Huta and Hawley proposed that character strengths and psychological vulnerability are not complete opposites and recommended their contributions to well-being to be examined (Huta and Hawley 2010). The present study results contribute to the gap they implied, suggesting resilience as a potential mechanism, which may be at play between the two constructs.

There are several studies that reveal character strengths' role in preventing and decreasing cognitive vulnerability (Gillham et al. 2011; Huta and Hawley 2010) that are in line with the present study results. Hope is found to be negatively related to cognitive vulnerability. Character strengths have the potential to reduce the negative effects of psychological vulnerability on well-being (Huta and Hawley 2010). Psychological vulnerability is a sign of psychological dissonance and is negatively associated with life satisfaction, positive feelings, self-efficacy, optimism, coherent coping strategies (Sinclair and Wallston 1999) and self-esteem (Luxton et al. 2006). On the other hand, psychological vulnerability is positively associated with depression (Ingram 2003), anxiety and stress (Sherman et al. 2009), and negative feelings (Sinclair and Wallston 1999). Psychologically defenseless people are more susceptible to stress and use incompatible coping mechanisms in response to stress (Sinclair and Wallston 1999). The virtue of transcendence, which includes the character strength of hope, is also related to life satisfaction, positive emotions, vitality, the meaning of life and peak experiences, and cognitive vulnerability was associated with negative emotions and depression (Huta and Hawley 2010).

Interpersonal (e.g. love, gratitude), intellectual (e.g. vitality, curiosity), and moderation (e.g. wisdom, self-regulation) character strengths play roles in coping with stress and protecting mental health. In addition, under normal circumstances, character strengths can increase physical well-being (Leontopoulou and Triliva 2012). A 12-month study found that character strengths help students under stress improve well-being, reduce psychological symptoms, and protect their mental health (Duan 2016). The present study results have implications for the practice of psychology and education as well. Teachers and school counselors can protect adolescents from risk factors by improving their character strengths and build resilience. The results of the study are promising in contributing to values education, positive education, and positive youth development studies areas, to name a few. In this context, prominent character strengths for enhancing psychological resilience and reducing psychological vulnerability can be prioritized by educators and researchers.

This research has various limitations. Firstly, the analyses were carried out using the quantitative data obtained by measurement based solely on self-report. Teacher, peer, and family assessments can help to achieve more objective findings. Moreover, qualitative methods such as in-depth interviews and focus group interviews may provide more detailed results. In addition, the moderate levels of internal consistency reliability coefficients for some subscales (humility, love, and honesty) of the measure for character strengths is another limitation of the present study. The use of more reliable measurement tools or data in subsequent studies may give a better idea of the relationship between these sub-dimensions and other variables. Finally, longitudinal, and experimental studies can

be done instead of using the cross-sectional pattern to reach the conclusions about the causal effects between variables. Another topic to explore is the bi-directional relationship between character strengths and resilience. Character strengths lead to resilience and character strengths may be caused by resilience (Martinez-Marti and Ruch 2017; Niemiec 2019). Although we assert that character strengths are causally prior to the resilience capacity, future research that show resilience capacity itself or processes underlying resilience have effects on the formation of strengths would compromise the acceptability of the present model.

It is recommended for teachers or mental health professionals to focus on individual strengths before, during and after stressful events to help students maintain their psychological well-being. Character strengths have the potential to aid coping with stress and protect from mental illnesses (Duan 2016). The development of character strengths may increase psychological well-being of adolescents. It can be said that the increase in the resilience of adolescents will protect them from psychological vulnerability. As wisdom, courage, optimism and calmness increase, resilience increases and as resilience increases psychological vulnerability decreases. Psychological counseling and psychoeducational applications focusing on wisdom, courage, optimism and calmness is suggested to have a higher potential to increase the resilience of adolescents and to reduce their psychological vulnerability. The model used in the study has the potential to contribute to the research on the character strengths and their effect on well-being and psychological health, even though it uses cross-sectional data and self-report-based measurements. However, it would be wrong to say that the findings proved existence of mechanisms. For example, the lack of meaningful relationships between kindness, spirituality and forgiveness and resilience is counter intuitive. The fact that these concepts are not related to resilience at a meaningful level may be due to the fact that they are related to other people and to a higher reality and may also be related to the dark side of these concepts, which show complex interactions with adaptive traits. The study that reveals that women's forgiveness levels increase willingness to maintain abusive relationships is a striking example of the fact that positive traits do not always produce adaptive results (Gordon et al. 2004).

The adverse effect of kindness on both the mediator and the outcome was particularly interesting. According to the zero-order correlations, character strengths of kindness, spirituality, and forgiveness were not significantly related to resilience, and character strengths of kindness, love and forgiveness are not significantly related to psychological vulnerability. The absence of the relationships in the first step shows that these relationships were altered due to the mediation effect itself and the controlling/partialing process intrinsic to SEM. When controlling the effects of the ten latter strengths, kindness may have operated as dysfunctional propensities such as submissiveness or gullibility. This statistical possibility may be at

play for spirituality and forgiveness to some degree, as well. Aside from statistical considerations, these results may also point out to possible detrimental effects of these strengths on resilience as an important question for future research.

Compliance with Ethical Standards

Declaration of Conflicting Interests The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Statement The authors declare that all the procedures of the study were conducted in compliance with the Helsinki Declaration. Voluntary participation, anonymity and informed consent were ensured for all participants and there was no experimental manipulation involved in the study.

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