



Relationship between social support and positive mental health: A three-wave longitudinal study on college students

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Abstract

The present study aims to understand the current situation and developmental trend of college students' positive mental health, explore the relationship among social support and positive mental health. 749 college students from 6 colleges in Shanghai participated for the follow-up survey in May 2013, May 2015 and May 2016. The social support scale (F-SozU) and psychological resilience scale (RS-11) and the life satisfaction scale (SWLS) were used to examine the changes in social support, resilience and life satisfaction. This study finds that the development of social support and life satisfaction of college students showed an upward first and then downward trend, while the development of resilience showed an upward trend. The mutually reinforcing relationship between social support and positive mental health was different during the college. Identifying the interaction between social support and positive mental health of college students, social workers working with college students need to recognize the important role of social support in positive mental health, provide suggestions for college students' education of mental health, and further help them improve their positive mental health.

Keywords College students · Social support · Positive mental health · Longitudinal study

Introduction

In recent years, positive mental health (PMH) in emerging adulthood has attracted more and more attention from scholars and practitioners (Hall, McKinstry, & Hyett, 2016; Marino, Hirst, Murray, Vieno, & Spada, 2018; O'Connor, Sanson, Toumbourou, Norrish, & Olsson, 2017). Traditionally, positive mental health has been defined as a positive self-attitude, or the ability of a person to fully realize their potential, and a sense of personal control of the environment (Jahoda, 1959). Keyes proposes a positive mental health model and suggests that positive mental health should be used in practice as a combination of positive feelings (such as life satisfaction) and positive life functions (such as resilience) (Keyes, 2006). Some researchers have proposed that the definition of positive mental health is related to the environment to some extent (Karlsson, 2012), resilience

refers to a person's inner mental ability, while life satisfaction refers to a person's satisfaction and happiness with the external environment. The positive mental health scale proposed by Lukat, Margraf, Lutz, van der Veld and Becker (2016) believes that the emphasis of assessment is positive self-evaluation related to life satisfaction and positive function (such as resilience). Positive mental health can reduce the negative impact of life stress events and to confer resilience (Brailovskaia, Teismann, & Margraf, 2020). According to the above theories, the two components of positive mental health in this study were life satisfaction and resilience. The "emerging adulthood" refers to the period from the late adolescents to the twenties, mainly concentrated between 18 and 25 years old. According to emerging adulthood theory, the characteristics of the emerging adulthood are that they are free from the dependence of childhood and adolescence, but have not entered the normal state of exploring various possible life directions after adulthood (Arnett, 2000). The emerging adulthood can be one of the most unstable periods of one's life (Arnett, Žukauskienė, & Sugimura, 2014). Therefore, the individual's positive mental health in this period is also often in fluctuation and change.

Life satisfaction (LS) is an important component of positive psychology (Bailey, Eng, Frisch, & Snyder, 2007; Durgante, Tomasi, Pedroso de Lima, & Dell'Aglio, 2020; Proctor, Linley, & Maltby, 2009). And life satisfaction is

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considered an important component of positive mental health (Hansen, Sund, Knudtsen, Krokstad, & Holmen, 2015; Huebner, Valois, Paxton, & Drane, 2005). Life satisfaction has been defined as an overall cognitive assessment of life conditions most of the time or over a certain period of time according to the criteria chosen by individuals (Pavot & Diener, 2009). Previous studies have shown that college students' life satisfaction declines from their first to their third year (Kjeldstadli et al., 2006). Current studies evidence linked life satisfaction with resilience (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Hu, Zhang, & Wang, 2015; Mak, Ng, & Wong, 2011) in somehow.

The most definitions of resilience are based on two core concepts: adversity and positive adaptation (Fletcher & Sarkar, 2013). Masten (2001) defines resilience as the process that produces good results when adaptation or development is seriously threatened. People are able to show resilience under adverse conditions because of intrapersonal, interpersonal or structural assets that allow for adaptive functioning in spite of hardship. Connor and Davidson (2003) suggests resilience is a personal trait and an important resource that enables people to thrive in adversity (Davydov, Stewart, Ritchie, & Chaudieu, 2010; Nurius, LaValley, & Kim, 2019). In short, resilience refers to the process of being able to adapt well in the face of adversity, trauma, threats, and even significant pressure (American Psychological Association, 2014). Resilience is usually assessed using the resilience scale (RS-14 or RS-25) (Wagnild & Young, 1993). In the shorter 11-item version, resilience is identified as a protective personality factor associated with healthy development and psychological resilience to stress. The scale proved to be of good reliability and validity in the German sample (Schumacher, Leppert, Gunzelmann, Strauss, & Brähler, 2005). Resilience is an important part of positive mental health. Individuals with high resilience have been shown to have positive traits in a variety of ways: they are enthusiastic and energetic about life, and they are curious and open to new experiences (Tugade, Fredrickson, & Feldman Barrett, 2004). Furthermore, there is a significant correlation between resilience and life satisfaction (Arslan, 2019). A recent research demonstrated that individual resilience predicts general satisfaction and self-satisfaction (Stack-Cutler, 2014) and enhancing resilience can contribute to life satisfaction (Cohn et al., 2009). Previous studies have shown that social support has a higher impact on both resilience (Bilgin & Taş, 2018) and life satisfaction (Malinauskas, 2010; Zhou & Lin, 2016). Meanwhile, based on earlier empirical evidence, there is a neurological link between resilience and life satisfaction (Kong, Wang, Hu, & Liu, 2015).

It is well known that positive mental health is associated with many social and environmental factors, such as social support (Spotts et al., 2005). Social support is an important

external stress resistance resource, and which can play a positive role in improving their positive mental health (Wang, Xiong, & Yang, 2018). Atchley (1985) believes that social support is the aggregation of family, friends and social institutions, which enables people to meet social, physical and psychological needs. A nationwide survey revealed that during the emerging adulthood period, more than half of young people believed that they relied heavily on the support of friends and family (Arnett et al., 2014). The previous cross-sectional and longitudinal studies have shown that social support are protective factors for positive mental health (Gooding, Hurst, Johnson, & Tarrier, 2012; Guo, Tomson, Keller, & Söderqvist, 2018; Hefner & Eisenberg, 2009; Mushonga & Henneberger, 2020; Ruthig, Haynes, Stupnisky, & Perry, 2009; Siegmann et al., 2018; Wood, Maltby, Gillett, Linley, & Joseph, 2008; Xu, Li, & Yang, 2019). Social support can alleviate college students' adaptation problems and improve their positive mental health which is associated with lower depression and psychological problems (Chui & Chan, 2017; Jibeen, 2016). Social support in this study refers to perceived support, which is defined as a measure of how a person evaluates his / her situation, rather than a true reflection of how much support he / she has received (Eagle, Hybels, & Proeschold-Bell, 2019). The effect of perceived support is different from that of received support, and higher perceived support is significantly related to lower negative psychological outcomes (Patil et al., 2014). Some researchers believe that positive mental health also contributes to interpersonal relationship and social support stability (Vaingankar et al., 2018). In recent years, researchers have also studied the negative aspects of social support. They found that social support and interpersonal negative effects are positively correlated, and insufficient or excessive social support is associated with adverse psychological outcomes (Williamson, Olinger, Wheeler, & O'Hara, 2019). Spousal support predicted positive and negative emotional states better than spousal stress (Pierce & Quiroz, 2019). Social support has played an increasingly positive role in life satisfaction (Chen et al., 2017; Kong, Zhao, & You, 2012; Siddall, Huebner, & Jiang, 2013). For instance, students' life satisfaction may be indirectly affected by the social support provided by their parents, classmates and teachers, and mediated by students' school (Danielsen, Samdal, Hetland, & Wold, 2009). In many longitudinal studies, at each time point, social support has a significant positive conditional effect on life satisfaction (Caron, Cargo, Daniel, & Liu, 2019; Yalçın, 2011). Social support can cope with stressful life events, which is significantly positively correlated with resilience (Bilgin & Taş, 2018; Cai, Zhu, Lin, Zhang, & Margraf, 2017). There was a significant longitudinal relationship between social support, resilience and mental health (Koelmel, Hughes, Alschuler, & Ehde, 2017). And a longitudinal study

suggested that strong social support may protect mental health by improving resilience to reduce stress (Eisman, Stoddard, Heinze, Caldwell, & Zimmerman, 2015). Social support as an external protective factors of college students have a protective effect against adversity. Individual perception of more social support, the development needs of college students can be easily met, and some resilience traits (such as empathy, cooperation, goal and orientation) can be naturally developed to protect college students from the influence of risk factors.

Based on previous studies, we found that the research on college students' positive mental health is mainly reflected in their subjective well-being, and there are few studies on the combination of college students' life satisfaction and resilience, as well as the impact of social support on positive mental health (Brailovskaia, Schonfeld, Zhang, & Bieda, 2018). Current studies evidence linked positive mental health and social support in somehow. Thus, the present study aims to explore the relationship among social support and positive mental health, and tries to find out the interaction of social support and positive mental health of college students through a three-wave longitudinal study. For research, it would find strategies for schools and society to improve college students' positive mental health, provide recommendations for mental health education of college students, and provide theoretical basis for further research and the positive psychology architecture are expanded and the posterity research provides base. So, the present study hypothesized that (1) there was a positive correlation between social support and resilience and life satisfaction, as well as positive mental health at each time point; (2) life satisfaction

and resilience changed with grade growth; (3) social support and positive mental health predicted each other over time.

Materials and Methods

Participants

The current project used data from one university in Shanghai, China. All participants were randomly selected from the majors of humanities, education, mathematics and science, construction engineering. The project lasted for four academic years (from 2013 to 2016) with the questionnaire was distributed in the freshman year, junior year and senior year separately (referred as T1, T2 and T3). The sample size for T1 in 2013 was 1812; 1442 for T2 in 2015, and 1054 for T3 in 2016. 749 students participated in the survey for four years. Among them, 617 were females, and 132 were males. Basic information about the participants was examined. Table 1 provides an overview of the sample characteristics, including gender, marital status, birth place and major.

Measures

The Satisfaction with Life Scale (SWLS)

The SWLS is a 5-item scale designing to assess life satisfaction of college students, which is theoretically predicted to depend on a comparison of life circumstances to one's standards (Diener, Emmons, Larsen & Griffin, 1985). Participants respond on a 7-point Likert-type scale, ranging from 1 (very

Table 1 Demographic characteristics of the samples

	T1	T2	T3
Gender			
Female = 0	1409(77.8%)	–	811(76.9%)
Male = 1	403(22.2%)	–	243(23.1%)
Marital status			
Unmarried (without a regular partner) = 0	1516(83.7%)	1155(80.1%)	868(82.4%)
Unmarried (with a regular partner) = 1	290(16.0%)	286(19.8%)	177(16.8%)
Married or divorced = 2	6(0.3%)	1(0.1%)	9(0.9%)
Birth place			
Village, country town and small city = 0	575(31.7%)	–	–
Mid-sized city and above = 1	1237(68.3%)	–	–
Major			
Humanities	442(24.4%)	–	292(27.7%)
Education	331(18.3%)	–	230(21.8%)
Science	568(31.3%)	–	281(26.7%)
Mathematics	435(24.0%)	–	246(23.3%)
Construction engineering	27(1.5%)	–	0(0.0%)
Other	9(0.5%)	–	5(0.5%)

dissatisfied) to 7 (very satisfied). A score of 20 represents the neutral point on the scale, the point at which the respondent is about equally satisfied and dissatisfied. Higher scores of SWLS indicate higher life satisfaction. The Cronbach's α of the current project was 0.88(T1), 0.91(T2), 0.91(T3) and the internal consistency coefficient was good.

The Resilience Scale (RS-11)

The 11-item short version of the Wagnild and Young Resilience Scale (RS-11; Schumacher et al., 2005) was used to measure the individual resilience, which is considered as a protective personality factor and is related to the healthy development and psychosocial stress-resistance. Through factor analysis, 9 items of the Chinese version of RS-11 (Gao, Yang, Margraf, & Zhang, 2013) were adopted in the current project and the original question 3 and 10 were removed. General regularity of each item is rated with a 7-point scale ranging from 1 (very disagree) to 7 (very agree). The total score of the scale is the sum of the crude scores of each item. Higher scores indicate higher resilience. The test of the reliability and validity showed that the scale had good reliability and validity, with internal consistency was 0.82(T1), 0.92(T2), 0.86(T3).

Social Support Questionnaire (F-SozU K-14)

The F-SozU (Fragebogen zur Sozialen Unterstützung) was used to assess social support. It is a widely used self-report questionnaire in Germany, which contains 14 items. Responses are made on a 5-point Likert scale ranging from 1 (very inconsistent) to 5 (very consistent). The total score of the scale is the sum of the scores of each item, and the score ranges from 14 to 70. Results from a total of 384 male and female West German adults (including normal and clinical samples) indicate that the F-SOZU has satisfactory psychometric properties, including internal consistency, construct validity, and factorial structure. In current project, the internal consistency reliability of social support was 0.96(T1), 0.95(T2), 0.95(T3).

Data Collection

The first survey was conducted in May 2013, the second in May 2015, and the third in May 2016. The time of each follow-up survey was conducted around the middle of the second semester of each academic year to avoid the potential psychological impact on college students in the new academic year and the new semester. The students who agreed to participate in the survey entered the prearranged classroom in batches and conducted the questionnaire survey. Each classroom had three survey conductors, who were trained graduate students majoring in psychology. SWLS, RS-11 and F-SozU were used for the current survey. Participants completed the entire questionnaire in about 20 min. The score of positive mental health in this study was the factor score of resilience and life satisfaction.

Results

Changes in Social Support, Resilience and Life Satisfaction across Time

General situation of social support, resilience and life satisfaction can be found in Table 2. In this study, we conducted the repeated-measures MANOVA to assess the differences in time (T1, T2, and T3) and the scores on the social support, resilience, and life satisfaction as dependent variables.

The results showed a main effect for time in social support, $F = 8.27, p < .001, \eta^2 = .01$. Pairwise comparisons showed that the differences in social support mainly include the difference between social support at T1 and T2 ($t = 3.29, p < .01$, Cohen's $d = .14$) and the difference between SS at T2 and T3 ($t = -4.15, p < .001$, Cohen's $d = .15$). There was no significant difference between T1 and T3.

A main effect of time was observed for resilience with the scores showed an increasing trend year by year, $F = 16.05, p < .001, \eta^2 = .02$. Further pairwise comparisons showed that the resilience at T2 was significantly higher than that at T1 ($t = 4.58, p < .001$,

Table 2 Means and standard deviations (SDs) descriptions and variance analysis of social support, resilience and life satisfaction at each time point

	T1		T2		T3		F	η^2	LSD	RANGE
	Mean	SD	Mean	SD	Mean	SD				
Social Support	59.08	11.13	57.69	9.25	59.08	8.77	8.27***	.01	1 = 3 > 2	14–70
Resilience	47.76	7.41	49.31	8.04	49.21	6.59	16.05***	.02	2 = 3 > 1	9–63
Life Satisfaction	25.65	5.99	24.63	6.31	25.50	5.84	9.92***	.01	1 = 3 > 2	5–35

T1, baseline; T2, 2nd-year-follow-up; T3, 3rd-year-follow-up;*** $p < .001$

Cohen' $d = .20$), and the resilience at T3 was significantly higher than that at T1 ($t = 5.30, p < .001$, Cohen' $d = .21$). There was no significant difference between the resilience at T2 and T3.

For life satisfaction, a main effect was shown for time, $F = 9.92, p < .001, \eta^2 = .01$. Further pairwise comparisons indicated that the life satisfaction at T1 was significantly higher than that at T2 ($t = 3.98, p < .001$, Cohen' $d = .17$), and the life satisfaction at T3 was significantly higher than that at T2 ($t = 3.60, p < .001$, Cohen' $d = .14$). There was no significant difference between the life satisfaction at T1 and T3.

Correlation Analysis of Social Support, Resilience, Life Satisfaction and Positive Mental Health

Correlations among the variables are displayed in Table 3. There was a significant correlation between social support and resilience and life satisfaction and positive mental health each year. T1 social support was positively associated with T2 resilience ($r = .12, p < .01$) and T2 life satisfaction ($r = .12, p < .01$). T1 resilience was positively associated with T2 social support ($r = .21, p < .001$) and T2 life satisfaction ($r = .23, p < .001$). T1 life satisfaction was positively associated with T2 social support ($r = .28, p < .001$) and T2 resilience ($r = .24, p < .001$). T2 social support was positively associated with T3 resilience ($r = .26, p < .001$) and T3 life satisfaction ($r = .24, p < .001$). T2 resilience was positively associated with T3 social support ($r = .29, p < .001$) and T3 life satisfaction ($r = .30, p < .001$). T2 life satisfaction was positively associated with T3 social support ($r = .20, p < .001$) and T3 resilience ($r = .30, p < .001$).

Cross-Lagged Panel Modeling

Cross-lagged analysis was used to investigate the interaction between social support and positive mental health at three time points (Fig. 1). The cross-lagged model has a good fitting index, $\chi^2(2) = 62.77, p < .001, CFI = .945, GFI = .973, RMSEA = .202$ (90% CI [.160, .246]). After controlling for the correlation and stability of social support and positive mental health, T1 social support cannot significantly predict T2 positive mental health ($\beta = .02, p > .05$). T1 positive mental health significantly predicted T2 social support ($\beta = .19, p < .001$). However, after controlling for other variables of T2, T2 social support can significantly predict T3 positive mental health ($\beta = .10, p < .01$). Similarly, T2 positive mental health predicted T3 social support ($\beta = .09, p < .05$).

Discussion

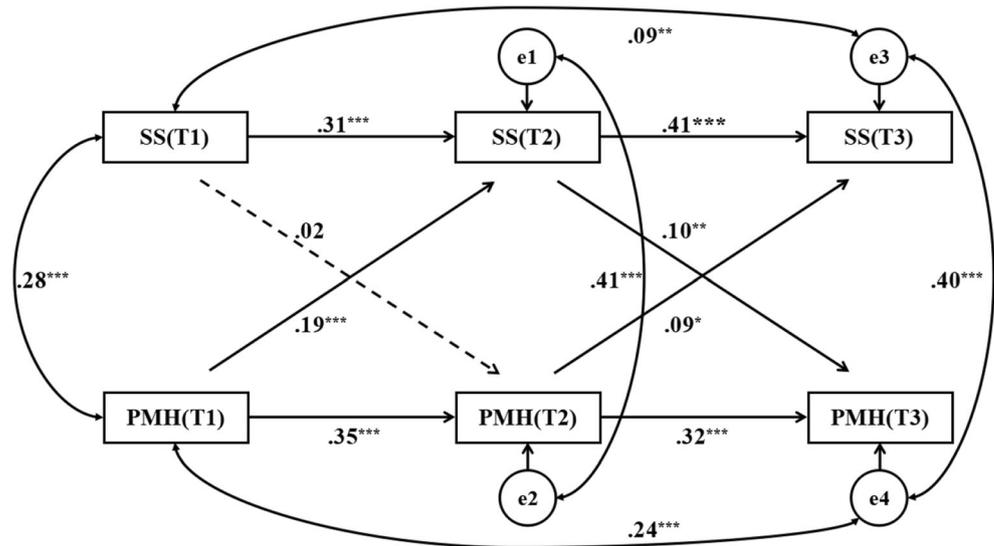
The present study aimed to explore the relationship among social support and positive mental health, such as high levels of social support are often associated with high levels of positive mental health. Social support, as protective factors of resilience and life satisfaction, are very important in improving college students' positive mental health. This study shows that social support is related to the resilience and life satisfaction of college students, which is consistent with previous studies (Eisman et al., 2015; Zhu, 2015; Zhou & Lin, 2016; Sharma, 2017; Bilgin & Taş, 2018). Based on the stress-buffer model (Aneshensel & Stone, 1982; Che, Cash, Ng, Fitzgerald, & Fitzgibbon, 2018; Hornstein & Eisenberger, 2017), social support often plays a role when people are under

Table 3 Pearson correlation analysis of social support, resilience, life satisfaction and positive mental health at each time point

	SS (T1)	SS (T2)	SS (T3)	RS (T1)	RS (T2)	RS (T3)	LS (T1)	LS (T2)	LS (T3)	PMH (T1)	PMH (T2)	PMH (T3)
SS(T1)	1											
SS(T2)	.37***	1										
SS(T3)	.35***	.48***	1									
RS(T1)	.25***	.21***	.29***	1								
RS(T2)	.12**	.46***	.29***	.29***	1							
RS(T3)	.23***	.26***	.53***	.44***	.38***	1						
LS(T1)	.30***	.28***	.29***	.40***	.24***	.30***	1					
LS(T2)	.12**	.33***	.20***	.23***	.59***	.30***	.36***	1				
LS(T3)	.18***	.24***	.36***	.23***	.30***	.57***	.38***	.42***	1			
PMH(T1)	.33***	.29***	.34***	.85***	.31***	.45***	.82***	.34***	.36***	1		
PMH (T2)	.14***	.46***	.28***	.29***	.94***	.39***	.32***	.83***	.38***	.36***	1	
PMH (T3)	.23***	.29***	.51***	.39***	.39***	.90***	.38***	.40***	.86***	.46***	.43***	1

SS Social Support, RS Resilience, LS Life Satisfaction, PMH Positive Mental Health; T1, baseline; T2, 2-year-follow-up; T3, 3-year-follow-up; ** $p < .01$, *** $p < .001$

Fig. 1 Cross-lagged panel model of social support and positive mental health. Note. Cross-lagged structural model for social support and positive mental health. The standardized coefficients were displayed in Model. e, measurement error; SS, social support; PMH, Positive Mental Health; T1, baseline; T2, 2-year-follow-up; T3, 3-year-follow-up; * $p < .05$, ** $p < .01$, *** $p < .001$



stress to reduce the negative psychological consequences of stress. Support from parents, teachers and family members will make individuals have higher psychosocial ability, and good social support will often lead to a higher level of mental health. Social support plays an important role as a protective factor for individual development (Keyes, 2006; Sarason, Levine, Basham, & Sarason, 1983). This study shows that social support is associated with positive mental health of college students, which is consistent with previous studies on college students (Chui & Chan, 2017; Reid, Holt, Bowman, Espelage, & Green, 2016). As expected, our analyses testify the relationship between social support and positive mental health.

In terms of positive mental health, the study found that the overall resilience and life satisfaction level of college students are high. The resilience of college students presents a rising trend. Consistent with most research findings, college students' resilience is above average (Erdogan, Ozdogan, & Erdogan, 2015). And the life satisfaction of college students shows a decreasing trend between T1 and T2, and an increasing trend between T2 and T3. It can be seen from the results that college students have a high degree of life satisfaction at T1 and the lowest at T2. Life satisfaction of adolescents is an important component of positive mental health, and some previous studies have found that life satisfaction of adolescents decreases with age (Shek, Yu, Wu, Zhu, & Chan, 2017). But in other studies, life satisfaction is relatively stable in adolescent development (Suldo & Huebner, 2004). While these studies focused on adolescents in a critical transition from childhood to adulthood, this study examined the life satisfaction of college students, who also entered a new stage of life. A study shows that the life satisfaction of medical students declined from the first year to the third year of medical school and remained low until graduation (Kjeldstadli et al., 2006). However, some studies have shown that college students can

keep a satisfied attitude towards their life (Shek et al., 2017). These different results indicate that college students' life satisfaction varies and is also susceptible to other factors. For our study, it is possible that freshmen have high expectations of college life and therefore report high life satisfaction (Bergin & Jimmieson, 2017), but life satisfaction begins to decline after they try to finish heavy schoolwork and suffer from stress (Rezaei & Jeddi, 2020). Their life satisfaction increases as students get used to college life, find the life purpose (Wilcox & Nordstokke, 2019; Zhang, Ewalds-Kvist, Li, & Jiang, 2019), or academic stress starts to decrease.

This study established a cross-lagged panel model to verify the relationship between college students' social support and positive mental health. It indicated that T1 social support cannot predict T2 positive mental health, while T2 social support can predict T3 positive mental health. In the first year of college, students have not established enough external resource, such as friend support, teacher support and so on. Thus, the level of positive mental health is mainly affected by the stable internal resources that affect the development of mental health. In the third year of college, students have established external resources, social support has a greater impact on life satisfaction the following year. This is in line with previous studies, such as a large sample of college students showed a significant correlation between social support and positive aspects of mental health (Hefner & Eisenberg, 2009). A cross-sectional study of Chinese adolescents showed that support from family and teachers was also significantly associated with positive mental health (Guo et al., 2018). Social support can regulate the relationship between college adaptation and positive mental health (Chui & Chan, 2017). And social support can significantly predict the life satisfaction (Zhou & Lin, 2016). Support has a significant positive conditional effect on life satisfaction in a longitudinal study. For instance, low social support is important risk factor for low life satisfaction (Suldo & Huebner,

2004). Meanwhile, studies have shown that peer support makes an important contribution to adolescents' resilience (Sewasew, Braun-Lewensohn, & Kassa, 2017). It can be said that social support can predict individual resilience. In this study, we emphasize the perceived support of students. The Received support is affected by perceived support of individuals, which reduces the relationship between received support and lower depressive symptoms (Eagle et al., 2019). Compared with the received support, perceived support is more related to beneficial psychological results, which may help individuals to continuously perceive the availability and control of support resources under pressure (Hartley & Coffee, 2019). Therefore, not only friends, teachers and family members are required to provide more support to help students improve their social network. What is more important is the students' views on social support, that is, students' evaluation of their own social support. Schools can set up some related activities or courses to help students deepen their perception of the environment and correctly evaluate their social support, so as to improve their adaptability and life satisfaction.

Consistent with our hypothesis, the results indicating that positive mental health can predicted the level of social support one or two year later. In previous studies, positive mental health often appears as a result variable (Marino, Hirst, et al., 2018). As a predictive variable, positive mental health enables people to cope with stress and adversity in life, helping to realize their potential. Empirical results suggest that higher levels of positive mental health can help increase the regularity of social rhythm (Cai et al., 2017). Positive mental health can moderate the association between risk factors and suicidal behavior (Siegmann et al., 2019). At the same time, studies have shown that positive mental health can help individuals improve their work performance and establish working relationships (Davenport, Allisey, Page, Lamontagne, & Reavley, 2016). For adolescents and young adults, positive mental health effectively predicted less problematic Internet use (Marino et al., 2018). Previous studies have shown that there is a significant correlation between positive mental health and social support. This study further suggests that higher level of positive mental health can increase social support, which means that individuals with a higher level of positive mental health can better use their social support system to cope with difficulties and solve the adverse situations, so as to protect their mental health. In a word, college students with higher levels of positive mental health in their first year of college are more likely to get social support in their third year of college, which may help improve their positive mental health during the college.

There are some deficiencies in this study. Firstly, all variables were tested through a questionnaire survey, and the subjects filled out the questionnaire in a self-reported way. The answers presented in the survey are allfixed, and environmental factors are not strictly controlled, which easily affects the

research results. This makes it difficult for us to figure out the reasons behind these answers. Furthermore, this study does not measure an essential component of the resilience process: adverse environment. We conceptualize emerging adulthood as a challenging developmental period that requires the development of new competencies, but it may be overstated. In order to study resilience more accurately, future studies should include an investigation of individual adverse environments. In addition, as a longitudinal study of college students' mental health, the changes in life satisfaction, social support and resilience in each year are of great concern. However, it is a great pity that this study could not follow the group of students in their second year of college. Despite some limitations, this study preliminarily demonstrated the relationship between social support and positive mental health through a four-year longitudinal design of a large sample of college students. College students are at a critical stage from adolescence to adulthood. This period is often faced with changes in mental health status. In order to improve the positive mental health of college students, social support provided by others is indispensable. This study suggests that social work should aim at helping students manage interpersonal relationships and establish social support networks when it involves community service for college Students. The social workers can form interest groups, growth groups, interpersonal groups, development groups, psychological training camps to enhance the communication between students, improve the relationship between students, and then establish social support network, improve the positive mental health of college students. The university can set up some courses to help students build their relationships after entering the university, which can not only improve their social support at that time, but also ensures a higher level of positive mental health over a four-year period.

Conclusion

This study provides a longitudinal evidence for the development of social support and positive mental health of college students. The level of social support, resilience and life satisfaction of college students are changing with the grade increase. The mutually reinforcing relationship between social support and positive mental health was different during the college.

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Compliance with Ethical Standards

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

Ethical Approval Ethical approval was obtained from the Research Ethics Committee of Shanghai Normal University. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee.

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

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