

ORIGINAL CONTRIBUTION

PTSD Among Shidu Parents in China: The Roles of Personality Types and Social Support

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Background: The psychological problems of Shidu Parents (SDP) under the China's One-Child Policy have been documented. The purpose of this study was to investigate the relationships among personality types, social support, and post-traumatic stress disorder (PTSD) in SDP. **Methods:** The PTSD Checklist-Civilian Version (PCL-C), The Big Five Personality Traits (NEO), and Social Support Revalued Scale (SSRS) were administered to the sample of 149 SDP who were over 50 years old and had lost their only child more than one year ago. **Results:** Among SDP, mothers were more likely to develop PTSD than fathers ($\chi^2 = 11.16, p < 0.01$). Parents who were extraverted had a lower risk of developing PTSD-related symptoms ($\chi^2 = 8.58, p < 0.01$), and the effect of neuroticism was significant ($\chi^2 = 23.73, p < 0.01$). The more social support parents utilized, the lower the incidence of PTSD ($t = 4.56, p < 0.01$). The result of multilevel linear regression showed that sex, neuroticism, and objective social support remained significantly different after combining all personality types and social support systems in the same model. Social support partially mediated the relationship between neuroticism and PTSD. Meanwhile, it was a complete mediator between extraversion and PTSD. **Conclusions:** Female sex/gender, neuroticism, and introversion were risk factors of developing PTSD, while receiving social support protected SDP from developing PTSD symptoms. Losing an only child is undoubtedly an enormous disaster for the family, which has become a huge, unavoidable social problem that must be addressed in China.

BACKGROUND

Shidu Parents (SDP) is a term for couples in their 40s or 50s who lost their only child due to disease or accidents and are past childbearing age. Losing an only child is one of the most devastating traumas which leads

to higher risks for developing mental and physical health problems [1,2]. Research shows that suicide risk is particularly high during the first month after the loss [3]. SDP will likely struggle for the rest of their lives with this dreadful trauma. A significant number of them were immersed in the grief of loss and developed symptoms of

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Abbreviations: PTSD, Post-traumatic stress disorder; PCL-C, PTSD Checklist-Civilian Version; SDP, Shidu Parents; NEO, The Big Five Personality Traits; SSRS, Social Support Revalued Scale.

Keywords: Shidu Parents (SDP), PTSD, personality types, social support

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post-traumatic stress disorder (PTSD). Previous studies showed that PTSD was prevalent and serious in SDP [4-7]. Over 32.6% SDP suffered from PTSD, experiencing daily longing or yearning for their lost child [7]. Similarly, survivors of 2008 Sichuan earthquake who have lost their closest family members, including children, showed the most severe PTSD and depression symptoms [8]. Another study came to the consistent conclusion that the loss of a child strongly predicted PTSD symptoms among parents [9]. Likewise, researchers also found that 22.2% of the SDP met the prolonged grief disorder (PGD) criteria and they had higher comorbidity of PTSD or depression compared with those without PGD [10,11].

PTSD is a trauma- and stress-related disorder that usually occurs in response to an overwhelmingly terrifying or life-threatening event [12,13]. Grief is the feeling that occurs when people lose their loved ones; this feeling is worse when the loss is sudden, traumatic, and unexpected. PTSD symptoms can appear and develop if such grief lasts for a long time [14]. Traumatic exposure can cause short- or long-term stress reactions among individuals as well as negatively influence a person's physical and mental health [15]. Specifying the risk factors and the mechanism of PTSD development in SDP will help to provide theoretical basis for further targeted intervention. Personality is the most stable psychological coping resource, which determines people's basic attitude towards reality and the way of reacting, and distinguish individuals based on their patterns of thinking, feeling, and behaving across different situations. Personality types are assumed to be categories that reflect vulnerability and resilience to difficulties and mental distress, including PTSD [16]. Researchers found that high negative emotionality (NEM) and low positive emotionality (PEM), characterized by the tendencies to direct post-traumatic distress inwardly through shame, self-defeating, anxious processes, avoidance, depression, and withdrawal, were the primary personality risk factors for PTSD [17]. Furthermore, it has been shown that PTSD symptoms positively relate to negative emotionality, neuroticism, and harm avoidance, as well as traits like anxiety [18]. However, PTSD has been shown to be negatively associated with traits like extraversion, conscientiousness, hardiness, and optimism, which indicates that some personality types exhibited protective factors against developing PTSD. Meanwhile, lower social support is another important contributor to the development and maintenance of post-traumatic stress symptoms [19-21]. Social support is available assistance from others such as family members, friends, neighbors, and organizations, which is likely essential for maintaining mental and physical health. Numerous studies found that people with more social support have an increased likelihood of survival, and those with lower social support have a higher

risk of developing diseases such as cancer, cardiovascular disease, and mental disorders [22-24]. Sufficient and positive social support would enhance one's resilience to stress and difficulties as well as reduce the possibility of developing mental disorders such as PTSD [25]. Through social support, one becomes involved in more social activities, which moderates the relationship between PTSD and quality of life in SDP [26]. Besides, it has been found that personality traits also related to social support. Such as, low extraversion and high neuroticism are negatively associated with perceived social support [27]. Similarly, high extraversion influences both high engagements in social activities and perceived social supports, and high neuroticism predicts both low social engagements and social support [28].

In conclusion, emerging studies suggest that there exist correlations between personality traits, social support, and PTSD. Extraversion and neuroticism in personality traits can affect individuals' access to social support, and social support will affect the level of PTSD. Therefore, this study assumes that there is a correlation between personality traits, social support, and PTSD in SDP, and social support plays a mediating role between personality traits and PTSD.

METHODS

Data Collection and Recruitment

This cross-sectional survey was conducted through face-to-face interviews in Shanghai, China, using a stratified sampling method to recruit the study population. The inclusion criteria were (1) individuals or couples who were at least 50 years old and lost their only child; (2) parents who did not have the desire to adopt a child and were infertile; (3) parents who were able to complete the questionnaire independently; and (4) parents who lost their only child more than one year previously. Parents with cognitive impairments or mental illnesses were excluded. A total of 160 people participated in the interview. The final sample included 149 participants.

This face-to-face interviews used the Questionnaire on the Mental Health of Citizens in Shanghai conducted by the Naval Military Medical University in Shanghai, China. The questionnaire received approval from the Ethics Committee of the Naval Military Medical University. The study was considered as not causing any other economic burden or injury. Given that some negative emotions might be elicited during the investigation, psychological experts and investigators were present and ready to provide help for participants. Participants' information was only used for research, and the protocol strictly abided by the Chinese Statistical Law to ensure that participants' personal information was kept confidential.

MEASURES

Post-traumatic Stress Disorder

The symptoms of PTSD were measured using the Chinese Translated Version of the PTSD Checklist–Civilian Version (PCL-C) developed by Weathers et al. [29]. The PCL-C used 17 items to assess three kinds of symptoms: Re-experiencing traumatic experience (group B symptoms), Emotional numbness and avoidance (group C symptoms), and Hyperarousal (group D symptoms). The sum of total score over the cut-point score of 50 points was considered to confirm a provisional diagnosis. Regarding the Chinese version of the PCL, a clinical psychologist using the Chinese version of PCL-C determined that the Cronbach alpha coefficient was 0.82 and the split-half reliability was 0.65 [30].

Personality

Personality was measured using the Big Five Personality Traits (NEO) created by Costa and McCrae based on the big five personality theory [31]. The present study used a Chinese version which was revised by Zhang and was translated into Chinese and back-translated into English in 2000. The Cronbach α coefficients in this study were 0.82, 0.75, 0.63, 0.72, and 0.81 for the neuroticism, extraversion, openness, agreeableness, and conscientiousness scales, respectively [32]. A total of 25 items were used to assess personality and divided into five traits: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Each item contained two opposing characteristics; a five-points Likert-type scale was used to self-report the score closest to the participants' characteristics. A summed score across these questions was used. Scores of 45 and 55 were used as thresholds. For each trait, a summed score lower than 45 was considered as not applicable to that trait, whereas a score higher than 55 was considered as defining that personality trait. Scores between 45 and 55 were considered as neutral.

Social Support

Social support was measured using the Social Support Revalued Scale (SSRS) [33], which had 10 items and three dimensions: subjective support (items 2, 6, and 7), objective support (items 1, 3, 4, and 5), and the use of support (items 8, 9, and 10). High scores reflected high levels of subjective support, objective support, and support use. The sum of total score was considered as high level of social support. Scores less than 20 were considered as less social support, 21-30 were considered as general social support, and 31-40 were considered as satisfactory social support. The results were explained to the participants with the help of professional psychiatrists. The Cronbach α of the total scale was 0.896, and the Cronbach α values

of the three dimensions were 0.849, 0.825, and 0.833, respectively [34].

Sociodemographic Information

Data on participants' sociodemographic backgrounds (age, gender) were obtained from the interviewer and the self-administered questionnaire.

DATA ANALYSES AND STATISTICAL METHODS

One-hundred-and forty-nine valid questionnaires were collected from 160 SDP based on the inclusion criteria (five declined our investigation, and six failed to meet the criteria). Analyses were conducted using IBM Statistical Package for Social Sciences version 26 (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp) and PROCESS V3.3 (Hayes AF, 2022). Chi-square and t-tests were carried out for further analysis on differences in demographic information, personality characteristics, and social support of the SDP with different level of PTSD. The interpretation degree of the variable was analyzed using a hierarchical linear regression, and the demographic variables, personality variables, and social support variables were included in the equation in three steps. $P < 0.05$ was considered as statistically significant in most of the test analyses, while $P < 0.01$ was considered as denoting a statistically significant difference in the paired comparison of chi-square test. Finally, the mediating effects of social support on personality traits and PTSD were investigated, with the total score of social support as the mediating variable, personality traits as the independent variable and PTSD score as the dependent variable.

RESULTS

The demographic information and personality characteristics of the SDP was presented in Table 1. Sixty-point-four percent were women, and the mean age was 62.25 years, 32.9% older than 65 years old. In the distribution of personality traits, 28.4% of the SDP had neurotic personality traits, 35.8% had extraversion, 5.4% had openness, 46.6% had agreeableness, and 61.5% had conscientiousness. Forty-six-point-three percent of the SDP reported satisfactory social support, while 10.1% reported less social support.

Table 1 also showed the differences in PTSD levels among the SDP with regard to age, sex, personality characteristics, and social support system use. Approximately 30.9% of parents developed PTSD-related symptoms. Chi-square tests revealed no significant difference in terms of age group ($\chi^2 = 0.64, p = 0.422$), while the prevalence of PTSD in females were significantly higher than

Table 1. Bivariate Analysis of Covariates and PTSD Diagnosis Among Parents Who Lost Their Only Child, Shanghai, 2015 (n=149)

	n	%	PTSD diagnosis				χ^2	p-value
			Negative		Positive			
			n	%	n	%		
Total	149	100.0	103	69.1	46	30.9		
Sex							11.160	0.001**
Male	59	39.6	50.0	84.8	9	15.2		
Female	90	60.4	53	58.9	37	41.1		
Age							0.645	0.422
50-64	100	67.1	67	67.0	33	33.0		
Older than 65	49	32.9	36	73.5	13	26.5		
Personality characteristics								
Neuroticism							26.956	<0.001***
Not Neurotic	69	46.6	62	89.9	7	10.1		
Neutral	37	25.0	22	59.5	15	40.5		
Neurotic	42	28.4	19	45.2	23	54.8		
Extraversion							9.526	0.009**
Not Extraverted	34	23.0	17	50.0	17	50.0		
Neutral	61	41.2	43	70.5	18	29.5		
Extraverted	53	35.8	43	81.1	10	18.9		
Openness							1.561	0.458
Not Open	97	65.5	69	71.1	28	28.9		
Neutral	43	29.1	30	69.8	13	30.2		
Open	8	5.4	4	50.0	4	50.0		
Agreeableness							1.147	0.564
Not Agreeable	18	12.2	12	66.7	6	33.3		
Neutral	61	41.2	40	65.6	21	34.4		
Agreeable	69	46.6	51	73.9	18	26.1		
Conscientiousness							0.940	0.625
Not Conscientious	4	2.7	2	50.0	2	50.0		
Neutral	53	35.8	36	67.9	17	32.1		
Conscientious	91	61.5	65	71.4	26	28.6		
Social Support							14.218	<0.001***
Less	15	10.1	7	46.7	8	53.3		
General	65	43.6	38	58.5	27	41.5		
Satisfactory	69	46.3	58	84.1	11	15.9		
			Mean	SD	Mean	SD	t	p-value
Objective Social Support			8.31	4.02	5.91	2.71	3.686	<0.001***
Subjective Social Support			18.10	5.05	15.00	3.69	3.737	<0.001***
Social Support Utilization			7.04	2.08	5.76	1.93	3.537	<0.001***
Total Score of Social support			33.50	9.22	26.67	6.35	4.562	<0.001***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Correlation Analysis of PTSD with Social Support and Personality Characteristics

	1	2	3	4	5	6	7	8	9
1. Neuroticism	1.000								
2. Extraversion	-.367**	1.000							
3. Openness	.172*	-.152	1.000						
4. Agreeableness	-.250**	.439**	-0.004	1.000					
5. Conscientiousness	-.365**	0.118	-.197*	.270**	1.000				
6. Objective social support	-.239**	.313**	-0.046	.309**	0.053	1.000			
7. Subjective social support	-.358**	.313**	-0.007	.385**	0.122	.646**	1.000		
8. Social support utilization	-.235**	.476**	-0.022	.215**	-0.034	.414**	.344**	1.000	
9. PCL-5 score	.536**	-.390**	.196*	-.194*	-0.127	-.424**	-.422**	-.302**	1.000

Note: * $p < 0.05$, ** $p < 0.01$

that in males (41.1% vs. 15.2%, $\chi^2 = 11.16$, $p < 0.01$). The prevalence of PTSD was also different in different personality traits, and the chi-square test was significant in neuroticism and extraversion, not significant in openness, agreeableness, or conscientiousness. Pairwise comparison in neuroticism showed that the prevalence of PTSD in the non-neuroticism group was lower than that of the neutral group and the neuroticism group (10.1% vs. 40.5% and 54.8%, $p < 0.01$), and no significant difference between the neutral group and the neuroticism group was found. Pairwise comparison in extraversion showed that the prevalence of PTSD in the introversion group was higher than that of the extraversion group (50.0% vs. 18.9%, $p < 0.01$), and not significant in other pairwise comparisons. Different levels of social support were also significantly associated with the prevalence of PTSD, the prevalence of PTSD in patients with satisfactory social support was significantly lower when compared with parents with less or general social support (15.9% vs. 53.3% and 41.5%, $p < 0.01$). All social support system t -tests revealed the following significant differences between parents who had PTSD symptoms and those without PTSD symptoms: objective social support ($t = 3.69$, $p < 0.01$), subjective social support ($t = 3.74$, $p < 0.01$), social support utilization ($t = 3.54$, $p < 0.01$), and total score of social support ($t = 4.56$, $p < 0.01$).

Correlation analysis of PTSD with social support and personality characteristics is shown in Table 2. Neuroticism was significantly correlated to the other four personality dimensions, and agreeableness was related to extraversion ($r = 0.439$, $p < 0.01$). Neuroticism, extraversion, and agreeableness were significantly correlated with the three dimensions of social support. All personality traits but conscientiousness were significantly related to PTSD scores, and so were three dimensions of social support.

Table 3 shows the hierarchical linear regression of personality characteristics and social support on PCL-C scores. In model 1, the effect of demographic information on PTSD was investigated, and the gender factor was significant ($\Delta R^2 = 0.11$, $F = 8.934$, $p < 0.001$). In model 2, five dimensions of personality traits entered the equation; neuroticism, and extraversion were significantly associated with PTSD ($\Delta R^2 = 0.29$, $F = 13.472$, $p < 0.001$). In model 3, when examining the relationship of all personality types and social support systems on PTSD in the full model, only gender ($\beta = 0.22$, $p < 0.01$), neuroticism ($\beta = 0.38$, $p < 0.001$), and objective social support ($\beta = -0.21$, $p < 0.05$) remained significant ($R^2 = 0.46$, $\Delta R^2 = 0.06$, $F = 11.832$, $p < 0.001$).

Figure 1 and Table 4 show the mediating effect of social support between personality traits and PTSD. The mediating effect was tested with the total score of social support as the mediating variable, neuroticism, or extraversion as the independent variable and PTSD score as the dependent variable, with other personality variables and demography variables as covariables. Figure 1A shows that social support was a partial mediator between neuroticism and PTSD. The total effect of neuroticism on PTSD was 0.477, and the indirect effect mediated by social support was 0.069, with the mediating effect accounting for 14.5% of the total effect (Table 4). The model significantly explained 43.8% (R^2 , $p < 0.01$) of variance in PTSD. When objective social support, subjective social support, and social support utilization were added simultaneously into the model as mediators, the indirect effect was not significant in all three paths (see Appendix A: Table 1 and Figure 1). Figure 1B shows that social support was a complete mediator between extraversion and PTSD. The indirect effect mediated by social support was -0.105, and the model significantly explained 45.8%

Table 3. Hierarchical Linear Regression of Personality Characteristics and Social Support on PCL-C Scores

	Model 1				Model 2				Model 3			
	B	SE	β	p-value	B	SE	β	p-value	B	SE	β	p-value
Sex	11.72	2.80	0.34	<0.001***	8.71	2.38	0.25	<0.001***	7.65	2.32	0.22	0.001**
Age	0.17	0.28	0.05	0.538	0.14	0.25	0.04	0.566	0.13	0.24	0.04	0.578
Neuroticism					0.48	0.08	0.43	<0.001***	0.42	0.08	0.38	<0.001***
Extraversion					-0.31	0.13	-0.19	0.021*	-0.22	0.14	-0.13	0.116
Openness					0.17	0.13	0.09	0.181	0.18	0.12	0.10	0.148
Agreeableness					-0.07	0.14	-0.04	0.629	0.06	0.14	0.04	0.643
Conscientiousness					0.17	0.17	0.07	0.318	0.11	0.16	0.05	0.479
Objective social support									-0.94	0.38	-0.21	0.013*
Subjective social support									-0.25	0.30	-0.07	0.411
Social support utilization									-0.23	0.61	-0.03	0.706
R ²	0.110				0.402				0.463			
Adjust R ²	0.097				0.373				0.424			
Δ R ²	0.110				0.293				0.061			
F	8.934***				13.472***				11.832***			

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Unstandardized Total, Direct and Indirect Effect of Personality on PCL-C score through Social Support

Effects on PCL-5 score	Variables	Effects	SE	<i>p</i> -value	Bootstrap 95%CI	
					Lower	Upper
Total effect (c)	Neuroticism	0.477	0.084	<0.001***	0.310	0.644
Direct effect (c')	Neuroticism	0.408	0.083	<0.001***	0.244	0.571
Indirect effect	Social Support	0.069	0.032		0.014	0.142
Total effect (c)	Extraversion	-0.310	0.133	0.021*	-0.573	-0.047
Direct effect (c')	Extraversion	-0.205	0.130	0.117	-0.463	0.052
Indirect effect	Social Support	-0.105	0.046		-0.205	-0.026

Note: * $p < 0.05$, *** $p < 0.001$

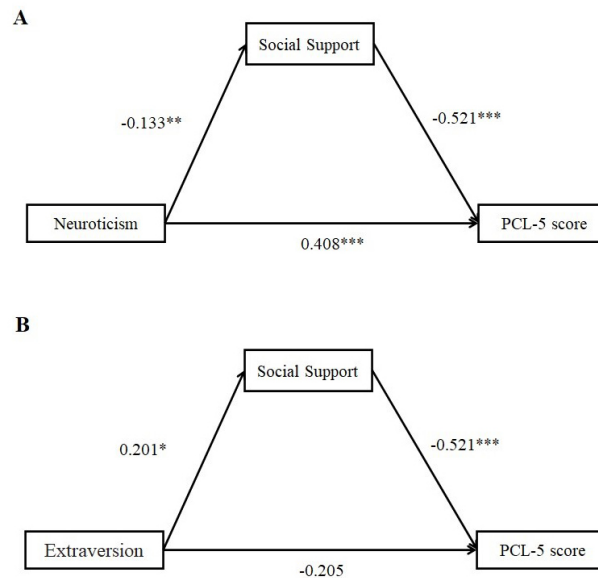


Figure 1. Path analysis diagram of mediation model. Note: all the coefficients were unstandardized beta. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

($R^2, p < 0.01$) of variance in PTSD. Objective social support was a complete mediator between extraversion and PTSD (indirect effect = -0.095, 95%CI= -0.207 to -0.016) when objective social support, subjective social support, and social support utilization were added simultaneously into the model as mediators (see Appendix A: Table 1 and Figure 2).

DISCUSSION

According to ancient Chinese Confucianism, children are regarded as extensions of the family carrying the hope and happiness of parents, who are the main caregiver of their parents when they become adults [35,36]. Losing a child is a devastating trauma for parents, espe-

cially for “the only child” families. The present study was to investigate relationships among personality types, social support, and PTSD in SDP. It was showed that female sex/gender, neuroticism, and introversion were risk factors of developing PTSD. Those who received more social support were less likely to develop PTSD symptoms. Previous results had evidenced certain personality types and social support differed between SDP with and without PTSD symptoms. SDP who were not neurotic, extraverted, and received more social support tended to have a lower risk of developing PTSD. In addition, Johan found that Type D personality, a personality type characterized by high negative affectivity and introversion, was a risk factor for PTSD [37], which was also consistent with our results.

Moreover, personality type and social support systems might interact to influence the development of PTSD among SDP. The consistent results have been found in the most studies referring to the physical and psychological outcomes of losing a child, but few studies discussed how personality type and social support were correlated with PTSD. Our results showed that neuroticism was a risk factor for developing PTSD, whereas extraversion was a protective factor. Any type of social support can protect SDP against developing PTSD symptoms. However, when considered all of the factors together, only sex, neuroticism, and objective social support maintained significantly related to PTSD symptoms. Through further analyzing, the mediating effect of social support between personality traits and PTSD was found. Social support total score partially mediated the relationship between neuroticism and PTSD, and objective social support was a complete mediator between extraversion and PTSD. Neuroticism reflects the process of individual emotion regulation, the tendency to experience negative emotions and emotional instability. Neurotic individuals are more likely to experience setbacks in social situations, so they may reduce social participation, resulting in less social support. This was in line with the literature from other studies indicating associations of lowered positive and cognitive coping modes with unstable personality traits like neuroticism. Those seeking for less social support had lower emotional self-control and the poorer quality of life, which led to more mental illness [38-40]. Meanwhile, extraverted people were more willing to use social support. Their need of social support and information seeking was further increased after sudden traumatic events occurred. Thus, they were more able to take their minds off of tragedy and sadness.

Furthermore, our results indicated that females were more likely to develop PTSD than males. The different roles that mothers and fathers play during childrearing might be the main reason for this result. In China, mothers spend more time and have a closer relationship with their children. Thus, losing a child was a more devastating trauma for mothers than fathers, both emotionally and physically [33,41]. In summary, it is important to offer support to those parents to prevent worsening PTSD, especially for mothers and parents with negative personality types and less social support.

Despite several important results of this study, there are some limitations that warrant discussion. The survey was conducted in Shanghai. Compared to the whole country, the sample size was relatively small. The particularity of subjects increased the difficulty of recruiting to some extent. Thus, the current findings might not be highly representative of the general population of China. All of these problems might bias and influence the results of the analysis.

To conclude, this study provided evidence that personality types and social support influenced the development of PTSD in SDP. The government and society should offer more support and services to help improve the health condition and quality of life of those parents who have lost their only child. More psychological healthcare and objective support for SDP are needed to reduce their pain and encourage them to communicate with more people. Presently, the three-child policy implemented by the country will also greatly reduce the occurrence of SDP.

CONCLUSIONS

SDP have more severe symptoms and a higher rate of developing PTSD. Female sex/gender, neuroticism, and introversion were risk factors of developing PTSD, while those who received more social support were less likely to develop PTSD symptoms. When all of the factors were considered together, sex, neuroticism and objective social support maintained a significant relationship with PTSD symptoms. Social support partial mediated the relationship between neuroticism and PTSD. Meanwhile, it was a complete mediator between extraversion and PTSD. SDP, a unique group in China, should be treated with more importance, and further research should be conducted to improve this problem and help them live better lives.

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Appendix A: Supplementary material

Table 1: Unstandardized Total, Direct and Indirect Effect of Personality on PCL-C score through Social Support

Effects on PCL-5 score	Variables	Effects	SE	<i>p</i> -value	Bootstrap 95%CI	
					Lower	Upper
Total effect (c)	Neuroticism	0.459	0.077	<0.001***	0.306	0.612
Direct effect (c')	Neuroticism	0.409	0.077	<0.001***	0.257	0.561
Indirect effect	Objective Social Support	0.032	0.024		-0.008	0.085
	Subjective of Social Support	0.015	0.027		-0.036	0.076
	Social Support Utilization	0.002	0.009		-0.011	0.028
	Total Indirect effect	0.049	0.034		-0.013	0.119
Total effect (c)	Extraversion	-0.370	0.117	0.002**	-0.601	-0.138
Direct effect (c')	Extraversion	-0.233	0.125	0.065	-0.481	0.015
Indirect effect	Objective Social Support	-0.095	0.049		-0.207	-0.016
	Subjective of Social Support	-0.018	0.037		-0.105	0.046
	Social Support Utilization	-0.023	0.055		-0.133	0.086
	Total Indirect effect	-0.137	0.064		-0.269	-0.016

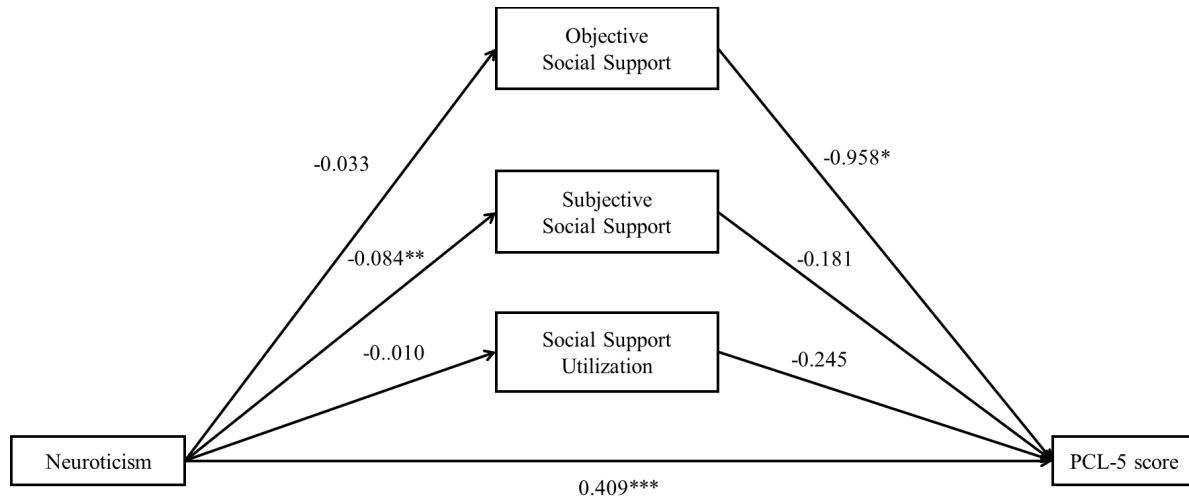


Figure 1: Multiple mediator model.

Note: All the coefficients were unstandardized beta. * $p < 0.05$, ** $p < 0.01$.

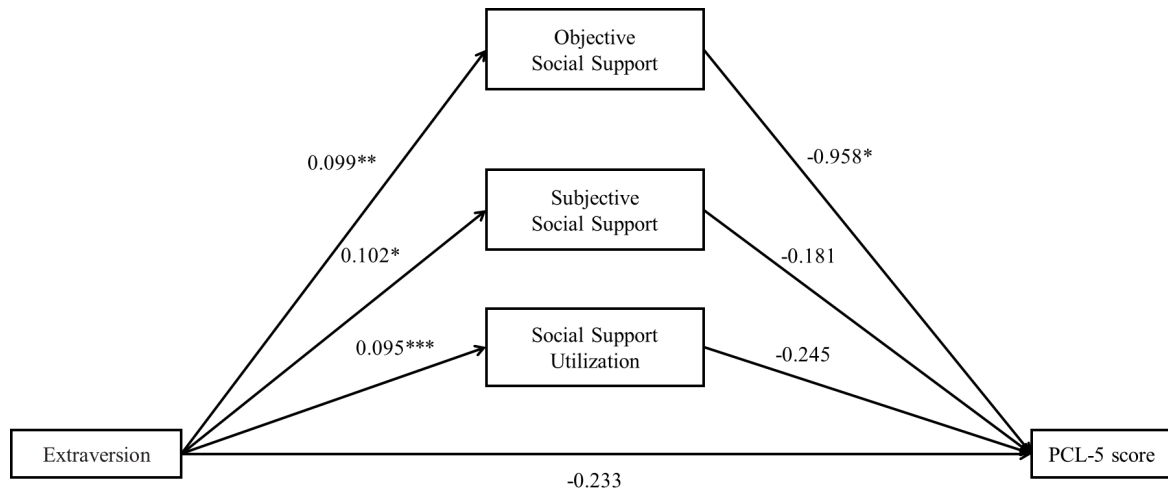


Figure 2: Multiple mediator model.

Note: All the coefficients were unstandardized beta. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.