



# The relationship between conscientiousness and posttraumatic stress disorder among young Chinese firefighters: The mediating effect of perceived social support

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## ABSTRACT

Previous studies have showed that personality traits are associated with posttraumatic stress disorder (PTSD). The present study investigated the mediating effect of perceived social support between conscientiousness and PTSD in young Chinese firefighters. A total of four hundred and nine firefighters were recruited from a firefighter school in this study. The Chinese big five personality inventory, the PTSD checklist for the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), and perceived social support scale were used to test personality traits, PTSD and perceived social support from family and from others. The results showed that conscientiousness has a significant positive correlation with perceived social support and has a significant negative correlation with PTSD. Moreover, support from others mediated the relationship between conscientiousness and PTSD, while support from family didn't. The results of this study suggest that support from others plays a key role in the relationship between conscientiousness and PTSD of young Chinese firefighters. Clinical implications for trauma interventions and limitations were discussed.

## 1. Introduction

Over the last few decades, research has provided extensive empirical support for the fact that people who were exposed to a wide range of extreme life events may develop mental problems, such as depression, anxiety, and posttraumatic stress disorder (PTSD; Ayub et al., 2015; Cao et al., 2015; McLean et al., 2015). Among these, PTSD is the typical negative psychological problem (Chen et al., 2014; Wilson et al., 2004).

Except direct victims of the disaster, rescuers such as firefighters, also have a high possibility to develop PTSD. Firefighters have the permanent responsibility for the tasks of firefighting and salvage operation, and they often witness the trauma and death scenes, which may lead to mental pressure (Bryant and Harve, 1995; Katsavouni et al., 2015; Wagner et al., 1998). What's more, there are some people in China who have the dual identities of a firefighter and a soldier. In daily life, they live in the army and participant in the military training, while they do fire-fighting work outside when there are fire disasters. Therefore, they also have the pressure of the military training except the stress of facing crisis situations, which increase the risk of PTSD. A survey of firefighters after a forest fire rescue found that the prevalence

rate of PTSD among them was 13% (McFarlane, 1988). Moreover, there is a study that has documented the prevalence rate of 33% for firefighters in Hurricane Katrina (Sharma et al., 2008). Since firefighters are susceptible to PTSD, it is of great importance to investigate the impact factors of PTSD among them, trying to improve this critical situation.

Currently, researchers are paying more attention to the correlative factors of PTSD (Silvestre et al., 2014). In previous studies, in addition to the disaster itself, there are many factors associating with PTSD, such as genetic factors, education, exposure to trauma, the fear of death, the preexisting appraisal, the death of a colleague, physical injury and personality traits (Andrew et al., 2013; Berant and Pizem, 2015; Berninger et al., 2010; Bryant and Guthrie, 2007; Jakovljević, 2012; Jakovljević et al., 2012).

Among those, personality traits are widely perceived as contributing to PTSD (Bryant and Harvey, 1995; Gil, 2005; Miller and Resick, 2007; Wolf et al., 2012). The firefighters take high responsibility for saving lives in a fire disaster. Therefore, a sense of conscientiousness is crucial to them. There are different personality models in interpreting the relationship between the personality and PTSD (Miller, 2003). A study proved that conscientiousness is significantly associated with positive

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changes after traumatic events (Campbell-Sills et al., 2006). Caska et al. (2013) also suggested that higher extraversion and conscientiousness may ease the symptoms of PTSD. However, to our knowledge, it is still not very clear how conscientiousness is related to PTSD. This current study will explore the internal mechanism of the relationship between conscientiousness and PTSD by taking the perspective of perceived social support into consideration.

Perceived social support is individuals gain spiritual and material support from their relationships, which can relieve the mental stress reaction and improve their social adjustment (Schwarzer and Knoll, 2007). According to the direct effect model of perceived social support, perceived social support can directly contribute to posttraumatic adaptation by enhancing people's healthy behavior (Ali et al., 2012; Ma et al., 2011; Neria et al., 2008). There is growing amount of research that has studied the mitigation effect of perceived social support on PTSD, and the results showed that perceived social support can directly alleviate PTSD (Platt et al., 2014; TARRIER and Humphreys, 2004; Wright et al., 2013). In a supportive perceived social environment, individuals can be encouraged to think positively about traumatic events, promote the integration of trauma significance, and reduce the negative effects of the events. However, in indifferent perceived social environments, individuals cannot effectively receive cognitive exposure to the traumatic events, so the trauma will have a greater negative impact on them (Carpenter et al., 2010). Research also showed that the lack of perceived social support can increase the PTSD (Vranceanu et al., 2007).

Moreover, there is also a direct relationship between personality and perceived social support. Pierce et al. (1997) demonstrated that perceived social support can reflect personality and information processing mode. For example, Bowling et al. (2005) found that extraversion and agreeableness are associated with perceived social support. What's more, individuals who have a higher score in conscientiousness are prone to interpret other's behavior conduct as prosocially supportive behavior (Moran et al., 1997), then positive emotions can lead to a greater perceived social support (Wood et al., 2008).

From a review of previous theories and empirical studies, we can find that conscientiousness is associated with perceived social support, and perceived social support can decrease PTSD (Ali et al., 2012; Ma et al., 2011; Moran et al., 1997). Therefore, perceived social support will probably act as a mediator in the relationship between conscientiousness and PTSD. To be specific, firefighters with high levels of conscientiousness may perceive increased perceived social support, which may lead to low levels of PTSD symptoms. To our knowledge, this mediation model has not been studied in prior studies among firefighters.

Besides, some psychologists have pointed out that different sources and types of perceived social support may have different influence in the same variance (Sun et al., 2014). Families and friends are the two most important parts in our life. Prior studies found that support from family is important in the process of reducing PTSD (e.g., Batten et al., 2009; Scarpa et al., 2006). Families can provide timely and full support when individuals are in trouble, which may help them recover from traumatic events. What's more, some firefighters live in the military that is a closed-off environment, in which they meet peers and supervisors almost every day, which is also an important support system. The study among firefighters found that support from supervisors has significantly negative correlation with perceived stress (Varvel et al., 2007), which may have a great effect on the recovery from PTSD. In addition, Laffaye et al. (2008) found that support from peers is the most common source of emotional support among veterans. Therefore, in this study, we choose the two scores of perceived social support (i.e. support from family and support from others) to examine their key role on the relationship between conscientiousness and PTSD.

Above these, in this study we hypothesized that (1) conscientiousness has the negative correlation with PTSD; (2) conscientiousness has the positive correlation with perceived social support; (3) perceived

social support and PTSD have the negative correlation; (4) support from family and support from others play the mediating role between conscientiousness and PTSD.

## 2. Methods

### 2.1. Participants and procedures

We recruited firefighters in a firefighter military school in September 2017. Those firefighters have the dual identities of a firefighter and a soldier. They lived in the army for at least 2 years before they moved to firefighter school and can't go back home unless on vacation (they have 30 days of vacation a year). In daily life, they participate in military training in the army, while they do fire-fighting work outside when there are fire disasters. One month ago, they moved to the firefighter military school (consisting of firefighters, supervisors, and some teachers) from different armies to learn more about fire-fighting, where they also can't go back home until winter and summer vacation in China.

A total of 409 firefighters completed the whole process of study. The participants were all males. The mean age of the firefighters was 21.34 ( $SD = 1.58$ ) years, and the age range was 18–29 years. Of this, 32.8% ( $n = 134$ ) of them worked less than 3 years, 27.1% ( $n = 111$ ) worked for 3 years, and 31.3% ( $n = 128$ ) worked over 3 years (36 participants didn't report their working years). In terms of education, 8.1% ( $n = 33$ ) of them were junior high school or below, 75.3% ( $n = 308$ ) of them were high school, and 14.2% ( $n = 58$ ) of them were Bachelor (10 participants didn't report their education). Table 1 shows the details.

The research project was approved by The School of Psychology Nanjing Normal University Institutional Review Board. The purpose of the study was highlighted before the survey, and the informed-consent forms were provided to all participants. We used the questionnaire packets to assess the personality, perceived social support and PTSD of firefighters in the firefighter school. The test was conducted in a quiet environment with the organization of the instructor. Participants were initially asked to write their number on the first page and provide demographic information including their gender, age, and working years et al. They were then asked to complete the remaining questionnaires. After the questionnaires were completed, we offered participants group counseling for relaxation and compensation.

### 2.2. Measures

#### 2.2.1. The Chinese big five personality inventory (CBF-PI)

The Chinese Big Five Personality Inventory (CBF-PI) (Wang et al., 2010) was used to assess dimensions and facets of The Big Five. The questionnaire was adapted for people who received secondary education and were 16 years old or older in China. This 20-item questionnaire

**Table 1**  
Demographics of firefighters.

	N	Percentage
<b>Age</b>		
<21	130	31.8%
21–22	176	43.0%
>22	92	22.5%
<b>Working years</b>		
<3	134	32.8%
3	111	27.1%
>3	128	31.3%
<b>Education</b>		
Junior high school or below	33	8.1%
High school	308	75.3%
Bachelor	58	14.2%

Note. 11 participants didn't report their age; 36 participants didn't report their working years; 10 participants didn't report their education.

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