

To the Graduate Council:

I am submitting a thesis written by Ju-Miao Cheng entitled “The Relationship between Personality, Stressors, and Strains among Chinese Workers.” I have examined the final copy of this thesis and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science with a major in Industrial / Organizational Psychology.

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Christopher J. L. Cunningham, Chairperson

We have read this thesis and recommend its acceptance:

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Mike Biderman, Committee Member

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Bart Weathington, Committee Member

Accepted for the Graduate Council:

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Dean of The Graduate School

THE RELATIONSHIP BETWEEN PERSONALITY, STRESSORS, AND STRAINS  
AMONG CHINESE WORKERS

A Thesis

Presented for the

Master of Science Degree

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## **ABSTRACT**

The present study examined how the Five Factor Model (FFM) personality traits influence the stress process experienced by manufacturing workers ( $N = 439$ ) in the People's Republic of China (PRC). More specifically, the mediating effects from perceived stressors (interpersonal conflict, quantitative workload, and role conflict, and role ambiguity) on the relationships between three FFM traits (neuroticism, extraversion, and conscientiousness) with strains (depression, emotional exhaustion, and job satisfaction) were examined. The moderating effects of three FFM traits on the relationships between perceived stressors and strains were also examined. Hierarchical multiple regression analyses and multiple mediation bootstrap analyses were conducted to examine hypotheses. The results indicated that FFM traits related to how individuals perceive stressors. Perceived role conflict mediated the relationships between neuroticism, with job satisfaction.

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## I. INTRODUCTION

Occupational stress is believed to have detrimental effects on individuals' well-being and on organizational outcomes, such as performance and turnover (Lu, Sui, & Cooper, 2005). It is also believed to reduce productivity and increase healthcare costs, rates of absenteeism and turnover, and on-the-job accidents (Jex, 2002, p. 179). Additionally, it is estimated that billions of dollars have been extracted from the U.S. economy due to occupational stress-related issues (e.g., Aldred, 1994; Mulcahy, 1991). More and more states have recognized the legitimacy of psychological strains caused by stressful work environments that are not only physical in nature (i.e., not just due to high workloads or overly demanding supervisor). Therefore, it is clear that working under stressful working conditions has an important and real impact on employees, organizations, and society (Jex, p. 180).

In occupational stress research, from a stimulus-response definition, stress refers to, "the overall process by which the work environment may negatively impact employees" (Jex, 2002, p. 182). Stressors and strains are involved in the stress process. A stressor is defined as the "aspects of work environment that may require some adaptive response on the part of employees" (Jex, p. 182). Role stressors (i.e., role ambiguity and role conflict), workload, interpersonal conflict, organizational constraints, job autonomy, and participative decision making are commonly studied job-related stressors (Jex, p. 189). Strains represent, "a multitude of maladaptive ways employees may react to stressors" (Jex, p. 182). Strains are typically categorized into three types: psychological (i.e., frustration and depression), physical (i.e., headache), and behavioral (i.e., job performance, absenteeism, and turnover) (Jex, p. 183).



Historically, the causality in the stressor-strain model was believed to flow from stressors as stimuli to strains as outcomes (Vollrath, 2001). However, some researchers also suggest that stress does not always result directly from the source of pressure (a stressor) itself, but also from individuals' perception of that stressor (Lu et al., 2005). Therefore, it is common in stress research to use self report measures of perceived stress when assessing a person's degree of stress.

More and more studies are examining how personality affects the stress process experienced by workers and people in general. Personality is now commonly viewed as an important determinant of health and psychological outcomes (Bolger & Zuckerman, 1995; Haslam, Whelan, & Bastian, 2009). Type A/B behavior patterns (Ganster, Schaubroeck, Sime, & Mayes, 1991; Jamal, 1999; Lee, Ashford, & Jamieson, 1993) and other personality traits such as locus of control (Cauce, Hannan & Sargeant, 1992; Parkes, 1984; Srivastava, 2007) and hardiness (Callahan, 2000; Pengilly & Dowd, 2000; Vogt, Rizvi, Shipherd & Resick, 2008) have all been shown to influence how a person is affected by stress. Recently, Five Factor Model (FFM) traits have also been studied in the stress process (e.g., Bolger & Zuckerman; Conard & Matthews, 2008; Grant & Langan-Fox, 2007; Miller, Griffin, & Hart, 1999). Building on this literature, the present study examined how FFM traits influence the stress process.

#### *FFM Traits and the Stress Process*

The concept of the FFM traits (e.g., the "Big-Five") is most commonly associated with McCrae and Costa (1986). This multifactor model incorporates the five trait characteristics of openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (McCrae & John, 1992; Penley & Tomaka, 2002). Openness is related to

curiosity, and willingness to try new things (McCrae & John; Penley & Tomaka). Conscientiousness is related to persistence, carefulness, responsibility, and hardwork (McCrae & John; Barrick & Mount, 1991). Extraversion is related to being energetic and talkative (McCrae & John; Penley & Tomaka). Agreeableness is related to being kind, generous, and forgiving (McCrae & John; Penley & Tomaka). Neuroticism is related to hostility, anxiety, and depression (McCrae & John; Penley & Tomaka).

Past research has shown several of these FFM traits to be important individual characteristics in the stressor-strain process. For example, Bolger and Zuckerman (1995) suggest there are two stages in the stress process: stressor exposure and reactivity. “Exposure is the extent to which a person is likely to experience a stressful event. Reactivity is the extent to which a person is likely to show emotional or physical reactions to a stressful event” (Bolger & Zuckerman, p. 890). Stressor exposure may mediate the relationship between FFM traits and reactivity. FFM traits may moderate the influence of reactivity on strain. At present, at least two FFM traits, neuroticism (Bolger & Zuckerman, 1995) and conscientiousness (Miller, Griffin & Hart, 1999) appear to play a role in both of these stages.

Bolger and Zuckerman (1995) examined the relationship of neuroticism with interpersonal conflicts as the stressor, and psychological distress including anger, anxiety, and depression as the outcomes. Their results found that neuroticism influenced both stressor exposure and reactivity. More specifically, neuroticism was associated with higher levels of interpersonal conflicts which led to higher levels of anger and depression. Neuroticism also moderated the relationship between interpersonal conflicts and anger and depression. The nature of this moderation was such that the relationship between

conflicts and the negative outcomes was more pronounced for those with higher levels of neuroticism. Hence, the FFM trait of neuroticism showed a mediating and moderating effect in the stressor-strain process from Bolger and Zuckerman's study.

Bolger and Zuckerman (1995), however, only examined the influence of one FFM trait, neuroticism, and one stressor, interpersonal conflict. The remaining traits in the FFM framework and many other types of common stressors (e.g., workload, role conflicts, role ambiguity) need to be considered as we attempt to more fully understand the linkage between personality traits and occupational stress. In addition, other outcomes need to be studied, such as physical health, illness, and job satisfaction. Miller et al.'s (1999) study provided further support for the effect of FFM traits on both stressor exposure and reactivity stages. Miller et al. examined the direct influence of conscientiousness on perceived workload and role clarity. The moderating effect of conscientiousness on the relationship between perceived stressors and both psychological distress and job satisfaction was also examined. Miller et al. found that conscientiousness affected individuals' exposure to role clarity. Conscientiousness was also found to moderate the effect of reactivity toward role clarity on both psychological distress and job satisfaction.

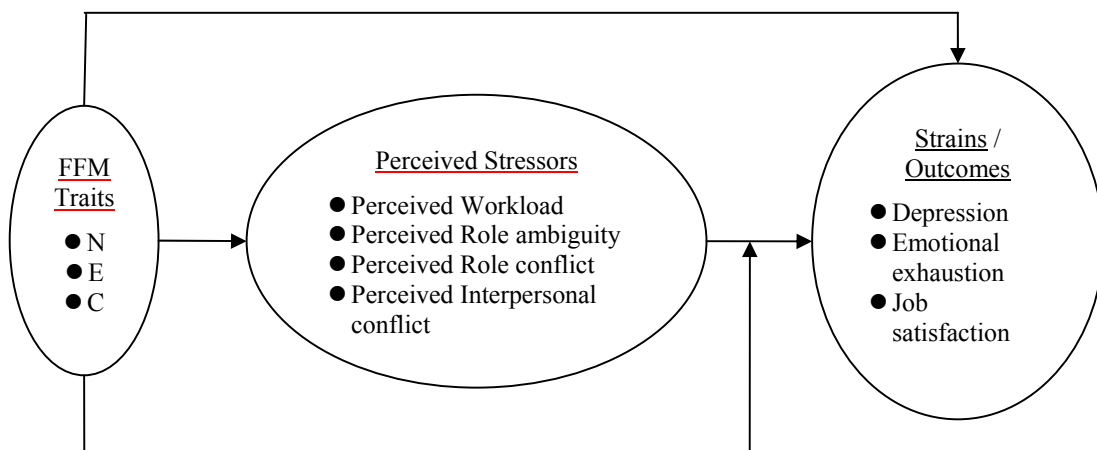
A recent study done by Grant and Langan-Fox (2007) further expanded the knowledge base in this area. Examining both mediation and moderation, they found that extraversion directly affected physical health and job satisfaction and that neuroticism directly influenced participants' perceptions of future job ambiguity and reported substance use, role conflict, job underutilization, behavioral disengagement, and physical health. Grant and Langan-Fox's analysis also demonstrated that the relationship between

neuroticism and physical health was mediated by reported role conflict and substance use. Conscientiousness was also found to moderate the relationship between perceived role ambiguity and conflict, with job satisfaction (detail will be discussed in a later section). Grant and Langan-Fox's study provided further evidence that FFM traits may be involved at various points in the stress process as direct influencers, mediators, and moderators of other process variables.

### *The Present Study*

Although empirical support exists for the importance of personality characteristics in the stress process (e.g., Bolger & Zuckerman, 1995; Grant & Langan-Fox, 2007), most of this support comes from studies with samples from Western populations (Berg & Piatariu, 2005). The problem of occupational stress is especially relevant for countries that are undergoing enormous economic and social changes, such as the People's Republic of China (PRC; Lu et al., 2005; Siu, Spector, Cooper, Lu, & Yu, 2002). Data suggests that occupational health researchers, managerial executives, and government policy makers in the PRC have noticed the importance of occupational stress (Shanfa, Sparks, & Cooper, 1998). However, few studies have extended the existing literature on western population, and examined how personality characteristics such as the FFM traits play a role in the stressor-strain process in Chinese populations, such as the PRC. Therefore, there is a lack of existing theoretical or empirical evidence to draw from in this regard. The purpose of the present study, therefore, is to investigate the relationships between FFM traits and stressor and strain constructs found in existing Western-based findings in a sample from the PRC.

Based on the previously discussed research which suggests that FFM traits may play both mediating and moderating roles in the perceived stressor-strain process, figure 1 presents the hypothesized role of FFM traits in the perceived stressor-strain process. In general, and pulling from existing theory, FFM traits are expected to moderate the relationship between perceived stressors and strain-related outcomes including attitudes and health-related symptoms. This moderating influence is expected based on previous research that has shown some FFM traits to influence individuals' exposure to the stressors which will lead to the outcomes, while other FFM traits have been shown to buffer or exacerbate the effect of stressors on strains.



*Figure 1.* General Model of the FFM Traits in the Stress-Strain Process. N = neuroticism; E = extraversion; C = conscientiousness.

To build on previous work in this area, the present study most closely extended Bolger and Zuckerman's (1995) study and reexamined Grant and Langan-Fox's (2007) work within a non-Western sample of participants by hypothesizing and testing a more

complete model that incorporates both moderation and mediation components and three of the five FFM traits (neuroticism, extraversion, and conscientiousness). Openness to experience and agreeableness were not included in the present research because few existing studies have shown these personality traits to play any consistent role in the stressor-strain process.

Perceived stressors of interest in this study included interpersonal conflict, workload, role ambiguity, and role conflict. Outcomes included depression, emotional exhaustion, and job satisfaction. The following sections provide support for the generally hypothesized paths summarized in Figure 1.

### *Neuroticism*

According to McCrae and John (1992), neuroticism, “represents individual differences in the tendency to experience distress, and in the cognitive and behavioral styles that follow from this tendency” (p. 195). Neuroticism is related to negative emotionality, and is in contrast with emotional stability. Individuals with high neuroticism are more likely to have negative feelings including anxiety, nervousness, worry, sadness, and tension (McCrae & John; Pervin & John, 1999). Individuals with low neuroticism do not necessarily have better mental health, but are more likely to be calm, relaxed, even-tempered, and generally unflappable (McCrae & John).

Previous research has shown neuroticism to be negatively related with job satisfaction (e.g., Judge, Heller, & Mount, 2002; Van den Berg & Piatariu, 2005; Watson & Slack, 1993) and life satisfaction (Hayes & Joseph, 2003). Neuroticism has also been shown to be a powerful predictor of depression (Conard & Matthews, 2008; Enns & Cox, 1997; Golden-Kreutz & Anderson, 2004; Hayes & Joseph; Van den Berg & Pitarui;

Vearing & Mak, 2007), and significantly and positively related to somatic complaints (Van den Berg & Piataru). Research also suggests that individuals with higher levels of neuroticism will perceive or be willing to complain more about bodily sensations (Watson & Pennebaker, 1989). It is clear that neuroticism is negatively related to job satisfaction and positively related to health-related symptoms, such as depression and somatic complaints.

Conard and Matthews (2008) found additional support for a direct and positive relationship between neuroticism and reported stress. Miller et al. (1999) also found that neuroticism was positively related to perceived work overload and negatively related to role clarity. Grant and Langan-Fox (2007) found that neuroticism was positively related to role conflict which in turn led to higher physical symptomatology. Finally, as already mentioned, Bolger and Zuckerman (1995) found that individuals with higher neuroticism showed greater exposure to interpersonal conflict and greater anger and depression when reacting to the interpersonal conflict. These studies showed a consistent result that high neuroticism leads to greater perceived stressors which in turn lead to greater strains.

Based on these existing findings, it appears that neuroticism has potentially direct effects on important health-related outcomes, and on perceived stressors which will lead to strains. It also may function as a moderator of the relationship between perceived stressors and strains. As such, the present study was designed to test the hypothesis that individuals with higher neuroticism will report higher levels of perceived stressors than individuals with lower neuroticism, and that the perceived stress will lead to higher levels of strains, but lower levels of job satisfaction. Figure 2 summarizes the effect of neuroticism in the stressor-strain process. Hypotheses were stated more formally below.

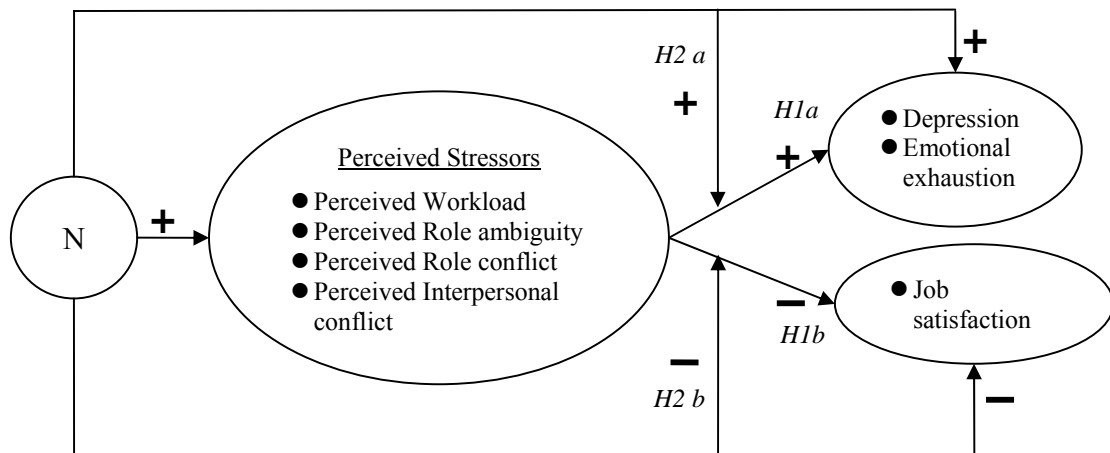


Figure 2. Model of the Effect of Neuroticism (N) on Stress Process.

*Hypothesis 1a:* The relationship between neuroticism and psychological strains is at least partially mediated by a person’s perceived stressors. Higher levels of neuroticism are associated with higher levels of perceived stressors, a perception which leads to higher levels of depression and emotional exhaustion.

*Hypothesis 1b:* The relationship between neuroticism and job satisfaction is at least partially mediated by a person’s perceived stressors. Higher levels of neuroticism are associated with higher levels of perceived stressors, a perception which leads to lower levels of job satisfaction.

Additionally, Penley and Tomaka (2000) found that neuroticism was negatively associated with perceived coping ability. According to Folkman and Lazarus (1980), coping is defined as “the cognitive and behavioral efforts made to master, tolerate, or reduce external and internal demands and conflicts among them” (p. 223).



Problem-focused coping attempts to directly manage the source of stress (i.e., the stressor), while emotion-focused coping is typically targeted as management of one's experienced emotional distress (i.e., a form of strain, such as depression).

Research has shown that neuroticism is positively associated with emotion-focused and avoidance coping and negatively associated with problem-focused coping (e.g., O'Brien & DeLongis, 1996; Vollrath, Torgersen, & Alnæs, 1995; Watson & Hubbard, 1996). Given that neuroticism is linked with a negative general appraisal tendency and ineffective coping, neuroticism is likely to increase the positive effect of perceived stress on strains regardless of the types of perceived stress.

Several studies have identified a stress-exacerbating effect from neuroticism. For example, Hudiburg, Pashaj, and Wolfe (1999) found that the effect of computer stress on anxiety and somatic symptomatology was different on individuals with different levels of neuroticism. More specifically, the positive relationship between computer stress and anxiety and somatic symptomatology was more positive on individuals with higher levels of neuroticism. Bolger and Zuckerman (2005) found that neuroticism moderated the relationship between interpersonal conflicts and distress including anger and depression. The positive relationship between interpersonal conflict and distress was more positive in individuals with higher levels of neuroticism. Therefore, neuroticism was expected to enhance the positive effect from perceived stressors on strains and negative effect on satisfaction.

*Hypothesis 2a:* Neuroticism moderates the relationship between perceived stressors and psychological strains, such that perceived stressors have a more

positive effect on psychological strains for those with high levels of neuroticism than for those with low levels of neuroticism.

*Hypothesis 2b:* Neuroticism moderates the relationship between perceived stressors and job satisfaction, such that the perceived stressors have a more negative effect on job satisfaction for those with high levels of neuroticism than for those with low levels of neuroticism.

### *Extraversion*

Extraversion is related to one's positive emotions (Pervin & John, 1999) and interactional orientation (i.e., the way in which people relate to others; Saucier, 1994 a). Therefore, individuals with high extraversion are more likely to be talkative and outspoken, seek excitement, interact with people, and enjoy social interactions (McCrae & John, 1992; Pervin & John). Research has found extraversion to be negatively related to depression and somatic complaints (Van den Berg & Piatariu, 2005). Additionally, research found that extraversion was positively related to job satisfaction (Judge et al., 2002; Van den Berg & Piatariu; Watson & Slack, 1993). The previous findings suggested that extraversion would be negatively associated with psychological strains and positively associated with job satisfaction.

Hemenover (2001) found that extraversion was associated with a positive processing bias which led to greater reliance on the positive features showed in the stressors. In other words, the positive processing bias would likely direct individuals' attention toward positive content or away from negative content. Therefore, individuals

with higher levels of extraversion may report lower level of perceived stressors because their attention is on more positive content due to a positive processing bias.

Vollrath, Knoch, and Cassano (1999) found that extraversion was associated with lower appraisal of daily hassles and lower levels of perceived health risks. However, Conard and Matthews (2008) found that extraversion was positively correlated with workload. The workload variable contained number of work hours per week, current number of academic credits, number of hours spent per week in sports, and time spent in student activities, community service or other activities. Further examination indicated that extraversion was only positively related to hours spent in sports. Therefore, Conard and Matthews's finding was not contrary to the concept of the positive processing bias. Individuals with higher levels of extraversion can still be expected to report fewer levels of perceived stressors.

Accordingly, the present study tested the hypotheses that individuals with higher level of extraversion would report lower levels of perceived stressors than individuals with lower level of extraversion. The lower levels of perceived stressors was then expected to lead to lower levels of psychological strains, but higher levels of job satisfaction. Figure 3 summarizes the effect of extraversion in the stressor-strain process. Hypotheses were stated formally below.

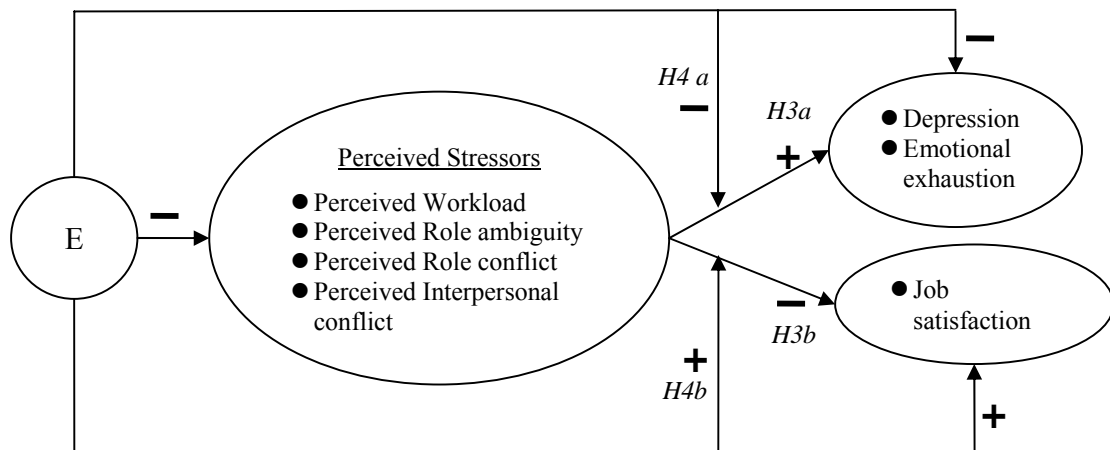


Figure 3. Model of the Effect of Extraversion (E) on Stress Process.

*Hypothesis 3a:* The relationship between extraversion and psychological strains is at least partially mediated by a person's perceived stressors. Higher levels of extraversion are associated with lower levels of perceived stressors, a perception which leads to lower levels of depression and emotional exhaustion.

*Hypothesis 3b:* The relationship between extraversion and job satisfaction is at least partially mediated by a person's perceived stressors. Higher levels of extraversion are associated with lower levels of perceived stressors, a perception which leads to higher levels of job satisfaction.

Additionally, individuals with higher levels of extraversion were expected to have more social support resources than individuals with lower extraversion. More specifically, some research on personality and coping found that extraversion is positively related to emotional and instrumental social support seeking (e.g., Vollrath et al., 1995; Watson &

Hubbard, 1996.) Social support is associated with psychological benefits which can decrease the effect of stress (Seidman, Shrout, & Bolger, 2006).

Research found that extraversion was positively related to problem-focused and emotion-focused coping (e.g., O'Brien & DeLongis, 1996; Penley & Tomaka, 2002). Penley and Tomaka found that extraversion was positively related to perceived coping ability. Further, Penley and Tomaka found that individuals with higher level of extraversion reported higher satisfaction with how they handled the stressors. McCrae and Costa (1986) found that individuals who used more effective ways of coping reported higher level of happiness and life satisfaction.

Therefore, the existing literature suggests that extraversion can serve to influence the negative effect of perceived stressors on both strains and satisfaction. Given that extraversion has been found to be related to a positive general appraisal tendency, it is likely to reduce the positive effect of perceived stressors on strains and negative effect on satisfaction despite the types of perceived stressors.

*Hypothesis 4a:* Extraversion moderates the relationship between perceived stressors and psychological strains, such that perceived stressors have a less positive effect on psychological strains for those with higher levels of extraversion than for those with lower levels of extraversion.

*Hypothesis 4b:* Extraversion moderates the relationship between perceived stressors and job satisfaction, such that perceived stressors have a less negative effect on job satisfaction for those with high extraversion than for those with low extraversion.

### *Conscientiousness*

Conscientiousness is a personality characteristic related to socially prescribed impulse control (Pervin & John, 1999), persistence, carefulness, responsibility, and tendency to be hardworking (Barrick & Mount, 1991). This characteristic enhances task-directed and goal-directed behaviors. Therefore, individuals with high conscientiousness are more likely to think before acting, perform behaviors of planning and organizing tasks, delay pleasure, and follow norms and rules (McCrae & John, 1992; Pervin & John).

Conscientiousness was found to be negatively associated with depressive symptoms (Hayes & Joseph, 2003; Vearing & Mak, 2007). Research has also found that conscientiousness was positively related to the job satisfaction (e.g., Judge et al., 2002; Van den Berg & Piatariu, 2005) and life satisfaction (e.g., Hayes & Joseph). Based on the previous findings, conscientiousness may have a direct negatively effect on health-related strains and a direct positively effect on job satisfaction.

Individuals with higher conscientiousness are believed to experience fewer disruptions and less stress (Friedman et al., 1995). Vollrath (2000) found that conscientiousness was associated with fewer daily hassles. Miller et al. (1999) found that conscientiousness has been found to be significantly and positively related to role clarity. Extending from these findings, in the present study it was hypothesized that individuals with higher level of conscientiousness would report lower levels of perceived stressors. Further, the lower perceived stressors were expected to lead to lower levels of psychological strains, but higher levels of job satisfaction. Figure 4 summarizes the effect of conscientiousness in the stress-strain process. Hypotheses were stated formally below.

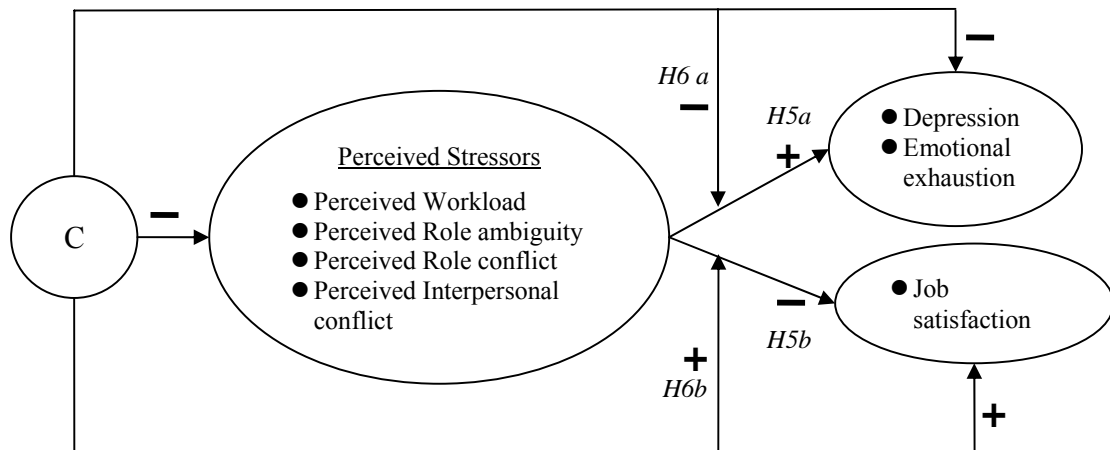


Figure 4. Model of the Effect of Conscientiousness (C) on Stress Process.

*Hypothesis 5a:* The relationship between conscientiousness and psychological strains is at least partially mediated by a person’s perceived stressors. Higher levels of conscientiousness are associated with lower levels of perceived stressors, which lead to lower levels of depression and emotional exhaustion.

*Hypothesis 5b:* The relationship between conscientiousness and job satisfaction is at least partially mediated by a person’s perceived stressors. Higher levels of conscientiousness are associated with lower levels of perceived stressors, which lead to higher levels of job satisfaction.

Additionally, Penley and Tomaka (2002) found that conscientiousness was positively associated with perceived coping ability. Research has shown that conscientiousness was positively associated with problem-focus coping and negatively associated with avoidance coping (e.g., O’Brien & DeLongis, 1996; Penley & Tomaka; Watson & Hubbard, 1996). Given that the nature of conscientiousness (achievement striving, order, self-discipline, and responsibility), positive appraisal tendency, and the

problem-focused coping strategy, conscientiousness is likely to reduce the effect of perceived stress on psychological strains regardless of the types of perceived stress.

Several studies indicated the moderating effect of conscientiousness on the perceived stressors-strains process. For example, Grant and Langan-Fox (2007) found that conscientiousness changed the effect of role ambiguity on job satisfaction. More specifically, the negative relationship between role ambiguity and job satisfaction was less negative among individuals with higher level of conscientiousness. Miller et al. (1999) found that the effect of role clarity on both psychological distress and job satisfaction was changed by the level of conscientiousness. More specifically, the negative relationship between role clarity and psychological distress was less negative among individuals with high level of conscientiousness. The positive relationship between role clarity and job satisfaction was less positive among individuals with high level of conscientiousness.

However, Grant and Langan-Fox (2007) found that conscientiousness worsened the effect of role conflict on job satisfaction which was contrary to their hypothesis and expected to be a less negative relationship mentioned above. The negative relationship between role conflict and job satisfaction was more negative among individuals with higher level of conscientiousness. Grant and Langan-Fox suggested that individuals with high conscientiousness might be unable to retain their rigorousness and high standard of performance under the existing of role conflict, and in turn led to poorer job satisfaction.

Previous studies showed a both negative and positive moderating effect from conscientiousness on the relationship between perceived stressors and strains. The present study reexamined Grant and Langan-Fox's (2007) original hypotheses of the



positive moderating effect of conscientiousness on the relationship between perceived stressors and strains. Based on the nature and the coping strategy of conscientious, and the previous findings about conscientiousness, it was expected in the present study that conscientious would reduce the positive effect from perceived stressors on strains and the negative effect on satisfaction.

*Hypothesis 6a:* Conscientiousness moderates the relationship between perceived stressors and psychological strains, such that perceived stressors have a less positive effect on psychological strains for those with higher levels of conscientiousness than for those with lower levels of conscientiousness.

*Hypothesis 6b:* Conscientiousness moderates the relationship between perceived stressors and job satisfaction, such that perceived stressors have a less negative effect on job satisfaction for those with higher conscientiousness than those with lower conscientiousness.

## II. METHOD

### *Participants and Procedure*

One existing data set collected from organizations in the PRC was used to test the hypotheses in the present study. The data set was collected as part of a larger project during a consulting project in the PRC. Prior to analyses, approval was obtained from the author's university Institutional Review Board (see Appendix B).

Participants were 449 manufacturing employees at an organization in the PRC. Participants' age ranged from 19 to 59 years, with a mean age of 30 ( $SD = 6.26$ ). Sixty-five percent ( $n = 293$ ) of participants were male. Education participants received ranged from 0 to 19 years, with a mean education of 11 years ( $SD = 2.66$ ). Participants' work experience ranged from 1 to 38 years, with a mean of 9 years ( $SD = 5.99$ ). Participants' tenure in the organization ranged from 1 to 30 years, with a mean of 7 years ( $SD = 4.43$ ). Tenure on the current position ranged from 0 to 21 years, with a mean of 5 years ( $SD = 3.78$ ). Eighty percent of participants were single ( $n = 358$ ). Participants' working hours per week ranged from 1 to 71 hours, with a mean of 46 hours ( $SD = 13.40$ ). Most participants worked for either 40 hours per week ( $n = 148$ ; 33%) or 64 hours per week ( $n = 96$ ; 21%).

All measures were translated into Simplified Chinese character and back-translated to check for content accuracy. Demographics and perceived stressors including interpersonal conflict, workload, role conflict, and role ambiguity were collected approximately three months before the collection of outcomes including job satisfaction, emotional exhaustion, and depression. Measures involved in the present study are described below.

## *Measures*

All items for the following scales are presented in Appendix A.

*FFM traits.* Three, eight-item subscales of the Mini-Markers FFM trait scale (Saucier, 1994b) were used for measuring the traits of conscientiousness, extraversion, and neuroticism. The Mini-Markers scale is a shorter version of Goldberg's (1992) 100-item scale for assessing FFM traits. The Mini-Markers scale contains 40 adjectives for assessing the five FFM traits. In the present study participants responded to 24 adjectives that described the three traits of, neuroticism (unenvious, moody, and envious), extraversion (i.e., talkative, quiet, and shy), and conscientiousness (i.e., organized, efficient, and disorganized).

Respondents were asked to rate how accurately the 24 unipolar adjectives describe the respondents at the present time on a nine-point scale ranging from 1 (*extremely inaccurate*) to 9 (*extremely accurate*). The established internal consistency reliabilities for the conscientiousness, extraversion, and neuroticism subscales was .83, .83, and .78 respectively (Saucier). The best reliability estimates (Cronbach's alpha) obtained in the present study were .73 for neuroticism after removing item 5 (*Relaxed*) and item 8 (*Unenvious*), .63 for extraversion after removing item 5 (*Quiet*), and .81 for conscientiousness.

*Interpersonal conflict.* The four-item Interpersonal Conflict at Work Scale (ICAWS) from Spector and Jex (1998) was used to measure this construct. This scale assesses how well the respondent gets along with others at work. In its initial validation study, this scale's established internal consistency reliability was .74 in its initial validation study (Spector & Jex). Respondents were asked to indicate how often getting

into arguments with others occurs at work. How often others “act nasty” is also included in the scale. Participants responded each item on a five-point scale ranging from 1 (*never*) to 5 (*very often*). The internal consistency reliability for this scale in the present study was .68.

*Role conflict.* Five adapted items from Rizzo, House, and Kirtzman’s (1970) original Role Conflict and Ambiguity Scale were used to measure this construct. According to Rizzo et al. (1970), role conflict was defined, “in terms of the dimensions of congruency-incongruency or compatibility-incompatibility in the requirements of the role, where congruency or compatibility is judged relative to a set of standers or conditions which impinge upon role performance” (p.155). Role conflict is related to the existence of competing and inconsistent expectations of a particular role. The internal consistency reliability for this subscale was found to range from .70 to .85 (González-Romá & Lloret, 1998; Kelloway & Barling, 1990). Participants were asked to answer each statement on a seven-point scale ranging from 1 (*very false*), 2 (*false*), 3 (*somewhat false*), 4 (*neither true nor false*), 5 (*somewhat true*), 6 (*true*), to 7 (*very true*). The higher score represents higher level of role conflict. The internal consistency reliability for this scale in the present study was .79.

*Role ambiguity.* Five adapted items from Rizzo et al.’s (1970) original Role Conflict and Ambiguity Scale were used to measure this construct. According to Rizzo et al. (1970), role ambiguity was defined as the extent to which an individual is unclear about the role responsibility and requirement, and the predictability of the role performance. The internal consistency reliability for this subscale was found to range from .78 to .82 (González-Romá & Lloret, 1998; Kelloway & Barling, 1990).

Participants were asked to answer each statement on a seven-point scale ranging from 1 (*very false*), 2 (*false*), 3 (*somewhat false*), 4 (*neither true nor false*), 5 (*somewhat true*), 6 (*true*), to 7 (*very true*). The higher score represents lower level of role ambiguity.

Therefore, the scores of all five items were reversed. The internal consistency reliability for this scale in the present study was .85.

*Workload.* The five-item Quantitative Workload Inventory (QWI) from Spector and Jex (1998) was used to measure this construct, assessing one's perception of the amount of work they have to do. The established internal consistency reliability for this scale is .82 (Spector & Jex). Respondents were asked to indicate how often each item occurs. Participants responded each item on a five-point scale ranging from 1 (*less than once per month or never*) to 5 (*several times per day*). Higher scores represent a higher level of workload. The internal consistency reliability for this scale in the present study was .80.

*Depression.* A shortened eight-item version of the full 20-item Center for Epidemiologic Studies Depression (CES-D) Scale developed by Radloff (1977) was used to measure this construct. CES-D scale is designed to measure self-reported depressive symptomatology in the general population. In a previous study, the internal consistency reliability of this brief measure ranged from .86 to .92 (Wang, 2007). In the present study, respondents were asked to rate the frequency of experienced depressive symptoms during the past week on a 4-point scale ranging from 1 (*Rarely or none of the time/ less than 1 day*), 2 (*Some or a little of the time/ 1-2 days*), 3 (*Occasionally or a moderate amount of the time/ 3-4 days*) to 4 (*Most or all of the time/ 5-7 days*). The internal consistency

reliability for this scale in the present study was .77 after removing two reverse-coded items: item 4 (“*You enjoyed life*”) and item 8 (“*You were happy*”).

*Emotional exhaustion.* The nine-item Emotional Exhaustion (EE) subscale from Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981) were used to measure this construct. According to Maslach and Jackson, EE subscale is designed to “measure feelings of being emotionally overextended and exhausted by one’s work.” Items were written as statements associated with individuals’ feelings or attitudes. The internal consistency reliability for this subscale was found to be .85 in Platsidou and Agaliotis’s (2008) study, and .91 in Brouwers and Tomic’s (2000) study. Participants were asked to response items on a five-points scale ranging from 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*slightly disagree*), 4 (*neutral*), 5 (*slightly agree*), 6 (*moderately agree*), to 7 (*strongly agree*). The higher scores represent higher degrees of experienced burnout. The internal consistency reliability for this scale in the present study was .90.

*Job satisfaction.* The eight-item version of the Abridged Job in General (AJIG) scale developed by Russell et al., (2004) was used to measure this construct. The AJIG scale is a shorter version of Job in General (JIG) scale. The alpha coefficient of the AJIG scale is .87, and correlation between AJIG and JIG is .97 (Russell et al.). The AJIG scale is designed to measure individuals’ feeling about their job. Each item in AJIG scale contains an adjective which is *Good*, *Undesirable*, *Better than most*, *Disagreeable*, *Makes me content*, *Excellent*, *Enjoyable*, and *Poor* respectively. Five of the items are positive worded and three of them are negative worded. Respondents were asked to answer each item by using “Y” if they agree with the statement, “N” if they disagree with the statement, and “?” if they are not sure or if they are neutral. Answer “Y” to a positive

item or “N” to a negative item is scored 3 points, answer “?” is scored 1 point, and answer “N” to a positive item or “N” to a negative item is scored 0. The raw scores range from 0 to 24. Higher scores represent higher job satisfaction. The internal consistency reliability for this scale in the present study was .70 after removing item 1, *Good*.

### III. RESULTS

#### *Correlations*

Means, standard deviations, and intercorrelations for all study variables are reported in Table 1. The correlations showed two of the FFM traits were significantly associated with only one of the outcomes, job satisfaction: conscientiousness ( $r = -.24, p < .01$ ) and extraversion ( $r = -.16, p < .01$ ). FFM traits also were significantly related to perceived stressors. More specifically, neuroticism was positively related to all four perceived stressors which were interpersonal conflict ( $r = .26, p < .01$ ), quantitative workload ( $r = .09, p < .05$ ), role conflict ( $r = .27, p < .01$ ), and role ambiguity ( $r = .25, p < .01$ ). Extraversion was negatively associated with two perceived stressors: interpersonal conflict ( $r = -.14, p < .01$ ) and role ambiguity ( $r = -.37, p < .01$ ). Conscientiousness was negatively associated with three perceived stressors: interpersonal conflict ( $r = -.24, p < .01$ ), role conflict ( $r = -.17, p < .01$ ), and role ambiguity ( $r = -.47, p < .01$ ). Additionally, two perceived stressors were significantly associated with only one of outcomes, job satisfaction: role conflict ( $r = -.11, p < .05$ ) and role ambiguity ( $r = .10, p < .05$ ).

#### *Analyses*

A series of multiple mediation analyses (Preacher & Hayes, 2008) was conducted to test the hypothesized mediating effects of several perceived stressors on the relationship between each of three FFM traits (neuroticism, extraversion, and conscientiousness) and the three outcomes (depression, emotional exhaustion, and job satisfaction). The multiple mediation technique uses a bootstrap resampling method to generate more stable statistical estimates than would be possible with standard approaches to testing mediation with ordinary least squares regression. In the present



study 5,000 resamples were generated within the analyses. In each model, participants' age, gender, marital status, working hours per week, and the other two personality traits were entered as covariates.

Three hierarchical multiple regression analyses were also conducted to test the hypothesized moderating effects of neuroticism, extraversion, and conscientiousness on the perceived stressor-strain process. Covariates in these analyses included participants' age, gender, marriage status, and working hours per week. The scores of the four covariates, the three FFM traits and the four perceived stressors were first standardized prior to computing cross-product terms and building the regression model for testing, following the guidelines of Cohen, Cohen, West and Aiken (2003) for testing moderation. The tests of each moderation hypothesis involved entering the four covariates at step 1. At step 2, the focal personality trait and four perceived stressors were entered into the regression analyses. The cross-product terms for significant stressors from step 2 x focal personality trait were entered at step 3.

### *Neuroticism*

Hypothesis 1a and 1b stated that the relationships between neuroticism with psychological strains and job satisfaction would be at least partially mediated by perceived stressors. Three multiple mediation models were conducted for depression, emotional exhaustion, and job satisfaction, respectively. Figures 8 to 10 show path models summarizing each of these analyses. Tables 2, 3, and 4 summarize the statistical output of these analyses. The results indicated no support for the mediational hypotheses when predicting depression and emotional exhaustion. Therefore, hypothesis 1a was unsupported.

However, neuroticism showed significant relationships with interpersonal conflict ( $b = .05, p < .05$ ), and role conflict ( $b = .19, p < .05$ ). Additionally, quantitative workload had a direct effect on emotional exhaustion ( $b = .33, p < .05$ ). When predicting job satisfaction, one mediation relationships were identified. More specifically, the relationship between neuroticism with job satisfaction was significantly and fully mediated by role conflict (indirect effect =  $-.014$ ,  $SE = .008$ , BC 95% CI:  $-.034, -.002$ ) while the direct effect of neuroticism on job satisfaction was nonsignificant ( $b = -.05, p > .05$ ). This finding supported hypothesis 1b.

Hypothesis 2a stated that neuroticism would moderate the relationship between perceived stressors with depression and emotional exhaustion. Table 5 shows the summary of the hierarchical multiple regression analyses for neuroticism. The results indicate that neither neuroticism, nor perceived stressors predicted depression. The adjusted  $R^2$  of the whole model for depression was nonsignificant ( $\Delta R^2 = .00, p > .05$ ). When predicting the outcome of emotional exhaustion, only quantitative workload was a significant predictor ( $b = .12, p < .05$ ). When entering the product of neuroticism and quantitative workload, the adjusted  $R^2$  of the whole model for emotional exhaustion was nonsignificant ( $\Delta R^2 = .00, p > .05$ ). Additionally, the cross-product term failed to significantly predict emotional exhaustion ( $b = -.01, p > .05$ ). Therefore, H2a was unsupported, and only one main effect from quantitative workload on emotional exhaustion was identified.

Hypothesis 2b stated that neuroticism would moderate the relationship between perceived stressors with job satisfaction. At step 2 of the regression analyses, two perceived stressors showed significant effect on job satisfaction. Specifically, role

conflict negatively predicted job satisfaction ( $b = -.12, p < .05$ ). Role ambiguity was interestingly positively predicted job satisfaction ( $b = .11, p < .05$ ). To test the interactions, the product of neuroticism and role conflict, and the product of neuroticism and role ambiguity were entered in the regression analyses at step 3. However, the inclusion of the two cross-product terms failed to significantly improve the overall adjusted  $R^2$  of the whole model for job satisfaction ( $\Delta R^2 = .00, p > .05$ ). Neither of the cross-product terms from role conflict and role ambiguity significantly predicted job satisfaction. Therefore, H2b was unsupported and two main effects from role conflict and ambiguity on job satisfaction were identified. Additionally, participants' working hours per week showed significantly and positively predicting effect on job satisfaction ( $b = .28, p < .05$ ).

### *Extraversion*

Hypothesis 3a and 3b were that the relationships between extraversion with psychological strains and job satisfaction would be at least partially mediated by perceived stressors. Three multiple mediation models were conducted for depression, emotional exhaustion, and job satisfaction, respectively. Figures 11 to 13 show the path models for these analyses, while Tables 6, 7, and 8 summarize the statistical output. The results indicated no support for the mediational hypotheses of extraversion. Although hypothesis 3a and 3b were unsupported, similarly main effects found in neuroticism models was also showed here. Quantitative workload had a direct and positive effect on emotional exhaustion ( $b = .35, p < .05$ ), and role conflict showed a negative effect on job satisfaction ( $b = -.08, p < .05$ ).

Hypothesis 4a stated that extraversion would moderate the relationship between perceived stressors with depression and emotional exhaustion. Table 9 shows the summary of these results, which suggests that neither extraversion nor any of the perceived stressors predicted depression. The adjusted  $R^2$  of the whole model for depression at step 2 was nonsignificant ( $\Delta R^2 = .00, p > .05$ ). When predicting emotional exhaustion, the result was the same as for the neuroticism models; only quantitative workload was a significant predictor ( $b = .12, p < .05$ ), although the adjusted  $R^2$  of whole model was nonsignificant ( $\Delta R^2 = .02, p > .05$ ). When entering the product of extraversion and quantitative workload, the adjusted  $R^2$  of whole model was nonsignificant ( $\Delta R^2 = .02, p > .05$ ). The cross-product term failed to significantly predict emotional exhaustion ( $b = -.92, p > .05$ ). Therefore, Hypothesis 4a was unsupported, and one main effect from quantitative workload on emotional exhaustion was identified.

Hypothesis 4b stated that extraversion would moderate the relationship between perceived stressors with job satisfaction. The results from step 2 of the regression analyses showed that only one perceived stressor predicted job satisfaction. Specifically, role conflict significantly and negatively predicted job satisfaction ( $b = -.12, p < .05$ ). The product of extraversion and role conflict was then entered into the regression analyses at step 3. The inclusion of the cross-product terms failed to improve the overall adjusted  $R^2$  of the whole model on predicting job satisfaction ( $\Delta R^2 = .01, p > .05$ ). The cross-product term was also nonsignificant. Thus, hypothesis 4b was unsupported, and only one main effect from role conflict on job satisfaction was identified. Additionally, participants' working hours per week again showed significantly and positively predicting effect on job satisfaction ( $b = .27, p < .05$ ).

### *Conscientiousness*

Hypothesis 5a and 5b was that the relationships between conscientiousness and psychological strains and job satisfaction would be at least partially mediated by perceived stressors. Three multiple mediation models were conducted for depression, emotional exhaustion, and job satisfaction, respectively. Figures 14 to 16 show the relevant path models and Tables 10, 11, and 12 summarize the statistical output of these analyses. The results indicated no support for the mediational hypotheses of conscientiousness. Hypothesis 5a and 5b were unsupported. However, conscientiousness had significant and negative effects on two perceived stressors: interpersonal conflict ( $b = -.04, p < .05$ ), and role ambiguity ( $b = -.26, p < .05$ ). Additionally, quantitative workload had a significant and positive effect on emotional exhaustion ( $b = .35; p < .05$ ). When predicting job satisfaction, role conflict had a direct and negative effect on job satisfaction ( $b = -.08; p < .05$ ). However, conscientiousness showed a significantly and negatively direct effect on predicting job satisfaction in the model ( $b = -.10, p < .05$ ) before and after the inclusion of mediators into the model. Thus is not support for hypothesis 5b.

Hypothesis 6a stated that conscientiousness would moderate the relationship between perceived stressors with depression and emotional exhaustion. Table 13 shows the summary of the hierarchical multiple regression analyses for conscientiousness. The results indicated the same results found from neuroticism and extraversion when predicting depression. None of the perceived stressors showed a main effect on depression. However, conscientiousness did demonstrate a significant main effect on depression as a positive and significant predictor ( $b = .13, p < .05$ ).

When predicting emotional exhaustion, the results showed similar results to what was observed for the traits of neuroticism and extraversion. Only quantitative workload showed a main effect on emotional exhaustion at step 2 of the regression model while the adjusted  $R^2$  of the whole model was significant ( $\Delta R^2 = .02, p < .05$ ). Quantitative workload significantly and positively predicted emotional exhaustion ( $b = .12, p < .05$ ). When entering the product of conscientiousness and quantitative workload, the adjusted  $R^2$  of the whole model was nonsignificant ( $\Delta R^2 = .00, p > .05$ ). The cross-product term failed to significantly predict emotional exhaustion. Therefore, Hypothesis 6a was unsupported.

Hypothesis 6b stated that conscientiousness would moderate the relationship between perceived stressors with job satisfaction. Similar to the findings from the extraversion and neuroticism models, the whole model at step 2 produced a significant adjusted  $R^2$  of the whole model ( $\Delta R^2 = .04, p < .001$ ). Conscientiousness ( $b = -.17, p < .001$ ) and role conflict ( $b = -.13, p < .05$ ) significantly predicted job satisfaction. The product of conscientiousness and role conflict was then entered into the regression analyses at step 3. The inclusion of the cross-product term failed to improve the overall adjusted  $R^2$  of the whole model ( $\Delta R^2 = .00, p > .05$ ). The cross-product term failed to show significantly predicting effect on job satisfaction. Therefore, Hypothesis 6b was unsupported, but two main effects from conscientiousness and role conflict on job satisfaction were identified. Additionally, participants' working hours per week again showed significantly and positively predicting effect on job satisfaction ( $b = .25, p < .05$ ).

#### IV. DISCUSSION AND CONCLUSION

The purpose of the present study was to examine how FFM personality traits influence the perceived stressor-strain process among Chinese workers. Neuroticism, extraversion, and conscientiousness were included as focal FFM traits. Perceived interpersonal conflict, quantitative workload, role conflict, and role ambiguity were included as the perceived stressors. Depression, emotional exhaustion, and job satisfaction were included as the strains. Multiple mediation analyses using bootstrap estimation and hierarchical multiple regression were conducted to examine the hypotheses of the present study. The perceived stressors were expected to mediate the relationship between FFM traits and strains. FFM traits were expected to moderate the relationship between the perceived stressors and strains.

##### *Neuroticism*

Neuroticism is associated with negative emotionality. Individuals with high neuroticism are more likely to have negative feelings including anxious, nervous, worrying, sad, and tense (McCrae & John, 1992; Pervin & John, 1999). The present study found that neuroticism was positively associated with perceived stressors. Specifically, individuals with higher level of neuroticism reported higher level of interpersonal conflict, and role conflict than individuals with lower level of neuroticism. In other words, neuroticism showed an influence on the exposure stage addressed within Bolger and Zuckerman's (1995) study in the present study. Additionally, the results of the present study were similar to the previous research (e.g., Bolger & Zuckerman; Grant & Langan-Fox, 2007; Miller et al., 1999). Neuroticism was found to be positively

associated with individuals' exposure of interpersonal conflict (Bolger & Zuckerman), and role conflict (Grant & Langan-Fox)

With regard to the tests of the hypothesized mediation models, one mediation relationship of neuroticism was found. The relationship between neuroticism and job satisfaction was mediated by perceived role conflict in the present study. Similar mediating effect of stressors on the relationship between neuroticism and strains are found in past research (e.g., Bolger & Zuckerman, 1995; Grant & Langan-Fox, 2007). However, the mediation relationships were found when either predicting mental distress (Bolger & Zuckerman) or predicting physical symptoms (Grant & Langan-Fox).

Also identified in the present study was that individuals with higher level of neuroticism reported higher level of role conflict than individuals with lower level of neuroticism. The higher level of perceived role conflict led in turn to lower level of job satisfaction. A similar result was also mirrored in the moderation analyses, where higher levels of role conflict were associated with lower levels of job satisfaction. High levels of role conflict represent individuals' perceptions that they need to work under vague directives or orders, under incompatible policies and guidelines, or receive incompatible requests from two or more people. Individuals may not be able to perform their job well under the above situations, which in turn lowered their job satisfaction.

In the moderation model for this hypothesis, the higher level of perceived role ambiguity interestingly resulted in higher level of job satisfaction. It was expected that higher levels of role ambiguity would be associated with lower job satisfaction. In other words, higher levels of role ambiguity led to higher levels of job satisfaction. The present sample consisted of individuals working in manufacturing. In this type of work



environment, they may have had low role ambiguity because their jobs were less complicated than in some other industries. For example, they know their responsibility is to produce a certain amount of products. The certain amount of production is what other people expect of them. Additionally, these individuals may know they do not have authority since their duty is to finish the production required by the supervisor or by the position. If the job for these individuals was extremely simplified and boring, it is possible that some ambiguity may have actually improved the work experience. This may explain why those with higher levels of role ambiguity in the present sample also reported higher levels of job satisfaction.

Although the hypothesized moderating effect of neuroticism on strains was not found in the present study, perceived stressors were identified as predictors of strains, as would be expected from theory and previous research. Specifically, higher level of quantitative workload led to higher level of emotional exhaustion. In other words, feelings of emotional exhaustion happened more frequently on individuals when the perceived workload increased. From the regression analyses, it was observed that job satisfaction decreased when role conflict increased, but increased when role ambiguity increased. However, the results from correlation indicated that role ambiguity was negatively associated with job satisfaction. In other words, job satisfaction decreased when perceived role ambiguity increased. This inconsistency of the influence of role ambiguity on job satisfaction will require additional research, but may have something to do with the covariates used in the regression analyses and the small sample in general.

### *Extraversion*

Extraversion is related to one's positive emotions (Pervin & John, 1999). Extraversion has been associated with a positive processing bias which led to rely more on the positive features showed in the stressors (Hemenover, 2001). Although the hypothesized mediating and moderating effects of extraversion on the stressor-strain process were not found in the present study, perceived stressors found to have direct effects on strains in the models of neuroticism were also found in the models of extraversion. Specifically, individuals reported higher levels of quantitative workload also reported higher levels of emotional exhaustion. In other words, quantitative workload showed its influence on individuals' emotional exhaustion again. Additionally, individuals with higher levels of role conflict reported lower levels of job satisfaction. Individuals would have higher levels of job satisfaction when the role conflict is low.

### *Conscientiousness*

Individuals with high conscientiousness are more likely to think before acting, perform behaviors of planning and organizing tasks, delay pleasure, and follow norms and rules (McCrae & John, 1992; Pervin & John, 1999). In the present study, conscientiousness was found to be negatively associated with perceived interpersonal conflict and role ambiguity. In other words, individuals with higher levels of conscientiousness reported lower levels of interpersonal conflict and role ambiguity than individuals with lower levels of conscientiousness. These results were consistent with past research (e.g., Miller et al., 1999; Vollrath, 2000). Miller et al. (1999) found that individuals with higher level of conscientiousness reported lower levels of role ambiguity. Additionally, individuals with higher level of conscientiousness were found to report

fewer daily hassles (Vollrath, 2000). Overall, individuals with higher conscientiousness showed less exposure or perception of stressors than individuals with lower conscientiousness in the present study.

Although none of mediation relationships was found for conscientiousness, conscientiousness had a direct effect on job satisfaction. However, the direction of the direct effect from conscientiousness on job satisfaction was contrary to the expectation in the present study. Conscientiousness was expected to be positively related to job satisfaction based on past research (e.g., Judge et al., 2002; Van den Berg & Piataru, 2005). However, individuals with higher levels of conscientiousness reported lower levels of job satisfaction than individuals with lower levels of conscientiousness in this mediation model. It is possible that conscientious individuals may find that the actual performance or outcomes of their efforts at work fail to achieve their high standard of expected performance which may lead to lower levels of job satisfaction (Grant & Langan-Fox, 2007).

An alternative possible explanation is again the nature of the manufacturing work environment. Manufacturing often involves assigning workers to different departments or groups to complete different parts of products. Employees may receive parts of products completed by another department or group. Employees with higher conscientiousness may have higher standards regarding with the quality of semi-finished products completed by other department or groups. Indeed, employees with high conscientiousness may feel those imperfect semi-finished products could stop them from producing products with high quality. Highly conscientious workers may also seek to see projects through from start to finish. Therefore, employees with high conscientiousness may be

dissatisfied with the working conditions in this type of environment, and in turn report lower job satisfaction than employees with lower conscientiousness. These possibilities will require further study.

Although the moderating effect of conscientiousness on the stressor-strain process was not found, conscientiousness and perceived stressors were found to have direct effects on strains. Specifically, individuals with higher level of conscientiousness reported lower level of job satisfaction which was also found in the mediation model discussed above. One other interesting finding in the present study is that individuals' job satisfaction increased when their working hours per week increased. Most manufacturing jobs involve pay for labor. In the PRC, the pay for labor is low, but the longer employees work, the more money they can make. It is possible in this sample that those working more were making more money, which in turn may have provided them with heightened satisfaction because of a better chance to make a decent living.

#### *Limitations and Future Research*

There were a few limitations existing in the present study. First, all of the participants in the present study worked in the same manufacturing facility, within the same city in the PRC. Generalization of the current findings in the present study to other areas of the PRC and world may therefore be questioned. Future study should collect data from different industry and other cities in PRC. A broader range of Chinese participants should be used in the future studies. Second, the data set was collected by questionnaires. Self-reported information could result in common method variance. To overcome this potential limitation, future studies can incorporate objective or other-reported outcomes, such as the symptoms of physical illness or actual productivity. Third, the measures used

in the present study were all well-designed in English, but were translated to Chinese for the present research. Although proper translation procedures were followed, the construct validity of Chinese-translation versions of the measures is not as well-established as the English versions and may need further refinement.

Fourth, the present study only examined the effect of three FFM traits in the stressor-strain process among Chinese workers (neuroticism, extraversion, and conscientiousness). Therefore, future studies can examine the influence of agreeableness, openness, and other personality traits (i.e., Type A/B behavior patterns, locus of control, optimism, and hardiness) on the stress process within Chinese workers.

Fifth, many stress-related variables were not considered in the present study. Other stressors and strains are needed in future investigations within Chinese samples. Finally, only one mediation relationship was identified in the present study, and the effect of conscientiousness on job satisfaction was found to be contrary to the initial expectation that were based on existing research. The inconsistency will require future research, but also raise the possibility that more refined theoretical stress models are needed that consider cross-cultural differences.

### *Conclusion*

Personality does appear to play a role in the stressor-strain process among Chinese manufacturing workers. Several findings from Western populations were mirrored in the current Chinese population based on the previous discussion. For example, different FFM traits led to the different perception or exposure of stressors. Neuroticism resulted in perceiving higher levels of stressors, while conscientiousness predicted lower levels of stressors. Perceived stressors, in turn, predicted strains. For example, higher

levels of quantitative workload led to higher experienced emotional exhaustion. Higher levels of role conflict resulted in lower levels of job satisfaction. Additionally, mediation was observed involving FFM traits, perceived stressors, and strains.

The present study can enhance the understanding of occupational stress and health in Chinese society. Employers can develop programs to assist employees with higher level of neuroticism developing effective coping strategies. To increase Chinese employees' job satisfaction, it may be important to reduce Chinese employees' perceived role conflict in the work environment. It is also important to reduce employees' perception of quantitative workload for creating a healthy working environment in Chinese society. Cognitive behavioral therapy could be used to reduce the perception of role conflict and quantitative workload. Along with the increasing awareness of human rights and occupational health in PRC, stress-related issues and research are more and more important in this area of the world. The present study presents an initial examination of how personality plays a role in the stress process among Chinese workers. Further studies should continue this line of work to build the knowledge base across Western and Eastern cultures.

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## **VI. TABLES**

**Table 1.***Means, Standard Deviations, and Correlations Between Variables*

Variables	Means	Std. Dev.	Correlations														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Age	30.10	6.26	--														
2. Gender	1.35	.48	.01	--													
3. Marriage	1.20	.40	-.53**	-.09	--												
4. Hours	46.34	13.40	-.17**	-.43**	.15**	--											
5. N	20.71	7.69	-.12*	-.09	.14**	.09*	--										
6. E	37.74	7.36	.06	-.02	-.01	-.11*	-.29**	--									
7. C	46.71	9.77	.12*	.13**	-.11*	-.19**	-.54**	.65**	--								
8. IPC	7.79	2.39	-.09	.01	-.03	.09	.26**	-.14**	-.24**	--							
9. QW	13.40	4.66	-.19**	-.11*	.04	.24**	.09*	-.03	-.05	.20**	--						
10. RoleC	17.12	5.71	-.14**	-.01	.05	-.04	.27**	-.10	-.17**	.31**	.20**	--					
11. RoleA	13.89	5.60	-.03	-.08	.02	.00	.25**	-.37**	-.47**	.07	.07	.16**	--				
12. JS	12.71	4.03	-.01	-.22**	.05	.33*	.05	-.16**	-.24**	.06	.06	-.11*	.10*	--			
13. EmotE	26.47	13.57	.01	.04	-.06	-.03	-.04	-.04	.03	-.03	.09	-.05	.02	-.06	--		
14. Dep	11.15	3.22	.03	-.05	-.10*	-.04	-.04	.03	.09	-.01	.04	.01	.01	-.06	.51**	--	

Note—N = neuroticism; E = Extraversion; C = Conscientiousness; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; JS = job satisfaction; EmotE = emotional exhaustion; Dep = depression.

\* $p < .05$ . \*\* $p < .01$ .  $n = 408 \sim 449$



**Table 2.**  
*Summary of Multiple Mediator Model for Neuroticism on Depression*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of N on mediators					
IPC	.05	3.00	.0028		
QW	.04	1.11	.2662		
RoleC	.19	4.26	.0000		
RoleA	-.00	-.06	.9513		
Effects of mediator on depression					
IPC	.02	.22	.8269		
QW	.02	.62	.5384		
RoleC	-.00	-.13	.8988		
RoleA	.04	1.27	.2034		
Total effect of N on depression	.00	.18	.8545		
Direct effect of N on depression	.00	.14	.8873		
Partial effect of control variables on depression					
Age	.00	.05	.9579		
Gender	-.59	-1.54	.1253		
Marriage	-.45	-.93	.3504		
Hours	-.01	-.87	.3852		
Extraversion	-.01	-.23	.8196		
Conscientiousness	.05	1.78	.0762		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of N on depression via mediators (bootstrap results)					
Total indirect effect	.0027	-.0126	.0148	-.0121	.0151
IPC	-.0004	-.0079	.0097	-.0077	.0101
QW	.0009	-.0033	.0062	-.0016	.0087
RoleC	-.0004	-.0124	.0121	-.0126	.0119
RoleA	.0026	-.0045	.0044	-.0059	.0037

Model fit:  $R^2 = .03$ ,  $F(11, 388) = .96$ ,  $p > .05$

Note—N = neuroticism; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples. n = 400.

**Table 3.**  
*Summary of Multiple Mediator Model for Neuroticism on Emotional Exhaustion*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of N on mediators					
IPC	.05	3.00	.0028		
QW	.04	1.11	.2662		
RoleC	.19	4.26	.0000		
RoleA	-.00	-.06	.9513		
Effects of mediator on emotional exhaustion					
IPC	-.06	.21	.8371		
QW	.33	2.25	.0250		
RoleC	-.18	-1.39	.1642		
RoleA	.20	1.48	.1407		
Total effect of N on emotional exhaustion	.03	.26	.7923		
Direct effect of N on emotional exhaustion	.05	.41	.6788		
Partial effect of control variables on emotional exhaustion					
Age	.13	.99	.3228		
Gender	.79	.49	.6228		
Marriage	1.35	.67	.5052		
Hours	-.04	-.74	.4569		
Extraversion	-.10	-.83	.4069		
Conscientiousness	.20	1.83	.0679		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of N on emotional exhaustion via mediators (bootstrap results)					
Total indirect effect	-.0169	-.0820	.0400	-.0823	.0398
IPC	.0034	-.0355	.0413	-.0323	.0446
QW	.0136	-.0122	.0507	-.0075	.0593
RoleC	-.0334	-.0891	.0136	-.0961	.0090
RoleA	-.0005	-.0238	.0196	-.0270	.0178

Model fit:  $R^2 = .03$ ,  $F(11, 388) = 1.11$ ,  $p > .05$

Note—N = neuroticism; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 400$ .

**Table 4.**  
*Summary of Multiple Mediator Model for Neuroticism on Job Satisfaction*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of N on mediators					
IPC	.05	2.98	.0031		
QW	.04	1.20	.2298		
RoleC	.18	4.17	.0000		
RoleA	.00	.08	.9372		
Effects of mediator on job satisfaction					
IPC	.07	.79	.4314		
QW	-.00	-.03	.9781		
RoleC	-.08	-2.17	.0303		
RoleA	.02	.54	.5886		
Total effect of N on job satisfaction	-.06	.03	.0425		
Direct effect of N on job satisfaction	-.05	.03	.1043		
Partial effect of control variables on job satisfaction					
Age	.04	1.01	.3126		
Gender	-.67	-1.50	.1347		
Marriage	.20	.36	.7190		
Hours	.08	4.52	.0000		
Extraversion	.01	.18	.8609		
Conscientiousness	-.09	-2.98	.0030		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of N on job satisfaction via mediators (bootstrap results)					
Total indirect effect	-.0106	-.0271	.0042	-.0294	.0028
IPC	.0036	-.0043	.0141	-.0036	.0152
QW	-.0001	-.0062	.0046	-.0061	.0047
RoleC	-.0143	-.0313	-.0011	-.0337	-.0022
RoleA	.0001	.0034	.0047	-.0033	.0049

Model fit:  $R^2 = .16$ ,  $F(11, 385) = 6.44$ ,  $p < .001$

Note—N = neuroticism; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 397$ .

**Table 5.**

*Summary of Hierarchical Multiple Regression of Three Outcomes on Neuroticism, Perceived Stressors, and Interaction.*

	Variables	Job Satisfaction <sup>a</sup>		Emotional Exhaustion <sup>b</sup>		Depression <sup>c</sup>	
		$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1	Zage	.06	.11***	.04	.00	-.00	.01
	Zgender	-.09		.03		-.09	
	Zmarriage	.03		.01		-.08	
	Zhours	.28***		-.03		-.06	
Step 2	Zage	.06	.02	.06	.02	.00	.00
	Zgender	-.07		.03		-.09	
	Zmarriage	.04		.03		-.07	
	Zhours	.28***		-.06		-.07	
	ZN	-.00		-.02		-.05	
	ZIPC	-.07		-.00		-.00	
	ZQW	-.01		.12*		.04	
	ZRoleC	-.12*		-.07		-.00	
	ZRoleA	.11*		-.05		.02	
Step 3	Zage	.06	.01	.06	.00	.00	.00
	Zgender	-.08		.03		-.09	
	Zmarriage	.05		.02		-.07	
	Zhours	.28***		-.06		-.07	
	ZN	.01		-.02		-.06	
	ZIPC	.05		-.00		.00	
	ZQW	-.01		.12*		.04	
	ZRoleC	-.13*		-.07		.01	
	ZRoleA	.12*		.04		.02	
	ZN * ZIPC	.06		-.01		-.02	
	ZN * ZQW	.01		-.03		-.01	
	ZN * ZRoleC	.04		-.01		-.04	
	ZN * ZRoleA	-.02		-.01		.02	

*Note.* ZN, standardized neuroticism; ZIPC, standardized interpersonal conflict; ZQW, standardized quantitative workload; ZRolec, standardized role conflict; ZRolea, standardized role ambiguity.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>a</sup> $n = 404$ . <sup>b</sup> $n = 400$ . <sup>c</sup> $n = 400$ .

**Table 6.**  
*Summary of Multiple Mediator Model for Extraversion on Depression*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of E on mediators					
IPC	.02	.99	.3247		
QW	.02	.60	.5464		
RoleC	.01	.26	.7986		
RoleA	-.08	-1.82	.0698		
Effects of mediator on depression					
IPC	.02	.22	.8269		
QW	.02	.62	.5384		
RoleC	-.00	-.13	.8988		
RoleA	.04	1.27	.2034		
Total effect of E on depression	-.01	-.32	.7494		
Direct effect of E on depression	-.01	-.23	.8196		
Partial effect of control variables on depression					
Age	.00	.05	.9579		
Gender	-.59	-1.54	.1253		
Marriage	-.45	-.93	.3504		
Hours	-.01	-.87	.3852		
Neuroticism	.00	.14	.8873		
Conscientiousness	.05	1.78	.0762		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of E on depression via mediators (bootstrap results)					
Total indirect effect	-.0026	-.0137	.0066	-.0141	.0063
IPC	.0003	-.0041	.0052	-.0028	.0070
QW	.0006	-.0039	.0057	-.0018	.0094
RoleC	-.0001	-.0040	.0034	-.0045	.0030
RoleA	-.0034	-.0120	.0021	-.0144	.0010

Model fit:  $R^2 = .03$ ,  $F(11, 388) = .96$ ,  $p > .05$

Note—E = extraversion; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 400$ .

**Table 7.**  
*Summary of Multiple Mediator Model for Extraversion on Emotional Exhaustion*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of E on mediators					
IPC	.0203	.99	.3247		
QW	.0244	.60	.5464		
RoleC	.0129	.26	.7986		
RoleA	-.0811	-1.82	.0698		
Effects of mediator on emotional exhaustion					
IPC	.06	.21	.8371		
QW	.35	2.25	.0250		
RoleC	-.18	-1.39	.1642		
RoleA	.20	1.48	.1407		
Total effect of E on emotional exhaustion	-.11	-.91	.3660		
Direct effect of E on emotional exhaustion	-.10	-.83	.4069		
Partial effect of control variables on emotional exhaustion					
Age	.13	.99	.3228		
Gender	.79	.49	.6228		
Marriage	1.35	.67	.5052		
Hours	-.04	-.74	.4569		
Neuroticism	.04	.41	.6788		
Conscientiousness	.20	1.83	.0679		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of E on emotional exhaustion via mediators (bootstrap results)					
Total indirect effect	-.0090	-.0633	.0379	-.0610	.0394
IPC	.0013	-.0173	.0245	-.0132	.0299
QW	.0085	-.0264	.0437	-.0193	.0506
RoleC	-.0023	-.0336	.0179	-.0386	.0144
RoleA	-.0165	-.0524	.0069	-.0628	.0028

Model fit:  $R^2 = .04$ ,  $F(11, 388) = 1.11$ ,  $p > .05$

Note—E = extraversion; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 400$ .

**Table 8.**  
*Summary of Multiple Mediator Model for Extraversion on Job Satisfaction*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of E on mediators					
IPC	.02	.94	.3458		
QW	.02	.40	.6914		
RoleC	.01	.20	.8378		
RoleA	-.08	-1.87	.0623		
Effects of mediator on job satisfaction					
IPC	.07	.79	.4314		
QW	-.00	-.03	.9781		
RoleC	-.08	-2.17	.0303		
RoleA	.02	.54	.5886		
Total effect of E on job satisfaction	.00	.14	.8895		
Direct effect of E on job satisfaction	.01	.18	.8609		
Partial effect of control variables on job satisfaction					
Age	.04	1.03	.3126		
Gender	-.67	-1.60	.1347		
Marriage	.20	.64	.7190		
Hours	.08	4.74	.0000		
Neuroticism	-.05	-1.63	.1043		
Conscientiousness	-.09	-2.98	.0030		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of E on job satisfaction via mediators (bootstrap results)					
Total indirect effect	-.0013	-.0130	.0100	-.0148	.0092
IPC	.0013	-.0023	.0088	-.0013	.0114
QW	.0000	-.0037	.0047	-.0049	.0035
RoleC	-.0008	-.0101	.0081	-.0116	.0065
RoleA	-.0018	-.0105	.0057	-.0121	.0041

Model fit:  $R^2 = .16$ ,  $F(11, 385) = 6.44$ ,  $p < .001$

Note—E = extraversion; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 397$ .

**Table 9.**

*Summary of Hierarchical Multiple Regression of Three Outcomes on Extraversion, Perceived Stressors, and Interaction.*

	Variables	Job Satisfaction <sup>a</sup>		Emotional Exhaustion <sup>b</sup>		Depression <sup>c</sup>	
		$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1	Zage	.06	.11***	.04	.00	-.01	.01
	Zgender	-.09		.03		-.09	
	Zmarriage	.03		.01		-.08	
	Zhours	.28***		-.03		-.06	
Step 2	Zage	.06	.03**	.06	.02	.00	.00
	Zgender	-.09		.04		-.08	
	Zmarriage	.04		.03		-.07	
	Zhours	.27***		-.05		-.06	
	ZE	-.09		.02		.06	
	ZIPC	.06		-.01		-.01	
	ZQW	-.01		.12*		.04	
	ZRoleC	-.12*		-.08		-.01	
ZRoleA	.08		.05		.04		
Step 3	Zage	.07	.01	.07	.02	.02	.01
	Zgender	-.09		.03		-.08	
	Zmarriage	.04		.03		-.07	
	Zhours	.27***		-.06		-.06	
	ZE	-.09		.02		.06	
	ZIPC	.06		-.01		-.00	
	ZQW	-.01		.11*		.03	
	ZRoleC	-.13*		-.09		-.02	
	ZRoleA	.09		.08		.05	
	ZE * ZIPC	-.04		-.04		.00	
	ZE * ZQW	-.04		-.08		-.04	
	ZE * ZRoleC	.07		.01		.04	
ZE * ZRoleA	.04		.11		.06		

*Note.* ZE, standardized extraversion; ZIPC, standardized interpersonal conflict; ZQW, standardized quantitative workload; ZRolec, standardized role conflict; ZRolea, standardized role ambiguity.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>a</sup> $n = 404$ . <sup>b</sup> $n = 400$ . <sup>c</sup> $n = 400$ .



**Table 10.***Summary of Multiple Mediator Model for Conscientiousness on Depression*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of C on mediators					
IPC	-.04	-2.36	.0185		
QW	.00	-.00	.9993		
RoleC	-.04	-.84	.4011		
RoleA	-.26	-6.77	.0000		
Effects of mediator on depression					
IPC	.02	.22	.8269		
QW	.02	.62	.5384		
RoleC	-.00	-.13	.8988		
RoleA	.04	1.27	.2034		
Total effect of C on depression	.04	1.44	.1510		
Direct effect of C on depression	.05	1.78	.0762		
Partial effect of control variables on depression					
Age	.00	.05	.9579		
Gender	-.59	-1.54	.1253		
Marriage	-.45	-.93	.3504		
Hours	-.01	-.87	.3852		
Neuroticism	.00	.14	.8873		
Extraversion	-.01	-.23	.8196		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of E on depression via mediators (bootstrap results)					
Total indirect effect	-.0116	-.0315	.0084	-.0333	.0073
IPC	-.0007	-.0075	.0065	-.0084	.0057
QW	.0000	-.0040	.0040	-.0038	.0041
RoleC	.0001	-.0034	.0049	-.0028	.0058
RoleA	-.0111	-.0291	.0064	-.0292	.0064

Model fit:  $R^2 = .03$ ,  $F(11, 388) = .96$ ,  $p > .05$

Note—C = conscientiousness; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 400$ .

**Table 11.**  
*Summary of Multiple Mediator Model for Conscientiousness on Emotional Exhaustion*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of C on mediators					
IPC	-.04	-2.36	.0185		
QW	.00	-.00	.9993		
RoleC	-.04	-.84	.4011		
RoleA	-.26	-6.77	.0000		
Effects of mediator on emotional exhaustion					
IPC	.06	.21	.8371		
QW	.35	2.25	.0250		
RoleC	-.18	-1.39	.1642		
RoleA	.20	1.48	.1407		
Total effect of C on emotional exhaustion	.16	1.47	.1415		
Direct effect of C on emotional exhaustion	.20	1.83	.0679		
Partial effect of control variables on emotional exhaustion					
Age	.13	.98	.3262		
Gender	.79	.60	.5470		
Marriage	1.35	.64	.5196		
Hours	-.04	-.71	.4787		
Neuroticism	.04	.41	.6788		
Extraversion	-.10	-.83	.4069		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of E on emotional exhaustion via mediators (bootstrap results)					
Total indirect effect	-.0495	-.1393	.0418	-.1440	.0379
IPC	-.0027	-.0353	.0285	-.0379	.0263
QW	.0000	-.0278	.0332	-.0280	.0330
RoleC	.0066	-.0108	.0377	-.0068	.0460
RoleA	-.0534	-.1325	.0168	-.1357	.0147

Model fit:  $R^2 = .03$ ,  $F(11, 388) = 1.11$ ,  $p > .05$

Note—C = conscientiousness; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 400$ .

**Table 12.***Summary of Multiple Mediator Model for Conscientiousness on Job Satisfaction*

Variables	Coeff	<i>t</i>	<i>p</i>		
Effects of C on mediators					
IPC	-.04	-2.28	.0234		
QW	.01	.16	.8724		
RoleC	-.03	-.70	.4835		
RoleA	-.26	-6.67	.0000		
Effects of mediator on job satisfaction					
IPC	.07	.79	.4314		
QW	-.00	-.03	.9781		
RoleC	-.08	-2.17	.0303		
RoleA	.02	.54	.5886		
Total effect of C on job satisfaction	-.10	-3.38	.0008		
Direct effect of C on job satisfaction	-.09	-2.98	.0030		
Partial effect of control variables on job satisfaction					
Age	.04	1.01	.3126		
Gender	-.67	-1.50	.1347		
Marriage	.20	.36	.7190		
Hours	.08	4.52	.0000		
Neuroticism	-.05	-1.63	.1043		
Extraversion	.01	.18	.8609		
	Point Estimate	Percentile 95% CI		BC 95% CI	
		Lower	Upper	Lower	Upper
Indirect effect of C on job satisfaction via mediators (bootstrap results)					
Total indirect effect	-.0058	-.0302	.0179	-.0311	.0170
IPC	-.0028	-.0123	.0034	-.0141	.0023
QW	.0000	-.0040	.0031	-.0036	.0035
RoleC	.0024	-.0049	.0117	-.0034	.0145
RoleA	-.0054	-.0255	.0148	-.0279	.0135

Model fit:  $R^2 = .16$ ,  $F(11, 385) = 6.44$ ,  $p < .001$ 

Note—C = conscientiousness; IPC = interpersonal conflict; QW = quantitative workload; RoleC = role conflict; RoleA = role ambiguity; BC = bias corrected; 5,000 bootstrap samples.  $n = 397$ .

**Table 13.**

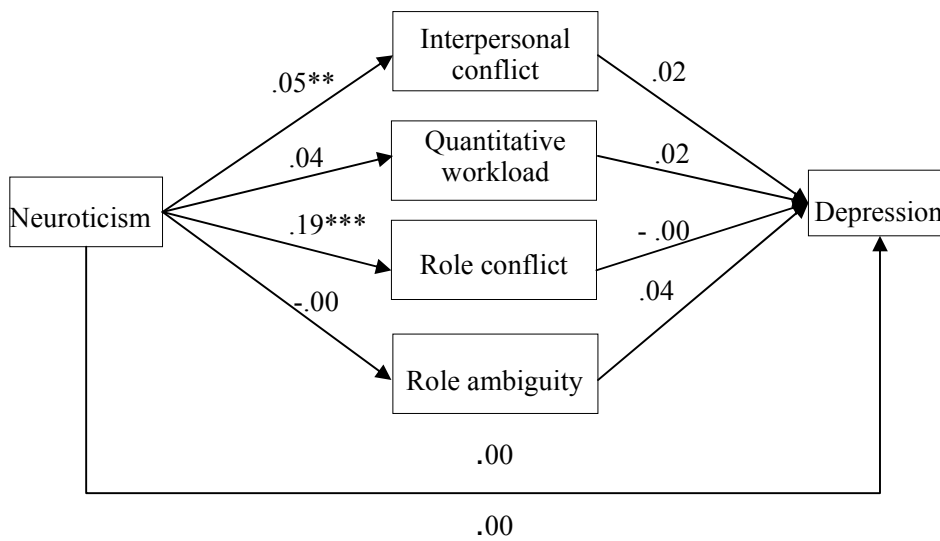
*Summary of Hierarchical Multiple Regression of Three Outcomes on Conscientiousness, Perceived Stressors, and Interaction.*

	Variables	Job Satisfaction <sup>a</sup>		Emotional Exhaustion <sup>b</sup>		Depression <sup>c</sup>	
		$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
Step 1	Zage	.06	.11***	.04	.00	-.01	.01
	Zgender	-.09		.03		-.09	
	Zmarriage	.03		.01		-.08	
	Zhours	.28***		-.03		-.06	
Step 2	Zage	.06	.04**	.06	.02*	.00	.01
	Zgender	-.08		.03		-.09	
	Zmarriage	.02		.04		-.06	
	Zhours	.25***		-.04		-.05	
	ZC	-.17**		.10		.13*	
	ZIPC	.03		.01		.01	
	ZQW	-.00		.12*		.03	
	ZRoleC	-.13*		-.07		-.01	
	ZRoleA	.03		.09		.08	
Step 3	Zage	.06	.00	.06	.00	.01	.01
	Zgender	-.08		.04		-.08	
	Zmarriage	.01		.04		-.06	
	Zhours	.25***		-.04		-.04	
	ZC	-.17***		.11		.14*	
	ZIPC	.03		.02		.02	
	ZQW	-.01		.11*		.02	
	ZRoleC	-.13**		-.01		-.02	
	ZRoleA	.05		.10		.09	
	ZC * ZIPC	-.03		-.00		.02	
	ZC * ZQW	.01		-.01		-.04	
	ZC * ZRoleC	-.01		.06		.08	
	ZC * ZRoleA	.05		.07		.06	

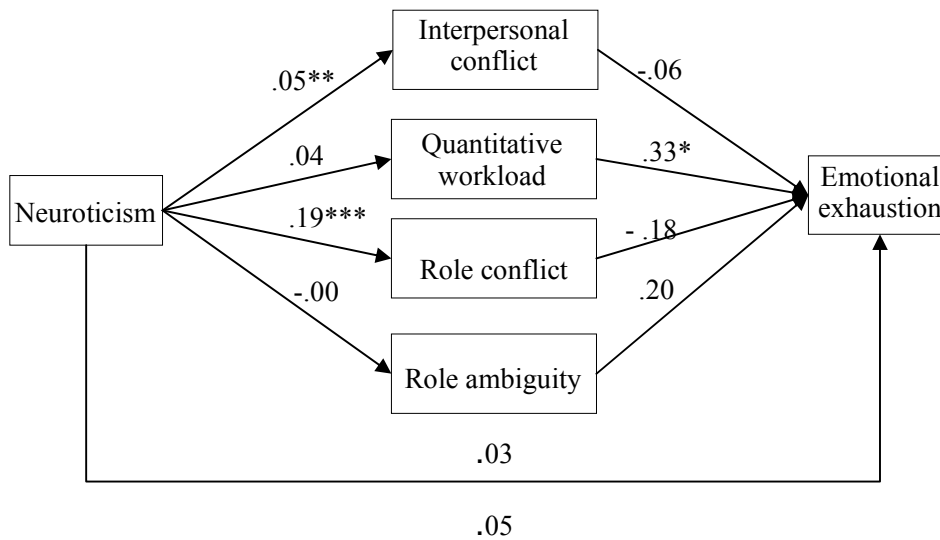
*Note.* ZE, standardized conscientiousness; ZIPC, standardized interpersonal conflict; ZQW, standardized quantitative workload; ZRolec, standardized role conflict; ZRolea, standardized role ambiguity.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>a</sup> $n = 404$ . <sup>b</sup> $n = 400$ . <sup>c</sup> $n = 400$ .

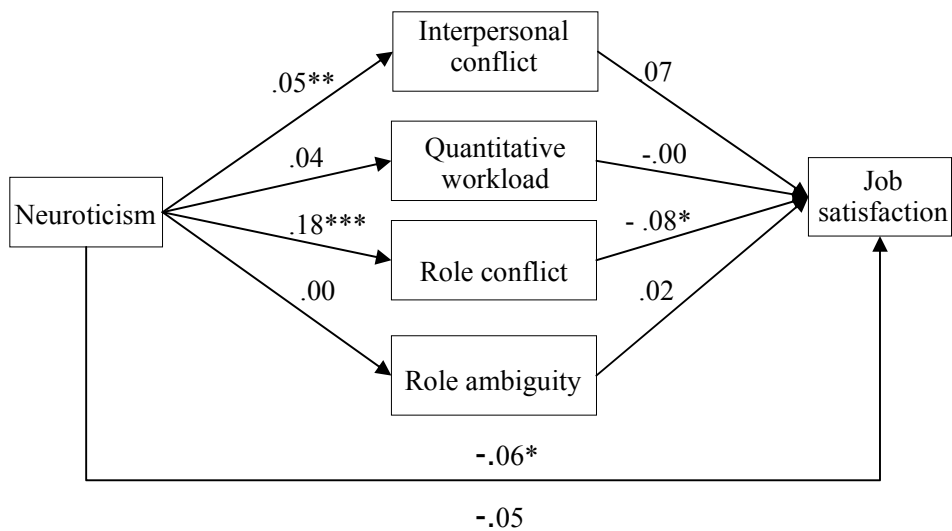
## **VII. FIGURES**



**Figure 5.** Multiple Mediation Bootstrap Analysis of Relationships between Neuroticism and Depression as Mediated by Four Perceived Stressors. The coefficient above the path from neuroticism to depression represents the total effect of neuroticism on depression with no mediators in the model; the coefficient below the path represents the direct effect of neuroticism on depression when the mediators are included in the model. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

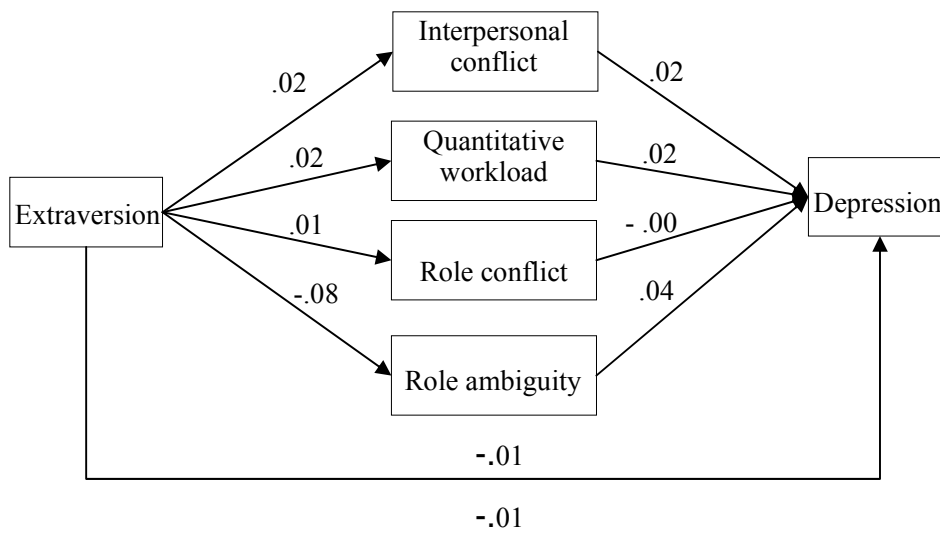


**Figure 6.** Multiple Mediation Bootstrap Analysis of Relationships between Neuroticism and Emotional Exhaustion as Mediated by Four Perceived Stressors. The coefficient above the path from neuroticism to emotional exhaustion represents the total effect of neuroticism on emotional exhaustion with no mediators in the model; the coefficient below the path represents the direct effect of neuroticism on emotional exhaustion when the mediators are included in the model.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .

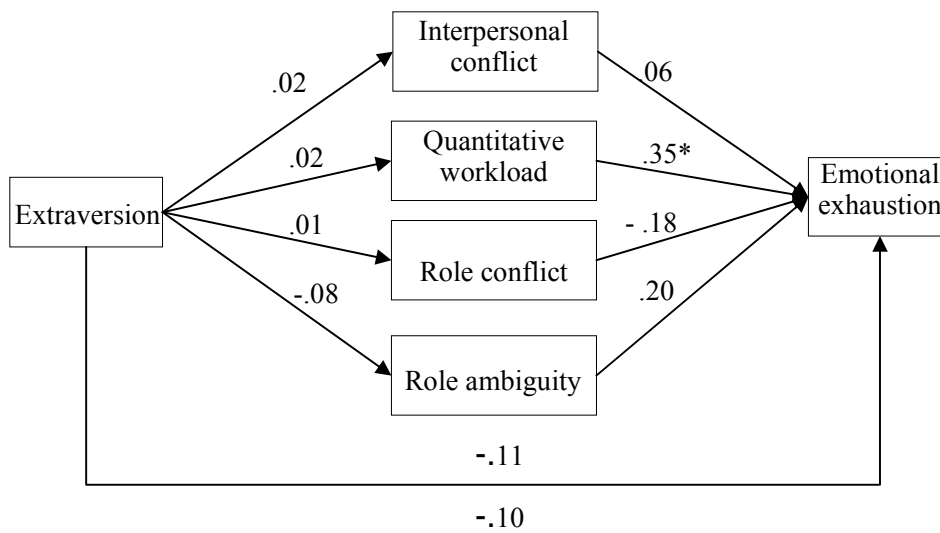


**Figure 7.** Multiple Mediation Bootstrap Analysis of Relationships between Neuroticism and Job Satisfaction as Mediated by Four Perceived Stressors. The coefficient above the path from neuroticism to job satisfaction represents the total effect of neuroticism on job satisfaction with no mediators in the model; the coefficient below the path represents the direct effect of neuroticism on job satisfaction when the mediators are included in the model.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .

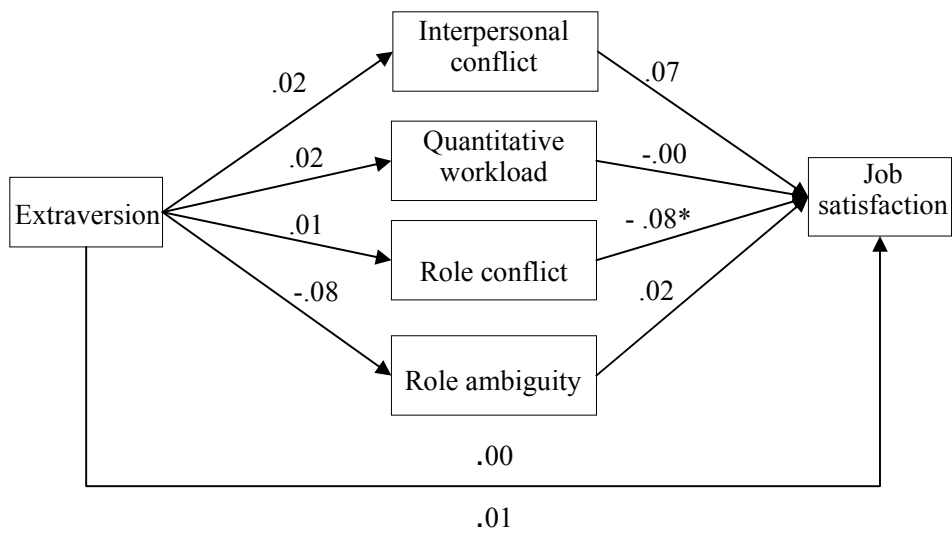




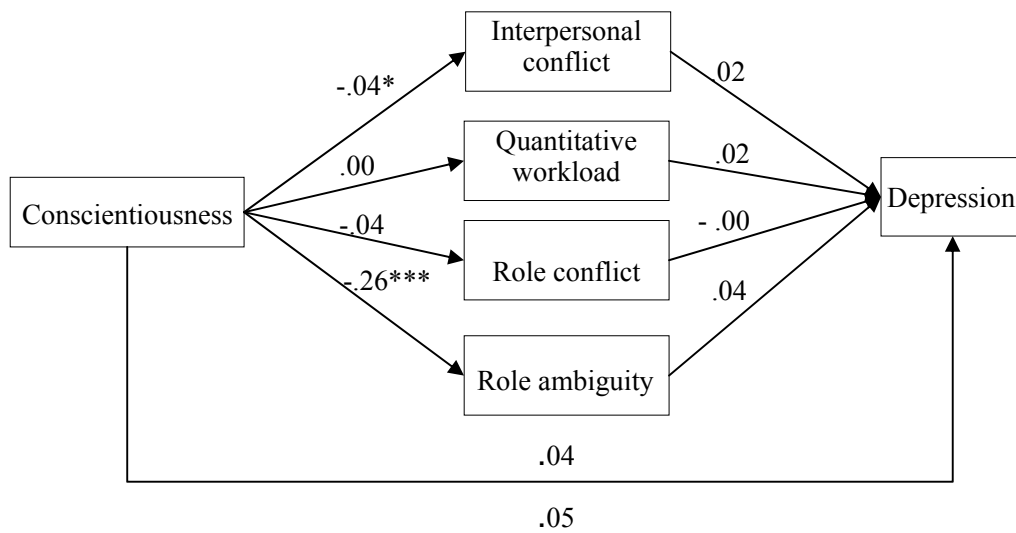
**Figure 8.** Multiple Mediation Bootstrap Analysis of Relationships between Extraversion and Depression as Mediated by Four Perceived Stressors. The coefficient above the path from extraversion to depression represents the total effect of extraversion on depression with no mediators in the model; the coefficient below the path represents the direct effect of extraversion on depression when the mediators are included in the model. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



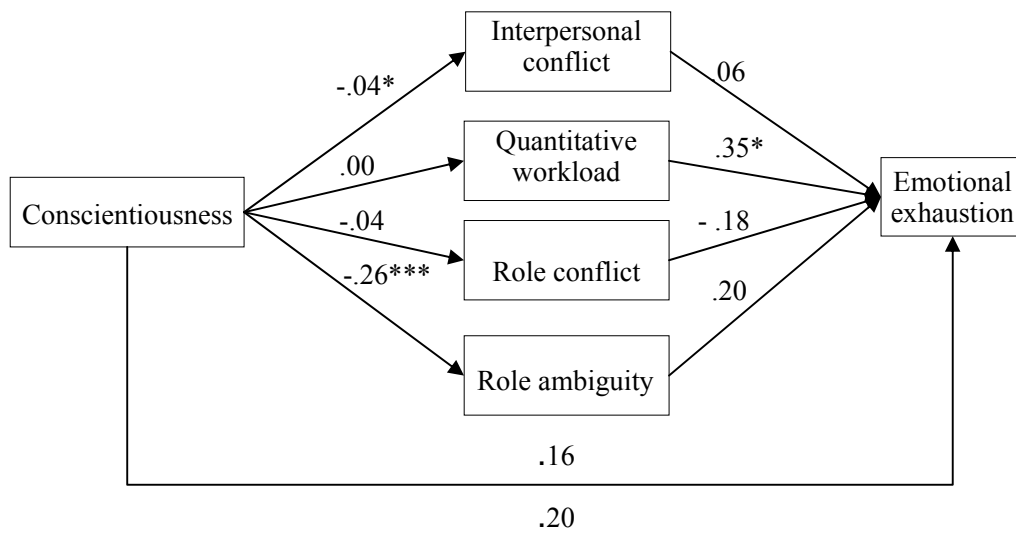
**Figure 9.** Multiple Mediation Bootstrap Analysis of Relationships between Extraversion and Emotional Exhaustion as Mediated by Four Perceived Stressors. The coefficient above the path from extraversion to emotional exhaustion represents the total effect of extraversion on emotional exhaustion with no mediators in the model; the coefficient below the path represents the direct effect of extraversion on emotional exhaustion when the mediators are included in the model. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



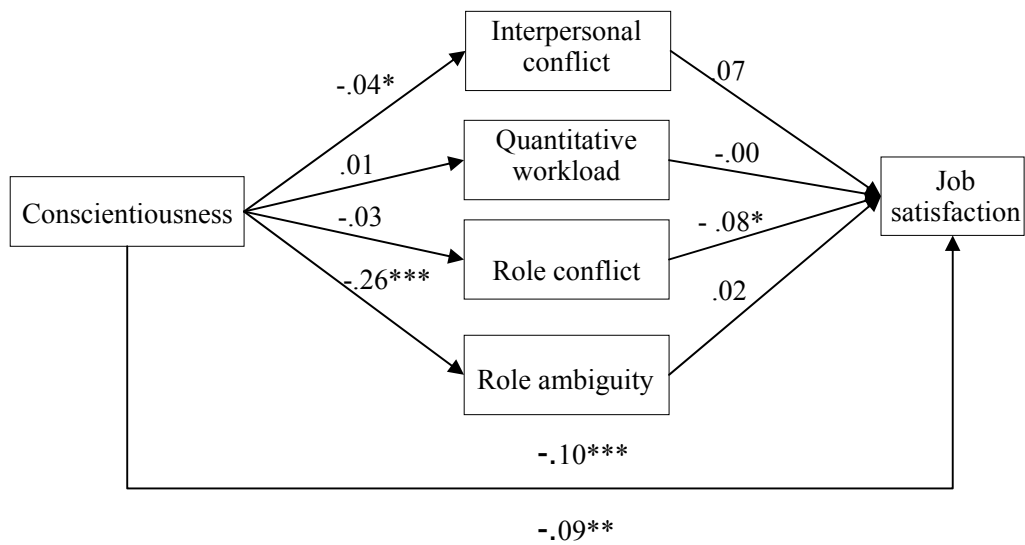
**Figure 10.** Multiple Mediation Bootstrap Analysis of Relationships between Extraversion and Job Satisfaction as Mediated by Four Perceived Stressors. The coefficient above the path from extraversion to job satisfaction represents the total effect of extraversion on job satisfaction with no mediators in the model; the coefficient below the path represents the direct effect of extraversion on job satisfaction when the mediators are included in the model. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



**Figure 11.** Multiple Mediation Bootstrap Analysis of Relationships between Conscientiousness and Depression as Mediated by Four Perceived Stressors. The coefficient above the path from conscientiousness to depression represents the total effect of conscientiousness on depression with no mediators in the model; the coefficient below the path represents the direct effect of conscientiousness on depression when the mediators are included in the model.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .



**Figure 12.** Multiple Mediation Bootstrap Analysis of Relationships between Conscientiousness and Emotional Exhaustion as Mediated by Four Perceived Stressors. The coefficient above the path from conscientiousness to emotional exhaustion represents the total effect of conscientiousness on emotional exhaustion with no mediators in the model; the coefficient below the path represents the direct effect of conscientiousness on emotional exhaustion when the mediators are included in the model.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .



**Figure 13.** Multiple Mediation Bootstrap Analysis of Relationships between Conscientiousness and Job Satisfaction as Mediated by Four Perceived Stressors. The coefficient above the path from conscientiousness to job satisfaction represents the total effect of conscientiousness on job satisfaction with no mediators in the model; the coefficient below the path represents the direct effect of conscientiousness on job satisfaction when the mediators are included in the model.  $*p < .05$ .  $**p < .01$ .  $***p < .001$ .

## **VIII. APPENDICES**

## **APPENDIX A**



## DEMOGRAPHIC INFORMATION

Date of Birth: 出生日期
Gender 性别:     Male 男     Female 女
Year of education: 受教育年数(从小学算起)
How many years and months of total work experience do you have? 工龄
How many years and months for you to work in this organization? 在本公司工作年数
How many years and months for you to work on the current position? 在该岗位工作年数
Marital status (Circle the appropriate answer): 婚姻状况 Single 单身     Married 已婚     Widowed 丧偶     Divorced 离婚     Partnered 同居
How many hours do you work per week? 您每周工作多少小时?

## INTERPERSONAL CONFLICT

Please indicate how often you do each of the following activities while at work by circling one of the four alternatives next to each statement. 请指出您在工作时下列事情发生的频繁程度，并在相应的答案上画圈。	非常频繁 Very Often				
	比较频繁 Quite Often				5
	有时 Sometimes			4	
	较少 Rarely		3		
从不 Never	2	1			
1. How often do you get into arguments with others at work? 在工作上与别人争论	1	2	3	4	5
2. How often do other people yell at you at work? 别人对你叫喊发脾气	1	2	3	4	5
3. How often are people rude to you at work? 别人对你不礼貌	1	2	3	4	5
4. How often do other people do nasty things to you at work? 别人对你做可恶的事情	1	2	3	4	5

## QUANTITATIVE WORKLOAD

<p>Please indicate how often you do each of the following activities while at work by circling one of the four alternatives next to each statement. 请指出您在工作时下列事情发生的频繁程度，并在相应的答案上画圈。</p>	每天多次 Several times per day				
	每天一两次 Once or twice per day				
	每周一两次 Once or twice per week				
	每月一两次 Once or twice per month				
	每月不到一次或从未发生 Less than once per month or never				
1. How often does your job require you to work very fast? 你需要工作得非常快。	1	2	3	4	5
2. How often does your job require you to work very hard? 你需要工作得非常辛苦。	1	2	3	4	5
3. How often does your job leave you with little time to get things done? 你需要在很短的时间内完成工作。	1	2	3	4	5
4. How often is there a great deal to be done? 工作量非常大。	1	2	3	4	5
5. How often do you have to do more work than you can do well? 工作量大到你不能很好地完成它们。	1	2	3	4	5

**FFM TRAITS (EXTRAVERSION, CONSCIENTIOUSNESS, NEUROTICISM – 8**

**ITEMS EACH)**

<p>Please use this list of common characteristics to describe yourself as accurately as possible. When making your ratings, describe yourself as you are at the present time, not as you wish to be in the future. Next to each characteristic, please circle one of the nine alternatives to indicate how accurately each characteristic describes you.</p> <p>以下特征在多大程度上可以准确地描述你? 当作判断时, 请根据你现在的状况进行评估, 而不是你对自己未来的期望。在每个特征旁, 请在最恰当的数字上画圈。</p>	Extremely accurate 极其准确								
	Very accurate 非常准确								
	Moderately accurate 比较准确								
	Slightly accurate 有点准确								
	Neutral 不确定								
	Slightly inaccurate 有点不准确								
	Moderately inaccurate 比较不准确								
	Very inaccurate 非常不准确								
	Extremely inaccurate 极其不准确								
1. Bashful 害羞的。 <b>ER</b>	1	2	3	4	5	6	7	8	9
2. Bold 大胆的。 <b>E</b>	1	2	3	4	5	6	7	8	9
3. Careless 粗心的。 <b>CR</b>	1	2	3	4	5	6	7	8	9
4. Disorganized 缺乏条理。 <b>CR</b>	1	2	3	4	5	6	7	8	9
5. Efficient 效率高的。 <b>C</b>	1	2	3	4	5	6	7	8	9
6. Energetic 经历充沛的。 <b>E</b>	1	2	3	4	5	6	7	8	9
7. Envious 爱羡慕别人的。 <b>N</b>	1	2	3	4	5	6	7	8	9
8. Extraverted 开朗的。 <b>E</b>	1	2	3	4	5	6	7	8	9
9. Fretful 易怒的。 <b>N</b>	1	2	3	4	5	6	7	8	9
10. Inefficient 效率低的。 <b>CR</b>	1	2	3	4	5	6	7	8	9
11. Jealous 爱嫉妒别人的。 <b>N</b>	1	2	3	4	5	6	7	8	9
12. Moody 喜怒无常的。 <b>N</b>	1	2	3	4	5	6	7	8	9
13. Organized 有条理的。 <b>C</b>	1	2	3	4	5	6	7	8	9
14. Practical 脚踏实地的。 <b>C</b>	1	2	3	4	5	6	7	8	9
15. Quiet 安静的。 <b>ER</b>	1	2	3	4	5	6	7	8	9
16. Relaxed 放松的。 <b>NR</b>	1	2	3	4	5	6	7	8	9
17. Shy 羞涩的。 <b>ER</b>	1	2	3	4	5	6	7	8	9
18. Sloppy 懒散的。 <b>CR</b>	1	2	3	4	5	6	7	8	9

19. Systematic 有计划的。 <b>C</b>	1	2	3	4	5	6	7	8	9
20. Talkative 健谈的。 <b>E</b>	1	2	3	4	5	6	7	8	9
21. Temperamental 多变的。 <b>N</b>	1	2	3	4	5	6	7	8	9
22. Touchy 暴躁的。 <b>N</b>	1	2	3	4	5	6	7	8	9
23. Unenvious 不爱嫉妒的。 <b>NR</b>	1	2	3	4	5	6	7	8	9
24. Withdrawn 退缩的。 <b>ER</b>	1	2	3	4	5	6	7	8	9

E = Extraversion / C = Conscientiousness / N = Neuroticism

R = Reversed Score

## ROLE CONFLICT

Please evaluate how true each statement below describe you, and circle one number of the seven alternatives: 请评估下面每项关于你工作的描述的正确程度，在相应的选项数字上画圈。	Very True 非常正确						
	True 正确						
	Somewhat True 有点正确						
	Neither True nor False 不置可否						
	Somewhat False 有点错误						
	False 错误						
	Very False 非常错误						
1. I have to do things that should be done differently. 我不得不做一些应该由其他人来做的事情。	1	2	3	4	5	6	7
2. I work under incompatible policies and guidelines. 我在存在矛盾的政策和指导方针下工作。	1	2	3	4	5	6	7
3. I have to work under vague directives or orders. 我不得不在模糊的指令下工作。	1	2	3	4	5	6	7
4. I receive an assignment without the manpower to complete it. 我接受任务，却没有足够的人力来完成它。	1	2	3	4	5	6	7
5. I receive incompatible requests from two or more people. 我接受来自两个或者更多人的矛盾的要求。	1	2	3	4	5	6	7

## ROLE AMBIGUITY

Please evaluate how true each statement below describe you, and circle one number of the seven alternatives: 请评估下面每项关于你工作的描述的正确程度, 在相应的选项数字上画圈。	Very True 非常正确						
	True 正确						
	Somewhat True 有点正确						
	Neither True nor False 不置可否						
	Somewhat False 有点错误						
	False 错误						
	Very False 非常错误						
1. I know that I have divided my time properly. 我知道我恰当的分配了我的时间。 <b>R</b>	1	2	3	4	5	6	7
2. I know what my responsibilities are. 我知道我的职责所在。 <b>R</b>	1	2	3	4	5	6	7
3. I know exactly what is expected of me. 我清楚地知道别人对我的期望。 <b>R</b>	1	2	3	4	5	6	7
4. I feel certain about how much authority I have. 我清楚地知道自己拥有多大权力。 <b>R</b>	1	2	3	4	5	6	7
5. I have clear, planned goals and objectives for my job. 我对我的工作有明确的、有计划的目标。 <b>R</b>	1	2	3	4	5	6	7

R = Reversed Score

## JOB SATISFACTION

Think of your job in general. All in all, what is it like most of the time? For each of the following words or phrases, circle: 1 for "Yes" if it describes your job, 2 for "No" if it does not describe it, or 3 for "?" if you cannot decide. 请您考虑您工作的总体情况, 并在恰当的选项上画圈。	不确定?		
	否 No		
	是 Yes		
1. Good 好的。	1	2	3
2. Undesirable 不是所希望的。	1	2	3
3. Better than Most 比大多数工作要好。	1	2	3
4. Disagreeable 不喜欢的。 <b>R</b>	1	2	3
5. Makes me content 使我满意的。	1	2	3
6. Excellent 极好的。	1	2	3
7. Enjoyable 有乐趣的。	1	2	3
8. Poor 低等的。 <b>R</b>	1	2	3

R = Reversed Score

## DEPRESSION

Please tell me how often you have experienced the following feelings during the past week: 请回答在过去的一周里面, 你体验到下述感觉的频繁程度:	总是如此 All or almost all of the time			
	大部分时间 Most of the time			4
	有些时候 Some of the time		3	
	从不或几乎从不 None or almost none of the time			
	1	2	3	4
1. You felt depressed 你感到沮丧。	1	2	3	4
2. You felt everything you did was an effort 你感到你做每件事情都很费力。	1	2	3	4
3. You experienced restless sleep 你睡眠不足。	1	2	3	4
4. You enjoyed life 你享受生活。 <b>R</b>	1	2	3	4
5. You could not get going 你无法振奋。	1	2	3	4
6. You felt lonely 你感到孤独。	1	2	3	4
7. You felt sad 你感到悲哀。	1	2	3	4
8. You were happy 你觉得高兴。 <b>R</b>	1	2	3	4

R = Reversed Score

## EMOTIONAL EXHAUSTION

<p>The following are statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, circle a “1” (one) after this statement. If you have had this feeling, indicate how often you feel it by circling the number (2 to 7) that best describes how frequently you feel that way. 下列是关于工作体验的一些描述, 请评价这些事件发生的频繁程度。</p>	每天 Everyday						
	每周几次 A few times a week						
	每周一次 Once a week						
	每月几次 A few times a month						
	每月一次或更少 Once a month or less						
	一年几次或更少 A few times a year or less						
	从不 Never						
	1	2	3	4	5	6	7
1. I feel emotionally drained from my work. 我觉得工作使我感到心力交瘁。							
2. I feel used up at the end of the work day. 每一个工作日结束时我都感到精疲力竭。							
3. I feel fatigued when I get up in the morning and have to face another day on the job. 早上起床时我会感到疲倦, 但又不得不面对新一天的工作。							
4. Working with people all day is really a strain for me. 与别人工作一整天让我感到紧张。							
5. I feel burned out from my work. 我觉得工作已经快把我的精力耗尽了。							
6. I feel frustrated by my job. 我的工作让我有挫败感。							
7. I feel I'm working too hard on my job. 我觉得我工作得过于努力了。							
8. Working with people directly puts too much stress on me. 与别人一起工作直接给我造成了很大压力。							
9. I feel like I'm at the end of my rope. 我感到智穷力竭。							

## **APPENDIX B**



MEMORANDUM

**IRB #: 09-041**

TO: Ju-Miao Cheng  
Dr. Chris Cunningham

FROM: Lindsay Pardue, Director of Research Integrity  
M. D. Roblyer, IRB Committee Chair

DATE: March 11, 2009

SUBJECT: IRB Application # 09-041: The Relationship between Personality,  
Stressors, and Strains among Chinese Workers

The IRB Committee Chair has reviewed and approved your application and assigned you the IRB number listed above. You must include the following approval statement on research materials seen by participants and used in research reports:

***The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 09-041.***

Since your project has been deemed exempt, there is no further action needed on this proposal unless there is a significant change in the project that would require a new review. Changes that affect risk to human subjects would necessitate a new application to the IRB committee immediately.

Please remember to contact the IRB Committee immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB Committee immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page <http://www.utc.edu/irb> or email us at: [instrb@utc.edu](mailto:instrb@utc.edu)

Best wishes for a successful research project.