

The Connection between Personality Traits and Perceived Stress:

An in-depth look at how personality traits can influence perceived stress during an immersion

study in a developing nation.

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### Abstract

The purpose of this study is to examine the relationships of the Big Five personality traits on levels of perceived student stress. A convenience sample of 28 undergraduate students (13 who were immersed in the culture of a developing nation and 15 in a normal setting) completed measures of perceived stress and the NEO-Personality Inventory. It was found that personality traits (neuroticism and extraversion) play a role in how educational stress is perceived, and that there is significant differences between the experimental and control groups on levels of perceived stress. The current study adds validity to previous research while adding the unique perspective of participants being immersed in the culture of a developing nation during a study abroad program.

### The Connection between Personality Traits and Perceived Stress:

An in-depth look at how Personality Traits can Influence Perceived Stress during an Emersion Study in a Developing Nation.

According to the University of Maryland Medical Center, “Stress” (2014), almost everyone experiences some sort of stress in their life. While a certain amount of stress can actually be healthy, acute stress also causes many physiological reactions that could lead to complications with health; examples of these stress reactions are increased heart rate and blood pressure, as well as lowered immune functioning that can be the result of things like acute stress. Acute stress, a type of stress that is an immediate reaction to a perceived threat, causes many neural processes that change the way the brain functions (“Stress,” 2014). The way in which stress is perceived by an individual can determine the impact it has on that individual. A stressor that may be acute to one person may not be so powerful in another. It is believed that personality plays an intricate role in how stress is perceived from one person to the next (Ebstrup, Eplöv, Pisinger & Jorensen, 2011).

There has been much research done on the topic of personality traits and perceived stress, specifically that those who are high in neuroticism are more likely to perceive life events as highly stressful while those high in extraversion are less likely to perceive life events as stressful (Ebstrup, et. al., 2011). Travel to a developing nation (or any foreign culture) causes excessive acute stress, due to the many cultural and environmental changes that a person undergoes while immersed in this type of foreign environment, which is generally referred to as culture shock (Berno & Ward, 2005). Thus, the connection between the Five Factor Model of personality,

perceived acute stress, and travel to a developing nation was examined and compared to a control group that did not leave their country of origin.

This topic is important to study for many different reasons. According to Dwyer (2004) the number of college students who participated in study abroad courses increased 236% from 1985 to 2002. With the number of students who are participating in study abroad courses on the rise, it is becoming increasingly important to make these programs as beneficial to the student as possible. In order to provide the student with the best learning experience, it might be beneficial to understand their personality traits so as to equip them with effective stress-coping skills prior to travel. It is also important to monitor acute stress on a daily basis while students are in a developing nation, to make sure that both their physical and mental health remain homeostatic.

In a more general sense, understanding the connection between personality and acute stress could allow for international studies professors to have a better understanding of what kind of study abroad experience might be more beneficial dependent on personality traits. A prior knowledge of participant's personality types might provide those who lead study abroad excursions with a base line from which to systematically measure the stress levels of those participants who are prone to experience higher levels of perceived stress.

In order to understand the impact that stress can have on an individual it is important to establish exactly what happens during times of acute stress. When a threat is perceived, the release of catecholamines (chemical messages) such as dopamine and epinephrine activate the amygdala, causing a heightened emotional response ("Stress", 2014). These catecholamines also inhibit the frontal areas of the brain that manage short-term memory, rational thought, and concentration. Other chemicals are released that cause decreased sleep and increased alertness and anxiety ("Stress", 2014). According to Palmer (2013), acute stress has direct negative effects

on learning and cognitive performance. Taking all of these things into consideration, it is easy to see that acute stress effects the body and brain in significant ways, and should be not only considered, but closely monitored while traveling to a developing nation in order to provide the student with the most learning conducive experience.

### **Stress and the College Population**

In order to show a connection between academic performance and stress, Gadzella, Baloglu, Masten, and Wang (2012) evaluated the relationship between college students and stress that enabled them to establish a connection between the two. While the main purpose of the study was to compare the Student Life Stress Inventory (SSL) with other established inventories, a significant negative relation with perceived stress and academic performance was found. Students who scored higher on perceived stress had lower academic performance than those students who scored lower on levels of perceived stress. With these results in mind, it is also important to have an understanding of stressors that are unique to college students.

Ross, Neibling, and Heckert (1999) examined what life factors caused the most stress specific to college students. The top five stressors for college students were found to be: changes in sleeping habits, vacations/breaks, changes in eating habits, increased work load, and new responsibilities. These results showed that college students in general have a unique set of stressors to deal with, whether immersed in a developing nation or not.

Other stressors that college students face appear to be related to their transition and change in roles, as in Towbes and Cohen (1996) study where the experimenters developed and tested the College Chronic Life Stress Survey (CCLSS) to measure chronic stress and psychological distress specific to the university student population. It was stated in this article that there are stressors unique to the college student population, including preparation for a

career and preparation for a relationship and family development. The researchers claimed that these specific stressors require the student to take on new professional and social roles, which could lead to unique chronic stress. Another claim made by the authors was that because college students have unsettled lives, stressors that appear to be minor to the general population could evolve into chronic stress or depression in the college student population.

### **Stress and Personality Traits**

In a study conducted by Ebstrup et. al. (2011) the association between stress and NEO Five-Factor model of personality was explored. The survey tested the Five-Factor personality model, as well as a screener that measures perceived stress. Mroczek and Almeida (2004) also conducted a study regarding daily stress levels and the Five-Factor Model of personality.

According to these researchers, those higher in neuroticism react to stressful events in a more aversive and negative way. The results of both studies showed a significant positive correlation between perceived stress and levels of neuroticism, and that those participants that scored higher on neuroticism reported an over-all higher amount of stress on any given day. Other important results included that extraversion was significantly negatively correlated with perceived stress (Mroczek & Almeida, 2014).

Furnham (1981) investigated the relationships between neuroticism, extraversion, and personality by examining these variables through the lens of choice of social situations. This information is specifically important to the current study because for the experimental group many new social situations were experienced during their immersion in a developing nation (Berno & Ward, 2005). In this study, after being screened to determine personality traits, participants were asked to rank various described social situations on whether or not they would prefer or avoid specific situations. The results showed that high extraversion scores led to

significantly different activity choices than those participants low in extraversion. It was also shown that those participants who scored high in neuroticism preferred and avoided different activities than those who scored low in neuroticism in a significant way. Considering the intense change in total environment during immersion in a developing nation, including social situations, this variable could easily cause changes in the perceived stress of persons with different personality types.

Two studies by Bolger and Schilling (1991) and Bolger and Zuckerman (1995), focusing solely on neuroticism, sought to create a suitable framework to study personality and stress and took into consideration that personality may not only play a role in the reaction to stressors but also exposure to the stressful events themselves. This framework also included the connection between personality traits and coping efforts. The results showed that those participants who scored higher in neuroticism had significantly greater reactivity to conflict, as well as significantly more exposure to conflict. Adding to those results, the coping strategies chosen and the effectiveness of those strategies for those who scored high in neuroticism were significantly different than for those who scored low in neuroticism. This showed that those high in neuroticism not only reacted differently to stress, but also perceived stress in a different way than those low in neuroticism. Additionally, the results revealed that reactivity accounted for twice as much difference in stress than exposure, which indicated that reaction was more pertinent than exposure in the perception of stress.

### **Stress and Study Abroad**

While there hasn't been much research done in the area of study abroad and perceived stress, there were some studies that were comparable in the participant group being examined. One such study, conducted by Grant and Langan-Fox (2007), found that those participants who

scored high on neuroticism also reported higher perceived stress and lower job satisfaction. The results also revealed that extraversion was negatively correlated with stress and positively correlated with job satisfaction. While job satisfaction might seem unrelated to study abroad, there was a clear connection: collecting data and/or other assignments could be considered work, so job satisfaction could also be interpreted as study satisfaction.

Lower levels of stress were positively correlated with higher levels of extraversion in a study conducted by Bakker, van der Zee, Lewig, and Dollard (2006) in which they examined the relationship between the Five-Factor model of personality and emotional exhaustion, depersonalization, and personal accomplishment of volunteer counselors. The experiment consisted of volunteer counselors working with terminally ill patients. It was determined in this experiment that those participants who scored high in neuroticism were more prone to burnout, and also had significantly higher emotional exhaustion and depersonalization, and lower feelings of personal accomplishment. Those participants who scored higher in extraversion had lower levels of emotional exhaustion and depersonalization, and higher levels of personal accomplishment. While counselors were not measured in the current study, the in-depth interviews and screeners that were administered by the students to the potentially traumatized people in the experimental group are comparable in the potential stress experienced by those participants in the Bakker et. al. (2006) study.

The purpose of the current study was to find relationships between personality (specifically neuroticism and extraversion) and stress during travel to a developing nation. Furthermore, these relationships between personality and stress were compared to a control group that consisted of subjects who did not leave their country of origin, as to examine the potential differences in overall perceived stress of the two groups. There were three hypotheses



within this study: (1) Participants who scored high on neuroticism would report higher levels of perceived stress during immersion in a developing nation, (2) Participants who scored high on extraversion would report lower levels of perceived stress during immersion in a developing nation, (3) Those participants immersed in a developing nation would report higher overall perceived stress than those who remained in their country of origin. All of these hypotheses are based on the previous research. Previously established is a connection between perceived stress and college student populations (Gadzella et. al., 2012; Ross et. al., 1999; Towbes & Cohen, 1996), the relationships between neuroticism, extraversion, and perceived stress (Bolger & Schilling, 1991; Bolger & Zuckerman, 1995; Ebstrup et. al, 2011; Furnham, 1981; Mroczek & Almeida, 2004) and heightened levels of perceived stress during travel to a developing nation (Bakker et. al., 2006; Berno & Ward, 2005; Grant & Langan-Fox, 2007).

## **Method**

### **Participants**

The participants for this study consisted of 28 individuals from a small, Midwestern university. The participants were selected by a convenience sample through their registration for an upper level psychology course. The experimental group were 13 individuals who traveled to Ghana, West Africa to participate in an immersive research project regarding post-traumatic stress disorder. This group consisted of 11 females and two males, with ages ranging from 21 – 50 and a mean age of 28.8. The control group consisted of 15 individuals: 14 females and 1 male, with ages ranging from 20 - 56 and a mean age of 27.8. Participation in the study had no effect on the final grade of the courses and was completely voluntary.

**Procedure**

The participants in both the experimental and control groups completed a total of three questionnaires. Initial measurements included a demographics survey and a revised NEO-Personality Inventory (NEO-PI; McCrae & John, 1992), to measure personality factors, specifically extraversion and neuroticism. Spontaneous Emotional Reactions (SERs) were then collected over an extended time (21 days for the experimental group and 7 days for the control group) to measure perceived stress levels.

The demographic survey was created by the researcher to collect general and study-specific information about the participants. This 18 item survey contains general questions such as age, sex, ethnicity, socioeconomic status, educational progression, marital status, disability status, etc. This survey also includes two items that are more specific to the study, which are country of origin and the number of countries other than the United States that the participant has visited.

The revised NEO-PI, which is a 40 item questionnaire, measures the Five-Factor Model of personality. It is a well-established scale that has been used for many years to measure personality (McCrae & John, 1992). The five factors measured with this scale (Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) are valid and reliable across cultures and observers (Costa & McCrae, 1995). Participants respond by reading words (i.e. bashful, efficient, rude, kind, etc.) and rate to what extent each characteristic represents their behaviors and/or feelings. The participants rate each word on a 9 point Likert scale ranging from 1 (extremely inaccurate) to 9 (extremely accurate). Standardized procedure is used for scoring purposes: items are divided into their subcategories, reverse coded if necessary,

and summed to create a score for each of the five factors. A higher score in any factor indicates more of that characteristic present in the participant's personality.

Spontaneous Emotional Reactions (SERs) were created by the researcher to measure perceived stress. A random time generator is used to create two predetermined times for every day to record perceived stress levels on a scale of 1 (no stress) to 10 (extremely stressed). Scores are averaged on three different levels to provide a daily, weekly, and total mean perceived stress rating. A high score indicates higher average perceived stress.

For the experimental group, the demographics survey and revised NEO-PI was administered to all participants through an online survey prior to departure to the developing nation of Ghana, Africa to identify each participant's general information and NEO-PI scores. During the time in Ghana, SERs were recorded every day at each predetermined time, when all participants were asked to record their current stress level. The location, activity, and any abnormalities were also recorded by the researcher during each collection time. When it was impossible for every participant to record their stress level at the exact same time (because of separation, illness, etc.), notations were made and readings were recorded at the first opportunity.

For the control group, participants were administered the demographics survey and the revised NEO-PI while attending class using a pen-and-paper version of the survey that contained a random identification number. Each participant was also given a log for SERs (with the same random identification number as the initial survey for matching purposes), which contained the same predetermined times (twice daily) for the first seven consecutive days the experimental group was given. The participants were asked to record their perceived stress rating as well as the activity they were engaged in during the recording. As with the experimental group, the control group was instructed that if it was impossible to record their perceived stress level at the

exact specified time, they were to record it at the first possible opportunity and notate this in their log. After the seven day period, the researcher returned to the class and collected the completed SER logs.

### **Results**

Using Pearson's Correlation, scores from the NEO-PI-R were compared to mean SER scores. The analysis supported hypothesis one, neuroticism and stress were positively correlated,  $r(28) = .51, p < .05$ ; participants who scored higher on neuroticism had a significantly higher mean score for SERs. The analysis also supported hypothesis two, showing a significant negative correlation between extraversion and stress  $r(28) = -.44, p < .05$ ; participants who scored higher on extraversion had a significantly lower score for SERs. See Table one for mean and standard deviation of NEO-PI and SER scores.

Using an independent samples *t*-test, overall perceived stress scores were compared for the experimental and control groups. The analysis supported hypothesis three by showing that the experimental group had significantly higher overall SER scores than those participants in the control group,  $t(26) = 6.76, p < .05$ . See Table two for mean and standard deviation of mean SER scores for both the experimental and control groups.

### **Discussion**

The results for hypotheses one and two support past research regarding neuroticism, extraversion and perceived stress in a college student population by showing that those individuals who are more neurotic perceive life events as more stressful, while those who are more extraverted perceive life events as less stressful. In a study by Schneider, Rench, Lyons, and Riffle (2011), the role of appraisals (threat and challenge) were examined within the context of neuroticism and extraversion. The results of this study showed that those high in neuroticism

reacted to a stressful task with a threat appraisal (the demands of the stressor are too high compared to the coping resources), which caused worsened task performance. Those high in extraversion, on the other hand, reacted to a stressful task with a challenge appraisal (the stressor is found to be manageable with coping resources) which resulted in significantly higher task performance than those high in neuroticism. Increased task performance due to appraisal type could decrease overall perceived stress, making appraisal type a possible explanation for the current study's results.

In another study, Bolger and Eckenrode (1991) found that individuals who score higher in extraversion perceive higher levels of social integration and perceived support. Only perceived support was significantly related to neuroticism, in that those high in neuroticism tended to perceive that they had inadequate social support, while those low in neuroticism perceived adequate social support. Another study conducted by Swickert, Rosentreter, Hittner, and Mushrush (2002) also found significant positive correlations between extraversion and several different aspects of social support. Considering the findings of these articles, it is possible that the perception of social support could be one reason why the results of this study were found. It would be beneficial for future researchers to test this variable along with perceived stress and personality, not only to measure more variables but to also test this variable for validation purposes.

The results for hypothesis three support past research that suggests a heightened state of perceived stress while being immersed in a developing nation and/or working with a population that has been exposed to trauma. College students who are immersed in a developing nation show significantly higher overall levels of perceived stress than those who do not leave their country of origin. Geeraert and Demoulin (2013), in a study which examined stress comparing a

group of students who traveled abroad versus another group who did not, found results that opposed the findings of the current study. Their results showed no significant difference in stress levels between the two groups during an initial measurement (one month prior to departure), but a significantly lower stress score for the participants immersed compared to the control group throughout the remaining measurements in the study. The most substantial difference between the participants in the Geeraert and Demoulin study and the current study was the amount of time the students were immersed in the foreign culture. The current study focused on short-term immersion (three weeks) while the Geeraert and Demoulin study measured participants in long-term immersion (one year). Thus, the amount of time the participants are immersed in the experimental setting (developing nation) should be considered in future research, as there is the potential for different results based on immersion time.

There are many general aspects of this study that future researchers should consider adapting. The inability to control the exact times for recording the SERs is one such topic. There were some times when illness or separation didn't allow for prompt collection within the experimental group, and there was an inability to monitor when recordings were made for the control group. In the future, researchers should consider this and try to develop an alternate method for the collection of SERs while maintaining a monitoring system to ensure prompt recordings. Time changes, circadian rhythms, and jetlag for the experimental group should also be examined. Mecacci and Rocchetti (1998) found that there are significant differences in perceived stress based on circadian typology, in that evening people perceive generally higher levels of perceived stress (both environmentally and socially) than morning people. This information, combined with the issues of jetlag, significant time changes, and difference in

light/dark periods for the experimental group could have caused general increases in perceived stress compared to the control group that did not experience these issues.

Future researchers could also consider age ranges in the future. A study by Stawski, Sliwinski, and Smyth (2008) showed that older participants reported less exposure to daily stressors. The fact that older individuals perceive less daily stressors could suggest that the current study needed to gather adequate data across age groups, due to a low overall (including experimental and control groups) mean age of approximately 28. There were several participants, however, who fell into older age brackets, which could have effected their SER scores. While the two groups were comparable in age, they were both on the lower end of the age spectrum. A more centralized mean age could produce different results.

The personality variables chosen to be examined, specifically extraversion, should be measured in future research. Jackson and Schneider (2014) claimed that extraversion might be beneficial for stress outcomes because those higher in extraversion are thought to focus more on the positive aspects of stress, however it was also stated that the context surrounding these outcomes and the methodology used to measure them (crucial components of extraversion are usually not controlled for during analysis) need to be further explored. This could have skewed the results of the current study because context and specific methodology regarding extraversion were not considered.

There is very little current research on this topic, so the results could prompt further research in the area and aid in the methodology used to conduct similar research. The unique contribution this research adds to the current pool of information is that in this study the experimental student group was immersed in a foreign and developing nation. This new facet could prompt educators to consider personality types while prepping students for study abroad

experiences, and could aid in students deciding where they would like to travel based on their personality traits. This information could also be beneficial to educators, as it would aid in the awareness that traveling abroad, especially to a developing nation, causes significantly higher levels of perceived stress than typical classroom learning. It would be important for the educator to consider this fact prior to and during immersion, so that coping measures and stress awareness could be utilized to enhance the students' cultural experience and academic success.



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Table 1

*Descriptive Statistics of NEO-PI scores for Neuroticism and Extraversion and Mean SER Scores*

	Mean	Standard Deviation
NEO-PI Neuroticism scores	41.57	14.12
NEO-PI Extraversion scores	47.96	15.57
Mean SER scores	4.40	1.60

*Note: N = 28*

Table 2

*Descriptive Statistics of Mean SER scores of both the Experimental and Control Groups*

	Mean	Standard Deviation
Experimental group	5.75	.85
Control Group	3.23	1.08

*Note: N (Experimental) = 13*

*N (Control) = 15*