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Recommended Citation
Yeo, Brandon, 'Associations and Interactions: Personality Aspects, Life Stress, and Depression in College Students' (2019).
Undergraduate Honors Theses. 1882.
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Associations and Interactions: Personality Aspects, Life Stress, and Depression in College Students

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Defended on April 5, 2019

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Abstract

Previous research into the associations and interactions of personality, life stress, and depression have produced sometimes inconsistent results. The current study was conducted to sharpen the resolution of personality using the Big Five Aspect (BFAS) model to better understand the associations between personality, life stress, and depression. Undergraduate students ($N = 509$) completed a survey including items from the BFAS for two aspects of neuroticism (i.e., withdrawal, volatility) and two aspects of extraversion (i.e., enthusiasm, assertiveness), as well as measures of stressful life events experienced in the past 6 months, and severity of depressive symptoms. Of eleven hypotheses inspecting intercorrelations between each construct, moderating effects of personality aspects on the life stress-depression association, and differences between aspect-depressive symptom associations, seven were supported. There were significant associations between depressive symptoms and life stress ($R^2 = 0.07$), withdrawal ($R^2 = 0.37$), volatility ($R^2 = 0.23$), and enthusiasm (negative association, $R^2 = 0.08$). Depressive symptoms were more strongly associated with withdrawal compared to volatility, and more strongly associated with enthusiasm compared to assertiveness. Of the four aspects of personality, only withdrawal moderated the association between life stress and depressive symptoms. These results support the perspective that it may not be neuroticism or extraversion per se that are associated with depressive symptoms, but parts of these broad personality traits, and to different degrees. These findings support continued research investigating personality at the aspect level, to refine the map of how personality contributes to risks and protective factors for depression.
Keywords: depression, personality, life stress, moderation, correlations, neuroticism, extraversion, college students
Associations and Interactions: Personality Aspects, Life Stress, and Depression in College Students

There is currently a body of research on how personality traits might moderate the life stress-depression association. Additionally, much work has been done on the associations between personality and depression, as well as life stress and depression. Even though these associations are well-established, there is little known about how the lower orders of personality (i.e., withdrawal and volatility for neuroticism, and enthusiasm and assertiveness for extraversion) associate with depression, or how they might moderate the life stress-depression association. It may be possible that it is not neuroticism or extraversion per se that have these effects, but parts of them instead, and to varying degrees. The current study was conducted to examine the main and moderated associations between aspects of neuroticism and extraversion, life stress, and depressive symptoms in a large sample of undergraduate students.

**Depression**

Depression is a more general term that can be divided into subtypes that necessitate differential treatment in a clinical setting. The primary diagnosis within the category of depressive disorders is major depressive disorder (MDD). A diagnosis of MDD requires the presence of at least five of nine potential symptoms (DSM-5; American Psychiatric Association [APA], 2013). These symptoms include depressed mood, anhedonia (diminished interest or pleasure in activities), marked changes in weight or appetite, insomnia/hypersomnia (too little or too much sleep), psychomotor agitation or retardation, fatigue or loss of energy, feeling worthless or guilty, difficulty concentrating or indecisiveness, or recurrent thoughts of death or suicide, including
attempts at suicide. These symptoms must persist for at least a 2-week timeframe, and of the symptoms, at least one must be either depressed mood or anhedonia. Additionally, the combination of these symptoms must accompany feelings of distress and decreased function, either socially, or in the workplace, etc. And finally, the symptoms cannot have arisen from some other medical condition or substance use.

Depression has become a global problem, causing difficulty in peoples’ personal relationships, and their ability to function socially and professionally (Sadock & Kaplan, 2007). For the year 2015, the World Health Organization (WHO) estimated the total global depression prevalence to be 322 million, 4.4% of the global population (WHO, 2017). This placed depression as fourth among the most common causes of disability, and it was projected to take second place by 2020 (Kessler, 2013). In the United States, it is estimated that 6.7% of the adult population experienced at least one major depressive episode (MDE) in 2016, and of those adults, 64% also suffered severe impairment (SAMHSA, 2017). The rates of MDE among adolescents (aged 13-17) were worse compared to adults, with an annual prevalence of 12.8% for MDE and 9% for severe impairment (SAMHSA, 2017).

Depression is more prevalent among college students when compared to the general United States population. A large survey revealed that 30% of college students felt so depressed that they found functioning to be difficult (American College Health Association [ACHA], 2008). A more recent study by the ACHA reported that 17.8% of students had either been diagnosed or treated for depression (ACHA, 2017), an increase from 13.8% reported a decade earlier (Eisenberg, Golberstein, & Gollust, 2007). This is in line with international rates of depression in college students, which range from 14%
to 39% (Schofield et al., 2016); the variation seen in these rates may result from variance in measurement, locale of study, or socio-economic status of the sample (Ibrahim, Kelly, Adams, & Glazebrook, 2013).

Depression is particularly costly both financially due to treatment, and because of opportunities missed by the sufferer. In the United States, the average age of onset of depression occurs at 22-23 years of age (Kessler & Bromet, 2013) negatively affecting critical transitions for the college-aged who are transitioning into full adulthood (Kessler, 2012). For example, depression has been associated with increased college drop-out rates, physical disorders, and could be construed as a risk for coronary artery disease, stroke, diabetes, heart attacks, and even some cancers (Kessler, 2012). Students, who in this phase of their life are accumulating experience for post-school employment and adult interpersonal relationships, can expect to face losses in both these endeavors, as depression is also associated with unemployment and poor relationship quality (Kessler, 2012).

**Life Stress and Depression**

Early conceptualizations of life stress defined it as a result of social change in an individual’s life that requires adaptation and causes stress (Holmes & Rahe, 1967); most research, both then and now, operationalizes the construct with self-reports. When first researched as a construct, stress included both positive and negative social changes; it was assumed that any social change itself was a stressor, whether that change was desired or not. Arguments challenging this assumption proposed that negative events were likely to be more stressful than positive ones, or to at least have qualitatively different effects (Sarason, Johnson, & Siegel, 1978). Follow-up research supported this argument for self-
report ratings of depression, anxiety, and tension (Kessler, 1997; Mueller, Edwards, & Yarvis, 1977; Vinokur & Selzer, 1975). Since, the association between life stress and depression has been oft-researched and verified (Kraaij & De Wilde, 2001), and differential effects of life stress on individual depressive symptoms have been found (Monroe, Harkness, Simmons, & Thase, 2001).

**Personality and Depression**

Personality is a thoroughly-researched construct with multiple conceptual variants. What each share are their attempts to measure consistent patterns of behavior and thought. The Five-Factor Model of personality (i.e., the Big Five) was first constructed a-theoretically, from studying adjective use of human traits and finding that some of these adjectives tended to cluster together, generally into five “domains” (DeYoung, Quilty, & Peterson, 2007). The five traits form the acronym, OCEAN: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Purportedly, any adjective one could use to describe another person can fit into one of these domains. This model’s taxonomy seems to be the consensus in personality theory (for a review, see John & Srivastava, 1999), although not perfect (Block, 1995; and for a brief review, see Block 2001). Additional contention arises from the potential mutability of the traits. Some research suggests that personality has strong biological and genetic bases, emerges early in childhood, and remains stable over an individual’s lifespan (Klein, Kotov, & Bufferd, 2011; Krueger & Johnson, 2008; Watson et al., 2006). On the other hand, there is evidence that suggests it can shift over the lifespan in response to changing levels of maturity and responsibilities (Fraley & Roberts, 2005), as seen in traits conscientiousness and neuroticism (Roberts, Walton, & Viechtbauer, 2006).
Neuroticism can be described, in general, as sensitivity to negative emotions and perceived threats (John & Srivastava, 1999). Individuals who score high in this trait can be aptly described as more emotionally reactive, pessimistic, or anxious than the average person. Trait neuroticism has been found to both predict depression and exacerbate its symptoms (Clark & Watson, 1999), with one study suggesting that higher levels of neuroticism multiply risk for developing depression threefold (Resnik, Garron, & Resnik, 2013). This association appears cross-culturally as well, as seen in Asian college freshmen from Beijing and Hong Kong (Song et al., 2008), and across various fields of academic study, as seen in both medical and humanities students (Rich & Scovel, 1987; Lee, 2009; Bunevicius, Katkute, & Bunevicius, 2008).

Extraversion can be described as the positive emotion trait, and individuals high in it tend to see the world as a place to engage with socially; they are often more assertive, enthusiastic, and talkative than the average person (John & Srivastava, 1999). Extraversion has been found to be a protective factor against depression and depressive outcomes, such as among students and the general population (Bunevicius, Katkute, & Bunevicius, 2008; Clark & Watson, 1999). However, it is possible that low levels of extraversion contribute to depression vulnerability (Hirschfeld et al., 1989), though these results have been inconsistent (Kendler, Neale, Kessler, Heath, & Eaves, 1996).

The relationship between personality traits and depression is not necessarily so straightforward, however. Some studies suggest that it is the interaction between high neuroticism and low extraversion that contribute to depression, more than either one of them alone (Wetter & Hankin, 2009). There has also been evidence that conscientiousness moderates the associations between both neuroticism and extraversion
with depressive symptoms (Verstraeten et al., 2009). These interactions paint a very complex picture when considering vulnerabilities to depression and buffers against it. Furthermore, if we consider Block’s critique of the hierarchical theory of personality, we might question whether these trait-level analyses are too broad. For example, some studies have investigated at what level of the trait hierarchy the personality-depression association should be examined; they found that some, but not all the facets of neuroticism correlated positively with depression (Chioqueta & Stiles, 2005) and the same applied to extraversion (Spinhoven et al., 2014; Chioqueta & Stiles, 2005), highlighting the need for more detailed personality assessments.

**Neuroticism as a Moderator on the Life Stress-Depression Association**

Although personality and life stress are often studied as independent correlates and risk factors for depression, it is possible that they interact with one another in predicting the onset, severity, and course of depression. To summarize how one might conceptualize this moderation model, one could say that for each score along the neuroticism or extraversion scale, there will be a hypothetical and corresponding change in the life stress-depression association. For example, when comparing two groups of people who face the same stressful life event, such as the death of a loved one, we may see differences in the manifestation of depressive symptoms between them. This difference could be due to their dissimilar scores in neuroticism or extraversion. One group may score higher in neuroticism, which could strengthen their negative response to the stressful life event, and lead to more severe depressive symptoms. Or, one group may score higher in extraversion, which will protect them from depressive symptoms (for an in-depth analysis and critique of the moderation model, see Kraemer et al., 2001).
Neuroticism has been found to moderate the association between life stress and depression in both adults and children (as cited in Hammen, 2005). One study looked at 7,500 individual twins and found that scores of neuroticism predicted the effect that life stress had on later depressive onset (Kendler, Kuhn, & Prescott, 2004), specifically that those higher in neuroticism were more vulnerable to depression following a stressful life event. However, some studies have found that neither neuroticism nor extraversion produce any moderating effects on the life stress-depression association (Spinhoven et al., 2011).

**Current Study**

The current study was conducted to evaluate the main and moderated associations between personality, life stress, and depressive symptoms, incorporating recent refinements and conceptualizations of both life stress and personality. Returning to the construct of life stress, refinements have been made which address the evidence that people tend to differ in stressful life event reports, according to their personality (for an in-depth analysis, see Magnus, Diener, Fujita, & Pavot, 1993). This suggests that personality may be a confound in the life stress construct, which requires that stressful life events be parsed into subjective and objective categories. Researchers generally want to assess life events that are verifiable by outside parties and are mostly agreed upon as objective. This way, the effect that personality has on life stress reporting is reduced.

As for personality, some evidence suggests that the Big-Five traits can be arranged hierarchically; that the five factors can be intercorrelated to form two meta-traits (Digman, 1997), decomposed into two aspects (DeYoung et al., 2007), or further into six facets (Costa & McCrae, 1992), depending on how detailed an analysis one needs. For
each level of detail, there are an array of different variants of the Big Five Model such as
the Revised NEO Personality Index which focuses on the five domains, with six facets
per domain (NEO-PI-R; Costa & McCrae, 1992), and the Big Five Aspect Scale which
focuses on the five domains, with two aspects per domain (BFAS; DeYoung et al., 2007).

As previously noted, results from prior research on personality as moderator of
the life stress-depression association have sometimes been inconsistent. It may be
appropriate to investigate how the components of these personality traits moderate the
association between life stress and depression. It is possible that the components of
personality, such as withdrawal and volatility for neuroticism, contribute unequally to the
moderation of the life stress-depression association. The same can be said of the
extraversion components, enthusiasm and assertiveness. For example, in a study using the
BFAS, researchers found that single aspects of neuroticism, conscientiousness, and
extraversion—withdrawal, industriousness, and enthusiasm, respectively—moderated
each other to predict depressive severity (Allen et al., 2017), revealing that it was not
neuroticism, conscientiousness, or extraversion that interacted with one other to predict
depression, but distinct parts of the traits that were at work.

The BFAS model of neuroticism and extraversion, with two aspects per domain
(DeYoung, Quilty, & Peterson, 2007), may allow for a higher-resolution look at the
moderating effect personality has on the life stress-depression association. It is possible
only one aspect of neuroticism—volatility or withdrawal—will produce a moderating
effect, or that they will produce different effects. This finer-grained look at the theoretical
risk factors for depressive outcomes could provide clinicians and future researchers a
better gauge of vulnerability to depressive symptoms. Although the higher quantity facets
of other measures, like the Revised NEO Personality Inventory, purport to provide the most detail, they do not have the same theoretical implications as the BFAS, are not as parsimonious, nor are as statistically robust, as they were derived from a literature review rather than algorithmically (DeYoung et al., 2007).

The current study was conducted to test 11 hypotheses regarding the associations and interactions between the neuroticism and extraversion aspects, stress, and depressive symptoms. Specifically, it was hypothesized that 1) stress, 2) withdrawal, and 3) volatility would be positively associated with depressive symptoms; and 4) enthusiasm and 5) assertiveness would be negatively associated with depressive symptoms. For moderating effects, it was hypothesized that both 6) withdrawal and 7) volatility would strengthen the life stress-depression association, and that both 8) enthusiasm and 9) assertiveness would weaken the life stress-depression association. When considering the differences between the aspects of neuroticism and extraversion, we hypothesized that 10) withdrawal would have a stronger association with depression than volatility; and 11) enthusiasm would have a stronger association with depression than assertiveness.

Method

Participants

Our study involved 509 participants taken from the introductory psychology subject pool at the University of Colorado Boulder (UC Boulder). Of the participants, 42.2% reported themselves as male, 57.8% as female, and 0.2% as transgender. Participants ranged in age from 18 to 33 years ($M = 19.31, SD = 1.74$). Most participants (76%) reported themselves as White, 0.8% as Black / African American, 10.8% as Asian, and 12.4% as Other (or not specified). Additionally, 12.2% identified as Hispanic, Latino,
or of Spanish origin. Participants completed questionnaires online along with other questionnaires not included in this study and received course credit for their participation. This study was approved by the Institutional Review Board.

**Measures**

All measures were administered through Qualtrics. The order in which each measure was presented was randomized using software built into Qualtrics, so that when a participant opened the survey, randomization took place. Items within each measure were also presented randomly.

**Life Stress.** To measure participants’ levels of life stress, we used a checklist of “bad events” constructed by Magnus, Diener, Fujita, & Pavot (1993), which consists of 24 items selected from previously constructed scales, chosen because of their high ratings in objectivity. Sample items included “Did not get into graduate school,” or “Victim of a non-violent crime.” Participants indicated whether each event occurred in the past 6 months, and the number of ‘yes’ responses were counted to create a total number of negative life events experienced in the last six months.

**Depressive Symptoms.** To measure depressive symptoms and their severity, we used the Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer & Williams, 2001), which consists of nine items. Participants rated the frequency with which they experienced each symptom on a 4-point scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day). Items were summed to create a total score, with higher scores indicating higher levels of depressive symptoms. Cronbach’s alpha in this sample was 0.89.
**Personality.** The Big Five Aspect Scale (DeYoung, Quilty, & Peterson, 2007) was used to measure the aspects of neuroticism and extraversion. The reliability and validity of the measure have been assessed and found to be excellent (Allen et al., 2017; DeYoung et al., 2007, 2016; Quilty et al., 2013). The BFAS consists of forty items, with twenty items for each trait ($\alpha = 0.89$ for neuroticism & $\alpha = 0.85-0.86$ for extraversion) and ten items for each aspect ($\alpha = 0.85-0.89$ for volatility, $\alpha = 0.80-0.84$ for withdrawal, $\alpha = 0.80-0.81$ for enthusiasm, & $\alpha = 0.85-0.88$ for assertiveness) (DeYoung et al., 2007). Participants were first prompted to consider “a number of characteristics that may or may not describe you.” Responses were reported using a 5-point scale (from *strongly disagree* to *strongly agree*, including a neutral option). Sample items for neuroticism were “Get easily agitated,” and “Feel threatened easily,” whereas sample items for extraversion were “Laugh a lot,” and “Am the first to act.” Items were reverse scored as needed and then summed to create total scores, with higher scores indicating higher levels of withdrawal, volatility, enthusiasm, and assertiveness. Cronbach’s alphas in this sample were 0.86, 0.89, 0.84, and 0.82 for volatility, withdrawal, enthusiasm, and assertiveness, respectively.

**Results**

**Hypotheses 1-5.** Means and standard deviations for study measures are presented in Table 1. It was hypothesized that life stress, withdrawal, and volatility would be positively correlated with depressive symptoms, and that enthusiasm and assertiveness would be negatively associated with depressive symptoms. To evaluate these hypotheses, Pearson correlations were computed; results from these analyses are presented in Table 1. As can be seen in Table 1, the results supported all but one of the five hypotheses:
assertiveness was not correlated with depressive symptoms. However, life stress was significantly positively correlated with depressive symptoms ($R^2 = 0.07$), as suggested by prior research. Additionally, there were significant positive correlations for withdrawal ($R^2 = 0.37$) and volatility ($R^2 = 0.23$) with depressive symptoms, and there was a significant negative correlation between enthusiasm and depressive symptoms ($R^2 = 0.08$).

**Hypotheses 6-9.** It was hypothesized that the BFAS aspects could theoretically moderate the life stress-depressive symptoms association. Specifically, it was hypothesized that as withdrawal and volatility increased, the life stress-depressive symptoms association would strengthen, and that as enthusiasm and assertiveness increased, the life stress-depressive symptoms association would weaken. To evaluate these hypotheses, each life stress and BFAS aspect score was mean deviated (i.e., centered). Then, Personality $\times$ Life Stress interaction terms were created for each of the four BFAS aspects. Linear regression analyses were then conducted, in which depressive symptom severity was regressed on the interaction term. This adjusted for the two component terms (i.e., a BFAS aspect and the life stress score). Each BFAS aspect was analyzed separately. Results from these analyses are presented in Table 2. As can be seen, of the four hypotheses, one was supported. Specifically, after adjusting for the component terms, the interaction between withdrawal and life stress was significantly associated with depressive symptoms; in comparison, there were no significant interactions between volatility, enthusiasm, or assertiveness and life stress regarding depressive symptoms. The regression coefficient for life stress presented in Table 2 for the withdrawal-life stress interaction ($b = .67, p < .001$) represents the association
between life stress and depressive symptoms when withdrawal is at its mean. This could be done because the component terms were centered before creating the interaction terms. To help interpret the interaction, we created Withdrawal × Life Stress interaction terms for scores of withdrawal one standard deviation above and one standard deviation below the mean withdrawal score. These new interaction terms were then analyzed separately, using the same calculations detailed above. When withdrawal scores one standard deviation above the mean were set to zero, the life stress-depressive symptoms association ($b = .95, p < .001$) was larger than when withdrawal scores were at their mean. Similarly, when withdrawal scores one standard deviation below the mean were set to zero, the life stress-depressive symptoms association ($b = .40, p < .001$) was smaller. This pattern of results suggests that the life stress-depressive symptoms association strengthens as withdrawal increases, which is consistent with the hypothesis.

**Hypotheses 10 & 11.** It was hypothesized that there would be differences in the strength of association between the BFAS aspects and depressive symptoms. Specifically, it was hypothesized that withdrawal would have a significantly stronger positive association with depressive symptoms than volatility, and that enthusiasm would have a significantly stronger negative association with depressive symptoms than assertiveness. To test these hypotheses, $t$-tests for dependent correlations were performed. Consistent with the study hypotheses, the withdrawal-depressive symptoms association was significantly stronger than the volatility-depressive symptoms association, $t(506) = 4.30$, $p < .001$, and the enthusiasm-depressive symptoms association was significantly stronger than the assertiveness-depressive symptoms association, $t(506) = -4.66$, $p < .001$.

**Discussion**
This study aimed to evaluate the associations and interactions of the BFAS neuroticism and extraversion aspects, life stress, and depressive symptoms. This was done to replicate past findings on the life stress-depression association, and the personality-depression association. However, the lower order BFAS aspects were used in place of the standard Big Five traits, to examine potential differential associations between the aspects belonging to the same higher order trait, as well as individual moderating effects on the life stress-depression association.

Of the five hypotheses involving bivariate associations, four were confirmed by the results. There were significant associations between life stress, withdrawal, volatility, enthusiasm, and depressive symptoms. Volatility, an aspect of extraversion, was not associated with depressive symptoms. These findings are generally consistent with most previous research on life stress and broad measures of neuroticism and extraversion. As individuals experience more life stress through recent negative life events, they tend to report higher levels of depressive symptoms.

It’s purported that personality produces a vulnerability or resistance to depressive symptoms. However, it could very well be that those with worse depressive symptoms report higher in withdrawal and volatility, and lower in enthusiasm than they would otherwise. A longitudinal design would begin to address these concerns. Additionally, there is evidence that personality correlates with the occurrence of stressful life events (Magnus, Diener, Fujita, & Pavot, 1993); the study found that higher levels of extraversion were positively associated with the occurrence of positive and objective life events (note that the current study did not look at positive life events), and that the same was true regarding higher neuroticism for negative and objective life events. Though this
study did not formulate any hypotheses for the personality-life stress association, nor account for any effects this could have had on other analyses, the personality-life stress association is reported in Table 1. According to the former study, it seems that life stress and personality can be viewed as distinct constructs. Future research may benefit from inspecting this association using the BFAS model to obtain a more detailed understanding of precisely which aspects correlate with objective life events.

This is one of two studies (the other being Quilty et al., 2013) to look at the relationships between the BFAS model of personality and depressive symptoms. For withdrawal, volatility, and enthusiasm, this study’s findings seem to corroborate those found in the Quilty et al. (2013) study. However, this study found no significant association between assertiveness and depressive symptoms, whereas the study by Quilty et al. did. This may be because the sample in the former study was taken from those with “a lifetime diagnosis of either a unipolar mood disorder or bipolar mood disorder,” perhaps increasing the number of reports of those experiencing depressive symptoms. Or, differences between the earlier study and the current study could be the result of differences in measurement. The study by Quilty et al. used the Hamilton Depression Rating Scale, not the PHQ-9.

As mentioned, there have been some inconsistencies in prior research when inspecting the association between extraversion and depressive symptoms. In theory, the current study reveals that it’s not extraversion per se that is negatively associated with depressive symptoms, but that it is enthusiasm only. If this pans out in future longitudinal studies, it may become useful to include measures of enthusiasm in interviews when considering patients’ resistance to developing depressive symptoms.
The aspect level of personality analysis proved useful for understanding the association between neuroticism and depressive symptoms as well. We hypothesized that withdrawal would have a significantly larger association with depressive symptoms than volatility, and the results supported this hypothesis. It is possible that withdrawal carries heavier weight when considering depressive symptom vulnerability. This would mean that those who are more likely to internalize rather than externalize their distress, and are more anxious or fearful, rather than irritable (DeYoung, Quilty, & Peterson, 2007), will experience worse depressive symptoms. Volatility seems to include more action-oriented tendencies, driven by anger, or instability of mood, and lack of emotional control. In our results, both were associated with higher levels of depressive symptoms, but the association between withdrawal and depressive symptoms was significantly larger than the association between volatility and depressive symptoms.

This study hypothesized that each of the four aspects would moderate the life stress-depression association. One of these hypotheses was supported by the results. As withdrawal increased, the association between life stress and depressive symptoms strengthened. This may indicate that higher withdrawal acts as a risk factor for depressive symptoms arising from the experience of life stress. Some past research supports this finding, in part. A longitudinal study found that neuroticism moderated the life stress-depression association in a Dutch sample (Ormel, Stewart, & Sanderman, 1989). However, to reiterate, other research has found no support for neuroticism as a moderator of the life stress-depression association (as well as for extraversion in Spinhoven et al., 2011). The latter study noted that this inconsistency may have arisen due to different methodology (citing Brown & Harris, 1978). However, the current study may indicate a
conceptual rather than methodological explanation for this inconsistency, in that volatility did not produce moderating effects on the life stress-depression association, while withdrawal did. Someone scoring high in neuroticism might be scoring high in volatility, but not in withdrawal, producing null moderating effects at the broad trait level. But at the aspect level, we see that it may be withdrawal only that tends to moderate the life stress-depression association, highlighting the utility of lower order personality models. The same problems with consistency have been found with extraversion as well, and may be remedied by the use of lower order personality models. However, this study can provide no insight into how extraversion might produce moderating effects, if at all. This could indicate that the problem, as illuminated by Spinhoven et al., may in fact be methodological.

It is important to note that the sample taken for this study was narrow in age-range and race, as reported above. This limits the generalizability of the findings to a general population. Additionally, there were more women than men in the sample. When speaking of general trends, it may be best appropriate to place these results in a university undergraduate context. Future research should aim to address this issue and enhance the external validity of the results by sampling a distribution more representative of a general population.

Additionally, this study used a cross-sectional design, so no causation can be inferred from the data. It is entirely possible that those with worse depressive symptoms tend to report more life stress (Brown & Harris, 1978) which could explain why the association appeared significant in the analysis. Further, this study used a conceptualization of life stress as defined by number of life events in the past 6 months.
Nothing can be said of what long-lasting effects older stressful events might have on depressive symptom reporting.

Results from the current study suggest there is promise in researching the associations between personality and depressive symptoms with lower order personality models. The added resolution of models like the BFAS may provide additional insight into the already researched relationships and interactions between constructs like life stress and depression. Given that the BFAS has been seldom utilized, there is a need for re-examination of previous studies on personality and psychopathology that has used the traditional Big Five order of personality traits, in order to better understand how personality plays a role as a risk or protective factor in depression.
References


American College Health Association-National College Health Assessment II: Reference Group Executive Summary Fall 2017. (2017). American College Health Association


Table 1

*Means, Standard Deviations, and Intercorrelations of Depressive Symptom Severity (PHQ-9), Life Stress (LS), and Scores on Withdrawal (W), Volatility (V), Enthusiasm (E), and Assertiveness (A)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>PHQ-9</th>
<th>LS</th>
<th>W</th>
<th>V</th>
<th>E</th>
<th>A</th>
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<td>5.92</td>
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<td>LS</td>
<td>2.02</td>
<td>1.65</td>
<td>.26***</td>
<td>1</td>
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<td></td>
<td></td>
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<td>W</td>
<td>29.39</td>
<td>7.35</td>
<td>.61***</td>
<td>.12**</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>V</td>
<td>26.91</td>
<td>7.39</td>
<td>.48***</td>
<td>.15**</td>
<td>.63***</td>
<td>1</td>
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<tr>
<td>E</td>
<td>35.45</td>
<td>6.54</td>
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<td>-.05</td>
<td>-.40***</td>
<td>-.20***</td>
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<td>.09*</td>
<td>-.37***</td>
<td>-.03</td>
<td>.44***</td>
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</table>

* p < .05. ** p < .01. *** p < .001.
Table 2

*Interactions between Personality Aspects and Life Stress Predicting Depressive Symptoms*

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SE</th>
<th>p</th>
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