

# Change in Affect as a Function of Extraversion and Stress

## *Monitoring Daily Life With a Daily Mood Diary*

Imagine your typical day including how you felt when you woke up, if you felt social and in high spirits throughout the day or if you experienced anxiety, stress, or feelings of despair. What influenced your mood? Did factors exist that caused a shift in your mood, an argument or a looming deadline? Most importantly did your mood affect social interactions or job satisfaction? Daily events drive our emotional states, thus affecting our behaviors. Identifying the determinants of mood has implications in our everyday lives and field of psychology. By understanding the predictors of mood we can more effectively assign coping strategies, create programs to combat mood-related disorders, and increase self-awareness of mood and their effect on our work and social structures. The current study extends the research on mood correlates to examine the relationship between extraversion and stress on daily mood.

Psychologists have comprehensively investigated factors related to mood fluctuations; however most of this research was conducted

in a laboratory setting. Such research conditions only allow minimal assessment opportunities such as before, during, and after a stressful event such as surgery or an exam. The A-State scale of the State-Trait Anxiety Inventory,<sup>1</sup> an index of transient anxiety, is the most commonly used measure of affect in this research. Such research consistently reveals that anxiety increases as the participant approaches the stressor, remains high during the event, and subsides to baseline level afterwards<sup>2</sup>. Although it is important to understand these events and their role in naturally occurring mood fluctuations, they cannot account for normal day-to-day variations in mood. Researchers have attempted to resolve this problem by using diary methods: an intraindividual design in which mood is assessed over several occasions instead of just two or three times.

Daily diary designs are repeatedly utilized in the study of psychological processes such as emotional well-being, self-regulation, self-awareness, and appraisals of social situations.<sup>3,4</sup> Diary methods allow for investigation

of self-reported experiences in their natural context providing useful knowledge over and above information obtained by more traditional designs.<sup>5</sup> The probability of retrospection is radically reduced by minimizing the amount of elapsed time between an experience and the self-report of this experience. Diary studies allow for frequent self-reports on the events and experiences of participant's daily lives to be obtained. These self-report instruments provide the means to examine social, psychological, and physiological processes within everyday situations, including personality processes<sup>6,7,8</sup> marital and family interaction<sup>9,10</sup> physical symptoms,<sup>11</sup> and mental health.<sup>12</sup> Limitations of diary methods are also worth discussing. Some studies require detailed training sessions for participants. Another is the difficulty in achieving the level of participant commitment and dedication necessary for daily diary assessment. Habituation is also a problem when the study asks the participant to answer the same questions in the same order for weeks at a time.

In past research mood was often assessed using a 7-point scale of good versus bad mood whereas daily life events were placed in broad categories such as pleasant or unpleasant. Through this model it has been widely concluded that events strongly influence an individual's daily mood level.<sup>13,14,15</sup> Other research correlated intraindividual mood fluctuations with specific types of life events.

Even when categorization of events was more differentiated, conclusions were limited to mood assessments using a single scale. By characterizing mood by two dominant dimensions, called Positive Affect (PA) and Negative Affect (NA), it is possible to obtain distinctive correlates of mood. Clark & Watson dutifully explain PA and NA.<sup>16</sup> Briefly,

high PA is best characterized by words expressing energy and pleasurable experiences such as *active, excited, alert, enthusiastic, and strong*. Low PA is most clearly defined by words expressing fatigue, such as *sluggish and drowsy*. Conversely, NA is best characterized by words that represent the extent to which a person is feeling upset or unpleasantly aroused. For high NA such words as *distress, nervous, angry, guilty, and tense*, whereas words such as *calm and relaxed* represent low NA.

When positive and negative moods are assessed separately, instead of PA versus NA in a single rating scale, they are more adequately related to pleasant and unpleasant events.<sup>17,18,19,20,21,22</sup> The occurrence of pleasant events and not the occurrence of unpleasant events are related to PA; whereas NA is related only to experiencing negative events. When events are categorized more explicitly, the two dimensions have characteristic correlates: PA is related to trait measures of Extraversion (E) or Positive Affectivity (PA); in contrast, NA is associated with trait measures of Anxiety, Neuroticism, or Negative Affectivity (NA).<sup>23,24</sup> Furthermore, PA is related to measures of social activity such as attending or participating in sporting events and NA is associated with physical complaints and poor mental health.<sup>25,26,27,28,29,30,31,32,33,34,35,36</sup>

Clark and Watson's daily diary research investigated relationships between life events and mood.<sup>37</sup> They particularly examined common events and their relationship to positive affect and negative affect. Their research found high PA was related to social activity, whereas NA was unrelated. The importance of assessing NA and PA independently was determined through their study.

Major recent developments using diary studies aim to explain variability in mood as a function

of daily processes and personality characteristics. Past research has held that extraversion predisposes people to experiencing positive affect and neuroticism to experiencing negative affect.<sup>38,39,40</sup> Through a daily diary, administered at bedtime for eight consecutive nights, David et al. found that neuroticism was associated with both positive and negative daily mood, whereas extraversion was found to be associated with only positive mood.<sup>41</sup> Neuroticism and extraversion were assessed with the NEO Personality Inventory.<sup>42</sup> The NEO-PI (Form S) consists of 181 items answered on five point scale. Their findings show that undesirable events were stronger predictors of negative mood than were desirable events, but the relative impact of undesirable events were smaller when predicting positive mood. This provides evidence that supports a model that treats the positive and negative affect systems as distinct but interconnected. Later, Clark & Watson determined that PA and NA should be studied independently as NA had no relation on social activity whereas PA had a large relation.<sup>43</sup>

Diary methods have also been used in recent research studying the effects of stress on mood states. Research examining how stress at work affects mood related daily changes in both workload and social interaction with co-workers and supervisors to daily mood and health complaints.<sup>44</sup> Results show that an increase in job stress is associated with a same-day decrease in physical and psychological well-being.

In a review of the association of daily stress with mood, day-of-the-week is shown to have an influence on mood.<sup>45</sup> Regardless of how stress and mood are measured there is a same-day association between stress and mood.<sup>46</sup> However, only those participants with strong stress-mood

relationships produce the overall association. Earlier research assessed the influence of daily stress on mental health, specifically negative mood. Daily stress explained up to 20% of the variance in mood. It was revealed that interpersonal conflicts were the most distressing events.

The aim of this study is to determine variability in affect as a function of stress and extraversion over a two week period. Although previous research found relationships between extraversion and mood, less evidence is available concerning extraversion and daily mood. This study expands on past research by using daily diary methods to assess the correlates of mood several times throughout the day, compared to previous studies of daily mood that only assessed mood only once a day, typically at night. Past research evaluated extraversion with other personality traits, whereas this study hopes to find a relationship between extraversion and stress. Previously stressful events were used in mood assessment whereas in this study daily events were not screened as pleasant or unpleasant. This would ideally mimic life events as they typically occur without looking for particularly stressful experiences. This research will focus on assessing mood during the afternoon and evening on Mondays by using the second time point and third time point on each Monday to create a multiple regression model.

Just as Costa and McCrae found that extraversion was associated with state positive affect it is hypothesized that our results will mimic these findings in daily positive mood. Previous findings show stress associated with increase in negative affect and decrease in positive affect.<sup>48,49,50</sup> On the basis of available evidence, it is expected that through these measures extraversion will only have a relationship with positive

affect and stress will be associated with increases in negative affect and decreases in positive affect during Monday afternoons and evenings. It is hypothesized that a model including both extraversion and stress would mirror these results.

## **METHODS**

### *PARTICIPANTS*

The study consisted of 83 college freshmen (37 men and 46 women) at Carnegie Mellon University, aged 18-25. Most students (N=55, 66.3%) were Caucasian, although a considerable amount (N=20, 24.10%) were of Asian descent. The remainder were Hispanic (N=2, 2.4%), African American (N=2, 2.4%), or other (N=4, 4.8%). Participants were recruited in four separate cohorts (September 2000 and 2001 and November 2000 and 2001). The cohorts began the study in October 2000 (N=24, 28.9%), December 2000 (N=30, 36.1%), September 2001 (N=12, 14.5%). On completion of the study, subjects were paid \$120. The protocol was approved by the Institutional Review Board of Carnegie Mellon University.

### *DESIGN AND PROCEDURE*

Participants were recruited through advertisements in university publications, announcements at social and academic function, and postings around campus. Upon contacting the project office, interested participants received details about the study and then underwent a screening interview to determine eligibility. Those who had no history of chronic mental illness, and no regular medication regimen other than oral contraceptives were deemed in good health and scheduled for the study. During a preliminary session, participants provided written informed consent, completed an intake survey featuring a battery of demographic, psychological, and health practice questionnaires, and

received training in daily monitoring procedures. Participants then began 13-days of ecological momentary assessment.

Each subject was given a palm computer (ThinkPad; IBM Corp., White Plains, NY) to aid in the data collection process. Four times each day (1, 4, 9, 11 hours after waking up), the computer sounded an alarm signaling the participants to answer a series of questions reporting their current affect and stress. This schedule was designed on the basis of pilot studies to capture the diurnal rhythm of mood states.<sup>51,52</sup> Their answers were recorded in the computer's memory and retrieved at the end of the EMA period.

### *MEASURES OF AFFECT AND PSYCHOLOGICAL STRESS*

Mood was assessed at each diary measure by using four negative items associated with two subgroups of negative affect (NA) and eight items associated with three subgroups of positive affect (PA). Mood-select adjectives from Profile of Mood States were chosen. NA subgroups were anxiety (jittery, nervous) and depression (unhappy, sad), whereas PA included subgroups of vigor (active, intense, lively, enthusiastic), well-being (happy, cheerful), and calm (calm, relaxed). Each item was rated on a scale from 0 (not at all accurate) to 4 (extremely accurate) with respect to how much that word reflected how participants felt at that moment. For the purposes of this study, one adjective was chosen to represent both PA and NA. Cheerful is used as a measure of PA and sad is used as a measure for NA.

Psychological stress measures were also obtained at each diary entry. At each moment of assessment, participants reported the extent to which they felt overwhelmed and stressed. A Likert scale was used to

rate the responses. The mean stress score across the entire thirteen days of self-assessment was used as the measure of stress.

*MEASURES OF EXTRAVERSION*

Extraversion was assessed at baseline using a modified version of the subscales from Goldberg’s Big Five Scale.<sup>53</sup> Participants were required to indicate how accurately a list of traits (e.g., anxious, extraverted, sad, talkative) reflected how they feel on a scale from 0 (not at all accurate) to 4 (extremely accurate). The alphas for extraversion were .92.

**RESULTS**

*PRELIMINARY ANALYSIS AND DESCRIPTIVE STATISTICS*

Prior to the primary analyses, descriptive statistics were obtained for the independent variables: cheerful and sad. Covariance matrices were obtained to adequately account for multicollinearity between variables extraversion and stress. Out of the 83 participants, five observations were missing, therefore we used 77 participants in data analysis. The Pearson correlation coefficients between extroversion and stress were significant ( $r = .86, p = -.02$ ). Table 1 displays the descriptive statistics for each of the variables in the study. We used an alpha level of .05 for all statistical tests.

*PRIMARY ANALYSES*

Simultaneous multiple regression analyses were conducted to examine the predictive relations between dependent variables, extraversion and stress, and mood on Monday afternoons. Two Mondays occurred during the thirteen day period corresponding to day two and day nine. The second assessment of the day, completed four hours after the participant woke up, was utilized for analysis landing typically between

noon and three in the afternoon. For comparison purposes the third assessment, completed nine hours after waking, was also used representing the time point most closely matching with Monday evenings. Cheerfulness and sadness ratings were taken from these time points on both Mondays.

*EXTRAVERSION AND STRESS AS PREDICTORS OF POSITIVE AND NEGATIVE AFFECT*

Data analysis revealed mixed results. The predictors, extraversion and stress, did not reliably predict positive or negative affect over both Monday afternoons and evenings. However, both extraversion and stress together did show a statistically significant relationship with positive affect,  $R^2 = .07, F(2, 75) = 3.78, p = .03$ , and negative affect,  $R^2 = .09, F(2, 75) = 4.82, p = .01$ , on the first Monday afternoon. Both extraversion and stress together did not, however, show a statistically significant relationship with either positive affect,  $R^2 = .02, F(2, 75) = 1.57, p = .21$ , or negative affect,  $R^2 = .05, F(2, 75) = 2.76, p = .07$ , on the second Monday afternoon. These results were replicated during the third time point with both extraversion and stress reliably predicting positive and negative affect. Table 2 presents a summary of the results from the final analyses for the second time point (Monday afternoons) and the third time point (Monday evenings).

*EXTRAVERSION AS A PREDICTOR OF POSITIVE AND NEGATIVE AFFECT*

As an individual predictor extraversion was only a statistically significant predictor of positive affect on the first Monday afternoon of the study,  $t(75) = 2.34, p = .02$ . Extraversion did not significantly predict positive mood on the second Monday or negative affect across

both Mondays. Examining the third time point revealed slightly different results. Extraversion did significantly predict positive affect only on the first Monday evening, but also predicted negative affect on the first Monday evening. Again, extraversion did not independently predict positive or negative affect on the second Monday evening.

#### *STRESS AS A PREDICTOR OF POSITIVE AND NEGATIVE AFFECT*

Independently, stress was the only predictor to yield a statistically significant relationship with negative affect across both Mondays during the afternoon, day two:  $t(75) = 3.00$ ,  $p = .003$  and day nine:  $t(75) = 2.10$ ,  $p = .04$ . However, it was not a significant predictor of positive affect across both Monday afternoons, day two:  $t(75) = -1.56$ ,  $p = .12$  and day nine:  $t(75) = -.71$ ,  $p = .48$ . These results were replicated during Monday evenings where stress, again, was not a predictor of positive affect across both Mondays. However, stress was only a significant predictor of negative affect on the first Monday evening,  $t(75) = 5.07$ ,  $p < .0001$ .

#### **DISCUSSION**

This is the first study to evaluate the change in affect as a function of both extraversion and stress. To an extent our results confirm previous research and our hypotheses. Extraversion and stress did account for a statistically significant change in positive and negative affect on Monday afternoon and Monday evening but only on day two. Overall, baseline extraversion scores and mean stress levels across the thirteen day study were unable to reliably predict positive and negative affect across both Monday afternoons and Monday evenings. Further examination is necessary to account for the ability of these two predictors to adequately account for positive and negative affect on only day 2, the first

Monday. It is a possibility that on day nine, the second Monday, participants are experiencing habituation since the study asks participants to answer the same questions in the same order daily for two weeks.

Individually, each predictor maintained past research expectations, but again only replicating on day two, not day nine. Specifically, extraversion was positively correlated with changes in positive affect and mean stress positively correlated with negative affect. If one looks at the insignificant relationships between an independent predictor and positive or negative affect it is possible to see patterns discussed in past research. Specifically, stress, although not significant, does display a negative correlation with positive affect and a significant positive correlation with negative affect. The same is true for extraversion, where the predictor is negatively correlated with negative affect and positively correlated with positive affect. The present results emphasize that positive and negative affect do represent distinct, but somewhat overlapping, systems.

The ability of extroversion and stress in determining positive and negative affect on Monday afternoons and evenings has particularly important implications in the field of psychology and the treatment of the mentally ill. The ability to organize and implement program to aid in the creation of coping strategies can be strengthened with better understanding of how different factors affect mood. Intervention and treatment of those suffering from mood-related disorders can also be supported with the results of research on mood correlates.

Although this study addressed extraversion and stress as reliable predictors of mood, there are some limitations that deserve mention. Diary studies require researchers to provide

*Table 1. Means and standard deviations for each questionnaire item*

Variable	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<b>Mood correlates</b>				
Extraversion	21.82	6.8	3	32
Mean Stress	2.33	1.71	0	7.12
<b>Mood variables</b>				
<i>Day 2 (Time 2)</i>				
Cheerful	1.65	1.08	0	4
Sad	0.37	0.67	0	4
<i>Day 9 (Time 2)</i>				
Cheerful	1.51	1.18	0	4
Sad	0.58	0.89	0	4
<i>Day 2 (Time 3)</i>				
Cheerful	1.85	1.08	0	4
Sad	0.41	0.86	0	4
<i>Day 9 (Time 3)</i>				
Cheerful	1.48	1.13	0	4
Sad	0.48	0.98	0	4

detailed and systematically similar training in completing the daily mood assessments on the handheld device. As previously discussed, habituation is also a problem. It is also difficult to achieve participant dedication and commitment at an adequate level. Participant compliance, although minimized by the use of handheld devices, can be an issue. Crawford et al. (2008) question the ability of diary studies to adequately detect change using POMS-15. Their findings reveal that POMS-15 scales reliably assessed mood changes over time. Our study only utilized a small portion of the POMS-15 measures. We exclusively used one item for PA and another for NA, i.e. cheerful and sad respectively. This may be a factor when accounting for the inability for the results to remain significant across both Mondays. Further research may yield more consistent results if using the entire set of mood-related words.

## CONCLUSION

This study was able to determine

the relationship of affect as a function of extraversion and stress. We explored the hypothesis that participants exhibiting high levels of perceived stress were associated with greater measures of negative affect and lesser measures of positive affect while those participating in greater amounts of physical activity were associated with increased positive affect and decreased negative affect. Extraversion and stress reliably predict positive and negative affect, but not across both Mondays. Results do not confirm previous research, although, independently, extraversion was associated with increased positive affect, it was not associated with decreased measures of negative affect. Stress was associated with increased measures of negative affect, but not significantly associated with decreased measures of positive affect. These outcomes lead us to call into question the amount of affect design has upon these conclusions. Perhaps a study designed appropriately for investigating mood correlates would disclose better substantiated outcomes.

This study attempted to determine the relationship of affect as a function of extraversion and stress. A cohort of 83 1<sup>st</sup>-semester healthy university freshmen underwent 13 days of ambulatory monitoring. Four times daily, participants completed a mood assessment including measures of affect and the extent to which they felt stressed and overwhelmed. The present research explored the hypothesis that participants exhibiting high levels of perceived stress were associated with greater measures of negative affect and lesser measures of positive affect while those exhibiting greater measures of extraversion were associated with increased positive affect and decreased negative affect. Multiple regression analyses were used to examine this hypothesis.

Inconsistent with prior research, stress did not predict increases in negative affect; however extraversion did seem to play a role in predicting positive affect.

These findings call for further research investigating the role of extraversion and stress on predicting mood.

Table 2. Summary of the Results from the Final Analyses for the Second and Third Timepoints

Affect	<i>F</i> (2,79)	<i>p</i>	adj. <i>R</i> <sup>2</sup>
<i>First Monday (Day 2) Afternoon</i>			
Positive	3.78	0.03	0.07
Negative	4.82	0.01	0.09
<i>Second Monday (Day 9) Afternoon</i>			
Positive	1.57	0.21	0.02
Negative	2.76	0.07	0.05
<i>First Monday (Day 2) Evening</i>			
Positive	3.57	0.03	0.06
Negative	15.29	<.0001	0.27
<i>Second Monday (Day 9) Evening</i>			
Positive	1.06	0.35	0.002
Negative	0.4	0.67	-0.02

**END NOTES**

1. *Spielberger, C.D., Gorsuch, R.L., & Lushene, R.E. (1970). Manual for the State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press.*
2. *Watson, D., & Clark, L.A. (1984). Negative Affectivity: The disposition to experience aversive emotional states. Psychological Bulletin, 96, 465-490.*
3. *Reis, H.T., & Gable, S.L. (2000). Event-sampling and other methods for studying everyday experience. In H.T. Reiss & C.M. Judd (Eds.), Handbook of research methods in social and personality psychology (p.p. 190-222). Cambridge, UK: Cambridge University Press.*
4. *Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. Annual Review of Psychology, 54, 579-616.*
5. *Reis, H.T. (1994). Domains of experience: investing relationship processes from three perspectives. In R. Erber & R. Gilmore (Eds.), Theoretical Frameworks in Personal Relationships (pp. 82-110). Mahwah, NJ: Erlbaum.*
6. *Bolger & Zuckerman 579-616*
7. *Fabes, R.A. & Eisenberg, N. (1997). Regulatory control and adults' stress-related responses to daily life events. Journal of Personality and Social Psychology, 73, 1107-1117.*
8. *Rhodewalt, F., Madrian, J.C., & Cheney, S. (1998). Narcissism, self-knowledge organization, and emotional reactivity: the effect of daily experiences on self-esteem and affect. Personality Social Psychology Bulletin, 24, 75-87.*
9. *Almeida, D.M., Wethington, E., & Chandler, A.L. (1999). Daily transmission of tensions between marital dyads & parent-child dyads. Journal of Marriage and Family,*

61, 49-61.

10. Repetti, R.L. & Wood, J. (1997). Effects of daily stress at work on mothers' interactions with preschoolers. *Journal of Family Psychology*, 11, 90-108.
11. Suls, J., Wan, C.K., Blanchard, E.B. (1994). A multilevel data-analytic approach to evaluation of relationships between daily life stressors and symptomatology: patients with irritable bowel syndrome. *Health Psychology*, 13, 103-113.
12. Alloy, L.B., Just, N., & Panzarella, C. (1997). Attributional style, daily life events, and hopelessness depression: subtype validation by prospective variability and specificity of symptoms. *Cognitive Therapy and Research*, 21, 321-44.
13. Eckenrode, J. (1984). Impact of chronic and acute stressors on daily reports of mood. *Journal of Personality and Social Psychology*, 46, 907-918.
14. Lewinsohn, P., Libet, J. (1972). Pleasant events, activity schedules, and depression. *Journal of Abnormal Psychology*, 79, 291-295.
15. Stake, J.E. (1985). Predicting reactions to everyday events from measures of self-esteem. Paper presented at the meeting of American Psychological Association, Los Angeles, CA.
16. Clark, L.A., & Watson, D. (1988). Mood and the mundane: relations between daily life events and self-reported mood. *Journal of Personality and Social Psychology*, 54, 296-308.
17. Headey, B., Holmstrom, E., & Wearing, A. (1984). The impact of life events in changes in domain satisfaction on well-being. *Social Indicators Research*, 15, 203-227.
18. Stone, A.A. (1981). The association between perceptions of daily experiences and self- and spouse-rated mood. *Journal of Research in Personality*, 15, 510-522.
19. Warr, P., Barter, J., & Brownbridge, G. (1983). On the independence of positive and negative affect. *Journal of Personality and Social Psychology*, 44, 644-651.
20. Zautra, A.J. (1983). Social resources and the quality of life. *American Journal of Community Psychology*, 11, 275-290.
21. Zautra, A.J., & Reich, J.W. (1983). Life events and perceptions of life quality: Developments in a two-factor approach. *Journal of Community Psychology*, 11, 121-132.
22. Zautra, A.J., & Simons, L.S. (1979). Some effects of positive life events on community mental health. *American Journal of Community Psychology*, 7, 441-451.
23. Costa, P.T., & McCrae, R.R. (1984). Personality as a lifelong determinant of well-being. In C.Z. Malatesta & C.E. Izard (Eds.), *Emotion in adult development* (pp. 141-159). Beverly Hills, CA: Sage.
24. Costa, P.T., & McCrae, R.R. (1985). Concurrent validation after 20 years: The implications of personality stability for its assessment. In J.N. Butcher & C.D. Spielberger (Eds.), *Advances in personality assessment* (Vol. 4, pp. 31-54). Hillsdale, NJ: Erlbaum.
25. Beiser, M. (1974). Components and correlates of mental well-being. *Journal of Health and Social Behavior*, 15, 320-327.
26. Bradburn, N.M. (1969). *The structure of psychological well-being*. Chicago,

Aldine.

27. David, J.P., Peter, G.J., Martin, R., & Suls, J. (1997). Differential roles of neuroticism, extraversion, and event desirability for mood in daily life: an integrative model of top-down and bottom-up influences. *Journal of Personality and Social Psychology*, 73, 149-159.

28. Diener, E., & Emmons, R.A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology*, 47, 1105-1117.

29. Diener, E., Larsen, R.J., & Emmons, R.A. (1984). Person X Situation interactions: Choice of situations and congruence response models. *Journal of Personality and Social Psychology*, 47, 580-592.

30. Lawton, M.P. (1984). The varieties of well-being. In C.Z. Malatesta & C.E. Izard (Eds.), *Emotion in adult development* (pp. 67-84). Beverly Hills, CA: Sage.

31. Morwaki, S.Y. (1974). The Affect Balance Scale: A validity study with aged samples. *Journal of Gerontology*, 29, 73-78.

32. Phillips, D.L. (1967). Social participation and happiness. *American Journal of Sociology*, 72, 479-488.

33. Tellegen, A. (1982). Brief manual for the Differential Personality Questionnaire. Unpublished manuscript, University of Minnesota, Minneapolis.

Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A.H. Tuma & J.D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681-706). Hillsdale, NJ: Erlbaum.

34. Warr, P., Barter, J., & Brownbridge, G. (1983). On the independence of positive and negative affect. *Journal of Personality and Social Psychology*, 44, 644-651.

35. Watson, D., & Clark, L.A. (1984). Negative Affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, 96, 465-490.

36. Zautra & Simmons 441-451

37. Clark & Watson 296-308

38. Costa, P.T., & McCrae, R.R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, 38, 668-678.

39. Watson & Clark 465-490

40. Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219-235.

41. David, et. al. 149-159

42. Costa & McCrae 31-54.

43. Clark & Watson 296-308

44. Repetti, R. L. (1993). Short-term effects of occupational stressors on daily mood and health complaints. *Health Psychology*, 2, 125-131.

45. Stone, A.A., Neale, J.M., & Shiffman, S. (1993) Daily assessments of stress and coping with their association with mood. *Annals of Behavioral Medicine*, 15, 8-16.

46. Bloger & Zuckerman 890-902

47. *Costa, P.T., & McCrae, R.R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. Journal of Personality and Social Psychology, 38, 668-678.*
48. *Bolger et. al. 579-616*
49. *Repetti 125-131*
50. *Stone et. al. 8-16*
51. *Miller G.E., Cohen, S., Ritchey, A.K., Chronic psychological stress and the regulation of pro-inflammatory cytokines: a glucocorticoid resistance model. Health Psychol, 21: 531-41.*
52. *MacArthur Foundation Network on SES and Health. Salivary cortisol measurement. San Francisco, CA: MacArthur Foundation; 2000.*
53. *Goldberg, L.R. (1992). The development of markers for the Big-Five factor structure. Psychological Assessment, 4, 26-42.*