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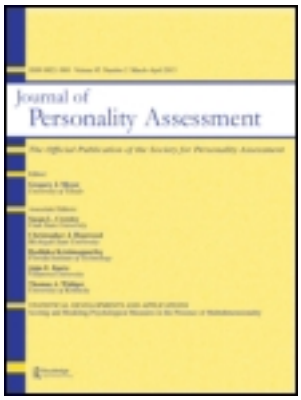

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Higher Order Structure of Personality and Mental Health: Does General Affectivity Matter?

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Higher Order Structure of Personality and Mental Health: Does General Affectivity Matter?

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The higher order personality model, namely the Big Two, was tested in 2 studies (*Ns* = 878 and 467, respectively) by controlling for the effects of both general affectivity and common method variance. Study 2 also examined the associations of the metatraits with different mental health indicators through regression analyses. The results consistently provided support for the validity of the Big Two model in the latent space, with and without the effects of general affectivity and the common method variance. Moreover, in both studies, the high correlation between stability and plasticity decreased when these 2 method effects were controlled statistically. The regression analyses also showed that the associations of plasticity and stability with the indicators of both subjective and psychological well-being, as well as psychopathology, were consistent with the theoretical arguments behind the Big Two.

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Although the Big Five personality traits have been considered the most parsimonious and orthogonal components of personality (McCrae & Costa, 1997), recent research has provided empirical and theoretical support for the possibility of metatraits behind these basic factors. Some researchers proposed that two metatraits, which have been called *alpha* and *beta* (Digman, 1997) and *stability* and *plasticity* (DeYoung, 2006), respectively, can account for the covariances among the Big Five personality factors. In a series of studies, DeYoung and colleagues found that a two higher order model of personality, namely the Big Two, was supported (DeYoung, Hasher, Djikic, Criger, & Peterson, 2007; DeYoung, Peterson, & Higgins, 2002) even in multi-informant data (DeYoung, 2006). Strong support has also been provided for the Big Two by other researchers; for example, Jang et al. (2006) showed that the Big Two was tenable and stable across three culturally diverse samples, based on research using twin pairs.

The most parsimonious factor structure, the general factor of personality (GFP), was proposed by Musek (2007) and research findings also supported this higher order metatrait behind personality factors. Some researchers provided support for the conclusion that a GFP accounts for the covariances among personality dimensions (Erdle, Irwing, Rushton, & Park, 2010; Erdle & Rushton, 2011; van der Linden, Bakker, & Serlie, 2011) even among twin pairs (Veselka, Just, Jang, Johnson, & Vernon, 2012).

Both the GFP (Musek, 2007) and the Big Two (DeYoung, 2006; DeYoung et al., 2002) are considered to be at least partially the result of certain neurobiological systems. DeYoung et al. (2002; DeYoung, 2006) suggested that levels of stability could be a reflection of individual differences in the serotonergic and dopaminergic systems, respectively. The GFP, being considered a higher order factor consisting of both plasticity and stability, is thought to be a biological high-level system combining lower levels of functioning of the serotonergic system and higher levels of the dopaminergic system (Musek, 2007).

Some researchers have tried to understand other aspects that could account for the covariances among the personality factors such as self-esteem (Erdle & Rushton, 2011; Şimşek, 2012), social desirability (Erdle et al., 2010), or halo effects (Anusic, Schimmack, Pinkus, & Lockwood, 2009). However, other potentially important factors such as positive and negative affectivity, and common method variance (CMV), have not so far been examined in detail. The primary aim of this research was to show the importance of general affect and CMV in the accounts of higher order personality models. Moreover, the association between metatraits and mental health has yet to be adequately researched. The secondary aim of this research was, thus, to determine whether metatraits could be validated by examining their associations with different conceptualizations of mental health.

METATRAITS, GENERAL AFFECTIVITY, AND COMMON METHOD VARIANCE

Separating description and evaluation in the structure of personality has been an important issue in defining particular dimensions that represent the scientifically correct way of parameterizing personality (Pettersson & Turkheimer, 2010). Peabody (1967) was the first to show that the assessment of personality includes an evaluative content in addition to the descriptive. According to this view, when people respond to the items of personality measures, their responses are biased to the extent that the items represent socially desirable characteristics. This issue has been a concern for the covariances among personality dimensions of the Big Five, and has been a focus of research in the context of higher order taxonomy of personality (e.g., Erdle et al., 2010). Other factors implied in the literature that could also impact the higher order personality structure include general affect and CMV.

Although general affectivity has been one of the fundamental concerns for mental health and well-being, some researchers indicate that this is an important factor in all self-report assessments, as it could result in bias in the measurement of all

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psychological variables. The best known cases exploring the biasing effects concerning affectivity originate from industrial and organizational psychology. These cases led to the conclusion that general affectivity inflates the relationship of work stressors with objective stress outcomes (Schaubroeck, Ganster, & Fox 1992) or job strain (Brief, Burke, George, Robinson, & Webster, 1988).

Affectivity could be also considered a potentially important cause of contamination of personality assessments. There are a number of reasons for this. First of all, valence (i.e., positive or negative judgment about the self) has been indicated as the major factor in the evaluation of personality (Fossum & Barrett, 2000; Pettersson & Turkheimer, 2010). Research showed that evaluative responses are strongly affected by affective experience (Schwarz & Bohner, 1996), which indicates a mood congruent evaluative tendency among individuals. Somewhat similarly, the "mood as input" model (Martin & Davies, 1988; Tesser & Martin, 1996) indicates that the process of evaluation is strongly affected by the mood states, even if the implications of such an effect are dependent on the context. It seems that, in the context of evaluation of one's own personal characteristics, individuals rate items according to their affective experience when items represent relatively positive or negative features. Watson, Pennebaker, and Folger (1987), indeed, indicated that the participants with higher levels of negative affectivity might respond negatively to any psychological measure. Clark and Watson (1991) similarly argued that affective inclinations of participants could have an impact on any measurement situation. As Podsakoff, MacKenzie, Podsakoff, and Lee (2003) indicated, if this is the case, affectivity might result in systematic variance in the relationships between two or more variables, which is different from the actual score variance between these variables.

Another critical factor, at this point, is CMV, which refers to the measurement bias due to use of the same method or source, and results in spurious covariances among the scores on measures under investigation (Johnson, Rosen, & Djurdjevic, 2011). Doty and Glick (1998) showed that 32% of the variance in measures of organizational science could be attributable to CMV. Johnson et al. (2011) showed that this source of bias is also important in the context of higher order constructs, concluding that it causes, in the majority of cases, weaker loadings of first-order latent factors on the higher orders and inflated correlations between variables.

It is highly possible, then, that the higher order factor structure of personality could be affected by both general affectivity and CMV. It was expected in this research that general affectivity would have an impact on personality evaluations in the way that the most parsimonious structure would arise, as these affect states bring about more congruent evaluations across different dimensions of personality. CMV would also have an effect on these evaluations, given that it causes each individual to respond all items in a consistent manner. Eliminating these evaluative biases would thus result in the structure of higher order personality due to content of these dimensions, namely a descriptive component. The high correlations between metatraits reported are considered as the main reason for the assumption that the GFP is the underlying cause (Hull & Beaujean, 2011; Musek, 2007). Hull and Beaujean (2011), for example, reported a correlation of .78 between stability and plasticity. Moreover, as Anusic et al. (2009) stated, a high correlation between these metatraits indicates a theoretically problematic situation, given that they refer to reverse social or personal situations. The main argument of this investigation is that the high correlations between plasticity and stability might be the result of these evaluative biases. The elimination of the method effects was forecasted to minimize the nonorthogonal relationship between plasticity and stability. Consequently, when controlled for the effects of general affectivity and CMV, the response bias into the ratings would be partialed out, and thus findings obtained would provide validity for the Big Two model of personality. If this is shown to be the case, researchers could control these factors in their research and thus obtain more reliable estimates for the relationships between metatraits.

Higher Order Models and Mental Health

Beyond the measurement issues concerning higher order models of personality, there is a lack of research concerning the validity of these metatraits, which are especially important for the Big Two model of personality, because plasticity and stability refer to the different inclinations of individuals, and are likely to have differential effects on mental health. Digman (1997) interpreted *alpha* (conscientiousness, emotional stability/neuroticism, and agreeableness) as referring to the effects of socialization, which include qualities related to being responsible, productive, and a good person, whereas *beta* (extraversion and openness) is related to personal growth and self-actualization. DeYoung (2006) indicated that the alpha could be interpreted as representing stability, as the factors of this metatrait, namely neuroticism, agreeableness, and conscientiousness, could be interpreted as different types of "tendencies" that function to maintain stability in the emotional, social, and motivational realms, respectively. The author stated that socialization also aims at promoting stability. Plasticity, on the other hand, is conceptualized as the tendency to explore the world perceptually and cognitively.

These metatraits would be expected to connect in different ways to the various approaches to mental health, which could have important implications for the meaning of these metatraits. There is a considerable difference between traditional and more recent approaches. Traditional approaches focus mostly on psychopathology and explore individual differences into such features as depression and anxiety. In contrast, the new approaches are mostly interested in positive features of individuals, two leading models of which are subjective well-being (Diener, 1984), and psychological well-being (Ryff, 1989; Ryff & Singer, 2003). The former focuses on hedonic elements of life such as positive affect, lack of negative affect, and life satisfaction, whereas the latter, on eudaimonic dimensions of growth, meaning, and direction. Psychological well-being, on the other hand, can be summarized as the six dimensions derived from the theories of Maslow, Rogers, Jung, and some other pioneers in the field and illuminate the nature of positive functioning more adequately. These theories, according to Ryff (1989), share some common indicators that can be regarded as essential features of positive psychological functioning, which she defined as self-acceptance, positive relations with others, autonomy, environmental mastery, purpose of life, and personal growth.

In the context of metatraits, life satisfaction is expected to be more associated with stability, given its strong association with hedonic inclinations (Lent, 2004). Moreover, research has shown that subjective well-being is not related to self-actualization (Vitterso, 2004), but is negatively affected by subjective change, regardless of whether this change is positive or negative (Keyes, 2000). When it comes to psychological well-being, it is expected that stability would be more associated with those psychological well-being dimensions that emphasize the domains of social life such as positive relations with others or environmental mastery. In contrast, plasticity is more likely to be related with autonomy, and growth. Psychopathology, on the other hand, would be more comprehensible in the context of inclination to be stable because stability, as DeYoung (2006) stated, is mostly determined by emotional stability or neuroticism.

Current Studies

Although multiple-informant data have many advantages compared to monomethod studies, research has shown that the participants' reports on their personality attributes are highly reliable (Spain, Eaton, & Funder, 2000). However, researchers use these metatraits as if they were proven facts, and do not take into account the method variables that could have an effect on the trait organization revealed by the data at hand (e.g., van der Linden, Scholte, Cillessen, Nijenhuis, & Segers, 2010). Another issue is that some researchers try to validate higher order personality models with self-report data without controlling any method effect (e.g., Hull & Beaujean, 2011). Researchers need to be aware of the possible biasing effects in the measurement of personality before testing possible models to avoid unwarranted conclusions about metatraits, if they indeed have an effect on the measurement of personality using self-report assessment.

This research aims at illuminating the effects of general affect on the accounts of metatraits using relatively large samples. In the first study, general affect and CMV were considered method effects in a series of confirmatory factor analyses. It was expected that partialing out the method effects would result in a more orthogonal relationship between plasticity and stability. In the second study, the same analyses were conducted on the data from a different group to test the cross-validity of the results obtained in the first study. The second study also examined the differential relations of metatraits with the indicators of psychopathology, and both subjective and psychological well-being, through a series of hierarchical regression analyses, in which general affectivity was controlled statistically. The regression analyses were expected to show that plasticity is more associated with autonomy and growth. In contrast, stability was expected to be associated with positive and negative indicators of well-being, namely psychopathology and life satisfaction, as well as those dimensions referring to the stable socioemotional dimensions of personal life, such as environmental mastery, positive relations with others, purpose in life, and self-acceptance.

Study 1

Method

All confirmatory factor analyses, with or without method variables, were implemented using LISREL 8.80 (Jöreskog & Sörbom, 2006). The maximum likelihood estimation method was used in all analyses with covariance matrices. Mood and CMV were controlled by defining them as latent method variables and allowing them to have paths to the indicators of other variables in the model (Johnson et al., 2011; Williams & Anderson, 1994). In such a model, the covariance of method factors with other latent variables in the model as set to zero, whereas the variance of these variables was set to 1 to achieve identification. It should be stated here that the CMV was modeled in all analyses as "unmeasured method variable" whereas general affectivity was modeled as "measured method variable" as defined by Johnson et al. (2011).

A convenience sampling method was used in this study. The participants were 878 graduate and undergraduate students from two Turkish public sector universities. The mean age was 22.5 ($SD = 5.3$). The participants completed the questionnaires in small group sessions using an identical procedure. Consent was obtained from all participants, and it was emphasized that participation was entirely voluntary. The scales were distributed, and instructions, which stressed the importance of full completion of the forms, were read aloud. The response rate of all participants was over 95%, and it was therefore not found necessary to eliminate any forms.

The 44-item Big-Five Inventory (BFI; John & Srivastava, 1999) was administered to assess five personality dimensions—Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Ratings are indicated on a scale from 1 (*disagree strongly*) to 5 (*agree strongly*) for each item. The scale was adapted to Turkish by Sümer, Lajunen, and Özkan (2005), who reported Cronbach's alpha reliabilities ranging from .64 to .77. The alpha coefficients were .74, .80, .82, .64, and .79, respectively in the data set used in this study. Research using the Turkish version reported convergent validity estimates based on the moderate or strong correlations with subjective well-being (Şimşek, 2011), basic psychological needs (Şimşek & Yalınçetin, 2010), and psychopathology (Şimşek & Koydemir, 2013).

The Positive and Negative Affect Schedules (PANAS; Watson, Clark, & Tellegen, 1988) was administered to measure general affectivity of the participants. The results of the factor analysis employed in the original scale yielded two dominant factors, accounting for 68.7% of the variance in the general time frame. The PANAS consists of 10 mood states for positive affect (PA; e.g., attentive) and 10 for negative affect (NA; e.g., hostile). Internal consistency was .88 and .87 for PA and NA, respectively. The adaptation of the scale to Turkish was made by Gençöz (2000). Consistent with the original study, the result of the factor analysis revealed two factors, accounting for 44% of the total variance. Its test–retest consistency was reported as .40 and .54, respectively. Correlations with the Beck Depression Scale and Beck Anxiety Scale were computed for construct validity. PA yielded the correlations of –.48 and –.22 with the scales, respectively. The correlations of the NA with these scales were .51 and .47, respectively. Internal consistency for the PANAS was .83 in the original study, whereas it was .91 in this study.

Results

In the first step, the GFP and the Big Two models were tested without any method factor. In these and the subsequent analyses, item parceling was used to create indicators for the constructs because all factors were unidimensional. Although there are different kinds of item parceling, the method used in this study

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TABLE 1.—Means, standard deviations, and intercorrelations of the observed variables in Study 1.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. EXT1	9.6	2.2	—																			
2. EXT2	10.6	2.5	.54	—																		
3. EXT3	6.4	1.8	.72	.49	—																	
4. OPE1	10.7	2.3	.45	.14	.50	—																
5. OPE2	10.1	2.4	.47	.20	.50	.64	—															
6. OPE3	13.9	2.7	.42	.19	.41	.53	.57	—														
7. AGR1	11.3	1.9	.20	.24	.22	.10	.11	.14	—													
8. AGR2	10.6	1.8	.11	.07	.18	.21	.16	.17	.40	—												
9. AGR3	11.8	1.7	.17	.09	.22	.27	.21	.21	.39	.43	—											
10. CON1	11.4	2.6	.05	.09	.06	.07	-03	.13	.19	.21	.26	—										
11. CON2	10.9	2.1	.34	.09	.42	.54	.40	.32	.11	.35	.41	.34	—									
12. CON3	10.5	2.2	.27	.18	.33	.37	.26	.31	.13	.27	.30	.46	.63	—								
13. NEU1	9.6	2.6	–.36	–.14	–.42	–.35	–.36	–.25	–.15	–.17	–.19	.07	–.28	–.26	—							
14. NEU2	7.6	2.5	–.13	–.13	–.13	–.02	–.03	–.18	–.31	–.28	–.25	–.40	–.17	–.36	.25	—						
15. NEU3	4.6	1.8	–.28	–.25	–.30	–.12	–.11	–.22	–.18	–.10	–.19	–.24	–.19	–.31	.43	.48	—					
16. PA1	11.6	3.5	.19	.11	.28	.22	.17	.17	.01	.14	.14	–.01	.20	.08	–.15	–.00	–.08	—				
17. PA2	11.2	3.3	.30	.18	.39	.34	.32	.26	.10	.14	.15	.01	.29	.18	–.24	–.03	.12	.77	—			
18. PA3	15.5	4.3	.20	.11	.28	.28	.19	.16	.03	.14	.15	.02	.30	.18	–.18	.01	–.08	.78	.79	—		
19. NA1	8.2	2.9	–.19	–.13	–.19	–.12	–.12	–.15	–.20	–.15	–.17	–.23	–.20	–.27	.25	.44	.41	.35	.30	.35	—	
20. NA2	6.8	2.7	–.23	–.12	–.22	–.16	–.11	–.15	–.13	–.10	–.14	–.21	–.22	–.28	.22	.29	.37	.31	.25	.31	.78	—
21. NA3	10.1	3.7	–.23	–.18	–.19	–.12	–.12	–.16	–.17	–.17	–.18	–.24	–.19	–.28	.22	.41	.41	.41	.32	.40	.81	.75

Note. $N = 878$. EXT1–3 = parcels for extraversion; OPE1–3 = parcels for openness to experience; AGR1–3 = parcels for agreeableness; CON1–3 = parcels for conscientiousness; NEU1–3 = parcels for neuroticism; PA1–3 = parcels for positive affect; NA1–3 = parcels for negative affect. Values greater than .06 are significant at $p = .05$, and .09 at $p = .01$.

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creates relatively equivalent indicators by spreading "better" and "worse" items across the different parcels. Indicators as parcels were created for each latent variable by rank-ordering items according to the size of item–total correlations and then summing sets of items to obtain equivalent indicators for those constructs. For each latent variable, three parcels were created. Means, standard deviations, and intercorrelations for the observed variables are represented in Table 1.

Model 1 tested the GFP model without the effects of CMV and affectivity in which GFP was considered a higher order construct that accounts for the covariances between personality dimensions. This model yielded poor goodness-of-fit statistics, $\chi^2(85, N = 878) = 1345.68, p < .05$, goodness-of-it index (GFI) = 0.83, Comparative Fit Index (CFI) = 0.89, standardized root mean square residual (SRMR) = 0.089, root mean square error of approximation (RMSEA) = 0.13 (90% CI for RMSEA = [0.12, 0.14]), Akiake's Information Criterion (AIC) = 1415.68. A test of the Big Two model (Model 2) resulted in a better fit to the data with the following statistics: $\chi^2(84, N = 878) = 1201.98$, $p < .05$, GFI = 0.85, CFI = 0.90, SRMR = 0.084, RMSEA = 0.12 (90% CI for RMSEA = [0.12, 0.13]), AIC = 1273.98, which was evident from the chi-square difference test, (144, 1), $p < .001$, as well as the AIC values.

In the second step, the effects of general affectivity were included in these models and subsequently contrasted with the models in which the effects of CMV were also included. Model 3 tested the GFP model with the effects of general affectivity and resulted in a good fit to the data, $\chi^2(155, N = 878) = 1354.31$, $p < .05$, GFI = 0.87, CFI = 0.94, SRMR = 0.062, RMSEA = 0.094 (90% CI for RMSEA = [0.089, 0.099], AIC = 1506.31). The results of Model 4, a test of the GFP model with the effects of both CMV and general affectivity, resulted in better statistics, $\chi^2(140, N = 878) = 703.19, p < .05$, GFI = 0.93, CFI = 0.97, SRMR = 0.041, RMSEA = 0.068 (90% CI for RMSEA = [0.063, 0.073]), AIC = 885.19, which is evident from both the AIC values and the chi-square difference test, (651.12, 15), $p < .001$. The same procedure was applied to the Big Two model and a test of this model (Model 5) with the effects of general affectivity, $\chi^2(154, N = 878) = 1314.97, p < .05$, GFI = 0.87, CFI = 0.94, SRMR = 0.056, RMSEA = 0.093 (90% CI for RMSEA = [0.088, 0.097], AIC = 1468.97, was compared with Model 6 in which the effects of CMV were also considered, $\chi^2(139, N = 878) = 661.77, p < .05$, GFI = 0.93, CFI = 0.97, SRMR = 0.040, RMSEA = 0.065 (90% CI for RMSEA = [0.061, 0.071], AIC = 845.77. These results clearly showed that both general affectivity and CMV affected the fit of the models to the data and resulted in better goodness-of-fit statistics.

It is clear from these results that that the Big Two model fit the data better than the GFP, even with the effects of method variables, which is evident from the chi-square difference test (41.42, 1), $p < .001$, and the AIC values. The Big Two model was also tested against the other version of GFP proposed by Musek (2007) in which GFP was modeled as a third-order model behind the Big Two. As indicated by the results provided, $\chi^2(138, N = 878) = 661.14, p < .05$, GFI = 0.93, CFI = 0.97, SRMR = 0.040, RMSEA = 0.066 (90% CI for RMSEA = [0.061, 0.071], AIC = 847.14, this model produced almost the same chi-square value, although it is less parsimonious. A chi-square difference test showed no difference between these models (0.63, 1), $p > .05$. The AIC value of this model was also higher than the Big Two model. Standardized parameter estimates of the Big Two model with and without method effects are presented in Figure 1.

It is evident that both PA and NA have influences on all constructs, given that all paths corresponding to these effects were found to be significant (Figure 1). PA had the strongest effect on extraversion, and NA on neuroticism, as expected. Although these effects resulted in decreases in second-order factor loadings, as well as the first-order, all second-order loadings were still large and significant. Moreover, the effects of method variables resulted in a clear differentiation between the

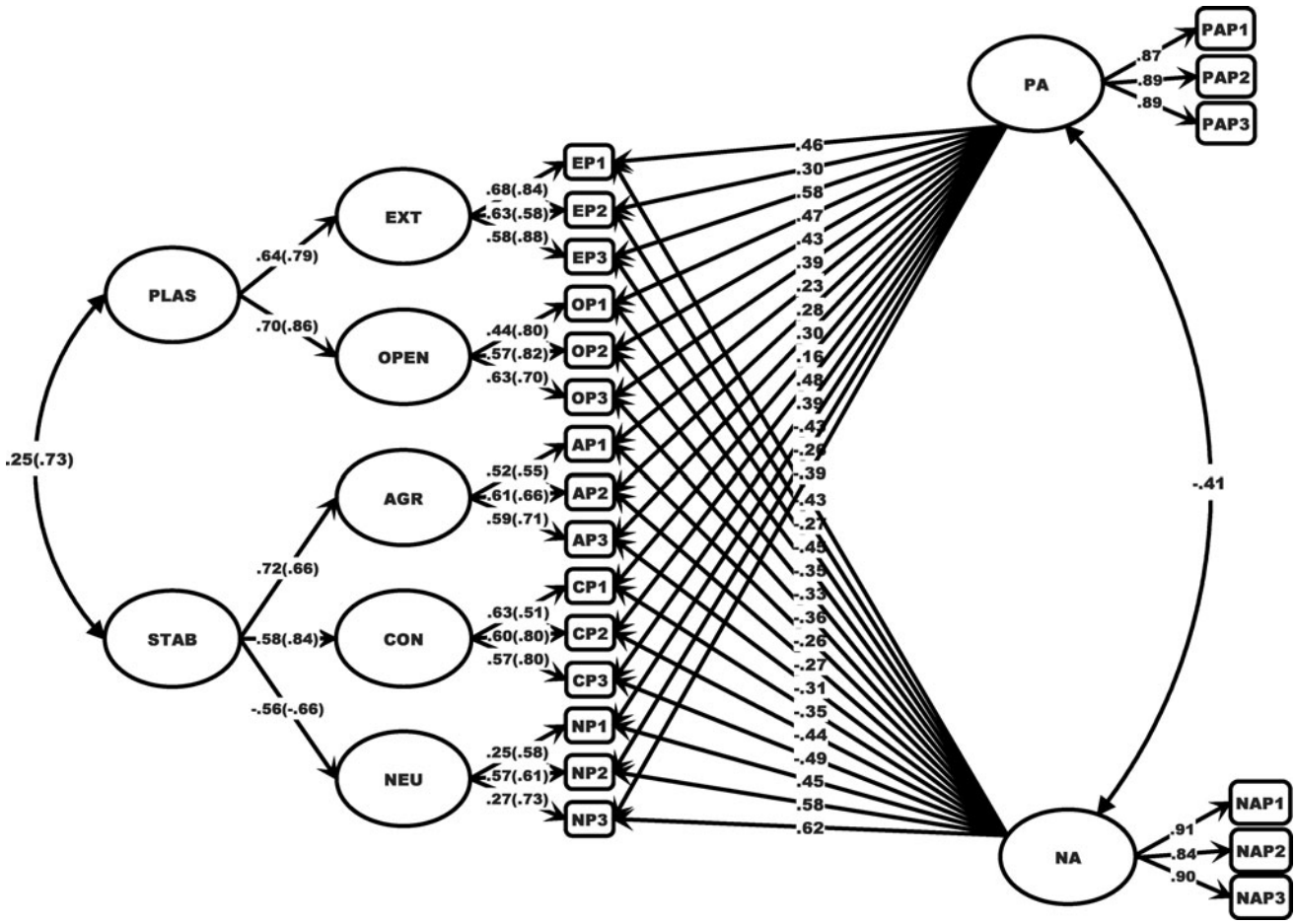

FIGURE 1.—Standardized parameter estimates for the Big Two model in Study 1. *Note*. $N = 878$. PLAS = Plasticity; STAB = Stability; EXT = Extraversion; OPE = Openness to experience; AGR = Agreeableness; CON = Conscientiousness; NEU = Neuroticism; PA = positive affect; NA = negative affect. All observed variables are parcels. Errors of the observed variables are not represented. Values in parentheses are from the model that includes the original Big Five factors; values outside parentheses are from the model after method variables have been partialed out of the manifest indicators. All values are significant at $p = .05$.

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indicators of higher order personality factors, and the correlation between plasticity and stability was much lower than that of the model in which no method effect was included. A chi-square difference test was conducted to see whether these values differ significantly. To achieve this, the coefficient for this parameter was constrained to the value obtained in the model without method effects specified (e.g., .73). The chi-square difference test (36.70, 1), $p < .001$, showed a statistically significant difference between the models in which the parameter was constrained to the earlier value (.73) and freely estimated (.25). This result was deemed to be a proof for the statistical difference between these values.

An examination " of the parameter estimates of Model 5, the Big Two model with the effects of general affectivity, were compared to those of Model 6 in which the effects of CMV were also included in the same model. It was clear that the factor loadings of the Big Five personality factors were still large. The loadings for extraversion, openness, agreeableness, conscientiousness, and neuroticism were .61, .84, .68, .63, and –.40, respectively. More importantly for this investigation, the correlation between stability and plasticity was also found to be very similar (.26).

STUDY 2

Method

As in Study 1, a convenience sampling method was used. The participants were 467 undergraduate students (258 female, 209 male) from two universities in Turkey, with an age range of between 18 and 34 years, and a mean age of 21.6. The procedure in Study 1 was applied to obtain data in this study.

Participants completed the same measures used in Study 1, but also completed the measures of life satisfaction, psychopathology, and psychological well-being. Cronbach's alpha coefficients for the factors of the BFI were all higher than .70 except for agreeableness (.66), whereas the alpha values for the PA and NA factors of the PANAS were .82 and .80, respectively. The information about the other measures follows.

Life satisfaction was measured using Diener, Emmons, Larsen, and Griffin's (1985) Satisfaction With Life Scale (SWLS). This scale is designed to enable individuals to evaluate their lives according to their own subjective criteria. The internal consistency of the scale was .87. Durak, Senol-Durak, and Gencoz (2010) translated the scale into Turkish using a back-translation procedure and reported satisfactory internal

consistencies (α = .86, .82). Cronbach's alpha for this study was defined as .83. Although they did not report retest reliability, construct validity results showed that the scale scores were correlated significantly with self-esteem (r = .40), depression (r = –.40), PA (r = .31), and NA (r = –.29).

Participants' symptoms of psychopathology were measured by the Brief Symptom Inventory (BSI), developed by Derogatis (1992) as a shortened version of the Symptom Checklist–90–Revised, and adapted to Turkish by Sahin and Durak (1994). It consists of 53 items rated on a 5-point, Likert-type scale, anchored by 1 (*not at all distressed*) and 5 (*extremely distressed*). The scale was developed to measure nine different mental illness indicators, including depression, interpersonal sensitivity, somatization, obsessive–compulsive disorder, anxiety, and paranoid thoughts. As a result of exploratory factor analysis, Sahin and Durak found that the adapted version of the BSI revealed five subscales: anxiety, depression, negative self, somatization, and hostility. Only anxiety, depression, and negative self-dimensions were used in this study. They found retest reliabilities ranging from r = .68 to r = .91. They also reported correlations with loneliness (ranging from r = .13 to r = .57) and depression (ranging from r = .34 to r = .70) for construct validity. The Cronbach alpha reliability coefficients have been found to be acceptable, at .95 to .96 for the Turkish form. The internal consistency coefficients ranged from .71 to .80 in this study.

Psychological well-being was measured by the Psychological Well-Being Scales (PWBS), developed by Ryff (1989). The scale consists of six dimensions: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The scale was adapted to Turkish using a back-translation procedure by Cenkseven (2004), who reported test–retest reliability coefficients ranging between .74 and .77. The internal consistency was found to be .84 for total scale scores. Construct validity of the scale was determined by correlations with self-respect (r = .62), depression (r = –.72), life satisfaction (r = .60) with the Life Satisfaction Scale (Diener et al., 1985), and positive (r = .52) and negative (r = –.52) affect. Cenkseven reported good internal consistencies ranging from .74 to .83. The coefficients in this study ranged from .82 to .86.

To provide support for the validity of the Big Two model, a set of regression analyses were tested in which plasticity and stability composed the second block, and the PA and NA scores the first. The general affectivity levels of the participants were thus controlled statistically.

Results

Cross-validation of the higher order personality models. All the measurement models were tested using three parcels for each latent variable. Means, standard deviations, and intercorrelations of these parcels are presented in Table 2.

The GFP and the Big Two models were tested with and without method effects as in Study 1. The results showed that the Big Two fitted the data better, $\chi^2(84, N = 467) = 527.72$, $p < .05$, GFI = 0.87, CFI = 0.92, SRMR = 0.079, RMSEA = 0.11 (90% CI for RMSEA = [0.098, 0.12]) than the GFP, $\chi^2(85, N = 467) = 548.77$, $p < .05$, GFI = 0.86, CFI = 0.92, SRMR = 0.085, RMSEA = 0.11 (90% CI for RMSEA = [0.10, 0.12]), which is indicated by a chi-square difference test (24.05, 1), $p < .01$.

The picture did not change when method effects were included in the model, and again the Big Two model produced better goodness-of-fit statistics, $\chi^2(139, N = 467) = 535.26$, $p < .05$, GFI = 0.90, CFI = 0.96, SRMR = 0.055, RMSEA = 0.078 (90% CI for RMSEA = [0.071, 0.085]) than the GFP model, $\chi^2(140, N = 467) = 568.16$, $p < .05$, GFI = 0.89, CFI = 0.96, SRMR = 0.053, RMSEA = 0.081 (90% CI for RMSEA = [0.074,0.088]). The chi-square difference test (32.9, 1), $p < .01$, indeed, showed that the Big Two model was again significantly better in accounting for the data than the GFP. The Big Two model was also tested against the third-order model of GFP proposed by Musek (2007) in which GFP was modeled as a higher order model behind the Big Two. As indicated by the results provided, $\chi^2(138, N = 878) = 534.01$, $p < .05$, GFI = 0.90, CFI = 0.96, SRMR = 0.055, RMSEA = 0.078 (90% CI for RMSEA = [0.072, 0.086]), this model, although less parsimonious, did not improve the model indicated by a chi-square difference test (1.25, 1), $p > .05$. The results for the Big Two model are shown in Figure 2.

These results are almost identical to those obtained in Study 1. The loadings of five personality factors on their respective metatraits were large and statistically significant. The loadings of the parcels on neuroticism, again, were largely influenced by the method effects. However, this time, neuroticism had the highest loading on stability. Most important, the correlation between plasticity and stability was reduced from .81 to .23, similar to Study 1. Finally, eliminating the effects of CMV, again, produced no substantial change on parameter estimates.

Hierarchical regression analysis results. Hierarchical regression analyses were conducted to understand the relative importance of stability and plasticity on the mental health indicators without the effects of general affectivity. Means, standard deviations, and zero-order and partial correlations of all variables are shown in Table 3. According to these results, both stability and plasticity correlated moderately or highly with all mental health indicators. It should be stated here that the correlation between stability and plasticity was reduced from .50 to .29 when the effects of general affectivity were partialed out.

To assess which of the metatraits accounted for unique variance in mental health variables, beyond that already captured by personality, the scores on stability and plasticity were entered into the second block of a hierarchical regression model, in which PA and NA scores composed the first block. The results of these analyses are shown in Table 4.

According to these regression analyses, both metatraits significantly accounted for additional variance in all criterion variables. The greatest variance accounted for was in positive relations with others, whereas the weakest was in life satisfaction. In regard to the metatraits, plasticity did not contribute to the additional variance in life satisfaction and purpose in life, and stability did not significantly account for the variance in autonomy and growth. It is also clear from the results that stability contributed more to the additional variance than plasticity in environmental mastery, positive relations with others, self-efficacy, depression, anxiety, and negative self.

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TABLE 2.—Means, standard deviations, and intercorrelations of the observed variables in Study 2.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. EXT1	9.7	2.2	—																			
2. EXT2	10.5	2.3	.60	—																		
3. EXT3	6.7	1.8	.69	.56	—																	
4. OPE1	10.9	2.3	.43	.20	.39	—																
5. OPE2	10.3	2.3	.47	.27	.43	.65	—															
6. OPE3	14.1	2.6	.46	.31	.34	.54	.57	—														
7. AGR1	10.6	2.1	.30	.29	.32	.13	.11	.24	—													
8. AGR2	12.1	1.9	.15	.04	.24	.30	.23	.23	.38	—												
9. AGR3	11.2	1.8	–.03	–.05	.12	.19	.06	.04	.31	.42	—											
10. CON1	1.08	2.1	.25	.15	.23	.40	.24	.29	.28	.23	.29	—										
11. CON2	11.7	2.1	.18	.15	.23	.35	.21	.24	.26	.26	.32	.62	—									
12. CON3	11.3	2.2	.20	.17	.22	.27	.14	.27	.27	.20	.19	.56	.58	—								
13. NEU1	9.2	2.4	–.36	–.21	.30	–.26	–.27	–.26	–.23	–.18	–.13	–.12	–.13	–.23	—							
14. NEU2	6.4	2.3	–.21	–.21	–.21	–.06	–.01	–.17	–.46	–.22	–.17	–.29	–.30	–.43	.42	—						
15. NEU3	5.8	1.7	–.40	–.31	–.35	–.24	–.25	–.30	–.27	–.13	–.11	–.13	–.20	–.29	.61	.49	—					
16. PA1	9.2	2.4	.31	.17	.28	.43	.34	.34	.13	.22	.11	.35	.30	.26	–.24	–.16	–.26	—				
17. PA2	9.3	2.4	.42	.30	.36	.39	.31	.29	.10	.15	.12	.31	.30	.28	–.25	–.19	–.33	.70	—			
18. PA3	13.0	2.9	.33	.19	.26	.37	.30	.30	.06	.15	.11	.26	.29	.17	–.17	–.07	–.25	.67	.62	—		
19. NA1	5.5	1.9	–.10	–.06	–.15	–.07	–.07	–.10	–.27	–.14	–.08	–.11	–.13	–.17	.27	.39	.25	.04	–.04	.13	—	
20. NA2	6.3	2.1	–.17	–.17	–.22	–.07	–.10	–.11	–.28	–.06	–.07	–.14	–.15	–.17	.24	.40	.37	–.20	–.27	–.11	.58	—
21. NA3	7.9	2.6	–.17	–.18	–.19	–.05	–.06	–.14	–.30	–.12	–.12	–.12	–.14	–.22	.27	.39	.34	.04	–.03	.12	.72	.57

Note. $N = 467$; EXT1–3 = parcels for extraversion; OPE1–3 = parcels for openness to experience; AGR1–3 = parcels for agreeableness; CON1–3 = parcels for conscientiousness; NEU1–3 = parcels for neuroticism; PA1–3 = parcels for positive affect; NA1–3 = parcels for negative affect. Values greater than .09 are significant at $p = .05$, and .11 at $p = .01$.

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DISCUSSION

The studies presented here used two separate samples to investigate the effects of general affectivity and CMV on the higher order factors of personality. In these model tests, general affectivity and CMV were partialed out by defining them as latent method variables in the measurement models. The data in both studies showed preliminary support for the Big Two model. Although the loadings of the Big Five factors on the two metatraits were reduced due to controlling for the method effects, they were still relatively large (ranging from .56–.72 in Study 1, and from .42–.87 in Study 2) and significant. Moreover, controlling for the effects of general affectivity and CMV resulted in a dramatic decrease in the correlation between stability and plasticity in both studies, from .73 to .25 in Study 1, and from .81 to .23 in Study 2. Additional analyses in Study 1 showed that the correlation between stability and plasticity remained almost the same (.26) when the effects of CMV were not taken into consideration. Thus, it seems that general affectivity is more important than CMV in providing support for the orthogonality of the Big Two factors. The findings provided here, however, should be interpreted cautiously given that the personality and affective experience are highly correlated with each other. Although these constructs were moderately correlated with each other in this investigation, it might have partly resulted in an overestimation of the impact of general affectivity in the models tested.

This study is first to show that general affectivity might be a critical variable in the assessment of higher order personality organization. Although the close relation between personality and general affectivity is generally known, this study makes an important contribution by highlighting the need to take into consideration the general affectivity of individuals in higher order personality models. This is an important issue in the study of higher order factors of personality because the high correlation between these metatraits was considered by some researchers as a reason for assuming a third-order general factor behind these metatraits (Musek, 2007). Multitrait-multimethod studies with multiple informants reveal that the correlations among the personality factors are reduced due to heteromethod correlations (DeYoung, 2006). The results provided here suggest that the high correlation between metatraits obtained in monomethod studies might have resulted from the general affectivity of participants given that the correlation decreased considerably when method effects were partialed out. General affectivity used as a control variable could produce more reliable estimates, as shown in the study by Şimşek and Koydemir (2013), who tested a structural equation model by controlling the affectivity of the participants. Consistent with the findings presented here, they observed a remarkable decrease in the correlation between the Big Two.

It should be noted here that there is no consensus among researchers concerning the inclusion of evaluative dimensions into the definition of trait personality (Simms, Yufik, Thomas, & Simms, 2008). This research agrees with the idea that the propensity to experience PA and NA would interfere with the descriptive assessment of personality and, thus, should be controlled statistically especially in monomethod studies. Findings supporting the existence of such evaluative dimensions would make clear what is vulnerable in the variance of monomethod data. Research clearly showed that the self-informant agreement on personality traits is much lower if the trait being judged is affectively charged (John & Robins, 1993). Moreover, Durrett and Trull (2005) provided some preliminary findings suggesting a possible role of positive and negative valence in Axis I and II psychopathology. Nevertheless, the findings provided here are preliminary, and the meanings these findings are wholly dependent on the theoretical perspective concerning the inclusion of an evaluative dimension in the definition of personality.

In light of these provisions, regression analyses conducted in Study 2 showed the differential effects of these metatraits on mental health variables. Plasticity accounted for a considerable amount of variance in autonomy and growth, whereas stability

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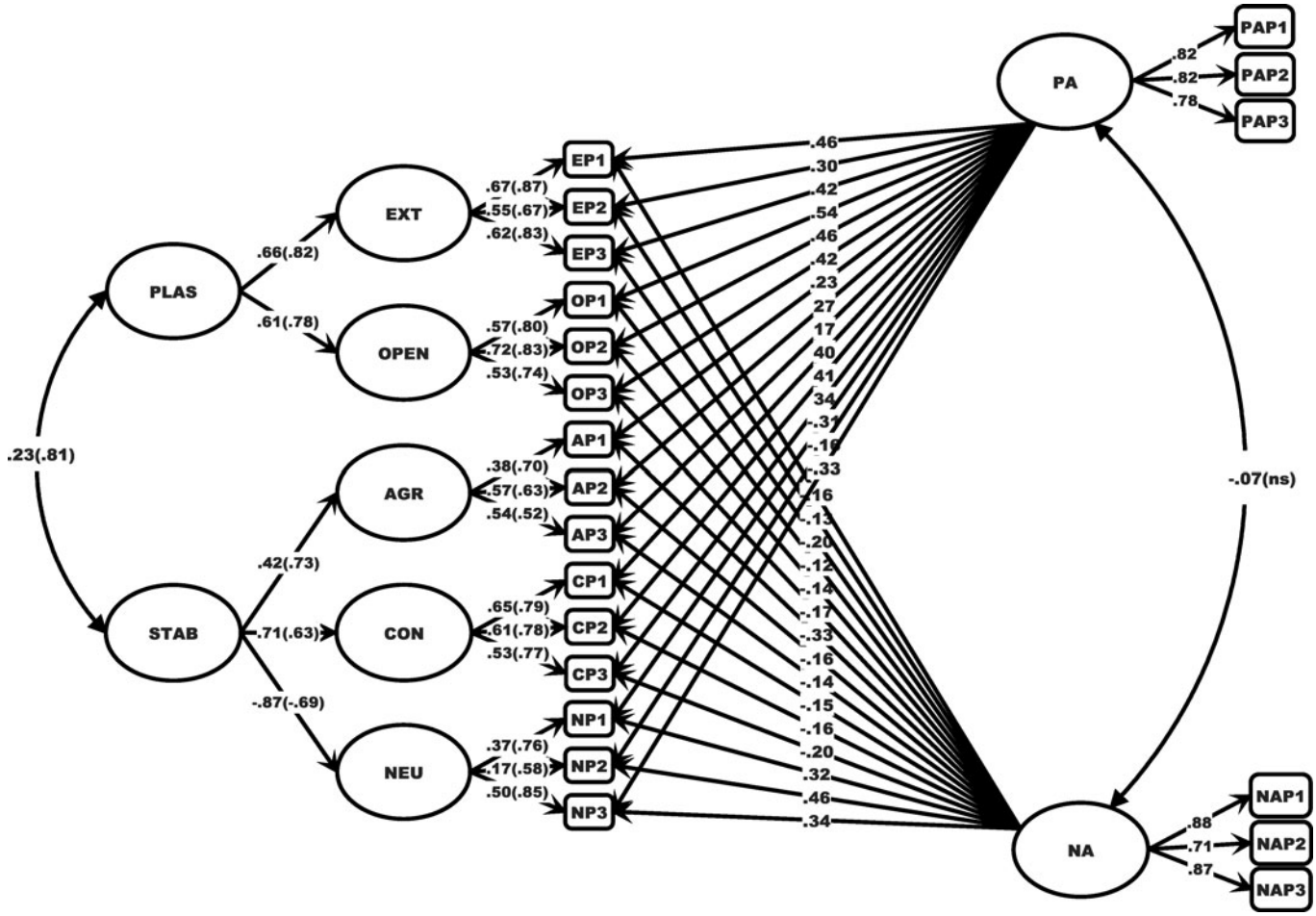

FIGURE 2.—Standardized parameter estimates for the Big Two model in Study 2. *Note*. $N = 467$. PLAS = Plasticity; STAB = Stability; EXT = Extraversion; OPE = Openness to experience; AGR = Agreeableness; CON = Conscientiousness; NEU = Neuroticism; PA = positive affect; NA = negative affect. All observed variables are parcels. Errors of the observed variables are not represented. Values in parentheses are from the model that includes the original Big Five factors; values outside parentheses are from the model after method variables have been partialed out of the manifest indicators. All values are significant at $p = .05$ if not otherwise indicated.

TABLE 3.—Means, standard deviations, and intercorrelations of variables in Study 2.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Stability	46.5	11.5	—												
2. Plasticity	62.5	10.3	.50	—											
3. LS	14.2	4.1	.42	.28	—										
4. Autonomy	29.4	4.9	.32	.46	.19	—									
5. EM	30.9	4.6	.59	.45	.54	.41	—								
6. Growth	34.3	4.4	.40	.45	.22	.38	.44	—							
7. PRWO	35.9	6.2	.60	.41	.43	.25	.57	.48	—						
8. PIL	35.6	5.0	.57	.30	.35	.22	.53	.46	.55	—					
9. SE	31.7	5.9	.59	.45	.69	.42	.64	.40	.58	.53	—				
10. DEP	25.1	8.9	–.52	–.36	–.40	–.31	–.41	–.41	–.51	–.50	–.52	—			
11. ANX	23.3	7.4	–.56	–.36	–.33	–.33	–.43	–.46	–.54	–.53	–.52	.84	—		
12. NS	21.4	7.4	–.50	–.37	–.35	–.34	–.41	–.45	–.58	–.49	–.53	.83	.81	—	
13. PA	31.6	6.8	.42	.51	.39	.25	.39	.21	.31	.30	.43	–.23	–.15	–.17	—
14. NA	19.7	5.8	–.44	–.24	–.36	–.25	–.41	–.45	–.37	–.36	–.47	.44	.52	.43	–.09

Note. $N = 467$. LS = life satisfaction; EM = environmental mastery; PRWO = positive relations with others; PIL = purpose in life; SE = self-esteem; DEP = depression; ANX = anxiety; NS = negative self; PA = positive affect; NA = negative affect. Values greater than .11 are significant at $p = .05$ and .15 at $p = .01$.

did not contribute to the additional variance in these variables. On the other hand, additional variance was more accounted for by stability than plasticity in environmental mastery, positive relations with others, psychopathology, and self-efficacy. Of the criterion variables, purpose in life and life satisfaction were only significantly accounted for by stability.

These findings are consistent with both DeYoung (2006; DeYoung et al., 2002) and Digman's (1997) accounts of these metatraits. For example, the shared variance between extraversion and openness to experience was interpreted as personal growth by Digman, and as plasticity by DeYoung. Regression analyses showed that this metatrait, unlike stability, accounted for a considerable amount of variance in autonomy and growth, two important concepts of growth theories mentioned by Digman (e.g., Rogers, Maslow). It is therefore plausible to argue that individuals more inclined to be autonomous and committed to grow are more likely to have higher levels of plasticity. These accounts are also consistent with the results of regression analyses that showed that plasticity made no contribution to the variance in purpose in life or life satisfaction. In Ryff's (1989) conceptualization, the purpose in life construct consists of a sense of directedness in life, involving plans and objectives. Motivational and emotional stability is much more likely to be associated with such a characteristic than an inclination to experiment in life and engage in different experiences. The same interpretation is also valid for life satisfaction (i.e., happiness), given that personal change, whether positive or negative, is unsettling (Keyes, 2000).

The regression analyses conducted also showed that stability is more important for environmental mastery, positive relations with others, and self-efficacy than plasticity. Given that these dimensions are strictly determined by social life (i.e., environmental mastery, positive relations with others) or related to it (i.e., self-efficacy), an inclination toward stability would be more likely to be associated with these mental health indicators. The results also showed that stability was also more associated with psychopathology (e.g., depression, anxiety, and negative self). This is an expected result, given that DeYoung (2006) and colleagues (DeYoung et al., 2002) presented ample evidence that stability is closely related to mental illness. Consistent with this, Becker (1999) called this metatrait *social adaptation,* which is conceptually related to both mental illness and mental health variables such as positive relations with others or environmental mastery.

These studies, although providing important evidence for the significance of general affectivity on the structure of higher order personality, have important limitations with regard to the research design and the data used. First, although the aim of this investigation was to show the effects of general affectivity and CMV on higher order personality organization using monomethod data sets, future heteromethod studies might provide additional support for the conclusions provided. Second, the research reported here considered only general affectivity as a measured method variable, and did not take into account the influence of momentary affect on the metatrait organization, an important area for the future research. This omission also applied to the results of the regression analyses, making it impossible to determine the influence of momentary affect on the results provided. Third, the regression analyses were also limited with regard to causality: Although the results indicated the relative importance of metatraits for different mental health indicators, a

TABLE 4.—Hierarchical regression analyses of mental health indicators on positive affect, negative affect, and personality metatraits.

Criterion/Predictors Entered by Step	$\beta 1$	$\beta 2$	R	R^2	Adjusted R^2	ΔR^2
Life satisfaction						
Step 1			.51	.26	.25	—
PA	.38**	.31**				
NA	–.30**	–.22**				
Step 2			.53	.28	.27	.027**
Stability		.20**				
Plasticity		–.00				
Autonomy						
Step 1			.32	.10	.10	—
PA	.22**	–.00				
NA	–.22**	–.13*				
Step 2			.48	.23	.23	.13**
Stability		.06				
Plasticity		.41**				
Growth						
Step 1			.47	.22	.21	—
PA	.17**	–.03				
NA	–.42**	–.32**				
Step 2			.57	.33	.32	.11**
Stability		.09				
Plasticity		.35**				
Environmental mastery						
Step 1			.53	.28	.27	—
PA	.35**	.13**				
NA	–.37	–.18**				
Step 2			.65	.42	.42	.15**
Stability		.40**				
Plasticity		.15**				
Positive relations with others						
Step 1			.42	.17	.17	—
PA	.22**	–.00				
NA	–.34**	–.14**				
Step 2			.59	.34	.34	.17**
Stability		.43**				
Plasticity		.16**				
Purpose in life						
Step 1			.47	.22	.22	—
PA	.30**	.15**				
NA	–.34**	–.17**				
Step 2			.59	.35	.34	.13**
Stability		.44**				
Plasticity		–.03				
Self-efficacy						
Step 1			.60	.37	.36	—
PA	.40**	.22**				
NA	–.43**	–.28**				
Step 2			.68	.46	.45	.09**
Stability		.32**				
Plasticity		.11*				
Depression						
Step 1			.49	.24	.23	—
PA	–.20**	–.02				
NA	.43**	.28**				
Step 2			.58	.34	.33	.10**
Stability		–.33**				
Plasticity		–.11*				
Anxiety						
Step 1			.51	.26	.26	—
PA	–.12**	.09				
NA	.49**	.31**				
Step 2			.63	.40	.39	.14**
Stability		–.40**				
Plasticity		–.12*				
Negative self						
Step 1			.45	.20	.20	—
PA	–.13**	.07				
NA	.42**	.27**				
Step 2			.56	.31	.31	.11**
Stability		–.33**				
Plasticity		–.14**				

Note. $N = 467$. $\beta 1$, $\beta 2$ = standardized beta coefficients for Steps 1, 2; PA = positive affect; NA = negative affect.
*$p < .05$. **$p < .01$.

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longitudinal design would be much more effective in revealing the differential effects of these metatraits. Another limitation was the use of only one dimension of happiness, the cognitive dimension, namely, life satisfaction. Future research could use other subjective emotional well-being measures that do not overlap with personality (Şimşek, 2011). Finally, both studies used data provided by university students, which resulted in a limitation concerning the generalizability of the results provided here.

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