

Indirect and Direct Associations Between Personality and Psychological Distress Mediated by Dispositional Coping

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ABSTRACT. The present study examines the association between coping and personality, by testing the hypothesis that dispositional coping mediates the relationship between personality and psychological distress. Canonical correlations evaluated the degree of the association among personality and coping dimensions in a community sample ($N = 489$) from Cyprus. Results partially support the hypothesized mediation model with Agreeableness predicting distress through the full mediation of avoidant coping, expression of negative feelings and active-positive coping. Partial mediation was found for Neuroticism and Openness. Canonical correlations deciphered how coping relates to the Big Five dimensions. Neuroticism was mostly associated with maladaptive coping, whereas Conscientiousness and Extraversion with adaptive coping.

Keywords: Big Five, coping, distress, emotion regulation, personality

COPING DESCRIBES HOW INDIVIDUALS MANAGE STRESS (Folkman & Moskowitz, 2004) and is a known predictor of mental and physical health. Somewhat different conceptualizations of coping exist: One theoretical approach gives emphasis to stylistic dispositions toward certain coping behaviors, which are seen as akin to psychoanalytic defense mechanisms and are related to personality (Moos & Holahan, 2003). Other conceptualizations, including the transactional view (Lazarus & Folkman, 1984), see coping as a conscious, intentional, goal-directed response, with coping strategies selected on the basis of the individual's

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understanding (cognitive appraisal and reappraisal of the situation) of the experience at that moment. This time-locked coping response is based on emotional states, and other person and environment factors that interact when a stressor is encountered.

Although both views of coping seem to hold in specific circumstances, that is, one copes in situation-specific ways but also shows some consistent coping tendencies, knowing a person's dispositional coping style does not help predict very well what the person will do in a specific situation, a fact that indicates that the two kinds of coping are quite distinct (Carver, Scheier, & Weintraub, 1989). Both types of coping have been seen as related to personality, though the specific way in which personality predicts coping and, in turn, how both of these processes interact to predict psychological distress remains obscure.

Dispositional coping has been seen as more related to personality than transactional coping responses (Bouchard, Guillemette, & Landry-Leger, 2004), and has been viewed as a personality process, or as "personality in action under stress" (Bolger, 1990, p. 525), pointing to the fact that personality characteristics and coping styles are closely intertwined. Preference for certain coping strategies can be thought of as a behavioral manifestation of higher-order personality characteristics, so that a tendency towards certain behaviors is consistent with one's personality, for example, support seeking among people high in Extraversion or avoidance in those high in Neuroticism (Endler, 1997; O'Brien & DeLongis, 1996). In fact, coping can be considered as a pathway through which personality (e.g., Type A, hardiness, Type C etc.) affects physical and psychological health (e.g., Park, 2007; Parkes, 1994). Thus, the present study examines the hypothesis that coping (i.e. dispositional) mediates the association between personality (defined by the Big Five dimensions) and psychological distress.

This mediation hypothesis has been examined in several previous studies with inconsistent findings. A challenging aspect of this research has been the clarification of the associations between coping and personality and between coping and distress. It has been argued by Connor-Smith and Flachsbart (2007) that the strength of the association between coping and personality depends on the time-frame for which a coping response is reported in relation to when it took place (i.e., whether coping was measured as a disposition or as a time-locked response), and on other factors such as the intensity and duration of the stressor. This link appears to be stronger for severe and prolonged stress where varied coping responses are possible. Also, according to Bolger (1990) people become more biased toward dispositional accounts of their behavior over time and therefore it is important to take into consideration the study's design. Regarding the link between coping and distress, it has been claimed by Bolger that cross-sectional designs are inappropriate for testing it because the direction of prediction is difficult to decipher.

A related difficulty with testing a mediation hypothesis is the independence of variance in psychological distress predicted by personality and coping

(particularly dispositional), for coping behaviors not to be considered as “an epiphenomenon of personality” (Knoll, Riechmann, & Schwarzer, 2005; McCrae & Costa, 1986). Therefore, it is important to determine that personality predicts coping, but that the two constructs are not multicollinear. Several studies suggest that indeed, both personality and coping predict separate variance in stress (e.g., Knoll et al.), but these results have not been unequivocal. Therefore, to examine our proposed mediation hypothesis the independence of the constructs must first be established.

Several studies have provided support in favor of the hypothesis that coping mediates the effects of personality on stress and other aspects of mental well-being, with different populations, various personality characteristics, outcomes, and methodological approaches. Bolger (1990), in a prospective study, found that situational coping responses mediated the association between Neuroticism and anxiety under stressful conditions. Murberg, Bru, and Stephens (2002), in a longitudinal design over a two year period, reported that dispositional coping mediated the association between personality and stress, whereas Knoll et al. (2005), with a similar design, found that situational coping responses partially mediated the association between the Big Five personality dimensions and stress before a cataract operation. Similarly, Williams, Wiebe, and Smith (1992) using a cross-sectional design, found that coping mediated the association between personality (hardiness) and health. Ireland, Brown, and Ballarini (2006), in a cross-sectional study, found that maladaptive coping (avoidant and emotion focused) served as a mediator between disordered personality patterns and psychological distress.

However, contradictory evidence comes from a series of studies, including that by Knoll et al. (2005) who found that dispositional coping did not mediate the association between personality and stress and did not explain any variance in outcomes above and beyond its association with personality. McCrae and Costa (1986), in a retrospective study, also failed to find evidence that coping explained independent variance in emotions once personality was controlled for, similar to Hemenhover and Dienstbier (1998), who, in a longitudinal design, did not find support for coping as a mediator between trait anxiety and affective adaptation to a stressful episode. Thus, the evidence regarding the mediational role of coping in the personality/stress relationship is still equivocal, both within studies using prospective and cross-sectional designs, and therefore deserves further research. In all, it appears from the aforementioned reviewed evidence that longitudinal or quasi-experimental designs that measured coping and stress simultaneously, fared somewhat better at finding the proposed mediating association (e.g., Bolger, 1990; Knoll et al., 2005), compared to cross-sectional or retrospective studies (e.g., McCrae & Costa) but this was not always the case. The present study, carried out in the Republic of Cyprus, re-addresses this issue in a cross sectional study, while looking at a wide range of coping styles in relation to the Five Factors of personality.

The second goal of the present study is to provide further evidence on how specific coping styles map onto the well-known Big Five dimensions of personality (Costa & McCrae, 1988). Reliable associations have been documented in some relevant studies (e.g., Lengua, Sandler, West, Wolchik, & Curran, 1999), especially regarding Neuroticism, Extraversion, and Conscientiousness in comparison to the other two Big-Five personality factors. Specifically, Neuroticism has been found to be associated with avoidant and emotion-focused strategies such as self-blame and distraction (e.g., Connor-Smith & Flachsbart, 2007), Conscientiousness to greater use of planning and active problem solving and lower use of passive and maladaptive coping (e.g., Vollrath & Torgersen, 2000), and Extraversion with active coping, seeking support, and low use of self-blame and disengagement (e.g., Vollrath, Torgersen, & Alnaes 1995). Openness and Agreeableness generally do not present strong or reliable associations to specific coping styles (O'Brien & DeLongis, 1996), although small meaningful correlations have been reported between, for example, high Openness and creative problem-oriented coping (Watson & Hubbard, 1996). Individuals high in Agreeableness are more likely to seek support and use acceptance and less likely to employ withdrawal strategies compared to individuals low on this trait (e.g., Connor-Smith & Flachsbart, 2007). More research is needed to verify and extend these findings, particularly regarding aspects of personality that have received less research attention.

In sum, the present study aims to revisit the question whether coping mediates the association between personality and psychological distress. This link has not consistently emerged in previous research, especially assessing dispositional coping using cross-sectional methods. One explanation pertaining to some of the previous disconfirming findings could be the authors' interest on the effects of specific personality traits (e.g., trait anxiety) and selected coping styles on stress. Here, we aimed to take a comprehensive stance to both personality and dispositional coping as taken by a limited number of extant studies (e.g., McRae & Costa, 1986) to highlight any under-examined mediation effects. Hence, the Big Five dimensions of personality and a range of coping styles as measured by the Brief COPE (Carver, 1997) were studied. As a secondary goal, to address how coping fits within a broad personality theory, the study used canonical and bivariate correlations to document which personality dimensions are related to particular coping strategies. Results are anticipated to further our understanding regarding the common and distinct paths through which coping and personality relate to psychological distress.

Method

Participants

Participants were 489 individuals who had taken part in two previous studies conducted in Cyprus and included the Brief-COPE and NEO-FFI in their measures. Study 1 was conducted among 195 Greek-Cypriot parents in the context

of a study on emotional and behavioral profiles of children with learning and behavioral difficulties and was also included in a previous publication (Kapsou, Panayiotou, Kokkinos, & Demetriou, 2010). Study 2 involved 294 Greek-Cypriot young adults and their parents in the context of a study on social anxiety. The two samples were compared in terms of their age and education. The sample from Study 1 was somewhat older ($M = 41.14$) compared to that of Study 2 ($M = 36.45$). Combining the two samples, however, permitted the examination of the hypothesized associations in the wide range of adulthood, that is, from 16–62 years ($M = 38.29$, $SD = 11.09$ in the combined sample). The two samples were also somewhat different in education level, with Sample 1 reporting higher education, but with both samples' average being at the level of high-school graduates and "some college." The full sample consisted of 199 male (41%) and 290 female (59%) participants.

Measures

The *Brief-COPE* (Carver, 1997) is a 28-item measure, consisting of 14 approaches (subscales) that individuals use to cope with problems and stress. These are: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. The items are answered on a four point Likert-type scale ranging from "not at all" to "very much." Factor analyses in Greek-speaking samples (Kapsou et al., 2010) resulted in eight factors, four of which (behavioral disengagement, substance use, humor, and religion) corresponded to the original subscales, and four were broader factors which included multiple subscales. These were labeled active-positive coping, seeking support, avoidance, and expression of negative feelings. Similar broader factor structures also had been reported in previous studies (e.g., Miyazaki, Bodenhorn, Zalaquett, & Ng, 2008). These eight factors reported by Kapsou et al. were used in the present study in order to reduce coping styles into fewer but more fundamental dimensions. Cronbach's alpha reliabilities in that study ranged from .55 to .82. The somewhat low reliabilities of some subscales are similar to those reported in most previous studies of the original English version of this instrument (e.g., Carver, 1997; Aitken & Crawford, 2007). In the present study alpha reliabilities were as follows: behavioral disengagement, .68; substance use, .75; humor, .50; religion, .76; active-positive, .78; seeking support, .84; avoidance, .56; and expression of negative feelings, .54.

The *NEO-Five Factor Inventory* (NEO-FFI; Costa & McCrae, 1992) is the abbreviated version of the NEO-Personality Inventory Revised and contains 60 items measuring Neuroticism (N), Openness to Experience (O), Agreeableness (A), Conscientiousness (C), and Extraversion (E). A shorter version containing 39 items, based on factor analytic findings of the Greek adaptation study (Panayiotou, Kokkinos, & Spanoudis, 2004) was used to calculate mean factor scores for all analyses. Reliability analyses on the present data indicated that for N alpha was .77;

for E, .81; for A, .68; for C, .74; and for O, .57. It should be noted that the O factor was defined by only six items in this version of the questionnaire and had reliability equivalent to the original Greek psychometric study.

The *Brief Symptom Inventory* (BSI; Derogatis, 1993) is a self-report inventory with 53 items describing a variety of psychological problems. It demonstrates adequate internal reliabilities for the *a priori* symptom subscales with Greek speaking participants (Loutsiou-Ladd, Panayiotou, & Kokkinos, 2008), with alphas ranging from .67 to .85. There are also three global indices, the global severity index (GSI), the positive symptom total, and the positive symptom distress index, which provide an overall assessment of psychological functioning. Each item is scored on a 5-point Likert-type scale of distress, ranging from 0 = not at all, to 4 = extremely. In the present study the GSI ($\alpha = .96$) was used as the outcome measure as it is considered the single best index of current distress by the authors of the scale (Derogatis & Melisaratos, 1983).

Procedure

Participants responded to the aforementioned measures in the context of larger questionnaire packages put together separately for each of the two studies from which the present sample was derived. For the Brief COPE, instructions directed participants to indicate ways in which they *typically cope with stress in their life*, in order to measure coping as a consistent, dispositional tendency toward specific coping strategies.

Statistical Analysis

Bivariate and canonical correlations between dimensions were computed, in order to further explicate the relationship between personality and coping. To test the mediation hypothesis, the approach proposed by Baron and Kenny (1986) was applied. The significance and size of the indirect effect were estimated using the Goodman I (Goodman, 1960).

Results

Preliminary Analyses

Gender differences in personality and coping were investigated using Multivariate Analyses of Variance (MANOVA). For personality, Wilk's Lambda was .91, $p < .001$. Women scored significantly higher than men in the personality dimensions of *N* [$F(1, 487) = 21.84, p < .001$], and *O* [$F(1, 487) = 16.43, p < .001$]. Gender differences on the remaining personality dimensions were non-significant. For gender differences in coping, Wilk's Lambda was .94, $p < .001$. Results indicated that women scored significantly higher on most coping strategies, with the exception of substance use, where men had significantly higher scores (see Table 1).

TABLE 1. Gender Differences in Brief-COPE Dimensions

Brief-COPE	Men		Women		<i>F</i> (1, 488)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Active-Positive coping	2.93	0.61	3.05	0.50	5.71*
Avoidance	2.20	0.66	2.37	0.64	8.62**
Seeking support	2.30	0.79	2.48	0.76	6.41*
Substance use	1.21	0.49	1.09	0.32	11.95**
Behavioral disengagement	1.47	0.65	1.49	0.69	0.19
Expression of negative feelings	2.47	0.65	2.56	0.58	3.21
Humor	1.94	0.74	1.85	0.72	1.57
Religion	2.24	1.02	2.46	0.94	5.89*

** $p < .01$. * $p < .05$.

Pearson's bivariate correlations indicated that age correlated negatively with N ($r = -.18, p < .001$) and E ($r = -.13, p < .01$), and positively with A ($r = .19, p < .001$) and C ($r = .13, p < .01$). It was related to less support seeking ($r = -.14, p < .01$) and humor ($r = -.14, p < .01$) and was also negatively related to GSI ($r = -.17, p < .001$).

On the basis of these preliminary results it was deemed that both gender and age should be used as covariates in the analyses since they both appear to predict differences in both coping and personality.

Correlations Among Coping, Distress, and Personality

Bivariate correlations were used to examine the relation between personality dimensions, distress and the eight coping subscales, as shown on Table 2. Self-reported distress was correlated with all Big Five personality dimensions except with E and O. Similarly, it was correlated with all coping styles, but not with active-positive coping. Active-positive coping was correlated with C, E and A. Behavioral disengagement, avoidance, and expression of negative feelings were correlated to all personality dimensions except to O. Substance use was related to three personality dimensions (N, A, C). Humor was the only coping style that was correlated with all personality dimensions. Seeking support was correlated with N, C, and E.

Canonical Correlations Between Coping and Personality

Canonical correlation analysis on SPSS was used to further investigate the relationships between personality and coping. Across the five pairs of variates,

TABLE 2. Bivariate Correlations among Brief-COPE Subscales, Personality Dimensions, and Distress

	GSI	N	E	O	A	C	Active-Positive Coping	Behavioral Disengagement	Substance Use	Seeking Support	Religion	Humor	Avoidance
N	.65**												
E	-.08	-.04											
O	.02	-.04	.09*										
A	-.37**	-.42**	-.07	.10*									
C	-.11*	-.06	.41**	.11*	-.00								
Active-Positive Coping	-.03	.03	.37**	.09	-.18**	.49**							
Behavioral Disengagement	.37**	.42**	-.14**	-.03	-.18**	-.23**	-.19**						
Substance Use	.17**	.13**	-.03	-.05	-.10*	-.17**	-.10*	.22**					
Seeking Support	.10*	.21**	.18**	.01	-.01	.09*	.19**	.06	-.02				
Religion	.09*	.14**	.17**	.13**	.01	.27**	.33**	-.02	-.05	.22**			
Humor	.11*	.07*	.21**	.09*	-.23**	-.11*	.19**	.17**	.17**	.13**	.05		
Avoidance	.41**	.39**	.15**	-.01	-.32**	.12*	.25**	.27**	.04	.20**	.10*	.16**	
Express Neg. Feelings	.35**	.39**	.10*	.08	-.36**	.13**	.34**	.17**	.07	.34**	.16**	.21**	.36**

Note. N = Neuroticism, E = Extraversion, O = Openness to experience, A = Agreeableness, C = Conscientiousness, GSI = Global Severity Index. **p < .01. *p < .05.

canonical variables accounted for 22% of the variance of the NEO-FFI factors and 17% of the variance of the Brief-COPE factors. Tests of dimensionality indicated that all five canonical correlations, ranging from .60 to .16, were statistically significant at the .05 level. For each successive set of variates, squared canonical correlations (R_c^2) were .36, .32, .14, .07, and .03. Collectively, the full model was statistically significant, Wilk's $\lambda = .33$, $F(40, 2073.27) = 14.92$, $p < .001$, indicating an overall r^2 type effect size of .67. Therefore, the full model explained a substantial proportion of variance shared between the two variable sets (67%). Taking into account the percentage of the variance of the canonical dimensions explained for each set of variates (R_c^2), it was deemed meaningful to interpret the first three sets, which contributed to >10% of the variance. Table 3 presents the standardized canonical coefficients and structure coefficients (canonical loadings) for these three dimensions across both sets of variables, as well as the squared structured coefficients and the communalities (h^2) across the two sets of variates for each variable.

For the first set of variates, the primary variable for personality appeared to be N and the secondary contributor was A. The sign was positive for N and negative for A, indicating that they were negatively related. For the coping variables, the first dimension was comprised of expression of negative feelings and avoidance. Because the structure coefficient for both was positive, this dimension was positively related to N but negatively to A. For the second set of variates, the coefficients suggest that the most important contributor for personality was C, whereas E and N were secondary contributors. For coping, active-positive coping, and behavioral disengagement were dominant. Looking at the structure coefficients for the entire set, C and E were positively related to active-positive coping, and negatively with expression of negative feelings and behavioral disengagement. For the third set, the relevant variables for personality were A, C, and N, and for coping only humor, which was negatively related to the three personality variables. All findings were also consistent with the squared structure coefficients (see Table 3), suggesting no multicollinearity between critical variables for either personality or coping.

Examination of the Proposed Mediation Model

According to Baron and Kenny (1986), support for a mediation model will be provided if: personality is a significant predictor of (a) distress, (b) coping, (c) coping significantly predicts distress, and (d) personality does not remain a significant predictor of distress once coping (i.e., the mediator) is entered into the model. In all the following steps reported, age and gender were entered in the first step as covariates. The potential of multicollinearity between the various coping styles and personality dimensions was eliminated first by examining the correlation matrix in Table 2; no correlations higher than .80 were observed. In addition to this criterion, the variance inflation factor (VIF) and tolerance statistic were examined in the following reported regression analyses. For VIF, none of the values were higher than 10 (Myers, 1990). For tolerance statistic, none of

TABLE 3. Standardized Canonical Coefficients and Canonical Loadings for Personality and Coping for Sets of Covariates 1, 2, and 3

Variable	1		2		3		r _s ² (%)	r _s	r _s ² (%)	h ² (%)
	Coef	r _s	Coef	r _s	Coef	r _s				
Neuroticism	.69	<u>.82</u>	.45	<u>.48</u>	-.61	-.29	23.04	-.29	8.41	<u>98.69</u>
Extraversion	.20	<u>.33</u>	-.19	-.54	.57	.41	29.16	.41	16.81	<u>56.86</u>
Openness	.14	.12	-.02	-.13	.18	.12	1.69	.12	1.44	<u>4.57</u>
Conscientiousness	.28	<u>.34</u>	-.78	-.88	-.61	-.31	77.44	-.31	9.61	<u>98.61</u>
Agreeableness	-.37	-.67	.05	-.12	-.74	-.51	1.44	-.51	26.01	<u>72.34</u>
R _c ²			0.37				0.33		0.14	
Active-positive coping	.25	<u>.52</u>	-.77	-.79	.04	.13	62.41	.13	1.69	<u>91.14</u>
Beh. Disengagement	.28	<u>.43</u>	.43	<u>.68</u>	-.35	-.17	46.24	-.17	2.89	<u>67.62</u>
Substance use	.03	.11	.13	.34	.09	.19	11.56	.19	3.61	<u>16.38</u>
Seeking support	.02	<u>.36</u>	.03	-.02	-.24	-.20	0.04	-.20	4.00	<u>17.00</u>
Religion	.17	<u>.36</u>	-.10	-.32	-.37	-.35	10.24	-.35	12.25	<u>35.45</u>
Humor	.02	.29	.13	.12	.88	.82	1.44	.82	67.24	<u>77.09</u>
Avoidance	.43	<u>.75</u>	.05	.07	.05	.05	0.49	.05	0.25	<u>56.99</u>
Negative Emotion	.46	<u>.78</u>	.19	.05	.06	.07	0.25	.07	0.49	<u>61.58</u>

Note. Structure coefficients (r_s) greater than .45 are underlined. Communality coefficients (h²) greater than 45% are underlined. Coef = standardized canonical function coefficient; r_s = structure coefficient; r_s² = squared structure coefficient; h² = communality coefficient.

the values were below .2 (Menard, 1995). Therefore, multicollinearity between coping and personality should not be a concern.

First, to examine whether personality significantly predicts distress, a regression analysis was conducted with the personality dimensions entered as independent variables and distress (i.e., GSI) serving as the dependent variable. The final model was significant, $F(7, 475) = 55.66, p < .001$, accounting for 44% of the variance in distress. As expected, N emerged as a significant predictor of distress, $\beta = .59, p < .001$, as well as O, $\beta = .08, p < .05$, and A, $\beta = -.13, p < .01$.

Next, regression analyses were conducted to examine whether personality significantly predicts coping dimensions. As before, all personality dimensions were entered simultaneously as the independent variables, with coping dimensions serving as the dependent variables in eight separate analyses (one for each coping dimension). In all cases, the models were significant and the variance explained by personality was above and beyond that accounted for by the covariates.

In the third step, a regression analysis was conducted to determine whether the proposed mediators (i.e., coping dimensions) significantly predict distress, entering coping dimensions as the independent variables. The model was significant, $F(10, 471) = 24.20, p < .001$, with active-positive coping, behavioral disengagement, substance use, religion, avoidance, and negative affectivity accounting for 33% of the variance in distress above and beyond the covariates.

The final step of the mediational model was tested using a hierarchical regression analysis. Gender and age were entered in the first step of the model as covariates, followed by all personality dimensions in the second step, and the proposed mediators, that is, all coping dimensions, in the third step of the model. The proposed mediators significantly improved the model, accounting for an additional 5% of the variance in distress. The results indicated only partial mediation of the effects of personality by coping: N and O remained significant predictors of distress, even with the mediators entered in the model. To the contrary, A was no longer a significant predictor. Active-positive coping, substance use, avoidance, and expression of negative feelings emerged as significant mediators of distress, explaining additional variance to personality, gender, and age.

To provide further support for the mediation model, Goodman (I) was calculated for A and each significant proposed mediator (coping dimension), to determine the significance of the indirect effect of this personality factor on distress through coping. These tests demonstrated the following: With active coping as the mediator, the indirect effect of A was significant, ($z = 3.13, p < .01$), as it was with avoidance ($z = -3.77, p < .001$) and with the expression of negative feelings as mediators ($z = -4.23, p < .001$). Similar tests were performed for the personality dimensions for which only partial mediation was found: For O the only statistically significant mediation effect was through the expression of negative feelings ($z = 2.75, p < .01$). For N, the indirect effect through expression of negative feelings as the mediator was significant ($z = -4.71, p < .001$), as it was with avoidance ($z = 4.97, p < .001$), with religion ($z = 2.07, p < .05$), with

substance use ($z = 2.06, p < .05$), and with behavioral disengagement ($z = 3.77, p < .001$).

Discussion

Even though personality is believed to be related to the way people cope with stress (Connor-Smith & Flachsbart, 2007), much remains to be learned about the nature of this association and especially its relation to psychological distress. The present study examined the hypothesis that coping mediates the association between personality and psychological distress based on the theory that dispositional coping can be thought of as “personality in action under stress” (Bolger, 1990, p. 525). It also examines how the Big Five factors of personality are specifically related to coping strategies, a domain where gaps in the literature still exist, particularly in relation to A and O. Coping is viewed here as a behavioral manifestation of broader personality characteristics that are consistent across time and situations.

Bivariate and canonical correlations yielded important information about the relationship between the five personality and the eight coping factors. The canonical correlation technique was used, because it reduces Type I errors (Sherry & Henson, 2005). Bivariate correlations were used to address the issue of multicollinearity between personality and coping and to further examine how coping maps onto the Big Five dimensions. In line with previous reports, in our study N and C appeared to be the most critical dimensions in their associations to coping.

Findings were consistent with expected relationships between N and a wide range of coping strategies, particularly those considered as maladaptive, including expression of negative feelings, avoidance and behavioral disengagement. N was unrelated to active-positive coping. Individuals high in N may use a greater range of coping strategies, probably because they tend to experience more negative feelings, and prefer to use emotion-focused coping strategies (e.g., Connor-Smith & Flachsbart, 2007).

Conscientiousness, which is characterized by self-regulated, goal-oriented behavior and the attempt to exert control over the situation, both in our study and in others, was positively associated with active problem-focused coping, (e.g., Penley, Tomaka, & Wiebe, 2002; O’ Brien & DeLongis, 1996); in fact, C was the strongest correlate of this coping approach. The second strongest association of C was with religious coping, perhaps indicating that when the conscientious person cannot easily exert primary control over a stressor, s/he may call on the supernatural in order to regain a sense of control.

Extraversion was most strongly positively associated with the use of active-positive coping and humor (Vollrath et al., 1995; Penley et al., 2002), showing that this trait promotes effective coping and potentially positive emotions. Although A is believed to be associated with high levels of perceived and received social support (e.g., Bowling, Beehr, & Swader, 2005), in our data it was unrelated to this coping style. Instead, it was associated with low use of expression of negative

feelings and avoidance, suggesting that this personality style may buffer against maladaptive coping. Openness has not previously been linked strongly to coping, while previous reports emphasized that individuals high in O are creative and flexible (Penley et al., 2002). In our case, as well, correlations between O and coping were few and small, with the strongest being with religious coping. The latter effect perhaps indicates openness toward spirituality among those high in O.

Importantly, results were also partially supportive of the proposed mediation hypothesis. Full mediation was documented only for the personality dimension of A, for which all relevant statistical criteria were met, and its indirect effects through coping were shown to be significant. For other aspects of personality, (N and O) partial mediation was supported, since they continued to be significant predictors (but with reduced weights) of distress after coping was entered in the regression equation, indicating that they exert much, but not all, of their impact directly. To the contrary, E and C did not emerge as significant predictors of distress at any stage of the analyses. The coping dimensions that emerged as mediators for the indirect effects of A were active-positive coping, expression of negative feelings and avoidance, demonstrating the significance of these behaviors for stress and mental health among high A individuals. When considering the correlations between personality and coping, A was related to low use of all three coping styles, indicating that for agreeable individuals, who may do their best to be pleasant and get along with others, it may take a great amount of distress to activate any coping behaviors. At the same time, their tendency not to rely on expression of negative feelings and avoidance may protect them against distress. The common coping dimension that emerged as a partial mediator for the indirect effects of N and O was the expression of negative feelings. Additional partial mediators for N were avoidance, religious coping and behavioral disengagement. All these partial mediators are emotion-focused coping behaviors, pointing to the potentially significant negative impact of such strategies for psychological distress among high N and O individuals.

Personality, especially N and O, also appeared to exert substantial direct effects on psychological distress and well-being. These styles may exert effects through paths unrelated to coping behaviors, such as exposure to stressors, perception of stress severity, or perceived and actual availability of supportive resources. Neuroticism in particular may be an important determinant of mood and emotional reactivity and, therefore, may relate to levels of distress irrespective of what coping behaviors are activated (Bolger & Schilling, 1991). Although the small, positive association between O and distress is more difficult to explain, it may reflect greater willingness among individuals high in this trait to admit to feeling stressed, as it has been found previously that it is related to greater introspection and mindfulness (Bishop, 2002).

Findings of mediation by coping of the effects of personality on stress have been challenged before on the grounds that personality and dispositional coping might be multicollinear (Knoll et al., 2005). Multicollinearity statistics for the

current study show that this is not the case (neither for coping with personality nor for personality with distress). This is in accord with some prior evidence (e.g., Knoll et al.) that coping explains variance in stress in addition to that explained by personality, but contrasts others who have not found such effects (e.g., McCrae & Costa, 1986). In the present regression analyses, active-positive coping, substance use, avoidance, and expression of negative feelings emerged as significant predictors of distress, explaining additional variance over and above to that explained by personality, gender, and age. These findings attest to the importance of such behaviors for psychological well-being, with active-positive coping being a negative predictor of distress and the other styles being significant positive predictors.

The possibility that cultural factors may have played a role in the results should be considered, given that this study was conducted in a small, southern European country. In general, both coping factors and personality dimensions have been found to be reliable across multiple cultural contexts (see Kapsou et al., 2010 for a recent review; McCrae & Terracciano, 2005), but some unique associations between them may be attributable to cultural differences. Cyprus is a westernized European Union member and therefore shares many values with other western countries. It has also been described as a more collectivist society than other western countries, sharing some common belief systems and traditions with nations such as Italy, Spain and mainly Greece (e.g., Triandis, 1995). Indeed, culture may influence exposure to stressors, available resources and types of acceptable coping responses (Connor-Smith & Calvete, 2004). In the current results the finding that Conscientiousness was associated with religious coping may reflect a higher emphasis placed on religion in the present culture. In other southern European countries, the emergence of a religious coping factor was observed, which was different from more western nations (Sica, Novara, Dorz, & Sanavio, 1997). Similarly, the finding that A was associated with low expression of negative feelings may be related to a cultural tendency toward compliance and non-confrontation (e.g., Leon-topoulou, Jimerson, & Anderson, 2011). However, to confirm any true effects of culture, cross-cultural equivalence studies of the current models would have to be conducted.

In sum, results of the present study indicate that even though personality exerts substantial effects on distress directly, its effects are also partially mediated by coping styles, especially active-positive coping, avoidance, and expression of negative feelings. This is one of the few studies to document this association within a cross-sectional design, in contrast to many previous studies that have failed to support this hypothesis. This may be due to the comprehensive and simultaneous examination of a wide variety of coping styles and personality dimensions, which is different from the approach taken by most previous researchers who focused on narrow personality constructs and specific coping behaviors.

These results have potential implications for psychological interventions. Although personality is considered to be stable and difficult to change, modifying

behaviors (i.e., coping responses) is a key component of evidence-based therapies. It appears that enhancing skills related to active-positive coping while decreasing avoidant tactics, and reducing anger, blaming, and other negative emotions may be important therapy goals for reducing psychological distress.

Even though the cross-sectional design in the present investigation could be considered a limitation and was criticized in some of previous studies, we elected to use this approach in order to examine the possibility that mediation can be supported when taking a more inclusive perspective of both personality and coping. This is not to say, however, that future replications using both longitudinal and experimental designs should not be undertaken. Specifically, experimental tasks that can demonstrate which coping responses are selected under various conditions should be developed, to better ascertain the effects of personality on coping, and of coping on distress.

Another potential limitation of the study has to do with the fact that all aspects of the model were measured through self-report: This problem of shared method variance may potentially lead to inflated associations. Independent evaluations of distress or observations of coping would have resulted in findings less affected by how much one's personality may color the perception of coping responses and stress. On the other hand, typically low correlations arise when multiple informants report on someone's behavior making it difficult to determine who the most accurate informant might be.

An additional potential problem for this investigation was the combination of two samples dissimilar in age. However, combining the groups permitted the examination of the hypothesized associations across a large spectrum of adult ages. Patterns of bivariate correlations between groups were quite similar (see Note 1) indicating that findings were probably unaffected by group demographic differences. Similarly, the additional correlations within subsamples (students, fathers, mothers) discussed in Note 1 indicated that although individuals within samples were relatives, the pattern of associations for each group and the total sample did not differ substantially. The same finding indicated that the obtained correlation magnitudes were mostly unaffected by sample size.

Potential concerns with the generalizability of the findings can be raised based on the somewhat low reliabilities of three subscales included in the proposed models. Coping through avoidance and expression of negative feelings, the Openness factor of personality demonstrated reliabilities below .60. These alphas could be anticipated based on previous reliability analyses of the same factors or their constituent subscales (e.g., Carver, 1997) in the literature and are partially explainable by the low number of items included in each scale (i.e., 0). However, they prompt the suggestion that further replication of the current results is required before definitive conclusions can be drawn regarding the associations between personality and coping.

In spite of the aforementioned limitations, this research documents that personality affects distress through the mediation of coping. Full mediation was

evidenced for Agreeableness through avoidance coping, expression of negative feelings, and active-positive coping, whereas partial mediation was found for N and O. The latter were shown to have direct effects on distress as well. Correlational findings provided a clearer picture of how coping maps onto personality, confirming that N is associated mostly with emotion-focused responses, whereas C and E are strong correlates of positive coping responses.

NOTES

1. In order to establish the invariance between the two samples used in this study and to address the issue that participants within samples were not independent due to the fact that they were relatives, the bivariate correlations reported for the full sample were also examined in each of the two initial samples as well as for students, mothers, and fathers, separately. Patterns of correlations were quite similar to the correlation matrix for the full sample, except that small correlations tended to become nonsignificant due to small sample size. These results are available upon request.

2. Statistics for these eight regressions are omitted for the sake of brevity but are available from the authors upon request.

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