Stability in Extraversion and Aspects of Social Support at Midlife

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This investigation used participants from the University of North Carolina Alumni Heart Study in an exploration of extraversion and aspects of social support at midlife. Results indicated that extraversion measured at college entry and at midlife was positively correlated with social activity and perceived social support measured later in middle adulthood. Multiple regression correlational analyses suggested that both the stable and changing components of extraversion influence structural and functional aspects of social support. Further, the changing component of extraversion was found to be significantly associated with greater social activity, perceived social support, and an increased likelihood of seeking support when faced with a stressful problem in middle adulthood. Overall, the development of sociability and outgoingness in interpersonal relationships during adolescence and young adulthood is suggested to be an important antecedent of the structural characteristics and functional dynamics of social support at midlife.

Personality has been suggested to be a moderator of interpersonal relationships and an important predictor of perceived social support (e.g., Costa, Zonderman, & McCrae, 1985; Cutrona, 1989; Sarason, Sarason, & Shearin, 1986). Moreover, as Pierce, Sarason, and Sarason (1991) hypothesized, "people's perception that they are loved, valued, and esteemed by others" (p. 1028) may have developmental roots in their childhood relationships with parents. Relatedly, Bergeman, Plomin, Pedersen, McClearn, and Nesselroade (1990) suggested that "measures of social support might reflect genetically influenced characteristics . . . such as . . . extraversion or sociability" (p. P101). Specifically, Bergeman et al. (1990) posited that individuals who are more extraverted may develop friendships more easily and have more elaborate social support networks, whereas individuals who are less extraverted may have fewer friendships, smaller networks, and less social resources. Thus, from a life span perspective, the development of sociability and outgoingness in interpersonal relationships may be an antecedent of structural and functional aspects of social support at midlife. Although longitudinal associations between the personality dispositions and aspects of social support have often been suggested, they have rarely been tested empirically (Costa, Zonderman, & McCrae, 1985). In this report, we examined relationships of extraversion, measured at college entry and again at

midlife, with structural and functional aspects of social support, assessed later in middle adulthood.

In general, there has been a lack of research designed to illuminate social support processes at the beginning of midlife and, relatedly, a scarcity of longitudinal research focused on relationships involving personality characteristics and structural and functional aspects of social support (cf. Costa, Zonderman, & McCrae, 1985). There has been accumulating cross-sectional evidence, however, suggesting facets of personality as antecedents of social support. For example, Costa, Zonderman, and McCrae (1985), using a sample of midlife and older men, reported a positive correlation of extraversion with the adequacy and satisfaction of social support and negative correlations of neuroticism and openness with the quality of family and marriage. Further, they reported positive correlations of social desirability with the quality of family and marriage and with the quality and satisfaction of social support (Costa, Zonderman, & McCrae, 1985). Relatedly, Cutrona and Russell (1987), using a sample of college students, reported perceived social support to be positively correlated with extraversion and social desirability and negatively correlated with neuroticism. Similarly, I. G. Sarason, Levine, Basham, and Sarason (1983) reported that high perceived social support was significantly associated with high self-esteem, internal locus of control, and optimism in college-age individuals. Further, B. R. Sarason, Sarason, Hacker, and Basham (1985) indicated that in comparison with college-age individuals high in perceived social support, those low in perceived social support were less favorably evaluated by the people with whom they interacted, and they reported a significantly higher level of loneliness and lower level of self-perceived social competence. Similarly, other research (e.g., S. Cohen, 1991; Jones, 1985; Newcomb, 1990; Rook, 1985; Vinokur, Schul, & Caplan, 1987) has also suggested that underlying personality characteristics influence social support; in general, depression, self-esteem, and loneliness are associated with the perception and availability of social support.

As Cutrona (1989) cautioned, however, most investigations of the relationship between personality characteristics and social

support have been correlational. Thus, the association between facets of personality and social support are "vulnerable to a number of alternative explanations of the obtained result" (Cutrona, 1989, p. 723). In distinguishing the different influences personality characteristics may have on aspects of social support, Cutrona (1989) posited three interpretative perspectives: The first perspective asks if personality characteristics differentially influence the perception, or cognitive appraisal, of social support, regardless of environmental and social network characteristics. Thus, given the same objective level of structural social support (e.g., social role and network size), the perception of support may vary as a function of individual differences in personality characteristics. A second perspective asks if personality characteristics are antecedents of social network characteristics, as well as the dynamics of interpersonal exchange. For example, an individual who is extraverted and outgoing in nature may shape the behavior of others, thereby developing a larger social network and obtaining more social support than one who is shy and resigning. A third perspective pertains to the effect of social support and personality characteristics on health and well-being. This perspective asks if personality characteristics act as a third variable in relationships involving social support and health and well-being. Accordingly, as described by Cutrona (1989), good coping skills or adaptive strategies may lead to the perception of adequate social support and healthful outcomes, but the link between social support processes and health and well-being may be spurious to the extent that it is mediated by personality characteristics. Conceptually, however, extraversion may be an important and concurrent influence on both structural and functional aspects of social support (S. Cohen & Syme, 1985). That is, one's predilection to be extraverted may influence and shape both structural aspects of social support (e.g., the number of people in the social network, frequency of social contact, and the type of interpersonal role each network individual plays) and functional aspects of social support (e.g., receipt of pragmatic aid and assistance; empathy; and feelings of affection, belonging, and esteem).

Given the interpretive issues delineated by Cutrona (1989), as well as the college student age bias and predominance of cross-sectional investigations in this area, "more studies, especially those using longitudinal designs, are needed to explore the developmental antecedents of working models related to social support" (Pierce et al., 1991, p. 1037). Indeed, as Cutrona (1989) indicated, "dimensions of personality that are associated with successful construction of a supportive social network require further study. Causal models that include both personality dimensions and dimensions of the objective social environment should be constructed and tested in future research efforts in this area" (p. 730). Thus, the purpose of this investigation was threefold: first, to test for relationships between a young adulthood personality measure indicative of sociability and outgoingness in interpersonal relationships (i.e., extraversion) and the structural and functional aspects of social support (i.e., social activity and the perception of available social support) at midlife; second, to examine the extent to which stability and change in extraversion influence these aspects of social support at midlife; third, to elucidate the unique contributions of extraversion and of structural and functional aspects of social

support toward interpersonal coping behavior of midlife men and women.

Following from reports suggesting extraversion as a causal antecedent of social support (e.g., Bergeman et al., 1990; Costa, Zonderman, & McCrae, 1985; Cutrona, 1989; Cutrona & Russell, 1987), we hypothesized that extraversion measured during young and midlife adulthood would predict structural and functional aspects of social support at midlife. Specifically, it was expected that high extraversion would be associated with greater levels of social activity and higher levels of perceived social support at midlife.

To explore longitudinal relationships between personality characteristics and social support processes, we asked, To what extent do stability and change in extraversion influence structural and functional aspects of social support at midlife? Given that previous work with a subset of the respondents in the present study indicated both stability and change in personality from age 19 to 42 (Siegler et al., 1990) and that "enduring characteristics of the individual are important determinants of support" (Costa, Zonderman, & McCrae, 1985, p. 152), we hypothesized that the stable component of extraversion would be predictive of social activity and perceived availability of social support at midlife.

To illuminate relationships among extraversion, social support, and interpersonal coping behavior of midlife men and women, we asked the following question: What are the unique contributions of stable and changing components of extraversion and structural and functional aspects of social support in predicting the seeking of support or advice from others when faced with a stressful problem? Following from research that suggests gender differences in socialization processes, goals, and roles (e.g., Burda, Vaux, & Schill, 1984; Kendig, Coles, Pittlekow, & Wilson, 1988; Troll, 1975, 1987) and that women are more likely to confide in others (Antonucci & Akiyama, 1987) and ask for support during personal stress events (Butler, Giordano, & Neren, 1985), it was expected that midlife women, more so than men, would report seeking support or advice from others when faced with a stressful problem. Further, following from research that suggests dispositional influences on behavior across time and situation (McCrae, 1992) and temporal stability in social support (Costa, Zonderman, & McCrae, 1985), it was expected that people high in extraversion and perceived social support would be more likely to report seeking the support or advice from others when faced with a stressful problem.

Method

Sample

This investigation included 2,643 men and 675 women from the University of North Carolina Alumni Heart Study (UNCAHS), who ranged in age from 40 to 50 years in 1989 (mean age = 42.87 years, SD = 1.42). Selection and recruitment of the participants in the UNCAHS are discussed in Siegler et al. (1992). Note, however, that this sample is reflective of the sociodemographic characteristics of the University of North Carolina at Chapel Hill (UNC) student population in the 1960s; during this period, the UNC student population was primarily male and White, with minority enrollment less than 1% (Siegler et al., 1992).

The sample was highly educated; all participants had some college

education, 28% had attained a bachelor's degree, 24% had attained a bachelor's degree plus further training, and 24% had attained a doctoral or law degree. With regard to socioeconomic status, the modal annual family income was in the $70,000 to $80,000 category (range = under $10,000 to $300,000 and higher). With regard to participants' marital status, 83% were married or living with a partner; 10% were divorced, separated, or widowed; and 7% had never married.

Procedure and Measures

The UNCAHS is an ongoing epidemiological study designed to assess a broad spectrum of psychosocial and health variables. Students at UNC who took the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943) in the 1960s were invited to join the UNCAHS in 1986. Recruitment into the study was not biased by personality characteristics (see Siegler et al., 1992).

The UNCAHS is a mail survey. Participants receive a brief questionnaire approximately every 18–24 months, focused on a specific area of health and behavior. The NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) was collected in 1988. Measures of social activity and support were collected in 1989, and coping was assessed in 1991. Individuals with complete data across the four waves of measurement include 91% of the men and 91% of the women who are currently enrolled in the UNCAHS.

Measures of extraversion. The MMPI has been widely used as a measure of personality and psychopathology (Dahlstrom, Welsh, & Dahlstrom, 1972, 1975). In this investigation, the baseline extraversion measure consisted of 23 items, representing the MMPI Extraversion content dimension delineated by Costa, Zonderman, McCrae, and Williams (1985). As described by Costa, Zonderman, McRae, and Williams, this dimension of personality "involved enjoying parties and crowds, wanting the company of others, and preferring not to be alone" (p. 929). Participants are required to make a "true" or "false" response to the items of this scale. Costa, Zonderman, McCrae, and Williams reported an alpha coefficient of .80 for the MMPI Extraversion component scale. The standardized and unstandardized alpha coefficients for the sample reported here were .82 and .80, respectively.

The midlife assessment used the Extraversion Scale from the NEO-PI (Costa & McCrae, 1985). This scale contains 48 items that assess "quantity and intensity of interpersonal interaction; activity level; need for stimulation; and capacity for joy" (Costa & McCrae, 1985, p. 2). The item response format consists of a Likert-type scale ranging along the dimension of *strongly disagree, disagree, neutral, agree,* and *strongly agree.* In regard to internal consistency, Costa and McCrae (1985) reported alpha coefficients of .89 for men and .85 for women. They also reported 6-month test–retest reliability of .91. The standardized and unstandardized alpha coefficients for the sample reported here were both .88.

Although the MMPI was created primarily as a personality measure focused on discerning psychopathology and the NEO-PI was developed to assess the five major domains of normal adult personality, there is evidence suggesting that both the MMPI and NEO-PI Extraversion scales measure the same underlying personality construct. Costa, Busch, Zonderman, and McCrae (1986) reported a significant correlation between the MMPI Extraversion dimension (Costa, Zonderman, McCrae, & Williams, 1985) and NEO-PI Extraversion content factor of .50. Further evidence of similarity between the MMPI Extraversion dimension delineated by Costa, Zonderman, McCrae, and Williams (1985) and the NEO-PI Extraversion domain is also found in Siegler et al. (1990), who, using a sample from the Baltimore Longitudinal Study of Aging, reported a significant concurrent correlation between scales of .66.

To investigate the predictive influence of stable and changing components of extraversion on structural and functional aspects of social support at midlife, two extraversion scores were created for each individual,

using the residual change score procedure (cf. Nunnally, 1971). The first extraversion score was derived by predicting the individual's extraversion score at midlife, on the basis of the extraversion score obtained at college entry; this predicted score reflected the stable component of extraversion. The second extraversion score was a residual component derived by subtracting the predicted score from the individual's midlife measure of extraversion; this score reflected change over time in extraversion.

Social activity. To investigate the structural aspect of social support, we asked a set of questions modeled after those used by Kaplan et al. (1988). These questions concerned the number of social activities that the individual participated in and included the self-report of the number of different friends or family members visited per month; the number of friends who telephoned or visited at home each day; the number of friends who telephoned or visited at work each day; and the number of religious services, meetings, and activities attended per month. Participants were also asked about the number of visits with friends and family per month, and responses were scored on a scale ranging from *rarely, less than 1 a month* (1), *about once a month* (2), *2–7 a month* (3), to *8 or more a month* (4). Additionally, participants were asked about the number of meetings of clubs, societies, or associations attended per month, and responses were scored on a scale ranging from *rarely, less than 1 a month* (1), *about once a month* (2), *2–3 a month* (3), to *4 or more a month* (4). An index of social activity was created for each individual, by summing their responses to these social activity questions. In this sample, the standardized and unstandardized alpha coefficients of the social activity index were .60 and .42, respectively. Of the 3,318 participants in this investigation, 41 had a social activity index greater than or equal to 50 (range = 50–219); these extreme outliers were assigned an index score of 50, to control for their effect in statistical analyses. The intercorrelations, means, and standard deviations of the social activity items and social activity index are shown in Table 1. Of particular note here are the correlations of each item with the total social activity index (*rs* = .44 to .69, *ps* < .0001).

Perceived social support. As a measure of the functional aspect of social support, the Appraisal scale of the Interpersonal Support Evaluation List (ISEL; S. Cohen, Mermelstein, Kamarck, & Hoberman, 1985) was used. Because the UNCAHS is a longitudinal mail survey, the amount of information collected at any one time needs to be reasonably short, so as to maintain high response rates. Thus, the decision was made to use only the 10-item Appraisal scale of the 40-item ISEL, forgoing assessment of the three other dimensions assessed by the ISEL. The 10-item ISEL Appraisal scale contains a Likert-type response format, ranging from *definitely true* (1), *probably true* (2), *probably false* (3), to *definitely false* (4). Item responses are summed, and a high score indicates greater perceived availability of support. Discussion of the psychometric characteristics of the full ISEL is found in S. Cohen and Hoberman (1983) and in S. Cohen et al. (1985). The standardized and unstandardized alpha coefficients were .90 and .89, respectively, in the present study. The intercorrelations, means, and standard deviations of the items and total score of the ISEL Appraisal scale are shown in Table 2. Of special note here are the significant correlations between all ISEL Appraisal scale items and the total score (*rs* = .58 to .82, *ps* < .0001).

Interpersonal coping behavior. The item used to assess interpersonal coping behavior was designed as a pretest question to ask respondents to describe their typical coping behaviors in a traitlike fashion. The item asked, "When faced with a stressful problem, how often do you engage in the following? Seek support or advice from others." This item was one of a series of questions developed from the factor names Vitaliano, Russo, Carr, Maiuro, and Becker (1985) assigned to their analysis of the Ways of Coping Check List—Revised. Responses to this question ranged from *usually* (1), *sometimes* (2), *rarely* (3), to *never* (4).

Table 1

Correlations, Means, and Standard Deviations of Social Activity Items and Social Activity Index

Variable	1	2	3	4	5	6	7	8
1. Number of different friends or family members visited per month	—							
2. Number of meetings of clubs, societies, or associations attended per month	.16*	—						
3. Number of visits with friends or family per month	.39*	.16*	—					
4. At home: Number of friends who call or visit per day	.36*	.17*	.34*	—				
5. At work: Number of friends who call or visit per day	.20*	.06*	.09*	.21*	—			
6. Number of religious worship services attended per month	.04	.26*	−.02	.06	.01	—		
7. Number of meetings and activities at church/synagogue/temple attended per month	.10*	.30*	.04	.07	.04	.60*	—	
8. Social activity index	.69*	.44*	.46*	.48*	.46*	.46*	.53*	—
M	6.12	2.32	2.79	0.91	1.80	1.98	1.22	16.51
SD	6.52	1.91	0.79	1.04	3.02	2.36	2.44	8.70

$* p < .0001$.

Data Analysis

Data analysis was performed by means of the SAS System computer software (SAS Institute, 1985). We used correlational and hierarchical multiple regression correlational (MRC) analyses, to test hypotheses and to investigate relationships between stable and changing components of extraversion and aspects of social support at midlife. J. Cohen and Cohen (1983) described the analyses as follows:

> The MRC hierarchical procedure orders the sets into an a priori hierarchy, and proceeds sequentially: For each set in hierarchical order of succession, all higher level sets (and no lower level sets) are partialled. The chief quantities of interest are the increments of Y variance accounted for by each set *uniquely*, relative to sets of higher order priority. (p. 176)

To protect for investigationwise inflation of Type 1 error rate, alpha criterion was set at .0001 for all statistical tests. Further, note that when very large samples are used, the power to detect statistically significant but relatively small effects is increased. Thus, as an interpretive guide, we adhere to the convention suggested by J. Cohen and Cohen (1983) that correlations of .10, .30, and .50 usually characterize small, moderate, and large effect sizes, respectively. Further, due to missing data, degrees of freedom may vary throughout all analyses.

Results

Descriptive Statistics

The raw score means of extraversion measured at college entry with the MMPI content dimension scale (Costa, Zonderman, McCrae, & Williams, 1985) and at midlife with the NEO-PI scale (Costa & McCrae, 1985) were 16.03 (SD = 4.58) and 53.47 (SD = 10.16), respectively. Correlation analysis indicated a significant association between college and midlife extraversion raw scores (r = .40, p < .0001). Investigation of associations between extraversion raw scores and structural and functional aspects of social support indicated significant correlations of college and midlife extraversion with midlife social activity (r = .14, p < .0001, and r = .26, p < .0001, respectively) and social support (r = .10, p < .0001, and r = .24, p < .0001, respectively). Further, correlation analyses indicated a significant association of midlife coping with the midlife extraversion

raw score (r = .12, p < .0001) but not with the college extraversion raw score (r = .04, p > .0001).

Hierarchical Analyses

Table 3 shows the zero-order and partial correlations among the variables used in the hierarchical MRC analyses, as well as their means and standard deviations. Note that each partial correlation in Table 3 represents the association between any two variables while controlling for the effects of all other variables in the correlation matrix.

Although the investigation of gender differences was not a primary focus of these analyses, preliminary statistical analyses indicated that women attained slightly lower scores on the midlife measure of extraversion (r = −.11, p < .0001). Previous investigation (Von Dras, Williams, Kaplan, & Siegler, in press) also found that in comparison with men, midlife women report a greater frequency of calls and visits from friends at home (r = .12, p < .0001) and perceive a higher level of social support (r = .17, p < .0001). Thus, gender (0 = men, 1 = women) was entered first in all hierarchical analyses to control for sex differences.

The first hierarchical MRC analysis investigated the effects of stable and changing components of extraversion on social activity at midlife, controlling for gender. The results of this analysis are shown in Table 4. Both stable and changing extraversion components were significant contributors (sr^2 = .02, p < .0001, and sr^2 = .04, p < .0001, respectively), accounting for 7% of the variance in social activity. Gender did not make a significant contribution to the model predicting social activity, and there were no interactive effects.

The next hierarchical MRC analysis investigated the effects of stable and changing components of extraversion on the perception of social support at midlife, after controlling for the influences of gender and social activity. The full model predicting social support accounted for 14% of the variance, adjusted R^2 = .14, $F(4, 3313)$ = 130.04, p < .0001. As shown in Table 5, gender remained a significant predictor throughout each step of the hierarchical MRC modeling and uniquely accounted for 4% of the variance in the full model (sr^2 = .04, p < .0001). Although there was a significant contribution of social

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Table 2
Correlations, Means, and Standard Deviations of the Items and Total Score From the ISEL Appraisal Scale

Abbreviated ISEL Appraisal scale item	1	2	3	4	5	6	7	8	9	10	Total
1. There are several people who I trust to help solve problems.	—										
2. There is no one I feel comfortable talking to about personal problems.	.40	—									
3. There is really no one who can give me an objective view.	.41	.55	—								
4. I feel that there is no one I can share my most private worries with.	.36	.69	.58	—							
5. There is someone I can turn to about problems with my family.	.44	.50	.52	.52	—						
6. When I need suggestions on personal problems . . . someone I can turn to.	.47	.59	.56	.60	.71	—					
7. There is someone I could turn to for advice about career plans.	.34	.36	.44	.40	.46	.54	—				
8. There is really no one I can trust to give me good financial advice.	.31	.29	.40	.30	.34	.34	.39	—			
9. If a family crisis arose . . . difficult to find someone to give advice.	.40	.44	.50	.46	.53	.53	.44	.46	—		
10. There is at least one person I know whose advice I really trust.	.40	.45	.48	.46	.46	.57	.44	.39	.48	—	
ISEL Appraisal total score	.65	.74	.76	.75	.76	.82	.67	.58	.72	.70	—
M	2.92	3.26	3.20	3.28	3.16	3.31	3.20	3.18	3.24	3.50	32.27
SD	1.03	0.90	0.80	0.88	0.86	0.82	0.84	0.80	0.78	0.72	6.06

Note. ISEL = Interpersonal Support Evaluation List. All correlations are significant beyond the $p < .0001$ criteria.

activity to the model following its initial entry (increase in adjusted $R^2 = .06$, $p < .0001$), its contribution lessened with the subsequent entry of stable and changing extraversion components; social activity uniquely accounted for a little more than 3% of the variance in the full model ($sr^2 = .03$, $p < .0001$). A significant increase in adjusted R^2 was observed when the stable and changing extraversion components were entered as a set (increase in adjusted $R^2 = .04$, $p < .0001$); however, the larger contributor was change in extraversion ($sr^2 = .04$, $p < .0001$), with the stable extraversion component making a very small contribution ($sr^2 = .01$, $p < .0001$).

The final hierarchical MRC analysis investigated the influences of gender, social activity, stable and changing components of extraversion, and perceived social support on interpersonal coping behavior when faced with a stressful problem. There were 259 missing values on the coping variable. Comparison of participants with complete data and participants missing on the coping variable, however, indicated no significant difference on any sociodemographic characteristic or study variable, and there was no change in any of the MRC analyses conducted above when participants with missing data were excluded. In this hierarchical MRC analysis, gender was entered first, followed by social activity, then stable and changing extraversion components, and, last, social support. The full model predicting interpersonal coping behavior accounted for 19% of the variance, adjusted $R^2 = .19$, $F(5, 3053) = 148.25$, $p < .0001$. As shown in Table 6, gender remained a significant predictor in the modeling throughout; however, its contribution diminished with the entry of social support ($sr^2 = .04$, $p < .0001$). Although social activity produced a significant contribution on entry into the model (increase in adjusted $R^2 = .02$, $p < .0001$), its contribution diminished with later entry of the extraversion components, and it did not make a significant contribution to the full model. Similarly, the extraversion components made a small but significant contribution on entry into the model at Step 3 (increase in adjusted $R^2 = .01$, $p < .0001$), but only the change component's parameter was significant ($B = .01$, $p < .0001$). Neither extraversion component made a significant contribution to the full model. Entry of social support accounted for over half the variance (increase in adjusted $R^2 = .10$, $p < .0001$), and it was the largest predictor in the full model ($sr^2 = .10$, $p < .0001$). There were no significant interactive effects.

Discussion

The focus of this investigation was to examine associations between the personality characteristic of sociability and outgoingness in interpersonal relationships and aspects of social support at midlife. In accordance with expectation, college entry and midlife measures of extraversion were found to be positively correlated with social activity and perceived availability of social support assessed later in middle adulthood. Further, both the stable and changing components of extraversion were found to have a unique and direct influence on midlife social activity and social support. Overall, these results offer empirical support for the theoretical accounts of others (e.g., Costa, Zonderman, & McCrae, 1985), who have suggested that the disposition of extraversion is an important determinant of social activity and support.

Table 3

Means, Standard Deviations, and Correlations Among Regression Variables

Variable	1	2	3	4	5	6
1. Gender	—	.00	.16*	−.06	−.10*	.25*
2. Social activity	−.01	—	.24*	.14*	.22*	.12*
3. Social support	.12*	.18*	—	.10*	.22*	.40*
4. Extraversion (stable)	−.08*	.12*	.08*	—	.00	.04
5. Extraversion (change)	−.14*	.17*	.13*	−.06*	—	.11*
6. Interpersonal coping	.21*	.02	.33*	.02	.05*	—
M	1.20	16.51	32.27	53.47	0.00	1.90
SD	0.40	8.70	6.06	4.01	9.34	0.78

Note. Zero-order correlations are above the diagonal; partial correlations are below. Each partial correlation represents the association between any two variables while controlling for the effects of all other variables in the matrix. The interpersonal coping item has been reversed, so that a high value indicates a greater frequency of seeking support or advice from others when faced with a stressful problem.
* $p < .0001$.

Addressing the three interpretive concerns posited by Cutrona (1989), these data suggest that the stable component of extraversion is a significant predictor of one's involvement in social activity as well as perception of available social support at midlife, thus suggesting that extraversion is an antecedent of both structural and functional aspects of social support. Furthermore, after we controlled for the number of midlife social activities, the stable component of extraversion continued to be a significant predictor of perceived social support, suggesting that one's perception of support is determined to some extent by one's extraverted behavioral style and sociable outlook on life, regardless of the frequency of one's social activity. The stable extraversion component, however, did not have a direct influence on support seeking. Examination of the partial correlations indicated the changing extraversion component as an influence on support seeking when faced with a stressful problem, although much of this effect occurred indirectly through the changing extraversion component's relationships with frequency of social activity and perceived availability of support. In general, both stable and changing extraversion components were found to influence the structural characteristics and functional dynamics of social support, although the change component was consistently the more heavily weighted influence and the only extraversion component

that significantly influenced the seeking of support. Mindful of the somewhat dubious psychometric properties of the residual change score (cf. Cronbach & Furby, 1970; Rogosa, 1988; Rogosa, Brandt, & Zimowski, 1982), for example, the residual change score consists of deviation from the predicted regression as well as the measurement error inherent in both measures (Nunnally, 1971), a significant influence of the changing extraversion component on any aspect of social support at midlife would appear to be a conservative finding. Further, note that given the use of different extraversion measures as well as the residual change score procedure, an interpretation of absolute change in extraversion cannot be made (Cronbach & Furby, 1970). Rather, these data only permit the inference of change from predicted ranking within the sample distribution. Thus, interpretively, these results suggest that a positive change from the predicted rank in extraversion was significantly associated with greater social activity and perceived social support as well as an increased likelihood of seeking support when faced with a stressful problem in middle adulthood. Overall, the relationships observed here between both stable and changing components of extraversion are congruent with the cross-sectional research of Amirkhan, Risinger, and Swickert (1995), who reported that extraversion was positively correlated with an optimistic outlook

Table 4

Summary of Hierarchical Regression Analysis Predicting Social Activity at Midlife

Variable	B	SEB	β	pr^2	sr^2	Increase in adjusted R^2	F	df
Step 1						.00	0.01	1, 3315
Gender	0.04	.38	.00	.00	.00			
Step 2						.07	84.85*	2, 3314
Gender	0.73	.36	.04	.00	.00			
Extraversion (stable)	0.32*	.04	.15	.02	.02			
Extraversion (change)	0.21*	.16	.22	.05	.04			

Note. F ratios in the table correspond to the F test for increase in adjusted R^2 at that particular step in the multiple regression correlational hierarchical analysis. The full-model adjusted $R^2 = .07$, $F(3, 3314) = 84.85$, $p < .0001$.
* $p < .0001$.

Table 5

Summary of Hierarchical Regression Analysis Predicting Social Support at Midlife

Variable	B	SEB	β	pr^2	sr^2	Increase in adjusted R^2	F	df
Step 1						.03	97.88*	1, 3315
Gender	2.54*	.26	.16	.03	.03			
Step 2						.06	225.96*	2, 3314
Gender	2.54*	.24	.16	.03	.02			
Social activity	0.18*	.01	.24	.06	.06			
Step 3						.04	84.80*	3, 3313
Gender	2.92*	.24	.19	.04	.04			
Social activity	0.13*	.01	.19	.04	.03			
Extraversion (stable)	0.14*	.02	.08	.01	.01			
Extraversion (change)	0.13*	.01	.20	.04	.04			

Note. F ratios in the table correspond to the F test for increase in adjusted R^2 at that particular step in the multiple regression correlational hierarchical analysis. The full-model adjusted $R^2 = .14$, $F(4, 3313) = 130.04$, $p < .0001$.

* $p < .0001$.

on life, as well as the seeking of social support when faced with a stressful problem. Indeed, Amirkhan et al. (1995) suggested that the extraversion dimensions of personal warmth, positive emotionality, and assertiveness help the individual attract and maintain friends and call on these social resources when confronting a stressful problem.

As hypothesized and observed in the MRC hierarchical analysis of coping, women and individuals high in perceived social support were more likely to report that they seek the assistance and advice of others when faced with a stressful problem. This gender effect is congruent with findings from other research that suggests women are more likely to confide in others (e.g., Antonucci & Akiyama, 1987) and to ask for support when distressed (Butler et al., 1985). Note, however, that seeking

support and advice from others does not necessarily suggest that the individual's coping is efficacious. That is, in some circumstances, seeking support and advice from others may be an appropriate coping behavior, whereas in different circumstances, seeking assistance and empathy from others may suggest dependency and maladaption.

Note that the interpersonal coping item did not imply or assess specific characteristics of the stressor (e.g., loss, threat, chronicity, controllability, or severity). Moreover, as McCrae (1992) indicated, seeking help is one of the least cross-situationally consistent coping mechanisms; consequently then, different MRC modeling effects may be observed given a more precise specification of the stressor and situation(s) in which it is encountered. Note also that the measurement of support seeking

Table 6

Summary of Hierarchical Regression Analysis Predicting Interpersonal Coping Behavior

Order of variable entry	B	SEB	β	pr^2	sr^2	Increase in adjusted R^2	F	df
Step 1						.06	206.88*	1, 3056
Gender	0.48*	.03	.25	.06	.06			
Step 2						.02	52.08*	2, 3055
Gender	0.48*	.03	.25	.06	.06			
Social activity	0.01*	.00	.12	.02	.02			
Step 3						.01	24.08*	3, 3054
Gender	0.51*	.03	.26	.07	.06			
Social activity	0.01*	.00	.10	.01	.01			
Extraversion (stable)	0.01	.00	.04	.00	.00			
Extraversion (change)	0.01*	.00	.12	.01	.01			
Step 4						.10	382.19*	4, 3053
Gender	0.38*	.03	.20	.04	.04			
Social activity	0.00	.00	.02	.00	.00			
Extraversion (stable)	0.00	.00	.02	.00	.00			
Extraversion (change)	0.00	.00	.04	.00	.00			
Social support	0.04*	.00	.34	.11	.10			

Note. F ratios in the table correspond to the F test for increase in adjusted R^2 at that particular step in the multiple regression correlational hierarchical analysis. The full-model adjusted $R^2 = .19$, $F(5, 3053) = 148.25$, $p < .0001$.

* $p < .0001$.

as a coping mechanism consisted of a single item, precluding comprehensive and reliable assessment of this interpersonal coping behavior. Relatedly, the assessments of social activity and perceived support did not exhaustively survey all the different elements of structural and functional aspects of social support. Taken together, these measurement issues limit the inferences to be made concerning the antecedent role of extraversion on the dynamics and other possible dimensions of interpersonal relationships. For example, although less extraverted people may report less social activity and social support, this does not prohibit them from having very rich and warm social relationships, albeit they may have such relationships with only a few people. Indeed, an individual very low in extraversion may have only a single person with whom to share his or her intimacies and concerns. Nonetheless, this relationship may fulfill the need for empathic understanding and sense of belonging. Conversely, a person high in extraversion, although involved in many social activities and perceiving a greater availability of support, may not enjoy a high level of warmth and intimacy in any relationship and may not have the basic needs for empathy and belongingness fulfilled. Thus, in general, additional research is needed to explore and reliably measure aspects of social support, the dynamics of support seeking as a coping mechanism, and the antecedent role of personality on these variables. Further, noting that the generalizability of these findings may be limited due to the underrepresentation of individuals of different ethnic heritage and lower economic and educational statuses in this sample, there is a special need for additional research that includes men and women of diverse cultural, economic, educational, and ethnic backgrounds. Moreover, as similarly suggested by Pierce, Sarason, and Sarason (1992), future investigations designed to understand the multidimensional interaction of the individual with key social network members and the differential influence various stressors may have on both the individual and network members would make an important contribution in this area.

In conclusion, these findings add to the usefulness of ongoing longitudinal studies to test important assumptions about the developmental antecedents of personality at midlife (see Lipkus & Siegler, 1995). They also begin to illuminate associations between extraversion and aspects of social support and stimulate important questions concerning the sequelae of personality development and social behavior across the life span. Indeed, these data are reflective of a statement made by Giles, Williams, and Coupland (1990) who, in a discussion of the social behavior of older adults, indicated that "the more we investigate gerontological processes, the more we are convinced that their social origins are in the middle and even early years of life" (pp. 21–22). Similarly, the results reported here suggest that the development of sociability and outgoingness in interpersonal relationships during adolescence and young adulthood is an antecedent of the structural characteristics and functional dynamics of social support at midlife.

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