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The Relationship Between Instrumental and Expressive Traits, Health Behaviors, and Perceived Physical Health[1]

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Relations between instrumental and expressive traits, health behaviors, and self-reported physical health were examined among young adults. Individuals (169 men, 167 women) completed two measures of instrumental and expressive traits, the Bem Sex Role Inventory (BSRI) and the Personal Attributes Questionnaire (PAQ). Ethnic background of the sample included 72% European Americans, 13% Latin Americans, 6% Asian Americans, 5% African Americans, less than 1% Native American, and 4% did not specify a particular category. Expressive traits from the BSRI, and expressive and instrumental traits from the PAQ were associated with health behaviors, after controlling for neuroticism. Neuroticism explained 43% of the variance in perceived physical health. Separation of individuals into four groups on the basis of instrumental and expressive traits showed that androgynous individuals reported significantly better health practices than other individuals providing support for the androgyny model.

Individual differences in lifestyle have become a concern of health practitioners because many health care problems once dealt with by physicians are decreasing, while self-management of health is increasing over time (e.g., Dill, Brown, Ciambrone, & Rakowski, 1995; Rankin, 1995). Re-

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searchers have found that personality characteristics help explain individual differences in health practices (e.g., Webster, Hunter, & Keats, 1994). In particular, gender role orientation may play a role in the performance of a variety of health behaviors (Shifren, Bauserman, & Carter, 1993). Both masculine and feminine characteristics are associated with self-reports of both health behaviors (e.g., Evans, Turner, Ghee, & Getz, 1990; Shifren et al., 1993) and physical health (Downey, 1985). There is still an ongoing debate as to whether the two most widely used measures of gender role orientation, the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, & Strapp, 1974), are an accurate reflection of gender role orientation (cf. Bem, 1985; Spence, 1985; Spence, 1991). In view of this debate, whenever possible, the personality characteristics discussed in this paper reflecting stereotypically masculine characteristics and stereotypically feminine characteristics shall be labeled instrumental traits and expressive traits, respectively (Spence, 1985, 1993).

With regard to health behaviors, individuals who score high on both instrumental and expressive traits (i.e., androgynous individuals) report better health behaviors, such as less smoking and the use of more safety precautions, than other individuals (e.g., Baffi, Redican, Sefchick, & Impara, 1991; Evans et al., 1990; Shifren et al., 1993). Instrumental and expressive traits also play a role in self-reported physical health. However, there is no consistent pattern to the relationship between instrumental and expressive traits and self-reported physical health. One researcher found that androgynous men reported better physical health than other men (Downey, 1985), and another researcher found that androgynous women and women who scored high only on instrumental traits reported better physical health than other women (Wech, 1983). Helgeson (1991) found that coronary patients who scored higher on instrumental traits reported more post-MI chest pains one year later, even after controlling for coronary risk factors and biological sex. However, individuals' expressive traits were not related to the physical health outcomes over time. In research on competing hypotheses of symptom reporting, Klonoff and Landrine (1992) found that expressive traits were related to more symptom reports for men and women. Shifren et al. (1993), on the other hand, found no relationship between instrumental and expressive traits and perceived physical health in a young adult sample of men and women.

Further research is needed on the relationship between instrumental and expressive traits and self-reported physical health, because individuals' perception of bodily aches and pains contributes to health practices. For example, individuals who perceive themselves as having less illness symptoms are least likely to admit the need for medical intervention (Johnson,

1988). Individuals who do not seek out medical assistance for injury or ailments are more susceptible to preventable disease and death (Cohn, Macfarlane, Yanez, Imai, 1995; Fielding, 1987). Thus, further understanding of the exact nature of the relationship between instrumental and expressive traits and self-reported physical health may broaden our understanding of important individual differences in health practices.

THEORETICAL MODELS

Though there have been many studies on instrumental and expressive traits and mental health, including literature reviews and meta-analyses (e.g., Markstrom-Adams, 1989; Pei-Hui & Ward, 1994; Taylor & Hall, 1982; Whitley, 1985; Whitley & Gridley, 1993; Ziegler, Dusek & Carter, 1984), there has been little research on instrumental and expressive traits, health behaviors, and perceived physical health. Consequently, there has been a lack of theory behind the research on instrumental and expressive traits and health practices. Recently, researchers have turned to the mental health literature to attempt to explain the relationship between instrumental and expressive traits, health behaviors, and physical health (cf. Shifren et al., 1993). The mental health literature shows support for both the androgyny model and the masculinity model. In the androgyny model the presence of both instrumental and expressive traits is said to provide individuals with a more flexible identity and better psychological adjustment (e.g., Markstrom-Adams, 1989). The masculinity model, however, proposes that a strong masculine identity (i.e., high instrumental traits) is better for psychological adjustment because of the value society places on instrumental traits like achievement (e.g., Adams & Sherer; 1985; Whitley, 1985; Ziegler et al., 1984).

Similarly, instrumental and expressive traits may be related to health practices because some health practices such as smoking, exercise or seeking medical assistance are stereotypically masculine or feminine (Shifren et al., 1993). Smoking, for example, is a health behavior often seen as more masculine (Evans et al., 1990). The androgyny model may explain the positive association between instrumental and expressive traits and better health practices (Baffi, et al., 1991). Androgynous individuals may have better health habits in part because of the presence of expressive characteristics such as nurturance and empathy (Sachs, Chrisler & Devlin, 1992) which may moderate the need to display more instrumental characteristics such as assertiveness (Baffi et al., 1991). Androgynous individuals may be more emotionally secure and able to resist social pressures to pursue risky behaviors considered more masculine (Evans et al., 1990). Thus, the pres-

ence of both instrumental and expressive characteristics in androgynous individuals may facilitate adaptation of a variety of behaviors beneficial to physical health (Brems & Johnson, 1989).

Because there is less consistency in the relationship between instrumental and expressive traits and self-reported physical health, it is difficult to determine whether the androgyny model or the masculinity model is best at explaining the relationship between instrumental and expressive traits and perceived physical health. Shifren et al. (1993) suggested that the combination of both instrumental and expressive traits may allow individuals to have a more realistic perception of their own health than individuals who score high only on instrumental or expressive traits. Their argument stems from studies that show that androgynous individuals report less illness symptoms, similar to stereotypically masculine individuals (Wech, 1983), yet they also express a greater willingness to recognize a need for help like stereotypically feminine individuals (Johnson, 1988). However, Helgeson's (1991) work on coronary patients has shown that individuals who score high on instrumental traits report more physical symptoms. Furthermore, there is evidence that expressive traits rather than instrumental traits are related to perceived physical health (Klonoff & Landrine, 1992). Thus, there is insufficient evidence at the present time to determine whether the androgyny model or the masculinity model is best suited to predicting perceived physical health.

LIMITATIONS OF PAST RESEARCH

Because variables that are related to health promoting and risky behaviors may be important in reducing "preventable" diseases or accidents (Center for Disease Control, 1994; Fielding, 1987), the relationship between instrumental and expressive traits and health deserves further exploration. However, limitations in previous research need to be addressed. These limitations include the varied definition and measurement of instrumental and expressive traits and health (Shifren et al., 1993, Spence, 1991, 1993). Prior research on what was traditionally considered gender role orientation research often confused readers by using terms such as "sex role," "gender role," "gender identity," and "gender role orientation" interchangeably (cf. Shifren et al., 1993).

Furthermore, the measurement of health in prior studies has varied drastically from one study to the next. Health is often defined as the absence of illness and assessed with questionnaires that measure the frequency of reporting a variety of illnesses (Wech, 1983). When health is defined as health behaviors such as exercise and proper nutrition, it is as-

sessed with questionnaires that focus on health related behaviors (Baffi et al., 1991). For example, Evans et al. (1990) chose one item to measure health behavior (smoking), and Downey (1985) assessed health with four items indicating individuals' perception of their own health alone and in comparison with others' health.

Shifren et al. (1993) attempted to deal with prior limitations by defining and measuring health as both illness symptoms (perceived physical health) and health behaviors. This allowed them to compare their results with prior research including health behaviors (Evans et al., 1990) and illness symptoms (Wech, 1983). However, limitations of the Shifren et al. (1993) study included the use of only one measure of gender role orientation, the BSRI, and a highly unbalanced sample of men and women. These limitations prevented these researchers from comparing their work with prior studies on the PAQ and health, and examining the relationship between gender (i.e., biological sex), personality traits, and health. Though gender alone is not a sufficient explanation for the performance of health behaviors (Verbrugge, 1989), it is possible that an interaction between gender and personality traits may play a role in the performance of health behaviors and perceived physical health.

PRESENT STUDY

The purpose of the present study was to examine the contribution of instrumental and expressive traits to individual differences in health promoting and risky behaviors and perceived physical health. Limitations in previous research were addressed by using both the BSRI and the PAQ to measure instrumental and expressive traits, and including assessment of both perceived illness symptoms and health behaviors. Though the PAQ and the BSRI are not identical measures of instrumental and expressive traits, they have demonstrated similarity (Spence, 1991, 1993). Results that are consistent across both measures would provide robust evidence of a relationship between instrumental and expressive traits and health practices. We chose the health behavior and self-report physical health instruments from Shifren et al. (1993) to allow comparisons with this earlier work. Thus, differences in our results could not stem from using different definitions or measurements of health practices. Furthermore, we collected data from a more balanced sample of men and women in order to examine the data for possible interactions between gender and personality traits on health.

A measure of neuroticism was added to the present study as well. There is evidence of an association between instrumental and expressive

traits and neuroticism (e.g., Pei-Hui & Ward, 1994). Researchers have found a negative relationship between neuroticism and instrumental traits (e.g., Shifren et al., 1993; Zeldow, Clark, Daugherty & Eckenfels, 1985). There have been inconsistent findings regarding the relationship between neuroticism and expressive traits with some studies showing a positive relationship (e.g., Zeldow et al., 1985) while others have found no relationship (e.g., Kimlicka et al., 1988).

Another reason for adding neuroticism to the present study is that much prior research indicates that removal of neuroticism from self-reports of physical health eliminates the effects of other personality variables on self-reported physical health (e.g., Costa & McCrae, 1985; Scheier, Carver & Bridges, 1994). There is also evidence of a relationship between neuroticism and health behaviors such as exercise (Davis, Fox, Brewer & Ratusny, 1995). However, Shifren et al. (1993) found that controlling for neuroticism did *not* eliminate the relationship between instrumental and expressive traits and health behaviors. Thus, we decided to include neuroticism in the present study to control for its possible confounding influence on self-report measures of physical health and health behaviors (Costa & McCrae, 1987; Hull, Tedlie & Lehn, 1995), and to try to replicate the results of Shifren et al. (1993).

Hypotheses for the present study included: (1) Instrumental and expressive traits are positively related to health behaviors (based on the androgyny model) such that individuals who score high on both instrumental and expressive traits (androgynous) will report better health behaviors, (2) individuals who score high on instrumental traits will report better perceived physical health (i.e., less illness symptoms), and (3) individuals who score high on expressive traits will report more illness symptoms. In addition to these hypotheses, we wanted to compare our results with prior research (cf. Baffi et al., 1991; Shifren et al. (1993). This necessitated the classification of instrumental and expressive traits into four gender role orientations (i.e., androgynous, masculine, feminine, and undifferentiated), to compare the relationship among the four gender role orientations, health behaviors, and perceived physical health.

Thus, additional hypotheses included: (4) Individuals classified in the androgynous category will report better health behaviors than masculine, feminine, and undifferentiated individuals, (5) individuals classified in the undifferentiated category will report the most risky health behaviors compared to the other gender role orientations, and (6) individuals classified in the feminine category will report the most illness symptoms (i.e., higher scores on perceived physical health) compared to androgynous, masculine, and undifferentiated individuals.

METHODS

Participants

Undergraduates at a large state university participated in the present study. Individuals received partial course credit in an introductory psychology course for their participation. There were 167 women and 169 men with an average age of 18.8 (*SD* = 1.4) years. The age range was 17 to 30 years old. Three individuals were eliminated from the analyses because they were outliers on the age variable (with ages ranging from 41 to 46). Seventy-two percent of the participants were European American, 13% were Latin American, 6% were Asian American, 5% were African American, less than 1% was Native American, and 4% of the individuals indicated none of these categories. Individuals' socioeconomic status (SES) was reported based on "own income" or "parents income." The average income was $47,970 (*SD* = 29.1), and this figure was primarily based on "parents income." Income level ranged from $8,000 to $88,000. There were no outliers on the SES variable.

Materials

Personality. Two instruments were used to assess instrumental and expressive traits in the present study, the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence, Helmreich, Stapp, 1974). The BSRI has demonstrated good reliability and validity (e.g., Tinsley, Sullivan-Guest, & McGuire, 1984). The BSRI contains 60 items including 20 instrumental characteristics, 20 expressive characteristics, and 20 neutral items. Participants used a 7-point scale (1: Never or almost never true to 7: Always or almost always true) to indicate the degree to which they felt an item described them. Scores could range from 20 to 140 for both the instrumental and expressive characteristics. Cronbach's alpha was .87 for the instrumental scale and .85 for the expressive scale, indicating good internal reliability.

The short version of the PAQ was used in the present study. It contains 24 items including 8 instrumental items, 8 expressive items, and 8 instrumental-expressive items. Participants used a 5-point scale (1: Not at all like me; 5: Very like me). Scores could range from eight to 40 for both the instrumental and expressive scales. The instrumental scale has adjectives that are socially desirable for both sexes but believed to be more characteristic of men than women (e.g., independent). The expressive scale has adjectives that are socially desirable for both sexes as well but are believed

to be more characteristic of women than men. Only the instrumental and expressive scales were used in this study. The elimination of the instrumental-expressive items from data analyses does not alter the classification of the other two scales (Desertrain & Weiss, 1988). Cronbach's alpha was .51 for the instrumental items, and .80 for the expressive items.[3]

Neuroticism was measured with the neuroticism dimension of the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1975). This dimension is measured with 24 questions that are answered with a dichotomous format (0:no; 1:yes). Scores could range from zero to 24 for the neuroticism factor. Test-retest reliability of the form used (Form A) is high (.84-.88), and concurrent validity is good as well (Eysenck & Eysenck, 1975). Cronbach's alpha in this study was .86.

Health-Related Behaviors. An unpublished measure of health-related behaviors developed by Berkman and Breslow (1983) was included in the present study. This instrument, labeled the Health Behaviors Inventory (HBI) in the current study, is available upon request. The HBI contains ten items including questions about smoking, drinking, exercise, and safety precautions. The HBI has been used in previous research (e.g., Hooker & Kaus, 1992; Shifren et al., 1993), and obtained a moderate internal reliability on a young adult sample (.57). The HBI correlated –.17 with the perceived physical health measure in the present study, indicating good discriminant validity between health behaviors and illness symptoms. Cronbach's alpha for the present study was .65, indicating a moderate internal reliability. This reliability is higher than that of other published health behavior measures such as the Health Habits Scale (Williams, Thomas, Young, Jozwiak, & Hector, 1991) which has shown a Cronbach's alpha of .40. Individuals used a 7-point scale (1:never; 7:always) to rate their frequency of behaviors. Scores could range from ten to 70 for the sum of the health behavior items. A reverse score procedure was used on items worded in a negative direction. Thus, a higher score indicates that individuals have

[3]An in-depth examination of the alpha correlation's for the instrumental items showed that PAQ item 16 (Making decisions) had a lower level of variability than the other items, and it was negatively related to the other instrumental items. Removal of item 16 increased Cronbach's alpha to .70 for the instrumental scale. An unpublished study on instrumental, expressive traits and eating disorders comparing American and British students has revealed a low Cronbach's alpha for the instrumental scale of the PAQ for both the American and British samples, .53 and .51, respectively (Shifren, Furnham, & Bauserman, 1996). Shifren et al. (1996) found that removal of item 16 from the subscale increased Cronbach's alpha to .76 and .67, respectively. Thus, this peculiarity in the PAQ instrumental scale does not appear to be related only to the present study. Perhaps decision making (item 16) among college age students is not considered a "gender-typed" characteristic now as compared to the 1970s when the PAQ subscales were originally normed on colleges students (Spence et al., 1974). In order to compare our results with prior studies, and maintain the original subscale of the PAQ, we included item 16 in all analyses.

better health habits. For example, a score of 6.00 on item one means that individuals did not smoke very often, and a score of 6.00 on item four indicates that individuals practice good hygiene very often.

Perceived Physical Health. A self-report rating scale of physical health, the Personal Health Questionnaire (PHQ), was used as a measure for general physical health symptoms. The PHQ contains 77 items on health problems such as headaches, toothaches, and broken bones. It was derived from the Health Checklist (Cline & Chosey, 1972) and the Health Assessment Interview (Marx, Garrity, & Bowers, 1975). The participants used a 3-point scale (0:did not experience this problem; 2:experienced this problem quite a bit) to indicate the frequency with which they experienced each physical symptom during the previous 6 months. The sum of these ratings served as an overall score for self-reported health problems. The overall score could range from zero to 154. Self-report ratings have been used often in past research and have demonstrated high predictive value on mortality ratings (e.g., Idler & Kasl, 1991), and the PHQ has demonstrated high internal reliability in previous research on young adults (e.g., Jorgensen & Richards, 1989). Cronbach's alpha in the present study was .87, indicating good internal reliability.

Procedures

Individuals volunteered for this study in partial fulfullment of introductory psychology course requirements. They had the option of writing a brief paper or participating in psychological studies, and were able to select the current study from a variety of other studies being run concurrently. Participants reported to a large campus classroom in groups of 30. The study was explained as an investigation of the relationship between personality characteristics, health habits, and physical health. Once the study was explained and any questions and concerns were addressed, consent forms were distributed and signed. Individuals completed a demographics questionnaire, the BSRI, the PAQ, the HBI, the PHQ, and the EPI. The questionnaires were assembled in three different orders before the study began, and students were randomly assigned to these three orders of the measures.

RESULTS

For the BSRI instrumental and expressive scales the means and standard deviations were 98.6(14.7) and 96.4(13.5), respectively; for the PAQ in-

strumental and expressive scales the means and standard deviations were 21.5(3.4) and 24.1(4.1). For the HBI, PHQ, and neuroticism the means and standard deviations were 50.4(8.6), 18.2(9.9), and 11.2(5.0), respectively. Higher scores on all measures indicated that more of the construct was present.

Simple correlations were performed to examine the relationship between the demographic variables of age and SES, and the study variables. There were no significant associations between age, SES and any of the study variables (correlations ranged from -.05 to .09 for age and SES on the study variables). We examined the relationship between the variables of ethnicity and religion, and the study variables, with Multivariate Analysis of Variance (MANOVA). The MANOVA for ethnicity across the seven study variables (instrumental and expressive traits from the BSRI and PAQ, neuroticism, health behaviors, and self-reported physical health) showed no significant overall ethnicity effect, $F(42, 1495) = 1.29, p = .10$ (Wilk's Lambda = .85). The MANOVA for religion across the seven study variables showed *no* significant overall religion effect, $F(35, 1340) = 1.12, p = .29$ (Wilk's Lambda = .89). Because ethnicity and religion were not associated with the study variables, they were not statistically controlled in the rest of the analyses.

A MANOVA was also performed across the seven study variables to determine if there were gender differences. There was an overall gender effect on the study variables, $F(7, 323) = 13.70, p = .0001$ (Wilk's Lambda = 0.77). Follow up ANOVAs indicated that there were significant gender differences across all the study variables, except health behaviors. These results and the means and standard deviations for men and women are presented in Table I.

Table I. Analyses of Variance for Gender Differences in Personality and Health

	Mean(SD)			ANOVA	
Source	Men	Women	SS	F[a]	*p*
Bex Sex Role Inventory					
Instrumental Traits	102.4(15.1)	94.7(13.3)	4944.08	24.34	.0001
Expressive Traits	91.5(13.4)	101.6(11.5)	7785.73	49.27	.0001
Personal Attributes Questionnaire					
Instrumental Traits	21.9(3.4)	21.2(3.2)	49.10	4.37	.04
Expressive Traits	23.1(4.2)	25.3(3.8)	384.94	24.20	.0001
Neuroticism	10.5(5.2)	11.9(4.7)	166.12	6.64	.01
Health Behaviors Inventory	49.6(8.9)	51.2(8.2)	201.29	2.73	.10
Personal Health Questionnaire	15.9(8.9)	20.8(10.6)	1772.81	18.97	.0001

Note. SS = Sum of Square.
[a]df = (1, 326) for each *F* above.

Our first set of hypotheses were based on instrumental and expressive traits as continuous variables. Correlations between instrumental traits, expressive traits, perceived physical health, and health behaviors are presented in Table II. Results from the PAQ supported hypotheses one, two and three. Instrumental and expressive traits were positively related to health behaviors, indicating those high on both dimensions performed better health behaviors; high instrumentality was associated with fewer reported physical symptoms (i.e., better perceived physical health); and high expressiveness was associated with more reported physical health symptoms. However, for the BSRI only expressive traits were related to health behaviors and perceived physical health in the manner expected.

The relationship between the two instrumental scales was positive (r =.65) as was the relationship between the two expressive scales (r = .74). The correlations between these scales show that 42 percent of the variance is shared for the instrumental scales, and 55 percent of the variance is shared for the expressive scales. Thus, the PAQ and the BSRI are similar but not identical measures of instrumental and expressive traits, a finding consistent with prior research (Spence, 1991, 1993). Perhaps the percentage of unexplained variance in the two measures (i.e., 58% unexplained variance for instrumental scales) can account for the differential relationship between the instrumental scales and the health measures.

Neuroticism was added to the present study because prior research has shown a relationship between neuroticism, and instrumental and expressive traits (Pei-Hui & Ward, 1994), and it often eliminates the effects of other personality variables on health outcomes (Costa & McCrae, 1987). Pearson correlations showed that neuroticism was not related to expressive traits. However, neuroticism was negatively related to instrumental traits

Table II. Pearson Correlations for the Relationship Between Personality and Health

	Instrumental Scales		Expressive Scales	
Measure	PAQ	BSRI	PAQ	BSRI
Health Behaviors	.29***	.10	.23***	.31***
Physical Symptoms	−.13*	−.03	.15**	.14**

Note. Higher correlations mean that more of the construct is present. PAQ = Personal Attributes Questionnaire; BSRI = Bem Sex Role Inventory; Health Behaviors = Health Behaviors Inventory; Physical Symptom = Personal Health Questionnaire.

*p = .05.
**p = .01.
***p = .001.

for the BSRI, $r(334) = -.29$, $p = .0001$, and the PAQ, $r(330) = -.36$, $p = .0001$, respectively. Neuroticism was negatively related to health behaviors as well, $r(334) = -.24$, $p = .0001$. Neuroticism was positively related to perceived physical health (i.e., higher neuroticism was related to reports of more illness symptoms), $r(334) = .44$, $p = .0001$, a finding consistent with much prior research (e.g., Andersen & Lobel, 1995; Larsen, 1992).

Next, we examined the effects of neuroticism on the relationships between instrumental and expressive traits and health outcomes. Hierarchical regression analyses were performed to determine the amount of variance in health measures accounted for by neuroticism, instrumental and expressive traits. Because correlations between the BSRI expressive scale and the health measures revealed a relationship only for the expressive scale, the first set of hierarchical regressions involves only neuroticism and the BSRI expressive scale. There were two steps to the BSRI and health regression analyses. Neuroticism was entered by itself in the first step. In the second step the BSRI expressive scale was entered into the equation. Because correlations revealed a relationship between both the PAQ expressive and instrumental scales and health outcomes, the second set of hierarchical regressions included neuroticism and both PAQ scales. There were three steps to the PAQ and health regression analyses. Neuroticism was entered by itself in the first step. In the second step the PAQ expressive scale was entered into the equation. In the third step the PAQ instrumental scale was entered into the equation.[4] Results are presented in Table III.

The table reveals several findings of importance. First, the BSRI and health regression analyses revealed that expressive traits accounted for 10% of the variance in health behaviors above and beyond the variance accounted for by neuroticism. Second, the PAQ and health regression analyses revealed that expressive traits accounted for 5% of the variance in health behaviors above and beyond the variance accounted for by neuroticism. Instrumental traits explained an additional 4% of the variance in health behaviors above and beyond the variance accounted for by expressive traits. Third, the BSRI and the PAQ and health regression analyses revealed that expressive traits and instrumental traits accounted for little additional variance (about 1%) in self-reported physical health after neuroticism was entered into the equation. Thus, it appears that instrumental and expressive traits may provide information in the study of health behaviors beyond that provided by neuroticism, but may not be useful in relation to self-reported illness symptoms.

[4]For the hierarchical regressions that included neuroticism, and the PAQ instrumental and expressive scales, reversing the order of entry for the PAQ scales in the hierarchical regression models did not change the level of significance or the amount of variance explained for both health behaviors and perceived physical health.

Table III. Hierarchical Regression Analyses for the Relationship Between Personality and Health

Step	Variables	R	R^2	R^2 change	SS	ANOVA F(df)	p
			BSRI				
Health Behaviors							
1	Neuroticism	.24	.06		1437.75	20.69(1,331)	.0001
2	BSRI Expressive	.40	.16	.10	4059.02	32.87(2.330)	.0001
Perceived Physical Health							
1	Neuroticism	.43	.19		6345.72	80.64(1,331)	.0001
2	BSRI Expressive	.44	.20	.01	6753.94	43.47(2,440)	.0001
			PAQ				
Health Behaviors							
1	Neuroticism	.24	.06		1437.75	20.69(1,331)	.0001
2	PAQ Expressive	.33	.11	.05	2723.40	20.65(2,326)	.0001
3	PAQ Instrumental	.38	.15	.04	3786.06	20.08(3,325)	.0001
Perceived Physical Health							
1	Neuroticism	.43	.19		6345.72	80.64(1,331)	.0001
2	PAQ Expressive	.45	.21	.02	6967.51	44.93(2,326)	.0001
3	PAQ Instrumental	.45	.21	.00	6996.83	30.02(3,325)	.0001

Note. SS = Sum of Squares; R^2 = multiple correlation squared (percentage of explained variance); R = multiple correlation; PAQ = Personal Attributes Questionnaire; BSRI = Bem Sex Role Inventory.

In order to address our second set of hypotheses, we needed to classify individuals into four gender role orientations with the median split procedure. Though there has been some argument against using the median split procedure (e.g., Taylor & Hall, 1982), this procedure was used in the present study in order to provide comparisons with prior research on the PAQ and health (Baffi et al., 1991) and the BSRI and health (Shifren et al., 1993). The median split procedure was used on the instrumental and expressive scales from both the BSRI and the PAQ to classify subjects into four groups (androgynous, masculine, feminine, and undifferentiated). The median cutoff points for the BSRI were 99 for the instrumental scale and 98 for the expressive scale; median cutoff points for the PAQ were 22 for the instrumental scale and 24 for the expressive scale.

Individuals who rated themselves high on both instrumental and expressive characteristics were labeled androgynous; those low on both characteristics were labeled undifferentiated. Individuals high on instrumental characteristics and low on expressive characteristics were labeled masculine; individuals low on instrumental characteristics and high on expressive char-

acteristics were labeled feminine. These labels originate from research on the bipolar view of gender role orientation presented by Bem (1975). The median split procedure has been used in previous mental health research as well (e.g., Bem, 1975; Desertrain & Weiss, 1988).

Before analyzing the relationship between gender role orientation and health, we first compared the classification of individuals into the four gender role orientations from the BSRI and the PAQ with a Chi-square analysis.[5] Chi-square analysis confirmed that the classification of individuals into the four gender role orientations was significantly related across the BSRI and the PAQ, $\chi^2(9, N = 334) = 199.90, p = .0001$. The strength of this relationship was examined with Cramer's V which is used for Chi-square tables larger than 2×2 and does not have the problems encountered with the Contingency Coefficient (cf. Welkowitz, Ewen & Cohen, 1982). Though the classifications were related, $V = .45, p = .0001$, they were clearly not identical. However, because the classifications were significantly related, we were able to examine the relationship between gender role orientation and health across both the BSRI and the PAQ with two(gender) × four(gender role orientation) MANOVAs. Because the BSRI scales and the PAQ scales contain a different number of items and a different range of scoring, it was not possible to simply choose one set of median values for classification into the four groups of gender role orientation for both measures. Therefore, we kept the classifications as specified in the paragraph above. All subsequent analyses were performed separately on both the PAQ and BSRI scales, to determine if similar relationships emerged using both measures.

The two(gender) × four (gender role orientation) MANOVA for the BSRI on the health variables revealed *no* overall significant interaction between gender and gender role orientation on health behaviors and perceived physical health, $F(6,648) = .95, p = .46$ (Wilk's Lambda = .98). There were, however, significant main effects for both gender and gender role orientation on the health variables, $F(2,324) = 9.78, p = .0001$ (Wilk's Lambda = .94), and $F(6,648) = 4.56, p = .0002$ (Wilk's Lambda = .92), respectively . The two (gender) × four (gender role orientation) MANOVA for the PAQ on the health variables also revealed no overall significant interaction between gender and gender role orientation on health behaviors and perceived physical health, $F(6,648) = .96, p = .45$ (Wilk's Lambda = .98). Again, there were significant main effects for gender and gender role orientation on the health variables, $F(2,324) = 8.70, p = .0002$ (Wilk's Lambda = .94), and $F(6,648) = 7.74, p = .0001$ (Wilk's Lambda = .87), respectively.

[5]We thank reviewers for their suggestions about comparing classifications.

Table IV. Analyses of Variance for Gender × Gender Role Orientation Relationships to Health

Source	SS	ANOVA F(df)	p
	Health Behaviors		
BSRI Gender (G)	160.03	2.36(1,325)	.1258
BSRI ANDRO (A)	1830.93	8.98(3,325)	.0001
BSRI G × A	334.79	1.64(3,325)	.1794
	Physical Symptoms		
BSRI Gender (G)	1339.79	14.18(1,325)	.001
BSRI ANDRO (A)	36.68	0.13(3,325)	.9426
BSRI G × A	48.05	0.17(3,325)	.9169
	Health Behaviors		
PAQ Gender (G)	70.65	1.09(1,325)	.2962
PAQ ANDRO (A)	2992.74	15.46(3,325)	.0001
PAQ G × A	222.06	1.15(3,325)	.3303
	Physical Symptoms		
PAQ Gender (G)	1329.22	14.20(1,325)	.0002
PAQ ANDRO (A)	113.16	0.40(3,325)	.7511
PAQ G × A	179.02	0.64(3,325)	.5915

Note. ANDRO = Gender Role Orientation; SS = Sum of Squares.

Follow-up ANOVAs for both the BSRI and the PAQ are presented in Table IV. For the BSRI, the ANOVAs revealed that gender role orientation was significantly related to health behaviors but not perceived physical health. Gender, on the other hand, was significantly related to perceived physical health but not health behaviors. For the PAQ, the ANOVAs revealed identical results, with gender role orientation being related only to health behaviors and gender associated only with perceived physical health.

To further examine the relationship between gender role orientation and the individual health behavior items, we performed a two(gender) × four(gender role orientation) MANOVA on the ten health behavior items. The MANOVA revealed no overall interaction between gender and gender role orientation on the ten health behavior items, $F(30, 928) = .58$, $p = .97$ (Wilk's Lambda = .94), and no overall gender effect on the ten health behavior items, $F(10, 316) = 1.42$, $p = .17$ (Wilk's Lambda = .95), respectively. There was a significant gender role orientation effect on health behavior items, $F(30,928) = 1.74$, $p = .009$ (Wilk's Lambda = .85). This result

confirmed that there was no need for separate analyses by gender of the gender role orientation and health behaviors relationship.

In order to compare our results with Shifren et al. (1993), we compared mean health behavior scores for each gender role orientation using Duncan's multiple range test to control for Type I comparisonwise error rate. Individuals in the androgynous group for both the BSRI and the PAQ had significantly better health habits than individuals in the feminine, masculine, and undifferentiated groups. In order, the means for the BSRI androgynous, feminine, masculine, and undifferentiated groups were 53.82, 51.53, 49.52, and 47.11, respectively. The means for the PAQ groups were 55.95, 50.53, 50.34, 47.19, respectively. As in previous research (Shifren et al., 1993), undifferentiated individuals had the lowest mean score for health behaviors, indicating poorer health habits.

The Duncan's multiple range test was used to compare gender role orientation with each item on the health behaviors measure for a more detailed analysis of the gender role orientation and health behaviors relationship. Results for both the BSRI and PAQ groups are presented in Table V. For the BSRI groups, androgynous individuals scored significantly higher than other individuals on managing stress. Androgynous and feminine individuals scored significantly higher than masculine and undifferentiated individuals on drinking (i.e., less drinking), regular sleep habits, and nutritional diet. For the PAQ groups, androgynous individuals scored significantly higher than other individuals on regular sleep habits, managing stress, and maintaining a nutritional diet. Androgynous and feminine individuals scored significantly higher than masculine and undifferentiated individuals on regular use of safety precautions.

DISCUSSION

The androgyny model proposes that the presence of both instrumental and expressive traits provides individuals with more flexibility in their identity (e.g., Markstrom-Adams, 1989). Though this model has been used most extensively in relation to mental health variables (e.g., Whitley, 1985), it appears to have support in relation to health behaviors as well (e.g., Baffi et al., 1991; Shifren et al., 1993). The hypothesis that instrumental and expressive traits would be positively related to health behaviors was supported in the present study. However, there were some important differences. When instrumental and expressive traits were kept as continuous variables, the PAQ instrumental and expressive traits were positively related to health behaviors. However, only expressive traits from the BSRI were related to health behaviors. After classification of subjects into four groups

Table V. Group Differences for Individual Items on the Health Behaviors Inventory

	Gender Role Orientation							
	BSRI				PAQ			
Health Behaviors	Androgynous	Masculine	Feminine	Undifferentiated	Androgynous	Masculine	Feminine	Undifferentiated
1. Smoking[a]	6.25_a	6.30_a	6.25_a	5.93_a	6.43_a	6.26_a	6.06_a	6.09_a
2. Drinking[a]	4.83_a	4.12_b	4.65_{ab}	4.19_b	4.72_a	4.47_a	4.54_a	4.17_a
3. Exercise	4.96_a	4.84_a	4.47_a	3.68_b	5.08_a	4.85_{ab}	4.40_{bc}	4.03_c
4. Hygiene	6.56_a	6.23_a	6.49_a	6.25_a	6.75_a	6.34_{ab}	6.51_{ab}	6.07_b
5. Sleep	4.59_a	3.96_b	4.26_{ab}	3.99_b	4.95_a	3.92_b	4.11_b	3.96_b
6. Managing Stress	4.79_a	4.02_b	4.12_b	3.41_c	5.08_a	4.19_b	4.02_{bc}	3.47_c
7. Doctor Visits	5.56_a	5.09_a	5.54_a	5.05_a	5.80_a	4.97_b	5.59_a	4.96_b
8. Weight	5.73_a	5.30_{ab}	5.01_b	5.21_{ab}	5.95_a	5.61_{ab}	4.85_c	5.14_{bc}
9. Diet	4.61_a	4.09_{ab}	4.41_a	3.74_b	4.89_a	4.06_b	4.23_b	3.86_b
10. Safety	5.94_{ab}	5.56_b	6.33_a	5.67_b	6.29_a	5.66_b	6.22_a	5.44_b

Note. Means in the same row that do not share a subscript are different at $p < .05$, using Duncan's multiple range test to control for multiple comparisons.

[a]Refers to items with higher scores indicating less of the construct present.

(androgynous, masculine, feminine, and undifferentiated), results showed that androgynous individuals reported better health behaviors than masculine, feminine or undifferentiated individuals, supporting results from prior studies (Baffi et al., 1991; Shifren et al., 1993). Furthermore, the relationship held for both the BSRI and the PAQ.

Our results provide some confirmation for the idea that the presence of expressive traits in androgynous individuals may moderate the need to express more instrumental characteristics (e.g., Evans et al.,l990). For example, feminine and androgynous individuals reported using safety precautions more than other individuals, and drinking less than other individuals. In addition, the presence of instrumental traits in androgynous individuals may allow them to perform health behaviors that are stereotypically masculine such as exercise (Eisler et al., 1988). In the present study, androgynous individuals exercised more often than other individuals.

Consistent with previous research (Shifren et al., 1993), individuals low in instrumental and expressive traits (undifferentiated) scored lower than androgynous, masculine, and feminine individuals on health behaviors. Undifferentiated individuals appear to be most likely to pursue health risky behaviors. The lack of instrumental characteristics may be a disadvantage for these individuals by preventing them from pursuing behaviors that are beneficial to health such as exercise. In addition, the lack of expressive characteristics is a disadvantage for undifferentiated individuals by preventing them from pursuing behaviors that are more cautious in nature (i.e., regular safety measures).

Thus, it appears that having high levels of both instrumental and expressive traits is beneficial in relation to a variety of health practices. However, one important exception is the relationship between expressive traits and the development of eating disorders. In the present study, individuals classified as feminine with the median split procedure scored the lowest on perception of appropriate weight. This relationship has been found in previous research (Shifren et al., 1993). Recent investigations of the role of gender role orientation in the development of eating disorders have provided evidence that gender role orientation is associated with perception of body image (e.g., Lancelot & Kaslow, 1994). Perhaps feminine individuals are more susceptible to the pressure to be thin that is promoted by media presentation of extremely thin women as the "ideal" for beautiful women (Furnham & Radley, 1989). In fact, there are competing theories about the role of instrumental and expressive traits in the development of eating disorders (cf. Lancelot & Kaslow, 1994).

The hypothesis that instrumental traits would be related to reports of better perceived physical health (less illness symptoms) was supported in the present study, but only by the PAQ instrumental scale. However, the

hypothesis that expressive traits would be related to reports of more illness symptoms was supported, even after controlling for the influence of neuroticism. The relationship between expressive traits and perceived physical health supports prior research (Johnson, 1988; Wech, 1983) that showed individuals who scored higher on expressive traits reported more illness symptoms.

In recent research on competing hypotheses in relation to health, Klonoff and Landrine (1992) found that expressive traits were related to self-reports of physical health but gender was not. In the present study, MANOVAs indicated that only gender was related to perceived physical health. This contradicts the findings of Klonoff and Landrine (1992). The present findings indicate that gender and neuroticism play a role in relation to self-reported physical health (i.e. perceived illness symptoms), a finding consistent with many previous studies (e.g., Jorgensen & Richards, 1989; Scheier, Carver,& Bridges, 1994).

An interesting result from the present study was the relationship between neuroticism, instrumental, and expressive traits. Neuroticism was negatively related to instrumental traits, but it was not related to expressive traits. The negative relationship between neuroticism and instrumental traits has been shown in a number of prior studies (e.g., Shifren et al., 1993; Zeldow, Clark, Daugherty, & Eckenfels, 1985). Zeldow et al. (1985) found that neuroticism from the EPI and the PAQ instrumental scale were significantly negatively related ($r = -.29$), and Kimlicka, Sheppard, Sheppard and Wakefield (1988) found a similar association with the EPQ and the BSRI instrumental scale ($r = -.21$). Prior research shows inconsistent findings regarding the relationship between neuroticism and expressive traits. Zeldow et al. (1985) found a significant positive relationship between neuroticism and expressive traits ($r = .23$), and Kimlicka et al. (1988) found no relationship between neuroticism and expressive traits.

There were several important findings in the relationship between neuroticism, instrumental and expressive traits and health measures. On the one hand, hierarchical regression analyses revealed that neuroticism accounted for most of the variance in self-reported physical health, with instrumental and expressive traits providing little additional information. Furthermore, when neuroticism was controlled in statistical analyses, the relationship between instrumental traits and perceived physical health disappeared. The relationship between instrumental and expressive traits and the five-factor model of personality has shown similar results (Whitley & Gridley, 1993). On the other hand, expressive and instrumental traits did account for an additional portion of the variance in health behaviors beyond that explained by neuroticism.

The literature on the role of neuroticism in health (e.g., Costa & McCrae, 1985) has remained relatively separate from the literature on gender role orientation and health (e.g., Evans et al., 1990). Researchers have found that neuroticism distinguishes individuals with poor or good health behaviors (Vingerhoets, Croon, Jeninga, & Menges, 1990), and the negative relationship between neuroticism and health behaviors found in the present study supports the notion that individuals high in neuroticism perform poorer health behaviors. However, our results indicated that instrumental and expressive traits may also help distinguish between individuals with poor or good health behaviors. It would be fruitful for researchers to include both neuroticism and instrumental and expressive traits in their examination of the relationship between personality and health behaviors in order to determine whether instrumental and expressive traits play a significant, direct role in relation to health behaviors. However, inclusion of instrumental and expressive traits in studies on self-reported physical health may not be useful.

Since the BSRI and PAQ were included in the present study, relationships between the scales for these questionnaires were examined. Results revealed that the instrumental and expressive scales for the BSRI and the PAQ, although strongly related, are not isomorphic. The instrumental and expressive scales from the PAQ appeared to show a stronger association with the health measures in this study than the scales from the BSRI. The unexplained variance between the scales may account for some of the differences in their relationship to perceived physical health and health behaviors in the present study.

The congruence model, which postulates that individuals' instrumental and expressive traits should ideally match their gender, was supported in the present study. Women reported more expressive traits and men reported more instrumental traits. Recent research supports the present findings of a match between gender and instrumental and expressive traits (Spence, 1993). Though this may lead to the assumption that an interaction should be present between instrumental and expressive traits and gender, the 2(gender) × 4(gender role orientation) MANOVAs in the present study did not support this idea. There was no interaction between gender and instrumental and expressive traits on health behaviors or perceived physical health.

Limitations

Some researchers have suggested that the median split procedure not be used to specify categories of gender role orientation (e.g., Taylor & Hall, 1982). This procedure was, however, used in the present study in order to

make comparisons with prior research (Baffi et al., 1991; Shifren et al., 1993). The median split procedure decreases the level of variability present in continuous variables, thereby reducing the power to detect differences. If the association between instrumental and expressive traits and perceived physical health is a small one, then decreasing the level of variability may have eliminated the relationship altogether. On the other hand, the median split procedure did not eliminate the relationship between instrumental and expressive traits and health behaviors.

Unfortunately, the cross-sectional design of the present study does not allow for examination of reciprocal effects between personality and health. However, the present findings on instrumental and expressive traits and health behaviors indicate that longitudinal research would be a fruitful avenue for future research. Self-report questionnaires of health may be considered a limitation of this study because self-report questionnaires are viewed as subjective ratings of health. However, there is evidence that self-reports of physical health are indicative of morbidity and mortality beyond that provided by objective health indicators (e.g., Idler & Kasl, 1991). Furthermore, our intent was to examine individuals' perceptions of their own bodily aches, pains, and illnesses. Self-report ratings may be important because individuals may have a different perspective of their own illness symptoms than other individuals (Dunn, 1994).

Findings from the present study have limited generalizability because the sample consisted of college students. To further the generalizability of findings regarding the relationship between instrumental and expressive traits and physical health, community samples and older adult samples would be beneficial. For example, older adults' life experiences may result in a wider variety of health outcomes than in a younger sample. This may be especially true given the relation between instrumental and expressive traits and health behaviors found in the present study. Thus, current health practices related to instrumental and expressive traits may influence future health outcomes. Examples include alcohol consumption and its association with liver disease, or neglect of safety measures and risk of accidental injury or death.

Strengths and Future Directions

An important finding in the present study was that controlling for gender and neuroticism did not eliminate the relationship between instrumental and expressive traits and health behaviors. Furthermore, an ANOVA showed that men and women did not differ significantly on their reports of health behaviors. This supports previous research that has shown that

gender does not sufficiently explain differences in health behaviors (Verbrugge, 1985).

The present study adds support to the accumulating research that shows the androgyny model best explains the relationship between instrumental and expressive traits and health behaviors (Baffi et al., 1991; Evans et al., 1990; Shifren et al., 1993). Furthermore, our findings are robust because they are consistent across the BSRI and the PAQ. The findings in the present study are important because knowledge of personality characteristics associated with health behaviors may aid in future prevention efforts. Given the role of health behaviors in preventable or "lifestyle" illnesses, and current social concerns over rising medical costs, effective interventions to encourage health-promoting behaviors are especially important and timely. In short, cross-sectional and longitudinal research on gender role orientation and health may prove valuable. Health interventions geared to address personality differences and their role in health practices may be an important way of preventing health problems and reducing personal and social costs.

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