1980

Stressful life periods and the mediating effect of sex role

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AND THE MEDIATING EFFECT OF SEX ROLE

A Thesis

Presented to the

Faculty of

California State

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by

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May 15, 1980

Date

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ABSTRACT

Theoretically defined transitional periods (ages 17-22, 40-45, 60-65) in male adult development have been identified as more stressful than non-transitional periods. Stressful periods have been etiologically linked to subsequent changes in health. The self-reports of 186 persons of varying ages are used to assess the relationship between age and reported stress and any possible mediation of stress by one's sex-role. Homeostatic flexibility (encompassing social roles, values, and personal behavior) has been suggested to mediate an individual's response to stress. The Bem Sex-Role Inventory is used to indicate sex role as a measure of homeostatic flexibility. The Social Readjustment Rating Scale is used to measure stress. Hypothesis 1 tests whether androgynous persons with a high degree of stress will experience less health changes than non-androgynous persons with a similar high degree of stress. The second hypothesis is that transitional periods in male adult development are more stressful than non-transitional periods. The first hypothesis was not supported; the differences in health changes for androgynous and non-androgynous persons were not statistically significant. The methodology is questioned. It is suggested that the antecedent stress may influence sex role. The second hypothesis was supported; persons in transitional periods reported significantly ($\underline{t}$ (162) = +1.726, $\underline{p} < .05$) more stress than persons in non-transitional periods.

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ACKNOWLEDGEMENTS

I extend my gratitude to the members of my committee, Drs. Nikolai Khokhlov, Bob Cramer, and Chuck Hoffman for their guidance throughout the process of this thesis. I especially thank Nikolai for his flexibility and continued concern throughout this work and for introducing me to persons and perspectives crucial to the completion of this thesis. I thank Bob for his overall direction and his emphasis on methodological and statistical integrity. I thank Chuck for instilling the concern that research incorporate a developmental perspective. Additionally, I thank Dr. Nick Andonov for his invaluable and enthusiastic assistance during the data collection phase. I warmly acknowledge Joan Woodson and members of the Steelworkers Old Timers Foundation. They brought much life to this project and taught me the polka. I thank Dr. Eva Conrad, friend and colleague, whose continued personal and professional support has served to minimize the stress associated with this project. Finally, I thank my daughter, Lettie, for helping me see the continuity of needs throughout the life cycle.

INTRODUCTION

Studies which focus on stress and its effects generally have one of three orientations: an attempt is made to understand the dynamics (Selye, 1973; 1974), predict the effects (Holmes and Masuda, 1974), or control the response to stress (Averback, Kendall, Cotter, and Levitt, 1976; Brown, 1978). The ability to predict stressful periods would enhance the prospects for a healthy response (Averback, et al. 1976). Also, personal characteristics may play a significant part in an individual's response to stress (Antonovsky, 1974; Brown, 1978).

A recent study of male adults indicates a distinction between theoretically defined periods of development (Levinson, Darrow, Klein, Levinson, and McKee, 1978). This distinction was partially based on the differential experiences of social stress. Levinson et al. (1978) identified three five-year transitional periods in their developmental study of 40 men. The early adult, mid-life, and late adult transitions are crucial turning points in the life cycle. These periods mark the time and process of changing from one life structure to another.

Levinson et al. (1978) consider three aspects as integral to the concept of life structure. These aspects are the sociocultural world of the individual, the self of the individual, and the participation of the individual in the world. In a transitional period, an individual's life structure is in a state of flux. During transitions, each of these three integral aspects is modified.

The sociocultural world includes all the various social contexts in which the person lives. These contexts include all the familial, religious, ethnic, political, social class, and occupational facets which have meaning and consequences for the individual.

The self of the individual is a Jungian concept. The self consists of conscious and unconscious aspects. Personal patterns of conflict and anxiety as well as styles of coping with these are included. The self also contains the fantasies, values, ideals, traits, and talents of the person. The self is responsible for the continuity of persons throughout development and represents the striving for unity (Wilhelm and Jung, 1931). The individual may at times express certain aspects of the self and inhibit or neglect other aspects.

The participation of the individual in the world is a function of those aspects of the self which are manifested and the interaction of these with the facets of the sociocultural world in those various social contexts. A person selectively uses and is utilized by the world through these transactions.

The combined aspects of the individual's sociocultural world, the self, and the participation of the individual in the world then join in the formation of a life structure. These structures are relatively stable until a transitional period. It is during the transitional periods that the existing structure is reappraised, new facets of the self and world are explored, and a new life structure begins. Transitional periods are seen as more stressful than non-transitional periods because of the concomitant changes.

The transitional periods are not of necessity age-related. The time they occur is a function of the biological, psychological, and social conditions of a person's life. However, in their study, Levinson et al. (1978) found that the transitional periods generally lasted five years each, and that they were associated with specific ages. The early adult transition involves ages 17-22. The mid-life transition involves ages 40-45. The late adult transition involves ages 60-65. Transitional periods are associated with a greater degree of social readjustment compared to the more stable maintenance of a life structure during the non-transitional periods.

The early adult transition (ages 17-22) is associated with numerous separations, losses, and transformations. The adolescent life structure is terminated. The mid-life transition (ages 40-45) is a time of individuation wherein more expression and integration of the self emerges. Also, deaths of parents are more probable. This is a period of moderate or severe crisis. Every aspect of the life structure comes into question. The late adult transition (ages 60-65) is associated with experiences of declining physical strength coupled with a relinquishing of authority and recognition. The lessening of adult responsibilities and power join with the cultural anxiety about aging to effect a changed relationship with society and self. As indicated by Levinson et al. (1978), these three transitional periods involve most of the social readjustment and associated stress experienced during male adult development. The distinction between transitional and non-transitional periods on the basis of social stress is an important one which warrants further investigation.

Stressful periods have been etiologically linked to changes in health (Holmes and Masuda, 1974). These health changes include the onset of heart disease, skin disease, tuberculosis, hernias, fractures, allergies and various forms of mental illness (Rahe & Lind, 1971; Rahe & Paasikiui, 1971; Theorell & Rahe, 1971). Periods of high stress are often followed by a decline in physical and/or mental health. For a detailed analysis of related theory and research see Stressful life events: Their nature and effects (Dohrenwend & Dohrenwend, 1974).

Brown (1978) suggests the presence of cognitive influences which mediate the physical effects of social stress. Changes in the social environment become stressful because of insufficient information to adjust or resolve a perceived problem. The social future for the individual appears uncertain. An individual must interpret the experienced stress as an indication of disharmony or threat for any associated physical reaction to occur. Once this reaction is evident then the cognitive processes of rumination and perceptual modulation serve to sustain it. Rumination is the process of focusing awareness on the stress problem through activities of recall, preoccupation and speculation. Perceptual modulation is a result of rumination, whereby interpretations of other events in the social environment come to be incorporated in the social stress problem. These processes result in both the lack of awareness of alternative solutions and a compounding of the stress problem. These occur due to a lack of sufficient information exogenous to the individual concerning the present, and they increase the conflict of uncertainty about the future. There may be characteristics endogenous to the individual which would also mediate response to stress.

For example, Antonovsky (1974) noted that the stresses of the Six Day War had no noticeable impact on the health of the Israeli people. He suggested the presence of resistance resources. These are personal characteristics which thwart the development of pathological responses to stress.

Homeostatic flexibility is one such response mediating resource. This includes the individual's ability to perceive and accept alternatives. Homeostatic flexibility is a function of the richness and complexity of the self image, the capacity to accept alternative values as legitimate, and the ability to respond to situations without debilitating emotional consequences. An individual with a high degree of homeostatic flexibility may be less prone to the debilitating effects of rumination and perceptual modulation due to the concomitant ability to perceive and accept alternative solutions to a stressful situation. Persons who encompass such a resistance resource may experience less health changes in response to social stress than persons who do not.

Bem (1974) has developed a self-report inventory which may be interpreted to indicate the presence of homeostatic flexibility within an individual. The Bem Sex Role Inventory (BSRI) includes two orthogonal scales. One is a list of masculine characteristics and the other of feminine characteristics (see Appendix A for a copy of the BSRI). Scoring is based on individual responses relative to group medians. Resultant scores are categorized as androgynous (both scale scores above the group medians), sex-typed (subjects' same sex score is above the median while the cross-sex scale score is below), and undifferentiated (both scale scores fall below the group medians).

Androgynous persons may be inferred to have a higher degree of homeostatic flexibility than non-androgynous persons. The richness and complexity of the self image is differentiated on the BSRI along a continuum of sex role identity. Androgynous persons describe themselves with high ratings of both masculine and feminine characteristics. Androgynous persons indicate an acceptance of alternative values both by their scores on the BSRI and by their performances in related construct validation behavioral studies (Bem, 1975; Bem & Lenney, 1976; Bem, Martyna & Watson, 1976). These studies also indicate that androgynous persons have an ability to respond to situations with less debilitating emotional consequence than non-androgynous persons.

Non-androgynous persons engaged in more self-defeating behaviors (monetary loss), reported more discomfort, and later felt worse about themselves when faced with a crossed-sex task than did androgynous persons (Bem, 1976). In these studies, non-androgynous males were the least supportive, playful, and expressive, and non-androgynous females were more conforming than androgynous persons. Other studies indicate that a high degree of sex-typing is correlated with high anxiety, high neuroticism, and low self-acceptance (Mussen, 1962; Harford, Willis & Deabler, 1967). Conversely, androgyny has been significantly correlated with high self-esteem (O'Connor, Mann & Bardwick, 1978; Spence, Helmreich & Stapp, 1975). Bem (1976) suggests that self-concept is more a function of external cues (activities) for non-androgynous persons than it is for androgynous persons.

The empirically validated relationship between androgyny, self esteem, behavioral flexibility, and acceptance of alternative values indicates that androgynous persons should encompass more homeostatic flexibility than non-androgynous persons. Androgynous persons, then, would be expected to experience less stress related health changes than non-androgynous persons.

Holmes and Rahe (1967) have both developed a measure of social stress and indicated a level above which a health change is likely to occur. The Social Readjustment Rating Scale (SRRS) is designed to empirically test the relationship between stressful life events and health. The SRRS contains 43 specific life events which are weighted in terms of Life Change Units (LCU) on an ordinal scale (see Appendix A for a copy of the SRRS).

Various research with this scale indicates a high probability of a health change (79% to 86%) during the year which follows a one-year accumulation of 300 or more LCU's (Holmes, 1970; Holmes & Masuda, 1974). One-year periods with an accumulation of less than 300 LCU's are associated with subsequent health changes in only 50% or less of the cases (Holmes & Masuda, 1974). The SRRS does afford a measure of the amount of social stress experienced and indicates a level above which a health change is likely to occur.

This study draws upon the theories and findings of all these researchers to test two hypotheses: (a) androgynous persons with a one year total of 300 or more LCU's will experience significantly less health changes in the following year than non-androgynous persons with

LCU scores of 300 or more; and (b) theoretically-defined transitional periods in male adult development (ages 17-22, 40-45, and 60-65) will be associated with significantly more stress, as measured in LCU's, than non-transitional periods (other ages).

METHOD

Subjects

Thirty-two female and 164 male subjects were recruited from a variety of sources: day and evening social science classes at San Bernardino Valley College, two local civil service offices, and three local community senior citizen service centers. Each subject was requested to fill out a questionnaire. No information was needed or used which would disclose the identity of any individual. All subjects remained naive as to the purpose of this study prior to being debriefed.

Criterion for inclusion in testing the first hypothesis consisted of a total score of 300 LCU's or above the SRRS for the year 1978. Twenty-one males and 32 females self-selected on this basis. The median age for this group was 22 years. They further self-selected into one of two groups based on their BSRI scores. Eighteen were androgynous and 35 were non-androgynous.

Criterion for inclusion in testing the second hypothesis consisted of being male. The 164 males were further grouped into transitional period (TP) or non-transitional period (NTP) groups based on their ages. The TP group ages were 17-22, 40-45, and 60-65. The NTP group ages were 23-39, 46-59, and 66 and above. The TP and NTP groups had 86 and 78 members respectively.

Questionnaire

One questionnaire was used for each subject. Each form was composed of one Bem Sex Role Inventory (BSRI), one Social Readjustment Rating Scale (SRRS), and nine personal data questions (see Appendix A for a copy of the questionnaire).

SRRS forms were scored in accordance with Holmes and Rahe's (1967) life change unit (LCU) point system (see Appendix B for scoring instructions). This scale was used in both hypotheses. In testing the first hypothesis, it was used to select subjects with LCU totals of 300 or more. In testing the second hypothesis, it was used to identify the LCU of each male and served as a basis for comparison of the TP and NTP groups.

Only the BSRI forms of those persons with LCU's of 300 or more were scored. BSRI forms were scored in accordance with Bem and Watson's (1976) revised scoring method (see Appendix B for scoring instructions). Based on the median masculinity and femininity scores, which were 5.37 and 5.02 respectively, subjects were identified as androgynous or non-androgynous.

In testing the first hypothesis, positive responses to either personal data question eight or nine (see Appendix A) were used to indicate a health change. A negative response to both was noted as indicative of no health change.

Procedure

Subjects were met individually or in groups as circumstances allowed. Proper completion of the questionnaire was explained. This

included drawing attention to the request that the SRRS be filled out as it related to their experiences for 1978, and that personal data questions 8 and 9 were specifically for the period from January, 1979, to the present. Completion of the forms averaged 20 minutes. Upon completion, subjects were informed of the intentions of this study and were told that a more complete debriefing would be available after the data were analyzed. Consent to participate was then again solicited. Everyone agreed to participate. The forms were collected and scored.

RESULTS

A 2 (sex-role) x 2 (health change status) Fisher's exact probability test is performed on the nominal data related to testing the first hypothesis (Siegel, 1956). The expected frequencies do not meet the minimum criterion for a chi-square analysis. The observed data do not support the hypothesis that androgynous persons with a one year total of 300 or more LCU's experience significantly less health changes in the following year than non-androgynous persons, Fisher's exact probability = .074, $p > .05$. Table 1 illustrates the resultant frequencies which while nearly significant, run counter to the hypothesized direction.

A one-tailed independent t-test is performed on the data related to testing the second hypothesis (Siegel, 1956). The use of this test is due to the prior directional, theoretical and empirical support associating transitional periods with higher levels of stress than non-transitional periods. The means for the TP (n= 86) and NTP (n=78) groups are 185.7209 and 151.80769 LCU's respectively. The variances are 16768.95503 and 14693.73079 LCU's. The distribution of LCU scores for both groups are positively skewed (see figure 1), and the variances are homogeneous (Kirk, 1968).

The data support the hypothesis that theoretically defined transitional periods in male adult development (ages 17-22, 40-45, and 60-65) are associated with significantly more stress, as

Table 1

Frequency of Health Changes in 1979
for Androgynous and Non-Androgynous Subjects:
Experiment 1

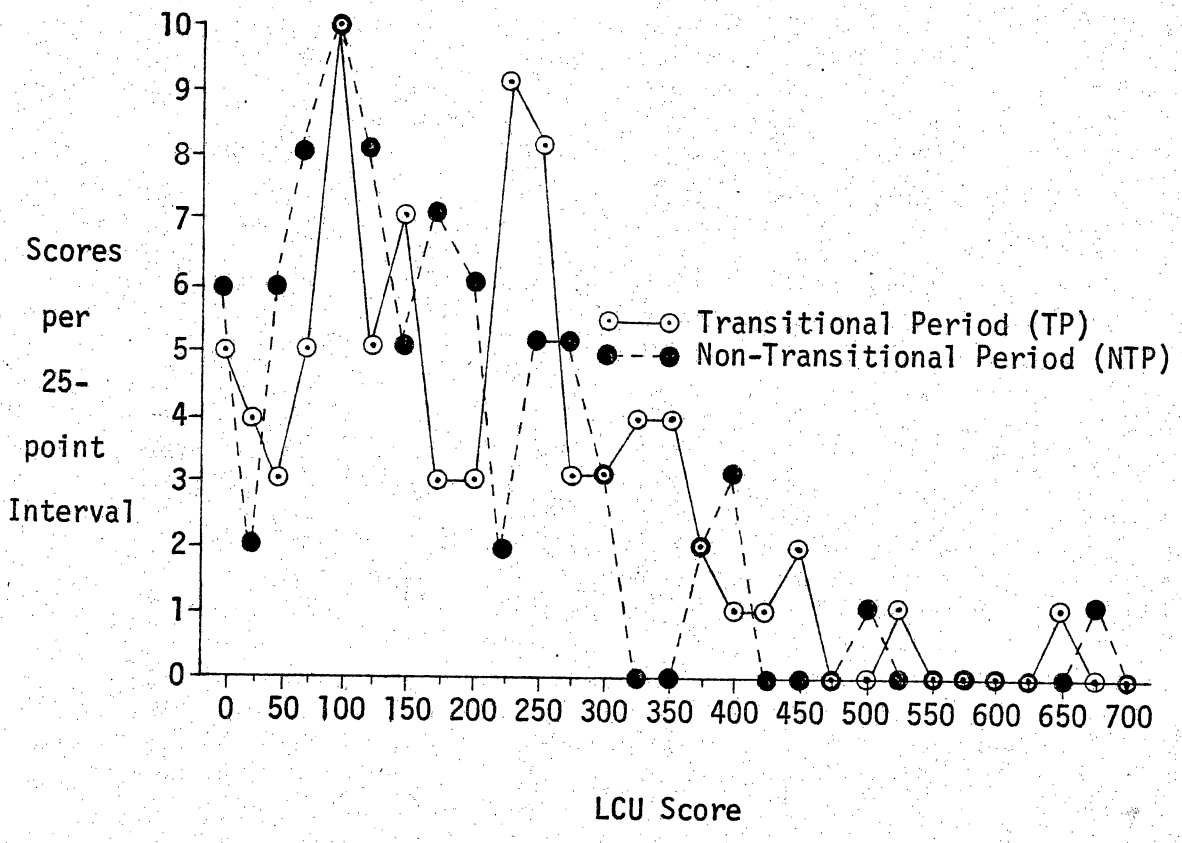
Sex Role[a]	Experienced health change in 1979[b] Yes	No
Androgynous	17	1
Non-Androgynous	26	9

Note. All subjects scored a minimum of 300 LCU during 1978.

[a]Sex roles were measured by BSRI scores for fall, 1979. The median femininity and masculinity scores are 5.02 and 5.37, respectively.

[b]Fisher's exact probability = .074, $p > .05$.

Figure 1. Distribution of LCU scores for males in transitional periods (n=86) and non-transitional periods (n=78).



measured in LCU's, than non-transitional periods (other ages), t (162) = +1.726, $p < .05$.

The relationship between the mean LCU's for each age group is depicted in Figure 2. Visual inspection of these data indicate that a possible negative linear relationship exists between these variables. As age increases, the number of LCU's associated with each age tends to decrease.

Figure 2. Mean LCU for each age group.

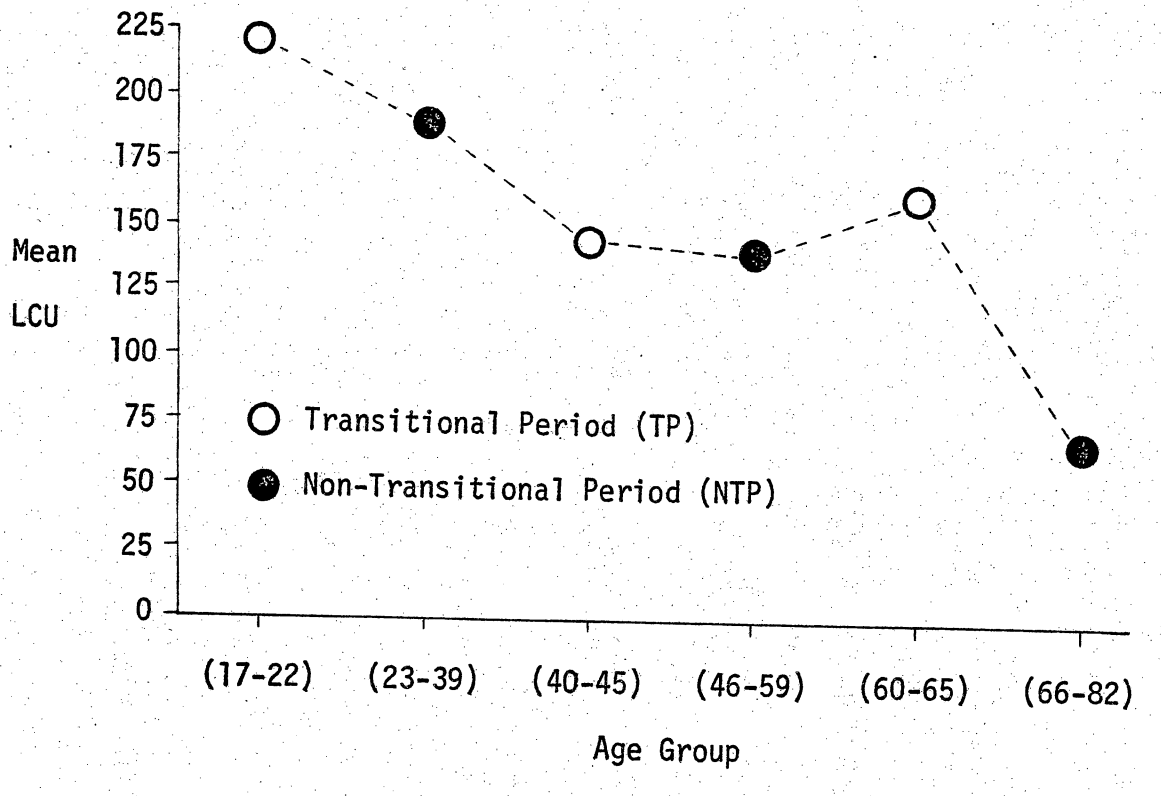


Table 2 presents the means, variances, and sample size for each age group. A statistical trend analysis is not performed due to the heterogeneous variances and unequal sample sizes (Kirk, 1968).

Table 2

Description of Life Change Unit Data

Age Group	Mean LCU	Variance	Sample Size
17-22	222.166	16030.580	42
23-39	187.324	20523.058	37
40-45	143.758	15359.832	29
46-59	140.750	4847.602	28
60-65	164.800	16044.028	15
66-82	66.846	6727.308	13

Note. All subjects were males.

DISCUSSION

The results of this study do not support the first hypothesis that androgynous persons with a one year total of 300 or more LCU's will experience significantly less health changes in the following year than non-androgynous persons with LCU totals of 300 or more. The second hypothesis was empirically supported, and theoretically defined transitional periods in male adult development were associated with significantly more stress, as measured in LCU's, than non-transitional periods. I believe the test of the first hypothesis suffered more from methodological deficiencies than from the lack of supportive rationale. The test of the second hypothesis, while statistically significant, is best interpreted through measures of practical significance.

The test of the first hypothesis was intended to measure the mediating effect of homeostatic flexibility, as indicated by sex role, on health change, given an excessive amount of stress. What may have in fact been measured was the mediating effect of stress on sex role (as indicated by the BSRI). The measurements of stressful experience and sex role were taken at one sitting, but the sex role orientation temporally lagged the stressful period in question by one year.

One assumption of this research was that the experience of a stressful period would have no systematic effect on sex role.

Subject selection was contingent upon an LCU total of 300 or more. This requirement may have affected the distribution of sex roles for this sample.

The categories of androgynous and non-androgynous were based on the BSRI median masculinity and femininity scores. For this highly stressed sample, the medians were 5.02 and 5.37 respectively. Two unrelated samples, not selected on the basis of stress, afford an indication of the possible effect stress may have on sex role. The median masculinity and femininity scores for a sample of 165 female and 124 male Bowling Green State University undergraduates were 4.91 and 4.95 respectively (Hyde & Phillis, 1979). The BSRI scores of 375 male and 290 female Stanford undergraduates yielded a masculinity median score of 4.89 and a median femininity score of 4.76 (Bem & Watson, 1976).

The sex roles for the sample used to test the first hypothesis were reassessed with these medians. Hyde and Phyllis (1979) medians increased the percentage of persons categorized as androgynous from 34% to 49%. The use of Bem and Watson's medians resulted in an increase in the androgynous category from 34% to 66%. These analyses indicate that sample selection based on an experience of stress (300 or more LCU) may inflate BSRI masculinity and femininity scores. This results in a sample which is more androgynous in number when compared with one not selected on the basis of high stress.

The procedure for the first hypothesis was intended to test the mediating effect of sex role (as an index of homeostatic flexibility)

on the ability to cope with stress. The analyses mentioned above indicate that what may have in fact been tested is the mediating effect of stress on sex role.

It remains to be tested whether stressful periods exert influence on sex role, but the inference here is that persons who have experienced more than 300 LCU's in a one year period are later more androgynous as a group than they were prior to the stressful experiences. This would indicate that persons faced with adversity later tend to develop greater homeostatic flexibility, that rough seas make for better sailors. A new design incorporating contiguous measures of stress and sex role will be needed to test the mediating effect of sex role on the ability to cope with stress.

The test of the second hypothesis was designed to measure whether transitional periods are associated with higher levels of stress than non-transitional periods. This was confirmed ($\underline{t}$ (162) = +1.726, $\underline{p} < .05$), but without strong support. ω^2 (that proportion of variance in the LCU's which is accounted for by which period a person is in) is .0119 (Hays, 1973). This indicates that, while transitional periods may be associated with more stress than non-transitional periods, the strength of this effect is very small. It only accounts for 1% of the variance in the LCU's.

This lack of strength may be due to the wide age dissimilarity within both the transitional periods and non-transitional periods. Among transitional periods there is an age range from 17 to 65. Among non-transitional periods the ages range from 23 to 82. Rather than

comparing these periods as a whole, a more meaningful comparison may be between a transitional period and those non-transitional periods immediately adjacent to it. Such comparison indicates that only TP-3 (ages 60-65) differs significantly from those non-transitional periods immediately adjacent to it (ages 46-59 and 66-82), $\underline{t}$ (54) = +1.66, $\underline{p} < .05$. However, even given this more dramatic difference (see Figure 2) between the LCU's for TP-3 and the adjacent NTP's, the strength of this effect is still extremely small, ω^2 = .03.

Overall, the data indicate that there is a negative linear relationship between age and the amount of stress experienced. Distinctions between the amount of stress associated with transitional periods and non-transitional periods are based on a weak relationship between these variables (ω^2 = 1% to 3%).

Data supporting the SRRS as a valid measure of both current and post hoc estimations of stress are presented in Appendix C and support the use of the SRRS in testing this hypothesis. However, some of the subtle differences in the dimensions of stress experienced by TP and NTP persons may have been undetected by the SRRS.

Various life-event schedules have been developed since the publication of Holmes and Rahe's (1967) Social Readjustment Rating Scale. Antonovsky and Kats (1967), Brown and Birley (1968), Cochrane and Robertson (1973), Dohrenwend (1973), Jacobs, Spilken and Norman (1969), Myers, Lindenthal and Pepper (1971), and Paykel, Prusoff, and Uhlenhuth (1971) have all developed such schedules in part due to the identified deficiencies of the SRRS. One suggested improvement for the quantification of stressful life events is to rate them along various dimensions, such as desirability (Dohrenwend, 1977), gain

versus loss (Dohrenwend, 1973), and entrance or exits from the social field and life area involved (Myers, et al., 1971). Future research focusing on experienced stress and the difference between transitional periods and non-transitional periods should incorporate the concerns for the multi-dimensional rating of life events as mentioned.

Health practitioners and the general public would benefit from the identification and understanding of predictable stressful life periods. Coupled with programs designed to aid individuals in developing increased homeostatis flexibility, this insight would result in a healthier forewarned and forearmed populace.

APPENDIX A

Questionnaire

1. Sex _____
   female/male

2. Age _____

3. Race:
   White/Anglo _____ Black _____
   Hispanic _____ American-Indian _____
   Oriental _____ Other _____

4. Religious Preference:
   Protestant _____
   Catholic _____
   Jewish _____
   Other _____
   None _____

5. Veteran _____
   yes/no

6. Please estimate and circle the amount most representative of your household's average yearly income:

   less than $5,000 _____
   $5,000 - $10,000 _____
   $10,000 - $20,000 _____
   $20,000 - $30,000 _____
   $30,000 - $50,000 _____
   $50,000 - $75,000 _____
   over $75,000 _____

7. Number of People in your Household _____

8. From January, 1979, to the present have you sought out the advice and/or assistance of a person acting in the professional capacity of:

   a) Medical Doctor, other than for a regularly scheduled check-up _____

   b) Psychologist/Psychiatrist _____

   c) Minister/Priest, for other than regular church functions _____

   d) Professor at school, for other than academic topics _____

   e) School Counselor, for other than academic topics _____

   f) None of these _____

9. If (f) none of these: if you could re-do the past nine months, would you seek help such as listed above?

   _____
   yes/no

The purpose of this personality inventory is to give you an opportunity to describe your personal characteristics. For each of the following words, please indicate how much the trait or personality characteristic applies to your personality. The numbers on the scale indicate the degree to which the word describes your personality, with 1 indicating "never or almost never" and 7 indicating "always or almost always." Please circle one number of your choice for each word. Try to respond as honestly and quickly as you can.

1.	Self-reliant	1	2	3	4	5	6	7
2.	Yielding	1	2	3	4	5	6	7
3.	Helpful	1	2	3	4	5	6	7
4.	Defends own beliefs	1	2	3	4	5	6	7
5.	Cheerful	1	2	3	4	5	6	7
6.	Moody	1	2	3	4	5	6	7
7.	Independent	1	2	3	4	5	6	7
8.	Shy	1	2	3	4	5	6	7
9.	Conscientious	1	2	3	4	5	6	7
10.	Athletic	1	2	3	4	5	6	7
11.	Affectionate	1	2	3	4	5	6	7
12.	Theatrical	1	2	3	4	5	6	7
13.	Assertive	1	2	3	4	5	6	7
14.	Flatterable	1	2	3	4	5	6	7
15.	Happy	1	2	3	4	5	6	7
16.	Strong personality	1	2	3	4	5	6	7
17.	Loyal	1	2	3	4	5	6	7
18.	Unpredictable	1	2	3	4	5	6	7
19.	Forceful	1	2	3	4	5	6	7
20.	Feminine	1	2	3	4	5	6	7

21.	Reliable	1	2	3	4	5	6	7
22.	Analytical	1	2	3	4	5	6	7
23.	Sympathetic	1	2	3	4	5	6	7
24.	Jealous	1	2	3	4	5	6	7
25.	Has leadership abilities	1	2	3	4	5	6	7
26.	Sensitive to the needs of others	1	2	3	4	5	6	7
27.	Truthful	1	2	3	4	5	6	7
28.	Willing to take risks	1	2	3	4	5	6	7
29.	Understanding	1	2	3	4	5	6	7
30.	Secretive	1	2	3	4	5	6	7
31.	Makes decisions easily	1	2	3	4	5	6	7
32.	Compassionate	1	2	3	4	5	6	7
33.	Sincere	1	2	3	4	5	6	7
34.	Self-sufficient	1	2	3	4	5	6	7
35.	Eager to soothe hurt feelings	1	2	3	4	5	6	7
36.	Conceited	1	2	3	4	5	6	7
37.	Dominant	1	2	3	4	5	6	7
38.	Soft spoken	1	2	3	4	5	6	7
39.	Likeable	1	2	3	4	5	6	7
40.	Masculine	1	2	3	4	5	6	7
41.	Warm	1	2	3	4	5	6	7
42.	Solemn	1	2	3	4	5	6	7
43.	Willing to take a stand	1	2	3	4	5	6	7
44.	Tender	1	2	3	4	5	6	7

45.	Friendly	1	2	3	4	5	6	7
46.	Aggressive	1	2	3	4	5	6	7
47.	Gullible	1	2	3	4	5	6	7
48.	Inefficient	1	2	3	4	5	6	7
49.	Acts as a leader	1	2	3	4	5	6	7
50.	Childlike	1	2	3	4	5	6	7
51.	Adaptable	1	2	3	4	5	6	7
52.	Individualistic	1	2	3	4	5	6	7
53.	Does not use harsh language	1	2	3	4	5	6	7
54.	Unsystematic	1	2	3	4	5	6	7
55.	Competitive	1	2	3	4	5	6	7
56.	Loves children	1	2	3	4	5	6	7
57.	Tactful	1	2	3	4	5	6	7
58.	Ambitious	1	2	3	4	5	6	7
59.	Gentle	1	2	3	4	5	6	7
60.	Conventional	1	2	3	4	5	6	7

Please circle the number associated with an event if that event occurred during 1978.

1. Death of a spouse
2. Divorce
3. Marital separation
4. Jail term
5. Death of close family member
6. Personal injury or illness
7. Marriage
8. Fired at work
9. Marital reconciliation
10. Retirement
11. Change in health of family member
12. Pregnancy
13. Sex difficulties
14. Gain of new family member
15. Business readjustment
16. Change in financial state
17. Death of close friend
18. Change to different line of work
19. Change in number of arguments with spouse
20. Mortgage over $10,000
21. Foreclosure of mortgage or loan
22. Change in responsibilities at work
23. Son or daughter leaving home
24. Trouble with in-laws
25. Outstanding personal achievement
26. Wife begin or stop work
27. Begin or end school
28. Change in living conditions
29. Revision of personal habits
30. Trouble with boss
31. Change in work hours or conditions
32. Change in residence
33. Change in schools
34. Change in recreation
35. Change in church activities
36. Change in social activities
37. Mortgage or loan less than $10,000
38. Change in sleeping habits
39. Change in number of family get-togethers
40. Change in eating habits
41. Vacation
42. Christmas
43. Minor violations of the law

APPENDIX B

Scoring Methods for the BSRI and SRRS

Scoring the BSRI

The procedure consists of the following three steps:

1) Calculating masculinity and femininity scores for each subject.

2) Obtaining medians for the masculinity and femininity scores based on the total sample, sexes combined.

3) Classifying subjects according to whether their masculinity and femininity scores are above or below each of the two medians.

The masculinity and femininity scores are simply the means of each subject's ratings of the masculine and feminine adjectives on the BSRI. That is, a given subject's masculinity score is the mean of that subject's ratings on the masculine adjectives, and that same subject's femininity score is the mean of his or her ratings on the feminine adjectives. The placement of adjectives on the BSRI is as follows:

1) the first adjective and every third one thereafter is masculine;

2) the second adjective and every third one thereafter is feminine; and

3) the third adjective and every third one thereafter is neutral.

Probably the easiest way to score each subject's BSRI is to construct two separate scoring "grids," one for masculinity and one for femininity. This involves taking two empty BSRI forms and cutting out all those squares which the subjects use for their ratings of the masculine and feminine adjectives, respectively. Scoring then consists of placing either the masculinity or the femininity grid over a given

subject's BSRI, counting up the total number of points in the visible squares, and then dividing by the number of ratings which the subject actually made on that grid. This procedure is done twice, once with the masculinity grid and once with the femininity grid.

Once each subject's masculinity and femininity scores have been calculated in this way, you must then calculate the median masculinity score and the median femininity score for the entire sample of males and females combined. The median masculinity score is that score above which 50% of the masculinity scores fall; the median femininity score is that score above which 50% of the femininity scores fall. Again, be sure to consider the scores of both the males and the females when calculating these medians. Moreover, if you are dealing with an unequal number of males and females, it would be best if you equalize the numbers statistically by weighting one sex more heavily than the other.

Once the median masculinity and femininity scores have been determined, subjects can be classified as follows:

		Masculinity Score: Above Median	Masculinity Score: Below Median
Femininity Score	Above Median	Androgynous	Feminine
	Below Median	Masculine	Undifferentiated

Adapted from Bem, S. L. & Watson, C. Scoring packet: Bem Sex-Role Inventory. Revised, 1976. Palo Alto: Consulting Psychologists Press, in press, pp. 3-4.

Scoring the SRRS

Life Event Number	Life Event	LCU Total
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of close friend	37
18	Change to different line of work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31
21	Foreclosure of mortgage or loan	30
22	Change in responsibilities at work	29
23	Son or daughter leaving home	29
24	Trouble with in-laws	29
25	Outstanding personal achievement	28
26	Wife begin or stop work	26
27	Begin or end school	26
28	Change in living conditions	25
29	Revision of personal habits	24
30	Trouble with boss	23
31	Change in work hours or conditions	20
32	Change in residence	20
33	Change in schools	20
34	Change in recreation	19
35	Change in church activities	19
36	Change in social activities	18
37	Mortgage or loan less than $10,000	17
38	Change in sleeping habits	16
39	Change in number of family get-togethers	15
40	Change in eating habits	15
41	Vacation	13
42	Christmas	12
43	Minor violations of the law	11

Adapted from Holmes, T. H. & Rahe, R. H. The Social Readjustment Rating Scale. Journal of Psychosomatic Research, 1967, 11, 213-218.

APPENDIX C

Issues Related to the Valid Use of the SRRS

Issues Related to the Valid Use of the SRRS

Three important issues have been investigated which relate directly to the use of the SRRS in this study: (1) the degree of agreement among persons of various cultures, ages and demographic characteristics on the ordering or scaling of the SRRS items, (2) the degree of reliability when scored in a post-hoc fashion for a period of one year prior, and (3) the predictive validity of the scale in assessing the impact of stress on subsequent health.

First, research indicates a high level of interjudge reliability on the relative ranking of the specific SRRS items. People of various ages, cultures, and demographic characteristics evidenced high agreement in their judgement of the relative stressfulness of specific life events. On a sample of 394 persons of varying characteristics, Holmes and Rahe (1967) report a Kendall coefficient of concordance (Siegel, 1956) of .477, $p < .005$ for the ranking of the SRRS items. Pearson's correlation coefficients were also calculated among the various ages, races, religious preferences, socioeconomic statuses, and education levels present in this sample. All coefficients were above .90 with the exception of that between whites and blacks, which was .82. Ruch and Holmes (1971) replicated this method of assessing inter-judge reliability with a sample of college students. The Spearman rho correlation between this and the original sample was .97.

Inter-sample reliability was further assessed in a series of cross-cultural studies (Masuda & Holmes, 1967; Komaroff, Masuda & Holmes, 1968; Celdran, 1970; Rahe, 1969; Harmon, Masuda & Holmes, 1970). Among

literate Japanese, French, Spanish, Afro-American, and Mexican-American samples, Pearsons r varied from .724 for the Japanese/Mexican-American coefficient to .892 for the Afro-American/Mexican-American coefficient.

In sum, the rank ordering of the relative level of stress associated with specific life events appears to be highly consistent or reliable across a wide range of subjects.

Secondly, Casey, Masuda, and Holmes (1967) studied the effects of time on subjects' recall when reporting life events on the SRRS. The amount recalled decreased with time, but for a one-year post hoc report, Pearson's r was .744, $p < .0005$. Rahe (1974) indicates that subjects are more complete in their reports when an interview is utilized rather than the SRRS form. While subjects never indicated items on the SRRS which had not occurred, they often omitted those which were relevant. In this regard, the SRRS is less valid and more conservative than an interview.

Thirdly, while concurrent validity appears low due to the conservative nature of responses, predictive validity appears high. High LCU scores cluster significantly in the one to two year period preceding the onset of such health changes as tuberculosis, heart disease, skin disease, hernia, fractures, myocardial infarction, sudden cardiac death, allergies, and various forms of mental illness (Rahe & Lind, 1971; Rahe & Paasikiui, 1971; Theorell & Rahe, 1971).

In sum, the SRRS has empirical support

-in the rank ordering of stressful life events,

-in the reliability of post-hoc responses, and

-as a measurement of stress levels often predictive of health changes.

APPENDIX D

Data

Hypothesis 1 Data

Subject Number	LCU	Sex	Age	BSRI F	BSRI M	BSRI Classification	Health Change
1	373	F	19	5.4	5.0	F	Y
2	302	F	33	5.45	5.3	F	Y
3	513	F	38	5.0	4.55	U	Y
4	302	F	23	5.05	4.85	F	N
5	386	F	18	5.7	5.05	F	Y
6	354	M	23	4.35	5.65	M	N
7	356	F	33	6.35	4.9	F	Y
8	305	F	18	5.3	5.42	A	Y
9	380	M	23	5.05	5.8	A	Y
10	309	F	19	5.75	5.6	A	Y
11	537	F	19	5.45	6.05	A	Y
12	337	F	30	5.15	4.35	F	N
13	315	F	18	6.0	5.9	A	Y
14	338	F	48	4.7	5.0	U	Y
15	374	F	20	5.45	4.5	F	N
16	303	F	26	5.2	4.9	F	N
17	438	F	21	4.4	5.55	M	Y
18	390	F	19	4.85	3.4	U	N
19	435	M	18	5.05	5.75	A	Y
20	302	F	18	5.4	4.6	F	Y
21	318	M	18	4.7	5.15	U	N
22	334	M	18	5.1	4.3	F	Y
23	363	F	18	5.7	5.35	F	Y
24	316	M	18	5.8	4.85	F	Y
25	344	M	18	4.5	5.85	M	Y
26	475	F	18	4.9	4.15	U	N
27	312	F	37	6.35	5.35	F	Y
28	352	F	19	5.9	5.85	A	Y
29	306	F	20	4.5	4.95	U	Y
30	385	M	19	5.1	5.4	A	Y
31	409	F	37	5.6	5.85	A	Y
32	534	F	19	5.05	5.75	A	Y
33	802	F	51	5.6	6.1	A	Y
34	513	M	19	4.8	4.58	U	Y
35	445	F	18	5.35	5.1	F	Y
36	303	F	19	4.9	6.3	M	Y
37	377	F	25	5.85	5.45	A	Y
38	652	F	18	5.1	6.15	A	Y
39	307	F	28	4.95	5.05	U	Y
40	316	F	32	5.65	4.9	F	Y
41	387	M	32	5.2	5.7	A	Y
42	303	M	65	3.5	5.25	U	Y
43	357	M	63	5.35	5.8	A	Y
44	647	M	19	5.95	6.15	A	Y

Subject Number	LCU	Sex	Age	BSRI F	BSRI M	BSRI Classification	Health Change
45	362	M	38	4.3	5.5	M	Y
46	337	F	35	4.65	5.5	M	Y
47	336	M	41	4.85	5.7	M	Y
48	500	M	26	5.75	6.3	A	N
49	328	M	41	5.0	6.45	M	Y
50	662	M	36	4.65	5.35	U	Y
51	425	M	43	5.05	6.9	A	Y
52	444	M	42	4.85	4.95	U	Y
53	377	M	31	4.5	6.3	M	N

Hypothesis 2

Demographic Data

	Ages					
	17-22 N=42	23-39 N=37	40-45 N=29	46-59 N=28	60-65 N=15	66 and above N=13
Ethnicity:						
White-Anglo**	29*	23*	19*	24*	11*	11*
Black	4	4	6	2	2	0
Hispanic	6	5	3	2	0	2
Am. Indian	1	2	0	0	1	0
Oriental	2	2	0	0	1	0
Other	0	1	1	0	0	0
Religious Preference:						
Protestant**	4	16*	13*	17*	7*	8*
Catholic	17*	8	9	5	5	4
Jewish	1	0	0	2	0	0
Other	13	5	3	4	0	0
None	7	8	4	0	3	1
Veteran:						
Yes	0	15	15*	23*	8*	2
No**	42*	22*	14	5	7	11*
Health Change:						
Yes	20	17	15*	12	6	7*
No**	22*	20*	14	16*	9*	6

*Modal response per age group
**Modal response per sample

Hypothesis 2

LSU's Reported by Age Group

LCU Scores	AGES					
	17-22	23-39	40-45	46-59	60-65	over 66
	12	37	0	17	0	0
	31	39	0	25	0	0
	38	39	23	29	0	0
	77	49	25	53	73	0
	82	56	25	62	89	0
	94	70	39	66	108	0
	99	71	54	78	137	37
	107	72	54	90	139	85
	109	73	56	96	144	90
	117	80	57	117	198	112
	125	82	76	139	258	123
	136	93	76	139	303	159
	158	93	79	145	306	263
	158	98	82	149	357	
	164	105	82	156	360	
	176	105	126	164		
	201	108	132	171		
	205	109	134	173		
	209	121	186	174		
	220	137	203	178		
	223	158	206	183		
	226	218	206	185		
	228	218	208	187		
	234	230	235	193		
	239	235	272	198		
	239	239	328	233		
	245	253	336	246		
	250	260	425	297		
	253	278	444			
	256	283				
	256	354				
	286	362				
	290	377				
	296	380				
	316	387				
	318	500				
	334	662				
	344					
	385					
	435					
	513					
	647					

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