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Impatience vs. Achievement

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Impatience versus Achievement Strivings in the  
Type A Pattern: Differential Effects on Students'  
Health and Academic Achievement

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Running head: Impatience vs. Achievement Strivings

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Abstract

Psychometric analyses of college students' responses to the Jenkins Activity Survey, a self-report measure of the Type A behavior pattern, revealed the presence of two relatively independent factors. Based on these analyses, two scales, labeled Achievement Strivings (AS) and Impatience and Irritability (II), were developed. In two samples of male and female college students, scores on AS but not on II were found to be significantly correlated with grade point average. Responses to a health survey, on the other hand, indicated that frequency of physical complaints was significantly correlated with II but not with AS. These results suggest that there are two relatively independent factors in the Type A pattern that have differential effects on performance and health. Future research on the personality factors related to coronary heart disease and other disorders might more profitably focus on the syndrome reflected in the II scale than on the Type A pattern.

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Based on their observations of patients with coronary heart disease (CHD), Friedman and Rosenman (1959, 1974) proposed that proneness to CHD is associated with a behavior pattern that they labeled Type A. In their formulation, people who exhibit the Type A pattern are characterized by ambitiousness, competitiveness, time urgency, impatience, and aggressiveness or hostility. Individuals who are relatively lacking in these characteristics are identified as Type B.

Several assessment devices have been developed to classify individuals as Type A or B, the most commonly used being the Structured Interview technique (SI; Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn, & Wethessen, 1964; Rosenman, 1978) and an objectively scored self-report measure, the Jenkins Activity Survey for Health Predictions (JAS; Jenkins, Zyzanski, & Rosenman, 1971), designed to tap the same

characteristics as the SI. A student form of the JAS in which items referring to job or job setting have been eliminated or modified by substituting references to school work and the academic setting has also been developed (Krantz, Glass, & Snyder, 1974). Studies using these several devices not only provide evidence for a link between the Type A pattern and CHD but also suggest that this pattern may be associated with related disorders (e.g., Haynes, Feinleib, Levine, Scotch, & Kannel, 1978; Manuck, Morrison, Bellack, & Polefrone, 1985).

Many of the components of the Type A pattern involve achievement-related motives and behaviors commonly believed to contribute to successful academic and vocational performance. Although Friedman and Rosenman (1974) have suggested that Type As' time urgency and emphasis on quantity rather than quality of work may interfere with effective performance, general discussions of the Type A concept typically imply that hard-driving, achievement-oriented people classified as Type A are more likely to succeed than the more relaxed, less ambitious people classified as

Type B. Jenkins, Zyzanski, and Rosenman (1971) stated, for example, that "Individuals with the [Type A] pattern are usually conscientiously committed to their occupation, and whatever its level, often have achieved success in it (p. 194)".

The evidence, although sparse, supports the view that, as a group, Type As outperform Type Bs. Thus, Type A college students have been found to earn more academic honors (Glass, 1977) and higher grades (Waldron, Hickey, McPherson, Butensky, Gruss, Overall, Schmader, & Wohlmuth, 1980) than Type Bs. In another investigation, Matthews, Helmreich, Beane, and Lucker (1980) obtained JAS data from a subset of male academic psychologists studied by Helmreich, Spence, Beane, Lucker, and Matthews (1980). Matthews et al. (1980) reported positive correlations between the respondents' JAS scores and two measures of scholarly attainment, number of publications and number of citations by others to their work, i.e., those high in Type A tended to be more productive and more highly cited than their Type B peers. Greater productivity in Type A faculty members has also been found by Taylor,

Locke, Lee, and Gist (1984). The uncomfortable conclusion suggested by these findings is that persons exhibiting the Type A pattern are likely to be more successful than those classified as Type B but simultaneously risk paying a heavy price for their attainments in terms of CHD or other health problems.

It seems highly unlikely that the same components of the Type A pattern are responsible for the positive association with indices of vocational and academic excellence, on the one hand, and with the greater incidence of CHD and other health problems on the other hand. Common sense suggests that the positive relationship with accomplishments is brought about by Type As' achievement strivings per se. The empirical literature provides indirect support for this contention. For example, in the Matthews et al. (1980) study of academic psychologists, measures of mastery and work-oriented achievement motives (Spence & Helmreich, 1978) were positively related both to JAS scores and to the productivity and citation measures.

As for the components responsible for the relationships with CHD and other associated disorders,

a number of investigators (e.g., Williams, Haney, Lee, Kong, Blumenthal, & Whalen, 1980; Matthews, 1982; Spielberger, Johnson, Russell, Crane, Jacobs, & Worden, 1985; Rosenman, 1985) have recently pointed to what Spielberger et al. (1985) have labeled the AHA! Syndrome--anger, hostility, and aggression. The deleterious effects of this set of interrelated variables on health have been independently established (e.g., Diamond, 1982; Greer & Morris, 1975). Quite direct support for the contention that it is these elements in the Type A pattern that may be uniquely responsible for the association between the latter and CHD comes from a study by Matthews, Glass, Rosenman, and Bortner (1977). These investigators reanalyzed Structured Interview data from the Western Collaborative Group Study, a large prospective project that found middle-aged men initially classified as Type As more likely to develop CHD than those classified as Type Bs (Rosenman et al., 1964). Matthews et al. (1977) reported that the Structured Interview items most sharply distinguishing CHD cases from nonCHD cases were those related to irritability,

anger, hostility, and several behaviors that could be motivated by these variables (e.g., vigorous answers and explosive voice modulation during the interview). Similar findings have recently been reported by Weinstein, Davison, DeQuattro, and Allen (1986).

The data thus suggest that different aspects of the Type A pattern may be responsible for the correlations of this pattern with academic and vocational performance and with measures of CHD and other medical conditions. If the evidence continues to indicate that only some components of the Type A pattern influence health and it can be demonstrated that a different set of components influences performance, the question that must be asked is whether the Type A construct is a useful one. That is, can it be assumed that the various components assigned to the Type A pattern show a strong tendency to coexist? Put another way, can persons who are hard-driving, hard working, and ambitious usually be characterized as irritable, impatient and hostile as well?

Unless the various facets of the Type A pattern



can be demonstrated to have similar effects on various types of outcome measures or these facets are shown to be highly correlated, it would seem to be more profitable to abandon the Type A concept. Those interested in the personality and behavioral factors related to CHD and other related disorders might better turn their attention away from the Type A pattern and consider directly the AHA! Syndrome per se. Similarly, those interested in the personal factors contributing to successful vocational and academic performance should look to sets of characteristics directly related to achievement strivings rather than to the Type A pattern. Additional evidence is required, however, before the usefulness of the Type A concept can be seriously disputed.

In an effort to address these issues, the present writers (Pred, Spence, & Helmreich, submitted for publication) conducted psychometric analyses of the JAS data obtained from male and female college students on the student form of the JAS. Factor analyses with oblique rotations, based on unit-

weighting of the individual items, yielded similar two-factor solutions in both sexes. Items with heavy loadings on the first factor appear to be related to achievement-related strivings (e.g., hard working, active, takes work seriously). Those with heavy loadings on the second factor appear to tap impatience, irritability, and anger. In both sexes, the correlation between the two factors was low (about .15), thus suggesting that there is considerable independence between them. Based on the results of these analyses, two unit-weighted factor scales were constructed, labeled Achievement Strivings (AS) and Impatience-Irritability (II). Confirmatory factor analyses performed on data from the Matthews et al. (1980) psychologist sample and from another sample of students given the AS and II scales verified these item assignments (Pred et al., submitted for publication).

The purpose of the present study was to determine whether these two facets of the Type A pattern have differential effects. Students' scores on the AS and II scales were related to their grade point average (GPA) with the expectation that the relationship with

Achievement Strivings, but not with Impatience and Irritability, would be significant. In addition, the subjects were asked to respond to a health survey in which they were queried about sleep disturbances, respiratory disorders, headaches, and digestive upsets. In this instance it was anticipated that Impatience-Irritability would be a better predictor of ill-health than Achievement Strivings.

#### Method

##### Subjects

Data were obtained from two samples of college students enrolled in introductory psychology courses at the University of Texas at Austin during the fall and spring semesters of the 1985-86 academic year. The first sample consisted of 362 men and 351 women. These students were given the 44-item student version of the JAS developed by Krantz et al. (1974). The second sample was composed of 256 men and 225 women. They were given (in revised form) only the items assigned to the new AS and II scales. In the combined samples, 67% were classified as freshmen; the remaining percentages were 19, 9, and 5 for

sophomores, juniors, and seniors, respectively. All subjects participated as part of a course requirement.

### Measures

Jenkins Activity Survey (JAS). Items on the 44-item JAS given to the first sample are accompanied by rating scales with 2 to 5 points. The items have been broken down by Jenkins et al. (1971) into three subscales with overlapping content. The first is the 21-item A-B scale whose items were selected and assigned different weights by means of discriminant function analyses designed to maximize the concordance between the Type A classification produced by the Structured Interview and by the JAS. The other two are a priori factor scales: Factor H (Hard-driving competitiveness) and Factor S (speed and impatience). The H and S scales consist of 17 and 21 items, respectively. Item overlap is particularly marked between the A-B and each of the two factor scales but the latter also have items ( $n = 4$ ) in common.

The Factor H and S scales, as well as the A-B scale, are scored by optimal weights. However, other investigators (e.g., Glass, 1977) have used a unit

weighting system. Further, Matthews et al. (1980) reported that unit weighting of their JAS data yielded scores whose correlation with scores produced by the discriminant function weighting was .90. For this reason, a unit weighting system was used in the present investigation. However, the scores assigned individual items were adjusted in an attempt to give the items with different numbers of alternatives more equal weight. For all items, a score of 5 was given to the extreme Type A response. For two-point scales the nonType A response was scored 2.5 whereas for 3-point scales, the remaining scores were 3.33 and 1.67 and for 4-point scales they were 3.75, 2.5, and 1.25. For 5-point scales, they ranged from 5 to 1.

As reported in Pred et al. (submitted for publication), the JAS data were subjected to factor analyses, separately for each sex, using a principal axis solution and an oblique rotation using an oblimin solution (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Based on an eigenvalue-one criterion, a two-factor solution was subjected to oblique rotation. For males, using a .35 criterion, 8 items loaded only

on the first factor, 5 items only on the second factor, 3 items on both factors, and 28 items on neither factor. For females, the parallel numbers were 10, 5, 1, and 28. For both sexes, items loading on the first factor reflected achievement-related behaviors and attitudes (e.g., hard-driving, puts forth much effort, takes work seriously). This factor was labeled Achievement Strivings (AS). Items loading on the second factor described impatience, irritability, and anger. This factor was labeled Impatience and Irritability (II). The factor correlations were .16 and .14 for males and females, respectively.

Seven of the items reaching the .35 loading criterion in both sexes on the first factor were assigned to an AS scale. The five items (which were the same for both sexes) reaching this criterion on the second factor were assigned to an II scale. Scores on these two new scales were then found for each subject. The Cronbach alphas on the AS scale were .69 and .72 for males and females, respectively. Corresponding alphas for the II scale were .65 and .64.

In the second sample, subjects were given a revised version of the AS and II scales. The major revision was an expansion of the rating scales accompanying each item to a 5-point scale. A number of items were also slightly reworded, primarily to accommodate the new rating scales. The data were subjected to confirmatory factor analyses, separately for each sex (Pred et al., submitted for publication). For both sexes, the analysis replicated the two-factor structure obtained in the first sample, all items originally assigned to the AS scale loading .30 or greater on this factor and all items originally assigned to the II scale loading .30 or greater on this factor. The alpha for the revised AS scale was .79 for both sexes. On the revised II scale, the alphas were .67 and .63 for males and females, respectively. The items on each scale are shown in Table 1.

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Grade point average (GPA). The cumulative GPA for each subject was obtained from the students'

official records following the 1986 spring semester. The number of semesters' work represented by this GPA varied from subject to subject, depending jointly on the semester (fall or spring) in which they were tested and the number of previous semesters during which they had been enrolled at the University. The modal number of semesters' work represented in the GPA for the two samples as a whole was two.

Health survey. A 32-item health survey was constructed whose items inquired about quality of sleep, problems of digestion and elimination, headaches, and respiratory problems (colds, flu, allergies). For subjects in the first sample, a priori scales in each of these 4 areas were constructed and whole-part correlations were determined for each item within each scale, separately for men and women. Ten items, the same for each sex, were dropped from further consideration on the basis of these analyses.

For the remaining items, a separate score was found for each subject on each content cluster. Scoring was such that high scores indicated better



health. The alphas were all .75 or above in both sexes. In both sexes, correlations among the four health scores were all significantly positive ( $p < .001$ ), the values ranging from .17 to .43. An overall health measure, based on all 22 items, was therefore obtained. The alphas for males and females were .82 and .83, respectively. Parallel analyses of the health data from the second sample provided very similar findings.

Other measures. Subjects in the first sample were given the three achievement motivation scales of the Work and Family Orientation Questionnaire (WFOQ; Spence & Helmreich, 1978; Helmreich & Spence, 1978). These scales are labeled Mastery (preference for difficult challenging tasks), Work (the desire to work hard), and Interpersonal Competitiveness (the desire to compete against others and to win). The items are each accompanied by a 5-point rating scale.

Another personality instrument was also administered to subjects in Sample 2 for another purpose, the results of which will not be reported here.

### Procedure

Subjects were tested in university classrooms in mixed sex groups of 80-100. They were not requested to supply their names but did provide their social security numbers so that it was possible to obtain their GPA from university records.

### Results

#### Sample 1

Correlations within JAS. The correlations between the Jenkins et al. (1971) A-B, Factor H, and Factor S scales and the two new factor scales, AS and II, are reported in Table 2. Although Jenkins et al. (1971) described the Factor H and S scales as independent, inspection of the correlations obtained with the three Jenkins scales shows that in each sex they are all substantially related to each other, in part because of overlapping content. They are also substantially related to the AS and II scales for the same reason. The AS and II scales, in contrast, are only modestly correlated.

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JAS correlations with GPA and health. The correlations of the AS and the II scales with GPA and the health measures are shown in Table 3. Also reported are the correlations between the latter and the Jenkins et al. A-B scale. (Predictably, the relationships of GPA and health with Factors H and S were similar to those with A-B. They will therefore not be reported.)

As expected, significantly positive correlations were found between GPA and the AS scale in both sexes. The correlations with the II scale, on the other hand, were not only lower in magnitude but also negative in sign.

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Also as anticipated, the opposite pattern occurred with the health measures. Negative relationships with II occurred in both sexes on the several indices, i.e., impatient, irritable men and women reported more health problems than their more placid peers. All these  $r$ 's were significant ( $p < .05$ ) except for the digestion/elimination category in

females. (See, however, the Sample 2 results in Table 5.) The correlations between AS scores and the health measures were all lower, and with the exception of sleep quality, they were all nonsignificant.

Inspection of the data from the Jenkins et al. (1971) A-B measure shows, ironically, that the scale is a better predictor of GPA than of health. This outcome was not surprising in view of the stronger correlation between A-B and AS than between A-B and II and reflected the substantial presence of items related to achievement on the A-B scale.

Correlations with achievement motive scales. The correlations of the three WOFO achievement motive scales with the JAS scales, GPA, and the overall health measure are reported in Table 4. In both sexes, WOFO Mastery and Work scores were moderately correlated with the JAS A-B and AS scales. Only trivial relationships were found with the II scale.

Of particular interest are the relationships with the Interpersonal Competitiveness scale of the WOFO because of the prominence of competitiveness in descriptions of the Type A pattern. This scale, Table

4 indicates, was moderately correlated with both the AS and II scales, as well as with the A-B scale, again in both sexes. In light of the differential relationships between the health measure and the JAS AS and II factors, expectations about relationships between health and Competitiveness were not clear. As it turned out, the relationship was nonsignificant in males and slightly but significantly negative in females, that is, more competitive women reported more symptoms. (However, the difference between the correlations in males and females was not significant.)

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The remaining relationships reported in Table 4 also differed for males and females. In females, Mastery and Work motives may be observed to be uncorrelated with overall health ratings, thus paralleling the health findings with the AS scale. However, significant positive relationships were found in males, i.e., those higher in Work and in Mastery tended to report better health. As determined by

Fisher's  $Z$  test, the difference between the  $r$ 's for males and females was significant ( $p < .01$ ) in both instances. These findings may well reflect genuine sex differences. However, it also seems possible that in both sexes, the relationship between health and this pair of achievement motives may tend to be slightly positive, perhaps because of the relationships of these motive scores with other desirable personality characteristics that more directly influence health.

Although the results are not central to the purposes of this investigation, several comments should be made about the correlations of the WOFO achievement motives with GPA. Previous studies (e.g., Helmreich et al., 1980; Spence & Helmreich, 1983) have found with several different types of groups and performance measures that Mastery and Work motives contribute positively to performance. However, as these two motives increase in strength, Competitiveness has an increasingly deleterious effect on performance.

Unlike the AS scale, which makes reference to

academic work, the WOFO scales are more abstract, making no reference to the situations and tasks that activate these motives. We suspect that it is in part for this reason that the WOFO scales were less successful in predicting grades than the AS scale. It should also be noted that most of the students were freshmen and their GPA was based on two semester's work. More substantial correlations with cumulative GPA based on a greater number of semesters' work have consistently been found in our previous studies (Spence & Helmreich, 1983). Many disinterested students tested in their freshman year have dropped out and those remaining have had an opportunity to identify their academic interests and talents and to select courses that satisfy them.

#### Sample 2

In the second sample, it will be recalled, subjects were not given the entire JAS but only the AS and II scales (in slightly revised form). The correlations between these scales were .32 for males and .14 for females ( $p$ 's < .01). Correlations of the scales with GPA and the health measures are reported



in Table 5. The results for both sexes basically replicated those found with the first sample. Thus significantly negative  $r$ 's occurred between II and the health measures whereas for AS, the  $r$ 's were nonsignificant. On GPA the opposite pattern occurred: AS was positively related and II was nonsignificantly related to academic performance.

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#### Discussion

Our data lead to two major conclusions. First, psychometric analyses of responses to both the student and the adult forms of the JAS indicate the presence of two relatively independent factors (Pred et al., submitted for publication). These factors, which we have labeled Achievement Strivings (AS) and Impatience and Irritability (II), have conceptual similarities to Factor H (hard-driving competitiveness) and Factor S (speed and impatience) described by Jenkins et al. (1971). However, our factor analyses resulted in cleaner factors in terms of item content and allowed us to develop two factor scales that have no item

overlap and have substantially lower correlations with each other than the Jenkins et al. H and S scales.

Second, the results obtained with our AS and II scales reveal different patterns of relationships with indices of performance excellence, on the one hand, and of health, on the other. The data from the student samples unambiguously show that the AS scale is significantly and positively related to GPA whereas the II scale has no significant effect on performance. We obtained similar results in a reanalysis of the JAS data obtained by Matthews et al. (1980) from a sample of male academic psychologists (Helmreich, Spence, & Pred, submitted for publication). Significant correlations were found between the AS scale and two measures of attainment, number of publications and number of citations by others to published work, but the correlations with II were nonsignificant.

Conversely, the data from the student samples consistently indicated significant relationships between II and measures of health such that more irritable and impatience men and women reported a greater number of physical complaints. Smaller and

usually nonsignificant relationships were found between these measures and the AS scale.

Additional evidence supporting the two-component model was recently reported by Chidester (1986) in a dissertation investigating factors related to the performance of jet transport pilots. Significantly positive correlations were found between the AS scale and ratings of performance related to crew management. In contrast, the II scale was not only nonsignificantly related to this measure but was negatively correlated with observers' evaluations of technical proficiency in flying. Pilots scoring high on the II scale also reported poorer quality of sleep and other physical problems during layovers than low scoring pilots.

The results of these studies demonstrating a relationship between the II scale and reports of relatively minor physical problems cannot automatically be generalized to CHD and other cardiovascular disorders. However, when these data are considered in conjunction with studies (e.g., Williams et al., 1980) showing an association between

CHD and variables such as hostility, they add weight to the conjecture that affective reactions and behaviors incorporated in the AHA! Syndrome are the critical elements within the Type A pattern relevant to these disorders and perhaps to other major health problems as well (Price, 1982).

An equally important implication of our results is that men and women who are hard-driving, achievement-oriented, and often as a consequence, successful, may not have a greater risk of CHD and other physical ailments than less ambitious persons. This conclusion follows jointly from our findings that achievement-strivings do not per se have a negative influence on health and that there is considerable independence between the two sets of attributes tapped by the AS and II scales.

The role of competitiveness merits special attention. It is popularly assumed that in order to be successful, particularly in business, one must possess competitiveness as a personal attribute. Competitiveness is often associated as well with other aspects of success-motivated behaviors. Descriptions

of the Type A pattern, for example, typically bracket hard-driving and competitiveness together.

It will be recalled that the WOFO Interpersonal Competitiveness scale (but not the Mastery and Work scales) was significantly correlated with II as well as with AS. Further, previous research (Spence & Helmreich, 1983) has suggested that high scores on the Competitiveness scale are often associated with performance of poorer quality, particularly when Competitiveness is combined with high levels of Work and Mastery motives.

It should be noted that many situations are inherently competitive in the sense that the supply of resources is less than the demand for them. Applying for a job or a research grant, selling goods and services in a limited market, or taking part in an athletic event or other contests with winners and losers are all examples. It seems reasonable to assume if they are to achieve their goals in such situations, people must be willing to enter into competition with others and to risk failure, or even to enjoy the challenge of competitive contests. The

WOFO Interpersonal Competitiveness scale, however, assesses people's desire to best and win out over other people. Even when competitiveness is described as a desirable attribute, it seems to incorporate these interpersonal aspects. However, this kind of interpersonal competitiveness has a hostile, aggressive tinge to it that may be responsible both for the correlation of the WOFO Competitiveness scale with the II scale and for its negative effects on quality of performance.

A final comment should be made about the JAS and its usefulness in health research. The concordance between individuals classified as Type A or B by means of the JAS and the Structured Interview (SI) has typically been found to be only moderate (e.g., Matthews, Krantz, Dembroski, & MacDougall, 1982). Further, the evidence suggests that differences between Type As and Type Bs in vulnerability to CHD are more likely to occur when the classification is done by means of the SI rather than the JAS (Matthews & Haynes, 1986). The basis for these discrepancies is not necessarily the greater validity of a clinical

interview than that of an objectively scored self-report measure, as some have intimated. What is notable about the JAS is the relative absence of items referring to irritability, anger, and hostility, the very elements that seem to bring about the CHD-Type A relationship. Rather than abandoning the JAS or other similar self-report measures in favor of the SI, it would seem more profitable in future research to use an array of self-report instruments to pinpoint more exactly the relevant personality factors associated with CHD and other disorders. The results of such studies could, in turn, lead the way to the development of a more valid package of instruments to replace current measures, including the II scale that we have carved out of the JAS. Development of such assessment instruments depends jointly on bringing greater conceptual clarity and greater psychometric sophistication to this area of research.

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Table 1

Items on the Revised Achievement Strivings (AS)  
and Impatience/Irritability (II) Scales

Achievement Strivings

1. How much does college "stir you into action"?  
(Much less to Much more than others)
2. Nowadays, do you consider yourself to be: (Very  
hard-driving to Very relaxed and easy going)
3. How would your best friends or others who know you  
well rate your general level of activity? (Too slow  
to Very active; should slow down)
4. How seriously do you take your work? (Much more  
to Much less than most)
5. How often do you set deadlines or quotas for  
yourself in courses or other activities? (Very often  
to Almost never)
6. Compared with other students, the amount of effort  
I put forth is: (Much more to Much less)
7. Compared with other students, I approach life in  
general: (Much more to Much less seriously)

**Impatience-Irritability**

1. When a person is talking and takes too long to come to the point, how often do you feel like hurrying the person along? (Very frequently to Almost never)
2. Typically, how easily do you get irritated? (Extremely easily to Not at all easily)
3. Do you tend to do most things in a hurry? (Definitely true to Not at all true)
4. How is your "temper" these days? (Very hard to control to I seldom get angry)
5. When you have to wait in line such as at a restaurant, the movies, or the post office, how do you usually feel? (Accept calmly to Feel very impatient and refuse to stay long)

Note. The labels for the end points of the 5-point rating scale accompanying each item appear in abbreviated form in parentheses.



Table 2

Correlations Between the Three Jenkins Scales and the New AS and II Scales for Males (N = 362) and Females (N = 351) in Sample 1\*

	A-B	H	S	AS	II
A-B	---	.73	.80	.76	.43
H	.68	---	.58	.83	.37
S	.78	.53	---	.57	.70
AS	.73	.82	.52	---	.21
II	.40	.30	.67	.13	---

\* $r_{.05} = .09$  and  $r_{.01} = .13$

Note. Males are above the diagonal and females are below.

Table 3

Correlations Between the JAS AS, II, and A-B Scales and GPA and Health Measures for Males and Females in Sample 1\*

	JAS Scales					
	AS		II		A-B	
	Males	Females	Males	Females	Males	Females
GPA	.36	.33	-.04	-.09	.25	.15
Sleep Quality	-.13	-.03	-.25	-.16	-.15	-.13
Head-aches	-.07	.05	-.20	-.18	-.03	-.04
Digestion/ Elimination	-.04	-.04	-.21	-.04	-.06	-.03
Respiratory	.08	-.04	-.18	-.12	.08	-.08
Health total	-.06	-.03	-.31	-.18	-.07	-.11

\*  
 $r_{.05} = .09$  and  $r_{.01} = .13$

Note. High health scores indicate good health.

Table 4

Correlations of the WOFO Achievement Motives Scales with the JAS Scales, GPA and Overall Health in Sample

1 \*

WOFO Scale	Males				
	JAS Scale			GPA	Health
	A-S	II	A-B		
Mastery	.40	.09	.45	.20	.22
Work	.36	.03	.36	.15	.22
Competitiveness	.30	.26	.32	.09	.03

  

WOFO Scale	Females				
	JAS Scale			GPA	Health
	A-S	II	A-B		
Mastery	.47	.07	.49	.07	-.02
Work	.43	.04	.39	.10	.00
Competitiveness	.25	.29	.33	-.02	-.11

\* $r_{.05} = .09$  and  $r_{.01} = .13$

Table 5

Correlations Between the JAS AS and II Scales and GPA and Health Measures for Males (N = 256) and Females (N = 225) in Sample 2\*

	AS		II	
	Males	Females	Males	Females
GPA	.33	.27	-.03	.04
Sleep quality	-.01	-.01	-.20	-.39
Headaches	-.10	-.02	-.20	-.24
Digestion/	-.12	-.06	-.12	-.31
Respiratory	-.08	-.04	-.12	-.26
Health Total	-.09	-.01	-.23	-.43

\*  
 $r_{.05} = .09$  and  $r_{.01} = .13$