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ABSTRACT

Two factor analytic studies of the Internal-External Control Scale, a forced-choice questionnaire, were carried out. In the first study, separate analyses for samples of male and female college students each yielded the following two factors: (1) generalized personal control, reflecting a belief about ability versus luck as a determinant of success with respect to self and others, and (2) system modifiability, reflecting a belief about the responsiveness of the sociopolitical system to citizen influence. In the second study, also based on samples of male and female college students, three factors emerged. The system modifiability factor was replicated, while a belief in ability versus luck emerged as two factors: (1) personal control, a reference to self, and (2) control ideology, a reference to others. (Author)

Internal-External Control and the Distinction Between Personal Control and System Modifiability

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Paper presented at the Midwestern Psychological Association, Cleveland, May 6, 1972

The Internal-External Control (I-E) Scale is a forced-choice questionnaire developed by Rotter (1966) to measure the degree to which individuals believe that they can control events in their lives (internal control) versus the degree to which individuals believe that events in their lives are beyond personal control (external control). As indicated in reviews by Rotter (1966) and Lefcourt (1966, 1971), there is generally consistent support for the construct validity of the I-E scale. Recent factor analytic studies (Gurin, Gurin, Lao, & Beattie, 1969; Mirels, 1970), however, have raised questions about the dimensionality of the I-E construct.

The first factor analyses of the I-E scale were carried out by Rotter (1966) with a college sample and Franklin (1963) with a high school sample. In each of these factor analyses one general factor accounted for a major portion of the total scale variance. While several additional factors emerged, there was no support for the presence of a clearcut or reliable set of subscales. In contrast to these results, Gurin et al. (1969), with samples of black college students and blacks enrolled in a job training program, reported the emergence of two separate factors among I-E items. The first factor, labeled "Personal Control" and based on items phrased in the first person, reflected a belief in the degree to which one can control what happens in one's

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Two factor analytic studies of the Internal-External Control scale were carried out. In the first study separate analyses for samples of male and female college students each yielded the following two factors: 1) Generalized Personal Control, reflecting a belief about ability versus luck as a determinant of success with respect to self and others; and, 2) System Modifiability, reflecting a belief about the responsiveness of the sociopolitical system to citizen influence. In the second study, also based on samples of male and female college students, three factors emerged. The System Modifiability factor was replicated, while a belief in ability versus luck emerged as two factors: 1) Personal Control, a reference to self; and 2) Control Ideology, a reference to others.

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own life. The second factor, labeled "Control Ideology" and based on items phrased in the third person, reflected a general belief about the relative importance that internal and external forces have in determining success and failure in the culture at large. In addition, a third factor was reported which was based in part on I-E items and in part on a set of items written specifically to assess beliefs about internal and external forces in racial discrimination. This third factor, labeled "System Modifiability," reflected a belief in the extent to which citizen paritipation can influence the sociopolitical system.

Gurin et al. (1969) interpreted the discrepancy between their findings of a personal-ideological distinction and the previous findings of a general factor as a valid difference between black and white populations. Blacks with the experience of discrimination and racial prejudice should be more prone than whites to make a distinction between general cultural beliefs and beliefs about the causal locus in their own lives.

The difference in the way that I-E items are categorized by black and white populations becomes more complex when the factor analytic results reported by Mirels (1970) are considered. Based on I-E responses from college students at the Ohio State University, Mirels found two factors: the first, a belief about the relative importance that internal and external forces have in determining success and failure in one's own life and in the culture at large; the second, a belief in the extent that citizen participation can influence the sociopolitical system. Mirels' first factor therefore includes both the Personal Control factor and the Control Ideology factor found in the Gurin et al. (1969) study, while Mirels' second factor corresponds to the System Modifiability factor found by Gurin et al. (1969). Assuming that the Ohio State

sample was largely white, the absence of a personal-ideological distinction lends support to the Gurin et al. (1969) conclusion that such a distinction is to be found within black but not white populations. What is most interesting about the Mirels' results, however, is the distinction between what might be labeled a "Generalized Personal Control" factor and the System Modifiability factor--a distinction which did not appear in the earlier factor analysis based on a college sample reported by Rotter (1966). The emergence of a System Modifiability factor in data obtained from black and white college students in the late 1960's may be a reflection of the increasing political sensitivity and involvement that has characterized the contemporary college scene. While a student may see himself as capable of directing the course of his own life, he may on the other hand see himself as relatively powerless to exert any influence which could affect the direction that the sociopolitical system takes.

In summary, the recent factor analytic data strongly suggest that the I-E scale is multidimensional. The purpose of the present investigation was to determine if the factorial distinctions obtained could be replicated, and if so to develop reliable subscales for the resulting factors. A series of two factor analytic studies was conducted.

Study I

Method

The I-E scale was administered to 170 male and 151 female students enrolled in an introductory psychology course at the University of Windsor. Responses to the 23 scored items were intercorrelated, and the resulting matrix was factored by the principal components method. Using Kaiser's (1958) Varimax method, factors with an eigenvalue of 1.0 or greater were rotated to orthogonal simple structure. Separate analyses were

carried out for males and females.

Results

Two factors emerged for females with eigenvalues above 1.0, while for males there was one factor with an eigenvalue above 1.0 and a second factor with an eigenvalue of .99. As this second factor was so close to the 1.0 significance level, it was included in the factor rotation. With respect to the variance accounted for, the figures in the male sample were 10.5% for Factor I and 4.3% for Factor II and in the female sample 11.4% for Factor I and 6.0% for Factor II.

The rotated factor loadings of the I-E items for males and females are presented in Table 1. The factor loadings for males and females were

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Insert Table 1 Here

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generally similar. There were nine items with loadings above $\pm$ .30 for both males and females: six items for Factor I and three items for Factor II.[2] Items with high loadings on Factor I refer to the relative importance that internal factors, such as ability and effort, have as opposed to external factors, such as luck and fate, in determining success and failure in one's own life and in the culture at large. An example of an internal statement with a personal reference is item 15 ("In my case getting what I want has little or nothing to do with luck"). An example of an internal statement with a generalized reference is item 11 ("Becoming a success is a matter of hard work, luck has little or nithing to do with it."). Taking into account both the personal and general reference to ability versus luck, Factor I has been labeled "Generalized Personal Control." Items with high loadings on Factor II refer to the extent to

which citizen participation is viewed as effective in influencing the sociopolitical system. Factor II has been labeled "System Modifiability."

Study II

Method

An extended form of the I-E scale was administered to 238 male and 271 female students enrolled in an introductory Psychology course at the University of Windsor. The sample for Study II was drawn from a population independent from the population used in Study I, because each study was performed in a different academic year. (Study I was conducted during the 1970-71 year, while Study II was conducted during the 1971-72 year). The extended form of the I-E scale included an additional 19 scored items in the same forced-choice format as the standard 23 scored items.[3] These added items, which were sequentially placed following the standard items, were included as an attempt to optimize the reliability of the subscales suggested in Study I by affording the possibility of a greater number of items within each factor subscale. Among the new items included were several drawn from a set of items which had been developed by Seeman (cf. Neal & Rettig, 1967) to reflect beliefs about the locus of exercising sociopolitical power. The Seeman items, some of which were slightly modified, were used because it was felt that they would have high loadings on the System Modifiability factor. Other new items included were specially written to provide additional statements for the theme of the Generalized Personal Control factor.

Responses to the 42 scored items of the extended I-E scale were factor analyzed, using the same procedure outlined in Study I.

Results

The factor analytic results for the 42 items proved to be generally inconclusive. There were thirteen significant factors for the male sample, but only three which accounted for more than 5% of the variance. In the case of the female sample, there were fourteen significant factors, but only two which accounted for more than 5% of the variance. On the basis of item content, there was a clearcut pattern of items for both the male and female samples with high loadings on a System Modifiability factor. This pattern of items included both standard I-E items and items that were added from the set developed by Seeman. Since most of the 19 added items did not appear to contribute to any consistent pattern of subscales, a subsequent factor analysis was performed with the 23 standard I-E items.

For the 23-item factor analysis, eight factors for males and nine factors for females were obtained with eigenvalues above 1.0. Across both samples, only the first four factors yielded high loadings for three or more items. The rotated factor loadings among the first four factors are presented respectively for males and females in Tables 2 and 3. In the case of the male sample, Factor I accounted for 14.6% of the variance,

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Insert Tables 2 and 3 Here

Factor II for 8.5%, Factor III for 7.1%, and Factor IV for 5.7%. For the female sample, the corresponding percentages were 12.4% for Factor I, 9.0% for Factor II, 6.7% for Factor III, and 5.8% for Factor IV. As in the case of Study I, the factor loadings for males and females were generally similar.[4] Items with high loadings on Factor I refer primarily

to the relative importance of ability and effort versus luck and fate in determining the course of one's life. Factor I has therefore been labeled "Personal Control". Factor II is composed of items with high factor loadings which refer to the "System Modifiability" theme of citizen participation in relation to the sociopolitical system. Factor III appears to be based primarily on only one item across both samples, that is item 5 ("The idea that teachers are unfair to students is nonsense."). Factor IV is composed of items with high factor loadings which refer primarily to the relative importance of ability and effort versus luck and fate as determinants of success and failure in the culture at large. In contrast to Factor I which emphasizes a personal frame of reference, Factor IV is concerned more with an ideological frame of reference and has therefore been labeled "Control Ideology."

Discussion

The results of Study I indicating a distinction between Generalized Personal Control and System Modifiability replicate the results reported by Mirels (1970), who used the same method of factor analysis as reported herein. The results of Study II indicating the three factors of Personal Control, Control Ideology, and System Modifiability within the 23-item I-E scale are similar to the results reported by Gurin et al. (1969). (Gurin et al. did not indicate the method used in their factor analysis.) The failure to obtain conclusive results with the 42-item extended I-E scale in Study II most likely reflects the unreliability of new items. The one promising result emerging from the analysis of the extended scale was the System Modifiability factor which included items that had been developed by Seeman to reflect beliefs about the locus of exercising sociopolitical power.

Turning to a comparison of the results for the Windsor samples across both studies on the 23-item I-E scale, it must be noted that there were some inconsistencies. In the second study several factors emerged which were not present in the first study. However, in terms of psychologically meaningful factors which contain more than two or three items with high loadings, the major difference that emerges in the second study is the distinction between the personal and general references to internal versus external determinants of success and failure. Taking into account the inherent unreliability of item factor analyses, the results for the two Windsor studies appear to be quite similar. System Modifiability as a distinct factor is clearly shown in the Windsor studies. Whether the personal-ideological distinction that emerged in Study II is merely artifactual or a valid reflection of a further conceptual differentiation that college students are now more prone to making requires further confirming data. It is interesting to note that there have been marked policy changes in the support of higher education in Canada, and particularly in Ontario, during the past year. Such a sociopolitical context could account for a trend towards more conceptual differentiation regarding beliefs about the locus of control among Canadian students.

Overall, the results of the present set of studies taken together with those of the Mirels' (1970) and Gurin et al. (1969) studies seem to clearly point to a trend towards conceptual distinctions regarding beliefs about the locus of control--distinctions which did not appear in the factor analyses conducted about ten years earlier. At least among college students, whether white or black, or American or Canadian, there is a consistent difference demonstrated between the beliefs one has

about being the master of his own destiny and the beliefs one has about the efficacy of getting involved in social and political affairs in terms of the way the societal structure is presently constructed.

The findings of multidimensionality on the I-E scale present new challenges for the construct validity of the internal-external control concept. As yet, there has been little in the way of validity data to support the meaningfulness of separate control dimensions. Lao (1970) in a study with black college students has reported that "internal" scores on the Personal Control factor (as identified by the Gurin et al. study) are positively related to measures of general competence, while "external" scores on a factor derived from the "System Modifiability" factor (also based on the Gurin et al. study) are positively related to sociopolitical involvement. In this study the total I-E scores were unrelated to these criteria measures. In a study with black high school students, Forward and Williams (1970) reported a relationship between positive attitudes toward the Detroit riot and a pattern of "internal" scores on Personal Control and "external" scores on a System Modifiability-derived factor (both factors based on the Gurin et al. study). The Control Ideology factor and the total I-E scores were unrelated to the attitude measure. A study by Silvern and Nakamura (1971) with college students reported both total I-E and Generalized Personal Control (based on the Mirels study) were related to measures of political orientation and political involvement, while System Modifiability was unrelated to these measures.

There appear to be two important aspects to the establishment of construct validity regarding I-E dimensions. First, reliable subscales need to be clearly identified. The issue of reliability may be particularly

problematic in the case of a System Modifiability factor, since there are only five items within the standard I-E scale that refer to a societal context. However, the results of the present study which included some items developed by Seeman (cf. Neal & Rettig, 1967) suggest that this set of items could be used in conjunction with the I-E scale. Finally, more validity studies need to be developed in order to determine which criteria situations are related to specific I-E dimensions.

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TABLE 1

Rotated Factor Loadings of I-E Items for Males and Females: Study I

Item	Males		Females	
	Factor I	Factor II	Factor I	Factor II
2. People's misfortunes result from the mistakes they make.	.27	-.11	.50*	.20
3. One of the major reasons why we have wars is because people don't take enough interest in politics.	.12	.39*	.09	.23
4. In the long run people get the respect they deserve in this world.	-.14	.15	-.24	.15
5. The idea that teachers are unfair to students is nonsense.	-.33*	-.03	-.26	.12
6. Capable people who fail to become leaders have not taken advantage of their opportunities.	.44*	-.13	.19	-.16
7. People who can't get others to like them don't understand how to get along with others.	.24	-.17	.08	-.18
9. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	.07	-.20	.31*	-.07
10. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.	-.27	-.09	-.24	.16
11. Becoming a success is a matter of hard work, luck has little or nothing to do with it.[a]	-.31*	.21	-.49*	.14
12. The average citizen can have an influence in government decisions.[b]	-.12	.47*	-.06	.63*
13. When I make plans, I am almost certain I can make them work.	-.20	.22	-.37*	.34*
15. In my case getting what I want has little or nothing to do with luck.[a]	-.43*	.07	-.37*	.23
16. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.[a]	.47*	-.14	.38*	-.01
17. By taking an active part in political and social affairs the people can control world events.[b]	-.03	-.60*	.04	-.59*
18. There really is no such thing as "luck".[a]	.38*	-.20	.47*	.14
20. How many friends you have depends upon how nice a person you are.	.24	-.04	.03	-.20
21. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.	.22	-.00	.33*	.06
22. With enough effort we can wipe out political corruption.[b]	-.03	.43*	-.22	.62*
23. There is a direct connection between how hard I study and the grades I get.[a]	.37*	-.00	.36*	-.11
25. It is impossible for me to believe that chance or luck plays an important role in my life.[a]	.45*	-.22	.56*	.03
26. People are lonely because they don't try to be friendly.	-.14	.24	.08	.19
28. What happens to me is my own doing.	-.42*	.23	-.29	.25
29. In the long run the people are responsible for bad government on a national as well as on a local level.	.09	-.36*	.22	-.27

Note.-- Each item is represented by the alternative scored for internal control. Omitted items 1, 8, 14, 19, 24 and 27 are fillers.
*--Factor loadings of ± .30 or greater.
a--Items loading ± .30 or greater on Factor I for both males and females.
b--Items loading ± .30 or greater on Factor II for both males and females.

TABLE 2

Rotated Factor Loadings of I-E Items for Males: Study II

Item	Factor I	Factor II	Factor III	Factor IV
2. People's midfortunes results from the mistakes they make.	-.16	-.26	.06	.06
3. One of the major reasons why we have wars is because people don't take enough interest in politics.	.12	-.54*	-.29	.07
4. In the long run people get the respect they deserve in this world.	.02	-.04	.59*	-.37*
5. The idea that teachers are unfair to students is nonsense.	.14	.00	.75*	.02
6. Capable people who fail to become leaders have not taken advantage of their opportunities.	.18	.11	-.21	.17
7. People who can't get others to like them don't understand how to get along with others.	.11	.03	.03	.12
9. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	.00	.18	-.07	.07
10. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.	.50*	-.19	.25	.07
11. Becoming a success is a matter of hard work, luck has little or nothing to do with it.	.20	-.10	.23	-.66*
12. The average citizen can have an influence in government decisions.	.06	-.76*	.15	-.22
13. When I make plans, I am almost certain I can make them work.	.69*	-.05	-.04	-.26
15. In my case getting what I want has little or nothing to with luck.	.35*	-.22	-.07	-.56*
16. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.	.11	.02	-.04	.61*
17. By taking an active part in political and social affairs the people can control world events.	.05	.69*	.16	.08
18. There really is no such thing as "luck".	-.20	-.04	.19	.05
20. How many friends you have depends upon how nice a person you are.	-.04	.19	-.08	.20
21. Most misfortunes are the results of lack of ability, ignorance, laziness, or all three.	-.03	.05	.06	.05
22. With enough effort we can wipe out political corruption.	.07	-.66*	.19	-.07
23. There is a direct connection between how hard I study and the grades I get.	-.05	.00	-.09	.05
25. It is impossible for me to believe that chance or luck plays an important role in my life.	-.27	.12	.13	.30*
26. People are lonely because they don't try to be friendly.	.23	-.11	.06	.03
28. What happens to me is my own doing.	.64*	.04	.09	-.08
29. In the long run the people are responsible for bad government on a national as well as on a local level.	-.08	.40*	-.29	-.33*

*--Factor loadings of $\pm$ .30 or greater.

TABLE 3

Rotated Factor Loadings of I-E Items for Females: Study II

Item	Factor I	Factor II	Factor III	Factor IV
2. People's misfortunes results from the mistakes they make.	-.06	-.03	-.03	-.02
3. One of the major reasons why we have wars is because people don't take enough interest in politics.	.01	-.53*	-.45*	-.09
4. In the long run people get the respect they deserve in this world.	-.10	-.06	.00	-.32*
5. The idea that teachers are unfair to students is nonsense.	.05	-.00	.74*	-.24
6. Capable people who fail to become leaders have not taken advantage of their opportunities.	-.07	.24	-.57*	-.13
7. People who can't get others to like them don't understand how to get along with others.	.02	.02	-.04	-.19
9. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.	-.20	.02	-.07	-.19
10. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.	.26	-.11	.12	-.44*
11. Becoming a success is a matter of hard work, luck has little or nothing to do with it.	.00	-.11	.14	-.75*
12. The average citizen can have an influence in government decisions.	.18	-.63*	.02	-.29
13. When I make plans, I am almost certain I can make them work.	.62*	-.26	-.22	-.14
15. In my case getting what I want has little or nothing to do with luck.	.33*	.05	-.20	-.47*
16. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.	-.03	.16	-.03	.13
17. By taking an active part in political and social affairs the people can control world events.	-.07	.59*	.08	.16
18. There really is no such thing as "luck".	-.32*	-.00	-.16	.10
20. How many friends you have depends upon how nice a person you are.	-.08	.07	.01	-.02
21. Most misfortunes are the results of lack of ability, ignorance, laziness, or all three.	-.01	-.05	-.00	.09
22. With enough effort we can wipe out political corruption.	-.03	-.70*	.07	-.01
23. There is a direct connection between how hard I study and the grades I get.	-.04	.05	-.06	.04
25. It is impossible for me to believe that chance or luck plays an important role in my life.	-.63*	-.08	-.15	.12
26. People are lonely because they don't try to be friendly.	.34*	-.08	-.07	.30*
28. What happens to me is my own doing.	.62*	-.05	.14	.13
29. In the long run the people are responsible for bad government on a national as well as on a local level.	.01	.60*	-.14	-.25

*--Factor loadings of $\pm$ .30 or greater.

Footnotes

1. The author would like to thank Igor Hrycenko for his help in data collection, and Martin Morf and Meyer Starr for their guidance with the statistical analysis.

2. Based on the overall comparability of the male and female samples, an additional factor analysis was performed on the combined sample of 321 students. The factor rotation for the combined sample yielded two factors with factor loadings on the 23 items comparable to those obtained from the male and female samples. In the case of the combined sample, there were fourteen items with loadings above $\pm$ .30: ten items for Factor I and four items for Factor II.

3. Randomized within the 19 added items were 3 filler items; thus, there were 22 items added to the 29 items (which included 6 filler items) of the standard I-E scale.

4. As in Study I, an additional factor analysis was performed on the combined sample of 509 students, resulting in factor loadings on the 23 items comparable to those obtained from the male and female samples.