

Locus of Control in Relation to Cognitive Complexity

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The present study explores the relationship between locus of control and cognitive complexity. It was hypothesized that persons having internal locus of control would show greater cognitive complexity than those having external locus of control, males would be more internally controlled than females and males would be more cognitively complex than females. 120 undergraduate students were taken as subjects. Among them 60 students were male and 60 were female students (Mean age=18.55years). Two tests were conducted to find out relationship between locus of control and cognitive complexity. One was Rotter's Internal-External scale and the other was Kelly's Role Construct Repertory test. It was found that internals are more cognitively complex than externals, males are more internally controlled than females and no significant sex difference exists in cognitive complexity.

Keywords: cognitive complexity, locus of control, Rotter's Internal-External scale, Kelly's Role Construct Repertory test.

In this world reinforcement is perceived by an individual as following some action of his own, not being entirely contingent, but for some it is typically perceived as the result of luck chance, fate due to powerful others or as unpredictable because of the great complexity of forces surrounding him, when the event is interpreted in this way by an individual, we have labeled this belief as external control. In fact, Rotter, Chance, and Phares (1972) state that some people have a tendency to believe that their actions and accomplishments are the result of luck or powerful others (external locus of control). If the person perceives that the event is contingent upon his own relatively permanent characteristics, we have termed this belief in internal control. These collectively referred as the locus of Control. According to Darley and Johnson (1993), individuals with an internal locus of control orientation use information to more effectively control their environment. In

comparison, individuals with an external locus of control orientation are less likely to actively search for relevant information because they perceive that they lack control over their environment. Individuals with an internal locus of control orientation would be likely to notice and accurately report on environmental cues because they actively engage in a search for relevant information.

Bieri (1955) was the first one who initiated the research with cognitive complexity within the general framework of Kelly's (1955, 1970) personal construct theory (summarized by Adams-Webber, 1996a). Kelley's (1955) theory of personal constructs implied that the cognitive complexity is the property of cognitive structure. Each person relies on a unique system of personal construct to interpret his or her own behavior and that of others (Adams-Webber, 1997). Cognitive complexity is a construct, which is intended

to indicate something about the person's structuring of his social world. More specifically, cognitive complexity is considered to be an information processing variable which helps to predict how an individual transforms specified behavioural information into social or clinical judgment. O'Keefe and Sypher (1981) defined cognitive complexity as the number and differentiation of constructs in a person's social/cognitive belief system. We can identify the cognitive complexity as a structural variable, which is intended to reflect the relative differentiation of a person's system of dimension for constructing behavior. Bieri (1955) defined cognitive complexity as the relative degree of differentiation of an individual's system of personal constructs for interpreting behavior. Cognitive complexity may also be defined as the capacity to construe social behavior in a multidimensional way. A more cognitively complex person has a more differentiated system of dimension for perceiving the behavior than does a less cognitively complex individual.

The measurement of cognitive complexity indicates the degree of differentiation of the personal constructs construed by the participant, that is, the degree of non-overlapping of these constructs. People who had a higher cognitive complexity related positively to their degree of confidence. (Adams-Webber, 2003).

The present study was proposed to find out the relationship between the locus of control and cognitive complexity with the assumption that person with internal control are more cognitively complex than external control. The present study incorporated gender of the subject as an independent variable.

Hypotheses:

- i. Males would be more internally controlled than females.

- ii. Persons having internal locus of control would show greater cognitive complexity than those having external locus of control.
- iii. Males would be more cognitively complex than females.

Method

Sample:

120 undergraduate students served as subjects of this study. Among 120 subject, 60 were male and 60 females. The average age of male participants was 18.7 years and of female participants was 18.4 years.

Tools:

The tools used in this study are Rotter's External and Internal Scale and Repertory test by Kelley.

I-E scale: It is used for measuring the locus of control. The first attempt to measure individual differences in a generalized expectancy or belief in external control as a psychological variable was begun by Phares, E.J. (1955). Phares developed a Likert type scale with 13 items stated as external attitudes and 13 as internal attitudes. Phares work was followed by James, W.H. (1957). James's test still used a likert format and had 60 items, 30 items of which were "fillers" used to disguise the purpose of the scale. This measure referred to as the James-Phares Locus of Control Scale. Consequently, after various refinements, the scale eventually devolved into the well-known 23 items Rotter's I-E-Scale, a detailed description of which was presented by Rotter in a monograph (Rotter, 1966).

In the present study this 23 items scale was used for accessing locus of control. Each item consists of two parts a and b and the subject has to select anyone of the two parts with which he agrees. After giving the instructions subjects were asked to mark a tick on any one part of a question or item i.e. a or b. After completion of 23 items I-E scale

was taken back. Same procedure was applied to all cases.

Repertory Test:

A technique for measuring the degree or cognitive complexity among one's perceptions of others is offered by the Role Construct Repertory Test (RCRT) developed by Kelly (1955). In Repertory Test the subject is presented with a grid containing spaces for persons to be judged (columns) and rows for constructs. The list of role titles represents a sampling of individuals presumed to be of personal importance to the subject these may include parents, friends, teachers, relatives and so on including both positive or liked and negative or disliked persons. Each of the 10 columns is identified by a different role type selected to be representative of the meaningful persons in the subject's social environment. The 10 rows of bipolar constructs which are provided were selected on the basis of being representative of the dimensions elicited from subjects. After the subject has listed the names or initial of each of 10 persons who best correspond to be in 10 role types, he is instructed to use a six step likert type scale in rating all ten persons he has listed on the first provided construct for example the first construct dimension is 'Outgoing Vs Shy' each subject has to rate each of ten persons on a scale of -3 (outgoing) to 3 (shy). Following this subject rates all 10 persons on the second construct dimension and so on through all 10 rows.

Instructions:

"Below is given a graphic chart consisting of 10 columns and 10 rows, the other is given a six step rating scale. You have to fill these constructs which are in the rows, in the columns according to six step rating scale positively or negatively, for example, first construct dimension in outgoing – shy and first type role is 'yourself' you have to rate yourself on a scale of -3 (outgoing) to 3 (shy) following this you have rate all types of role on the rating

scale."

Scoring:

In the Repertory test, cognitive complexity is measured comparing each rating in a row with the rating directly below it, in the other rows on the matrix. In comparing any two construct rows a score of one of one is given for every exact agreement of ratings on only one person. This matching procedure is carried for all possible comparisons, and scores for each comparison are added to give one total score. Since there are 45 possible row comparison in 10 * 10 matrix, the highest possible score is 450. A score of 450 would indicate that the subject gave the same ratings on all bipolar constructs to all of the role types. On the other hand, a person with a score as low as 100 is presumed to be relatively cognitively complex as he uses constructs differently in discriminating among people.

Results and Discussion

Table 1. Significance of the difference between the Mean Scores of males (N=60) and females (N=60) on the I-E scale

| Mean | Combined S.D. | t |
|---------|---------------|--------|
| Males | 12.17 | 1.98 |
| Females | 14.84 | 2.46** |

** p< 0.05

The obtained significant sex difference between males and females supported the hypotheses that males are more internally controlled than females which proves the fact that females perceive their action as the result of luck chance, fate due to powerful others or as unpredictable, the event interpreted in this way are relatively permanent characteristics of an individual, who are externally controlled. On the other hand males perceive that their action is contingent upon their own relatively permanent characteristics, the event interpreted in this way are relatively permanent characteristics of an individual,

who are internally controlled. Since the mean difference between males and females on the I-E scale was found to be significant. Further analysis was done separately for males and females.

Table-2 Significance of the difference between externally controlled males (N=26) and internally controlled males (N=34) and, externally controlled females (N=21) and internally controlled females (N=39) on cognitive complexity scale

| | | Mean | SD | t |
|---------|-----------|--------|-------|--------|
| Males | Internals | 103.61 | 30.93 | |
| | Externals | 121.11 | 21.15 | 5.25** |
| Females | Internals | 113.50 | 57.82 | 2.93** |
| | Externals | 150.00 | 46.67 | |

** p < 0.01

It was hypothesized that persons having internal locus of control would show greater cognitive complexity than those having external locus of control. The obtained results were statistically significant and supported the hypothesis. These results can be explained in the light of previous studies. Two of the earliest reported investigations providing information in regard to cognitive activity as a function of locus of control were those by Seeman and Evans (1962) and Seeman (1963). Both studies reported the fact that internal had more information relevant to their personal conditions than did externals. Seeman and Evans has said that among tuberculosis patients, internals had come to know more about their own conditions than had externals. Seeman (1963) said that among reformatory inmates, internals exhibited greater learning about the attainment of people than had externals. Internals did not differ from externals however, when the information presented for learning was less personally less relevant. Differences were prominent only when the learning concerned means toward a valued end. Since these early publications a series of investigations have been reported that further support the

hypothesized cognitive differences between persons with internal versus external control orientation. In one study; Davis and Phares (1967) gave their subjects the task of attempting to influence another subject's attitudes towards Vietnam. Subjects were led to believe that the experimenters had a file of data available about each prospective influence. The main dependent measure consisted of the number of the questions that subjects asked of the experimenter about their specific influences.

The authors had hypothesized that internals would be more likely to seek information than externals, so as to become more prepared for the task. Davis and Phares also instructed their subjects as to the likelihood of their being effective. One group received skill directions, another luck direction and the third were offered no special instructions regarding their likelihood of successful persuasion. In the group receiving the luck instructions, no difference in information seeking were found. However internals request more information in both the skill and no instructions group. The results indicate that externals engaged more in the preliminary steps of data gathering than internals which in turn might increase their probability of success were the task actually to transpire. This difference was not obtained when subjects were instructed that there was less likelihood of them being able to influence change in attitudes, adds to the credibility of the results.

In another study reported by Phares (1968) internals and externals were compared in their tendencies to use information for decision making. In this experiment subjects learned 10 bits of information about four males to errorless recall. A week later subjects had to guess which of the eight girls and which of the ten occupations were most suited to each of the four men. Financial rewards were offered for correct matching. Information utilization was measured by the number of

reasons given for the matches made as well as the correctness (from previous information) of those reasons. Internals were found to give more reasons and more correct reasons at that, than externals. This led Phares to conclude that internals are more likely make use of information that externals are equally aware of, and that therefore internals should have a greater potential for effectiveness in their social environment.

Lefcourt and Wine (1969) had also reported some data about the manner in which internals and externals attend to social interaction while attempting to learn about another person. Lefcourt and Wine found that internals made eye contact more often than did external subjects. Internals also made more observations than externals of the target persons. The number of observations of eye contact was related to the frequency with which the subject observed that person's facial areas. These authors concluded that internal subjects are more likely to attend to cues providing information which can help to resolve uncertainties.

Another set of studies had included measures of I-E and differentiation as predictors of cognitive activity (Lefcourt, Gronnerud and Mac Donald 1973 , and Lefcourt ,Sardoni, and Sardoni 1974) these investigators predicted that internal highly differentiated individuals would be the earliest to recognize that something untoward was occurring as a word association test nominally given to check the verbal facility presented a gradually increasing number of sexual double entries. Internals exhibited excessive time delay earlier in the list than externals, indicating an earlier development of awareness. The first sex response made to the double entry came earliest from the internal highly differentiated subjects. However it was external but the internal low differentiated subjects who were the last to respond to with sex words. The resulting interaction between I-E and differentiation was

highly significant. Videotaped facial expressions indicated that internal low differentiated group also showed more signs of puzzlement throughout the test. In brief internal highly differentiated subjects seemed to be more cognitively alert and active than other subjects, they perceived the nature of the stimulus list early in the task, tested out their hypothesis about same and gave some visual indication of 'knowing' what was happening sooner than did other subjects.

Overall the researches regarding cognitive activity and I-E tend to support the contention that persons with internal control expectancies tend to be more cognitively active than those with external control expectancies. Internals seem to know more about what is important to them, and seem more eager to gain information that would help that would help them to increase their probabilities for successful experiences. In skill tasks, where control is possible, internals took decidedly more deliberate and cautious than externals. Externals on other hand seem more involved in chance, tasks, expending time and effort at decisions which seem of little concern to internal. Nevertheless I-E itself explains only a limited percentage of the variance in the cognitive tasks. As evidenced in an overview and replication of his own work Seeman (1967) found support, albeit weak support for his linkage between locus of control and knowledge of valued information.

On the basis of above studies we can say that internally controlled persons are more cognitively complex than externally controlled persons. It was also found in this present study because the people who are internally controlled believe that they exercise some control over their destinies, and perceive their reinforcements as consequence of their own behavior. They do not give any importance to luck, chance and fate in their life. So they have more information relevant to their personal conditions and so they are more cognitively complex than externals. On the other hand

externals believe that outcomes are not determinable by their personal effort and so they have less information about environment and other persons.

Table 3. Significance of the difference mean scores of males (N=60) and females (N=60) on the cognitive complexity scale

| | Mean | Combined SD | t. |
|---------|--------|-------------|------|
| Males | 114.50 | 35.71 | 1.71 |
| Females | 132.93 | | |

It was also assumed prior to the conduction of study that there would be significant sex difference in cognitive complexity. Males were supposed to more cognitively complex than females. The obtained results had not shown a significant sex difference for cognitive complexity. Table 3 shows that the difference between cognitive complexity of males and females is not significant. Although the difference between the means is not significant but it is sizable enough to demonstrate that males may be supposed to have more cognitive complexity. The results of the study by Irwin show that males are more cognitively complex than females.

It can be concluded that persons possessing internal locus of control will have more cognitive complexity than the persons who are externally controlled. But no sex difference can be demonstrated in the case of cognitive complexity. There is sex difference in the locus of control between males and females, so it can be said that males are more internally controlled than females.

Practical Implication:

Both locus of control and cognitive complexity are important variables in overall development of beginning psychologists and counselors. Results of this research have implication in the improving the training programs in psychology and counseling.

Secondly, the results also have implication in working with clients with adjustment problems due to the orientation of their locus of control.

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