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Implicit Intelligence and Achievement Motivation in Relation to Academic Achievement

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Abstract – The aim of this study was to find out the relationship between academic achievement, implicit intelligence and achievement motivation. The main objectives of the present study are to examine the relationship of achievement motivation with academic achievement and to explore the relationship between implicit intelligence and achievement motivation. The sample consisted of 200 male adolescents with 16 to 18 years age group with the average age of 16.8. The adolescents were assessed with, Implicit Theory of Intelligence Scale and Achievement Values and Anxiety Inventory. Pearson's Product Moment method of correlation was used to analyze the data of present study. The results revealed that incremental belief about intelligence correlate positively with academic achievement (r= .35, p< .01) Entity belief about intelligence has shown negative relationship with academic achievement (r= -.18, p= .01). Need for achievement and achievement value correlated positively with academic achievement. The respective correlation coefficients are .39 (p< .01) and .33 (p< 01).

Keyword: Implicit Intelligence, Academic Achievement, Achievement Motivation

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1. INTRODUCTION

Research on implicit theories of intelligence addresses lay perceptions and conceptions of intelligence. Implicit intelligence is typically differed with the more traditional research on explicit theories of intelligence, that is, states about the nature of cognitive performance and individual differences therein. It can be stated that research on implicit theories is more important approach because its influence extends to voting preferences, everyday social interactions, and coping as well as evaluations related to scholastic and jobs (Hogan & Hogan, 1994; Hong, Chiu, & Dweck, 1995; Sternberg, 1988). In current social-cognitive research, implicit theories as an overall framework for explaining and making meaning of experience, as well as an influence on behavior of the individual (e.g. Molden & Dweck, 2006). It was found that children who experienced failure in the social and academic realms found some children who failed exhibited a more "helpless" behavior than others (e.g., Diener & Dweck, 1980; Goetz & Dweck 1980). This helpless behavior involved the children attributing their failures to their own personal inadequacies, as well as seeing the difficulties they were having as impossible to control. Other children had a much more positive point of view on their failures– these children were more likely to view failures as indicative of a lack of effort, and were much more likely to want to, and have confidence in their ability to control such failures. Such responses of behavior of individual were labeled as "mastery-oriented" responses to failure.

Dweck and Leggett (1988) suggested that, in accordance with previous studies, children differ on the extent to which they see their intelligence as changeable or malleable. Some children are more likely to favor an *incremental theory* in which they believe that their intelligence is a malleable characteristic, one which they are able to control, change and improve with effort, where as other children endorse an *entity theory* in which they see intelligence as a fixed factor, one which cannot be controlled or changed over time. Later research went on to study these different aspects on a scale of "implicit theories," with one end of the scale indicating a more "incremental" theory, and the other end indicating a more "entity" theory. (e.g., Erdely & Dweck, 1993; Robins & Pals, 2002). In addition, further studies found that implicit theories affected goals and behaviors in the academic realm as well as the social realm (e.g. Erdley & Dweck, 1993; Erdley, et al., 1997; Beer, 2002).

The influence of implicit beliefs about intelligence and the impact of those beliefs on the evaluative meanings of performance outcomes in the classroom are critical issues, worthy of investigation. The implicit theories of intelligence

model (Dweck, 1999) have gained significant attention as a framework with which to conceptualize individual differences in academic related cognition, affect, and behavior. Research has demonstrated that children possess one of two implicit theories of intelligence (entity vs. incremental). This theory of intelligence, in turn, orients children toward particular goals, which in turn shape response patterns to success and failure experiences in the classroom (Dweck, 1999; Dweck & Bempechat, 1983; Dweck & Leggett, 1988).

There is significant overlap between Dweck's implicit theory of intelligence and attribution theory's classification of ability along the stability dimension (Graham, 1991). Although attributions and attribution styles are a central part of Dweck's model, they are seen as existing within the context of people's self theories and goals (Dweck, 1999). In essence, Dweck suggests that an individual's theory of intelligence (entity vs. incremental) provides the framework from which many attributions will be made. This framework exists by middle to late grade school, as children then understand aspects of both theories, but tend to focus on one view about intelligence (Dweck & Bempechat, 1983).

2. ACHIEVEMENT MOTIVATION

The motivation of achievement related behaviour deserves the good research attention. The construct of achievement motivation or need achievement often abbreviated as n-Achievement has its origin in earlier psychological researches carried out in different labels specifically "Success and failure", "Ego involvement", and "Level of Aspiration" (Allport, 1943;Sears,1942). It has historical connections with the research conducted by the pioneers in German psychology (e.g., Lewin ,1926). The former attempted to explain the achievement related behaviour of subjects in his laboratory utilizing the concept of "determining tendency", the latter employing the concept of "quasi-need". Gotschaldt (1933) regarded the origin of achievement motivation to be striving for social prestige.

By the end of the 20th century, several competing conceptualizations of achievement motivation came into existence and co-existed. These have utilized social-cognitive and achievement goal theories in accounting for individual competence - relevant strivings. Various goal constructs, were proposed to account for action in achievement domain, "achievement goal", was commonly defined as the purpose of task engagement (Maehr, 1989) and the specific type of goal adopted was posited to create a framework for how individuals interpret experience and act in their achievement pursuits (Dweck, 1986; Nichous, 1989). Achievement goals were considered as a desire to develop, attain, to demonstrate competence at any of the activity. In past number of researcher's contrasted different types of achievement goal and examined their effects on cognitive, affective, and motivational processed. Dweck and Legett (1988) have differentiated performance and learning goals; Ames (1984, 1992) and Butler (1992), compared ability and mastery goals; Nichous (1979, 1984) and others (Koestner et al. 1987; Ryan, 1982; Sansone, 1986) have differentiated ego involvement with task involvement or with neutral control conditions.

3. ACADEMIC ACHIEVEMENT

The word 'academic achievement' is a very broad term which indicates the learning outcomes of pupils. Achievement of those learning outcomes requires a series of planned and organized experiences and hence learning is called a process. In this process of achievement of change in behavior occurs, one cannot say that all pupils react at the same level of change in behavior during the same span of time. The level of achievement reached by the pupils is called academic achievement of the pupils in school.

There are some indications, from previous research, that negative expectancy may lead to poor performance and the beliefs about incremental and the beliefs about incremental ability may lead to enhanced efforts and improve performance. Therefore believers of entity and incremental hypothesis theory are supposed to differ in their efforts, interest and resultantly in academic achievement. Therefore aim of this study to examine the relationship of academic achievement with implicit intelligence and achievement motivation.

4. MAIN OBJECTIVES

1. To explore the relationship between implicit intelligence and academic achievement.

2. To examine the relationship of achievement motivation with academic achievement.

3. To explore the relationship between implicit intelligence and achievement motivation.

5. HYPOTHESES

1a. Incremental belief about intelligence is positively related to academic achievement.

1b. There is no relationship between entity belief about intelligence and academic achievement.

2. Achievement motivation is positively correlate with academic achievement.

3a. Incremental belief about intelligence is positively related to achievement motivation.

3b. There is no relationship between entity belief about intelligence and achievement motivation.

6. METHOD

Sample- The sample for the study was drawn from various Senior Secondary Schools in Bhiwani, Hissar, and Rohtak Districts of Haryana. A total of two hundred male subjects were drawn through cluster random sampling. Approximately equal numbers of students were taken from arts science commerce streams. The age ranged of the subject from 15 to 18 years, with a mean of 16.8 years. The selected subjects in the sample covered a wide range of socio-economic status and come from different demographical setting. Since all the selected schools were affiliated to Haryana Board of School Education, academic atmosphere in these schools may be treated as homogeneous.

7. TOOLS: -

1. ***Implicit Theory of Intelligence Scale*:-** Implicit intelligence of the subjects was measured by using Implicit Theory of Intelligence Scale- ITIS (Abd-El-Fattah and Yates, 2007). This scale measures one's belief about intelligence in terms of entity and incremental notion. **Entity** refers to one's perception that his /her intelligence is a fixed, uncontrollable trait that cannot be changed with effort. **Incremental** refers to one's perception that his/her intelligence is a controllable, malleable quality that can be increased and improved with effort and investment. The reliability of the ITIS was measured by applying the congeneric model approach, the reliability estimates of the entity and incremental factor were .87 and .88 respectively.

2. ***Achievement Values and Anxiety Inventory: -*** Achievement motivation of the subjects was measured by using Mehta's (1980) Achievement Values and Anxiety Inventory (AVAI). This measure consists of 22 items, in form of descriptive statements of situations depicted in the pictures of a thematic appreciative measure of n-Achievement. Each item is followed by six responses. These responses also are based on the stories written to TAT type pictures. Two each of the six responses are achievement related (AR), task related (TR) and unrelated to achievement (UR). Respondents have to check and respond to each item. The inventory yields four scores (i) AR, the number of achievement related responses, (ii) TR, the number of task related responses, (iii) UR, the number of responses unrelated to achievement, and (iv) AIVI- The total scores which is obtained by subtracting the number of UR from the number of AR, which represents achievement motivation, i. e., achievement values.

The reliability of the inventory was assessed by applying KR-20 formula it was found to be .67, which can be considered as satisfactory (Mehta, 1980). The construct validity of AVAI scale was established through factor analysis of AVAI scales along with n-Achievement. The AIVI and AR scores showed high positive loading on the factor of n- Achievement, where as the UR and TR showed high negative loading.

3. ***Academic Achievement:-*** The academic achievement of the subjects was recorded throughout two academic years from the school files. It was measured by overall examination marks of IXth, Xth grades for XIth graders and marks of Xth and XIth grades for XIIth graders. Finally, the marks of both the examinations were taken together to have a more reliable and overall index of academic achievement.

Procedure-After seeking subjects willingness for the participation in the study, they were tested in class room setting with adequate facilities for ventilation, light, and sitting arrangement. The ITIS (Implicit Theory of Intelligence Scale) and AVAI (Achievement Values and Anxiety Inventory) being group tests were administered in one session to the subjects in the groups of 15-18 students in respective class room. Tests were administered strictly in accordance to the instructions and administrative procedures described by receptive test authors.

Statistical Analysis:

The obtained data were processed by running SPSS for various statistical analyses most pertinent to the objectives of the study. Pearsonian correlation was the main analysis on the basis of which the findings of the study were interpreted and discussed.

8. RESULTS AND DISCUSSION

CORRELATIONS:

After ascertaining that the obtained data meet the requirements of Product Moment Method of correlation, by and large the correlations were computed among all the measure used in the study. The obtained intercorrelations are reported in Table-1. Degrees of freedom being 198(N-2) the

correlation coefficients of .14 and .18 are significant at .05 and .01 levels of significance respectively. The correlation between different domains is reported under separate headings.

(i) Correlations between measures of implicit intelligence and academic achievement:

An inspection of the inter correlation matrix reveals that intercorrelations between the measures of implicit intelligence and academic achievement are significant but of modest degree. It is interesting to note that entity and incremental belief of intelligence (implicit) hold different direction of relationship with two beliefs about intelligence. The entity notion of intelligence correlates negatively with academic achievements (r = -.18, P = .01). It suggests that the beliefs of intelligence fixed and uncontrollable trait, which cannot be changes through effort and has detrimental effect on ones academic achievement. On similar line Bridgeman (1974) and Stipek and Gralinski (1996) have concluded that negative expectancy about one's ability may lead to poor performance. Dweek (1991) noted that entity theorists believe performance reflects ability and that clever people succeed irrespective of task difficulties or effort.

As expected incremental beliefs about intelligence was found to correlate positively with academic achievement. The correlation equals to .35, which is a bit substantial. This has the meaning that those believe intelligence or general ability is malleable perform better in academics where effort and motivation matters a lot. Therefore, incremental theorists believe that intelligence can be increased through interest and effort and consequently they make more effort to boost their capacity and performance. This motivation coming from high expectancy and exerted effort leads to performance improvement. The results of same of the earlier studies, e.g., Muller and Dweck (1998), Nauta et al. (1999) have also hinted on this pattern of relationship. However the findings of Furnham Chamorro-Premuzic, and MeDougall (20034) reported that personality is better predictor of academic performance than cognitive ability and implicit theory of intelligence. Therefore belief about intelligence may have self enhancing (incremental) or self -defeating (entity) effects on academic performance.

(ii) Correlations between measures of achievement motivation and academic achievement:

The intercorrelation between measures of achievement motivation and academic achievement are substantial and positive. The present study used fore scores of achievement motivation inventory, two of which are motivation related but two are unrelated or task related. The achievement related factor of achievement motivation is positively correlated with academic achievement, the correlation equals to .33 (P<.001).This higher side of modest correlation suggest that higher achievement values facilitate academic achievement. This positive relationship between achievement values and academic achievement is consistent to the findings of (Shaw, 1961; Green & Farquhar, 1965; and Cock and Halwari, 1999). AIVI score that reflects need for achievement has shown relatively higher correlation with scholastic achievement. The correlation is .39 which is significant at .001 probability level. It is pertinent to mention here that AIVI score obtained by subtracting UR from AR, which is taken as more direct measure of n-Ach as compared AR. Along with other researchers (e.g., Mehta and Kumar,1985), the author of the inventory (Mehta 1980) obtained significant positive correlation with total school marks. Therefore among all four AVAI inventory scores AIVI (n-Ach) is a better predictor of academic performance.

Table 1. Interco relation Matrix

Variables	ENTY	INCRE	AR	TR	UR	AIVI	ACH
ENTY	-	-.03	-.12	**.18**	.14	-.14	**-.18**
INCRE		-	**.20**	-.03	-.07	**.21**	**.35**
AR			-	**-.55**	**-.63**	**.75**	**.33**
TR				-	-.10	**-.40**	-.09
UR					-	**-.60**	-.03
AIVI						-	**.39**
ACH							-

r=.14 at .05 level r=.18 at .01 level

Since UR (unrelated to achievement or avoidance motive) and TR (task related) scores are related inversely to AR and AIVI, these two are negatively related with academic achievement also, though the correlations are low and non-significant. The task related (TR) responses correlate with academic achievement to degree of -.09 (p> .05). Whereas, the correlation of UR, i.e., unrelated to achievement equals to -.03, which is almost close to zero.

(iii) Correlations between measures of implicit intelligence and achievements motivation:

The correlations between the measures of implicit intelligence and achievements motivation are low in general, the correlations range between -.14 and .21. Out of the eight correlations four are significant, two at .05, probability level and two at .01 probability level. Entity factor of implicit intelligence correlates negatively with AIVI (n-Ach), the correlation is -.14 (p = .05). It has shown positive correlation with task related (TR), correlation equals to .18 (p≤01). It means people who believe that intelligence fixed entity and can't be enhanced by efforts or hard work tend to be low

in achievement motivation and higher in task related activities.

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