

TEACHER EFFICACY: IN TERMS OF TEACHERS' CONCEPTIONS OF THE NATURE OF ABILITY AND THEIR MOTIVATIONAL STYLES[#]

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The construct of 'teacher efficacy' as framed by Bandura (1977) was investigated along with such affective characteristics as teachers' conception about the nature of intelligence or ability and their motivational style in a correlational research design. The results confirmed the two factors of teacher efficacy; 'self efficacy', and 'teaching efficacy', as uncorrelated and independent dimensions. The latter strongly correlated with teachers' conception of human ability as an incremental quality. Teachers' motivational styles (intrinsic, extrinsic) which were uncorrelated were moderately associated with conception of ability as incremental quality. Subjects with high 'teaching efficacy' endorsed incremental beliefs about intelligence significantly higher than low scorers, however, the dimension of personal efficacy' also contributed moderately to incremental belief scores. Persons high on both factors scored highly on incremental beliefs about intelligence and vice versa. Neither level of teacher education courses nor length of teaching experience, as teacher characteristics, influenced teacher efficacy score. Beliefs about ability as an incremental quality, as a positive affective, dispositional characteristic, appears to underlie teacher efficacy beliefs.

There is evidence that teachers' beliefs in their efficacy to instruct students account for individual differences in teacher effectiveness (Brophy & Avertson, 1977; Brookover & Lozette, 1979; Brookever, Schweitzen, & Wisenbaker, 1978). Berman and McLaughlin (1977) found that the most important characteristic determining the effectiveness of change agent in schools was teachers' sense of efficacy — a belief that teacher can help even the most difficult or unmotivated students. It implies that when teachers face any difficulty, they discover appropriate remedy rather than believing those students can not learn. It is in this dispositional affective context that the present

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investigation explores the construct and meanings of the construct of teacher efficacy in Pakistan.

Researchers in Psychology and education have generally based the conceptualization of teacher efficacy on the theoretical framework of Bandura (1977) which is largely grounded in psychology. He conceptualized two dimensions of efficacy; 'efficacy expectation' — a belief that one has the skill and ability to bring about student success, e.g., "If I really try hard, I can get through to even the most difficult or unmotivated students" (keyed as agree); and 'outcome expectation' — perception of the extent to which teaching can overcome the influence of factors external to the teacher, such as home environment family background, parents and pupils ability factors, e.g., "when it comes right down to it, a teacher really can not do much because most of the students motivation and performance depends upon his or her home environment" (keyed as disagree). The former is a self-efficacy belief assessed by level of agreement with the statements, whereas the latter is a belief of being effective and controlling external factors and limitation assessed by level of disagreement with the statement(s). Outcome expectations and efficacy expectations are differentiated because individuals can believe that certain behaviour will produce certain outcomes but if they don't believe that they can perform the necessary activities, they will not initiate relevant behaviour or if they do, they will not persist.

Majority of the studies of teacher efficacy in the psychological traditions have used the procedure used by Ashton and Webb (1986), and Gibson and Dembo's Teacher Efficacy Scale (1984) developed after Bandura's concept of teacher efficacy. Similar to Bandura's efficacy expectation and outcome expectation, Gibson and Dembo have named teachers' Personal Efficacy (PE) and their Teaching Efficacy (TE) as two simultaneous discrete dimensions of teacher efficacy.

The purpose underlying the present investigation is to explore the meanings of Bandura's two-facet model of teacher efficacy across different populations and school settings in Pakistan, by means of Gibson and Dembo Teacher Efficacy Scale. Secondly, this investigation is aimed to find whether individual differences in efficacy in teachers can be explained as an affective characteristic independent of the influence of teacher education, training and teaching experience. Thirdly, would more efficacious teachers prove better growth agents in the development of pupils abilities and learning and if so what type of

ability beliefs underlie teacher efficacy is another point of investigation here.

The researchers conceptualize that teacher efficacy depends on teachers conceptions of nature of ability. Sternberg, Conway, Ketson, and Bernstein (1981), and Nicholls (1984) have originally investigated children's conception of the nature of ability or intelligence as determiner of their goal orientation towards school achievement. Adults have similar conceptions or implicit beliefs about the nature of human ability. One theory is that human ability or intelligence is a malleable and controllable quality, the other is that it is a fixed, predetermined, uncontrollable entity that is beyond any change. The present researcher conceptualize that subjects with high score in teaching efficacy beliefs will tend to endorse incremental views regarding the nature of human intelligence and those who have poor teacher efficacy beliefs will be prone to endorsing a fixed, entity view of intelligence, and will be concomitantly less intrinsically motivated in making an effort for changing or increasing ability of the students. The researcher wonders whether teacher's implicit conception regarding the nature of intelligence as malleable or fixed quality and their motivational orientation (extrinsic or intrinsic) combined, will determine teacher efficacy better than the former characteristic would do alone and whether level of teacher – education courses or qualification and teaching experience influence teacher efficacy beliefs. The above research questions lead to the formulation of the following hypotheses:-

- I. Bandura's two facet model of teacher efficacy is a theoretically meaningful cognitive psychological construct and Gibson-Dembo teacher efficacy scale developed after such a model would be potentially a useful measure for teachers in Pakistan.
- II. Teachers' with high "teaching efficacy beliefs", i.e., those believing in the power of school to change pupils would strongly endorse incremental view of ability and would be more guided by self-motivation than other teacher.
- III. Teachers conception of ability as incremental quality (X1) and their motivational orientation (X2) combined, as independent variables will determine teacher efficacy (Y) strongly than either variable would do alone.
- IV. Different level of teacher – education course or degree possessed by the subjects and their varying length of teaching

experience as cognitive causative variables would significantly influence the affective teacher efficacy beliefs.

METHOD

Sample

Study-I

Out of 424 male students enrolled in Bachelor of Education (B.Ed.) programme of Government College of Education, Lahore, Pakistan, a sample of 61 prospective teachers was drawn by selecting every seventh student. Their mean age was 23.8 years. They were administered Gibson and Dembo Teacher Efficacy Scale in Urdu at the completion of their B.Ed. programme, 1997. The purpose of this study was to pilot the said scale on a sample of prospective teachers.

Study-II

All the 47 students enrolled in Master of Education (M.Ed.) programme, 1998 were included in study-II as experienced teachers. They had an average teaching experience of 7 years. Nearly half the subjects (23 out of 47) had a master's degree in Science or Mathematics, and the other half had a master's degree in Humanities/Arts. Their age ranged between 30-42 years, with a mean age of 34 years.

Instruments

Gibson and Dembo's 16 Items Short version Teacher Efficacy Scale

Gibson and Dembo (1984) claimed 16-item short version of their Teachers Efficacy Scale (TES) to have reliability similar to their 30 items standard scale. We used the 16 items plus three others items from the original 30 item scale that referred to adequacy of the pre-service preparation of teacher, an area deemed relevant for pre-service subjects of study-I. The scale so used had 11 items pertaining to Personal Efficacy (PE) and 8 pertained to Teaching Efficacy (TE). It was

earlier piloted on B.Ed. pre-service teachers which indicated alpha reliability coefficient of .79 for PE and .76 for TE sub-scales. Iqbal and Ahmad (1996) and Woolfolk and Hoy (1990) reported Cronbach alpha of .74 for TE scale and .82 for PE scale on a sample of 182 pre-service teachers. Items are scaled from strongly disagree (1), to strongly agree (6); PE items keyed by level of agreement, TE items scored by level of disagreement.

Ability as Incremental Quality Questionnaire

A 15-item alternate response questionnaire on Ability as Incremental Quality (AIQ) was constructed. The statements pertained to teachers' conception of intelligence or ability as increasable, e.g., "Achievement depends upon hardwork and effort", or fixed quality, e.g., "You can learn many new things but your smartness remains pretty much the same". The statements are responded by agreeing or disagreeing with them. Score on this scale can theoretically range between 0-15. The pilot test of the questionnaire revealed a K-R 20 index of .73 on subjects of study-I.

Teachers' Motivational Orientation Questionnaire

Another measure used in this study is a 20 item, teachers Motivational Orientation Questionnaire (MOQ). It yields two sub-scale scores on intrinsic/self motivation, e.g., "I like teaching to other jobs" and extrinsic motivation "Dull students depress their teachers. Respondents agree or disagree with the items. The K-R. 20 index is .71 and .67 for self motivation and external motivation sub-scales respectively. The two motivational styles are uncorrelated ($n=.185$) and independent, on the current data.

Procedure

The subjects responded to the questionnaires during regularly scheduled classroom periods. They were assured anonymity. Study-I involved pilot testing of Teacher Efficacy Scale (TES) and Ability as Incremental Quality Questionnaire (AIQ) to prospective teachers near the end of their B.Ed. course. It took the subjects 30 minutes to complete the form. The experience teachers (Study-II) in addition took

MOQ and Background Information Items around the mid-term of course.

Statistical Analysis

Pearson product-moment correlations were calculated to ascertain the structure of the Teacher Efficacy Scale in terms of its two factors; personal efficacy and teaching efficacy and their relationship to teachers' incremental conception of intelligence and their motivational orientation. The latter two characteristics were then determined by level of PE and TE in 2 x 2 cross table, and tests of significance were also computed.

To determine teacher efficacy (Y) from ability as an incremental quality (X1) and teachers' motivational orientation (X2), multiple correlation ($R = 1.23$) was computed to ascertain to what extent composites X1 and X2 as independent variables, cause the consequent teacher his efficacy score (Y). The later was also explored as an outcome of teacher-education courses, and teaching experience.

RESULTS AND DISCUSSION

Structure of Teaching Efficacy

An analysis of data on both prospective and experienced teachers revealed that TE and PE sub-scales of the Gibson and Dembo efficacy scale as used in this investigation, are un-correlated and independent of each other ($r = .046$ and $.088$, respectively). Similar properties of the scale were formed by Gibson and Dembo (1984), who reported a correlation of $.171$ on 182 elementary school teachers in California School Districts. Woolfolk and Hoy (1990), replicating Gibson and Dembo (1984) two factor solution of the scale also found them as uncorrelated ($r = .008$). The two factors were named by them as 'Personal teaching efficacy', and 'General teaching efficacy' close to Bandura's two facets of personal expectation and outcome expectations, respectively. Pakistani data confirms the independence or uniqueness and the two factors. Regarding its meanings the relationship of the two facets of teacher efficacy to other related characteristics is explained below.

Relationship with Other Characteristics

Inter-correlation's between PE, TE factors and other relevant variables of the study, namely ability as an incremental quality and teachers' motivational styles were explored.

As explained earlier, teachers' beliefs about the nature of ability or intelligence refers to teachers' conception of ability as a fixed trait or a malleable characteristic. A teachers motivational style was conceived as predominant self regulated or externally motivated.

Table 1

Correlation matrix among various variables or measures: Study II (N=47)

Variables	I	II	III	IV	V
I Teacher self-efficacy	-	.096	.126	.301*	.289*
II Teachers out-come expectation	-	-	-.453*	-.258*	-.015
III Incremental intelligence	-	-	-	.405**	.211
IV Self-motivation	-	-	-	-	.185
V	-	-	-	-	-

*df=45; *p < .05; **p < .01*

Table 1 indicates that personal efficacy is equally significantly correlated with both styles of motivation but un-correlated with conception of ability as an incremental quality ($r = .126$). On the other hand, teaching efficacy is strongly related with self-motivational orientation, and beliefs in the nature of ability as incremental characteristic but it is un-correlated with an external motivational orientation ($r = .015$). Clearly indfferentiated motivational and absolute beliefs patterns emerged for persons on the two dimensions of efficacy.

- 1) The more the subjects believed in the efficacy of teaching (TE) to overcome home and background outside factors, the stronger they endorsed conception of ability as an incremental quality and were districtly internally guided and self-motivated.
- 2) Subjects who had confidence in their skill and abilities to teach (personal efficacy) appear to be influenced by both internal and

external inducements but held lesser beliefs in the nature of ability as incremental quality.

With the set of above characteristics associated with TE, a teacher would act as a facilitator of the pupils and their 'ability builder'. Persons who hold such beliefs hold that school can counteract the effects of pupils' family background to improve their ability through educational intervention. Concomitantly they are likely to entertain high student outcome expectations. Some other researchers (Ashton & Webb, 1986; Eccles & Wigfield, 1985; Marshall & Weinstein, 1984) have also noted that TE dimension has much in common with teachers' belief is the mutability of intelligence. Their self instructional and self monitoring aspects involve them in task and their persistence and efforts are fortified by their optimistic conception that abilities can be enhanced and efforts can be fruitful in correcting the situation.

On the other hand, persons entertaining high self efficacy (PE) belief as teachers, may hesitate to make efforts to invest in pupils in view of their modest beliefs in the increasability of intelligence and overcoming external obstacles. A consequent low outcome expectation would demoralize the teacher and undermine his motivation and effectiveness in work. A response pattern that deters individuals from confronting obstacles or that prevents them from functioning effectively in the face of difficulty must ultimately limit their attainments. Brophy and Avertson (1977) posit that teachers were less effective when they had low outcome expectation and as such did not assume personal responsibility for making sure that students learned.

Dimensions' Interactive Relationship to Ability Beliefs and Motivation

The cognitive-behavioral pattern of teacher efficacy presented above is explored further in that PE and TE dimensions being uncorrelated, scores on one may differ from the other in several ways. The present researcher explored what combination of different positions on PE and TE interactively characterize subjects' incremental beliefs about ability and their motivational styles. Four such combinations were identified on the basis of medium splits of high and low scores on TE and PE dimensions, juxtaposing these categories in 2x2 cross table. Mean score in each of the four categories on beliefs about ability as incremental quality, as well as motivational style (shown in Table 2), predicted by level of PE and TE, indicated interactive influence of these two dimensions of efficacy on the

predicted characteristics of ability beliefs and motivational style in the experienced teachers.

Table 2

Beliefs about intelligence as incremental quality and motivational orientation by level of PE and TE.

I. AIQ Mean Scores:		<i>Teaching Efficacy (TE)</i>		
		High	Low	Total
<i>Personal Efficacy (PE)</i>	High	10.68 (1.42) <i>n</i> = 13	9.15 (2.95) <i>n</i> = 11	9.97 - <i>n</i> = 24
	Low	10.32 (3.42) <i>n</i> = 11	7.08 (2.02) <i>n</i> = 12	8.62 - <i>n</i> = 23
	Total	10.15 <i>n</i> = 24	8.07 <i>n</i> = 23	
II Self (intrinsic) Motivation Mean Score		<i>Teaching Efficacy (TE)</i>		
		High	Low	Total
<i>Personal Efficacy (PE)</i>	High	6.25 (1.25) <i>n</i> = 13	5.29 (1.02) <i>n</i> = 11	5.81 - <i>n</i> = 29
	Low	5.10 (1.70) <i>n</i> = 11	5.36 (1.27) <i>n</i> = 12	5.23 - <i>n</i> = 23
	Total	5.72 <i>n</i> = 24	5.32 <i>n</i> = 23	

Note : Standard Deviations are given in parentheses.

: The higher the score the higher the incremental conception about intelligence (I), and the higher the score the higher the self motivation orientation (II).

- I. Teacher high on both TE and PE dimensions have the highest incremental ability score and those low on both dimensions have it the lowest. The two categories emerge as distinct, contrast groups with significant differences in their mean scores ($M = 3.60$, $t(23) = 5.22$, $p < .001$). It transpires that when scores on both dimensions are high, high self competence beliefs coupled with high pupil outcome expectation interactively boost beliefs in ability as an incremental quality. Such persons or teachers are “incremental theorists” and “ability builders” of the pupils. In the opposite category, incremental ability scores drop to the lowest. Here low TE dimension appears to pull down the incremental conception of ability more than the low PE dimensions does (see, Table 2 diagonally) because of their higher relationship ($r = .453$, $p < .01$). Logically, beliefs about intelligence as a fixed quality would undermine teacher expectations of appropriate student outcome.
- II. Teachers high on one dimension and low on the other have comparable incremental ability belief scores and differences between the means of these categories are trivial ($t = .63$, ns).

Subjects high or low on both PE and TE dimensions appear as clearly identifiable cases of teacher efficacy in terms of being incremental theorist or otherwise.

In a high-low combination on these dimensions, low TE scores seem to cut at incremental conception more strongly than the low PE position. The stronger the TE, the greater incremental beliefs and associated self-motivational style. Alternatively, high PE supplements low TE in terms of incremental beliefs about ability. A low PE and TE score cut together at incremental beliefs to the lowest level, much more significantly.

Joint Determination of Incremental Beliefs From TE And PE Scores

Relationship between cognitive dimensions of PE and TE and psychological characteristic of motivational to be theoretically meaningful and significant (Table 1). There is evidence for internal validity among these concepts. The construct of teacher efficacy therefore can be applied in Pakistan using Gibson and Dembo procedure. Hypotheses I and II are thus supported, however in

pursuance of hypothesis III, multiple correlation (R) between the causative variables; incremental beliefs about ability (X1) and motivational style (X2) combined, and TE (Y) the dependent variable only modestly raised the correlation index [$R(1.23) = .433$] from the simple correlation between TE and incremental beliefs about intelligence ($r = .405, p < .01$). Because of the overlap between the two causative variables, the second (X2) variable could not uniquely contribute its influence to associate or determine TE strongly.

Relationship with Teacher Characteristic

Whether different level of teacher-education courses (B.Ed., M.Ed.) and years of teaching experience influence teacher efficacy as contemplated in hypothesis IV was next examined (see Table 3).

Table 3

Mean scores B.Ed., Pre-service and M.Ed., Experienced Teachers

Teachers (Experience and Education)	<i>N</i>	<i>PE</i>	<i>TE</i>
<i>Study-I</i>			
B.Ed., Pre-service Teachers	61	49.70 (6.29)	31.08 (4.67)
<i>Study-II</i>			
M.Ed., Teachers with an average of 7 years experience	47	53.88 (5.47)	30.33 (4.76)
		$t(106) = 3.39, p < .01$	$t(106) = 0.73, n.s.$
M.Ed., with 3-7 years experience	21	53.57 (4.21)	30.00 (4.59)
M.Ed., with 8-18 years experience	26	53.15 (5.31)	32.75 (4.33)
		$t(45) = .25, n.s.$	$t(45) = .40, n.s.$

Note: Standard Deviations are given in parenthesis.

Range: PE=42-62 scores, TE=21-42 scores.

Difference between mean PE scores of experience teachers and the prospective teachers were statistically significant. The M.Ed., programme as advance course logically seems to have added to the teachers personal efficacy beliefs. The educational courses thus did

orient teachers to high self efficacy, however their views about the extent to which schools could act to change students, i.e., TE scores, remain undifferentiated between these groups. Between more or less experienced teachers, the mean scores on personal efficacy and teaching efficacy are not differentiated at all, however, small sample does not warrant any conclusion in this regard.

CONCLUSION

In sum, high scores on both PE and TE dimensions on the short version of Gibson and Dembo (1984) Teacher Efficacy Scale as used in this study can be usefully applied in our condition to identify potential teachers who have such frame of mind as believing in the incremental nature of ability and entertaining outcome expectations of their teaching activities. A belief that education is powerful enough to overcome limitations imposed by the child's ability and home background (TE) is a positive orientation towards schooling and it serves maximization of intellectual development as a goal for education. Teacher efficacy is related to such significant variables as teacher education courses. High scores on both the dimensions of teacher efficacy is a predictor of incremental beliefs about ability as a cultivatable quality. Low efficacy score are associated with low incremental beliefs scores. Such an affective frame of mind cannot be overemphasized by educationists for teaching purposes. The proposed scale may well be further applied to research on psychological and dispositional characteristic of incremental ability beliefs, expectations and motivation styles of teachers in the context of teacher efficacy in our population. Future researches may well be based on operational data on actual efficacious teacher behaviour to alleviate measurement concerns peculiar of self-report studies as the present one.

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