Journal of Behavioural Sciences, Vol. 21, Number 2, 2011

Effect of Teacher Efficacy Beliefs on Motivation

Iftikhar Ahmad*, Ph.D
University of Management and Technology, Lahore, Pakistan

The purpose of this investigation was to explore meanings of the construct of teacher efficacy and its effect on teacher motivation. Teacher efficacy comprises Teaching Efficacy (TE) and Personal Efficacy (PE) as two constituent dimensions. The two interact in terms of their effect on teacher motivation. More specifically we sought to find whether teachers would be more motivated when levels of TE and PE were high than when any one or both were low. In-service 227 secondary school teachers completed three quarters of their M.Ed. training at the time of this assessment and had, on average, 5.3 years of teaching experience. They were administered Teacher Efficacy Scale along with three measures of motivation namely Task Motivation, Ability-Effort Attribution and Beliefs about Ability as Incremental Quality. Across the median split of TE and PE scores four levels / groups of teachers were created to compare strength as well as motivation pattern of these groups. One of the findings was that task motivation and effort–attribution predicted TE strongly ($p < .01$) but PE was predicted with ability attribution and incremental ability percept in the inverse direction ($p < .05$).Thus PE dimension was found different or independent from TE. However, levels of analysis technique indicated that teachers high on both PE and TE dimensions were motivationally adaptive: They dominantly attributed 'effort' as cause of success / failure unlike low PE and high TE groups which displayed a mixed attribution of 'ability' and 'effort'. Motivation was modest where both the dimensions were weak. These findings bring out the significance of both competence or teaching efficacy and confidence or personal efficacy beliefs as reciprocally boosting teacher motivation.

*Correspondence concerning this article should be addressed to Dr. Iftikhar Ahmad, Professor, University of Management and Technology, Lahore, Pakistan
Email: iftikhar.ahmad@umt.edu.pk

Keywords: teacher efficacy, teacher motivation, ability as incremental quality, effort-ability attribution

Research on teaching and teacher education which has overemphasized knowledge and skills in building teacher so far has shifted its focus, during the last four decades, to teacher cognition, thought processes, and belief system. Numerous studies examined changes in beliefs and attitudes of teachers and its impact on teacher effectiveness (Pajares, 1992; Fang, 1999). Beliefs are a wide area indeed: This study explores teacher efficacy beliefs, as encompassed in the construct of '*Teacher Efficacy*' and determines how these influence teacher motivation. Teacher efficacy beliefs pertain to a judgment that teachers have the capacity to impact student performance even where students are difficult to handle or are unmotivated (Guskey & Passaro, 1994). Teacher efficacy involves two related but different dimensions: Teaching Efficacy (TE) or 'Competence' and Personal Efficacy (PE) or 'Confidence'. The former pertains to teachers' evaluation of their ability to bring a positive change in student engagement and learning; the latter is teachers' cognition that pupils are teachable despite their background conditions. In short, efficacy effects the effort people invest in work. It shapes enthusiasm and level of teacher motivation (Allinder, 1994; Burley, Hall, Villeme, & Brockmeier, 1991). RAND studies (1976) which introduced the construct of Teacher Efficacy used only two items to measure it: One each tapping TE and PE and found the composite scores strongly related to reading achievement among university students. The score also related to amount of teacher change and percentage of project completed (Midgley & Feldlaufer, 1989).

Bandura (1986) held that teacher efficacy is a skill as well as a motivation guided by one's beliefs. Both in-service and prospective teachers develop their beliefs about teaching from years spent in the classroom both as student and teacher. In Bendura's terminology (1970) teaching efficacy is synonym with 'outcome expectation' – the degree to which teacher believes environment can be controlled in terms of school conditions, students' back ground factors etc. and personal efficacy would be closer to self efficacy or teachers' beliefs in their capacity to bring about a positive change in students. Unless people believe they can produce desired results to their actions they have little incentive to act or to persevere in the face of difficulty. Moreover, such beliefs appear to be consistent, stable and even formidable. According to Bendura, beliefs are best indicators of decisions people make including those about job. Assuming that problems in teaching are attitudinal more

than that of capacity or skill in the context of Pakistan with 65% pass rate in matriculation and 45% in higher secondary school level, this study is focused on assessing thoughts and beliefs of teachers about their own selves, students and the work-environment and the motivational implications thereof. These environmental and context factors influence efficacy beliefs accounting for individual differences in teacher effectiveness (Gibson & Dembo, 1984).

Certain formidable beliefs such as 'concept of ability' account for academic achievement and intelligence in general and poor educational outcome in particular. Ability is popularly construed as a fixed and predetermined quantity (Elliot & Dweck, 1988). School teachers tend to generally endorse deterministic view of ability (Nicholls & Miller, 1983). There is evidence that those who take ability as a fixed quantity pursue *ego*-centered goals and involve pupils in self worth concerns more than in learning (Maehr & Nicholls, 1980) whereas those who take it as an incremental quality *task*-involve the pupils so that they learn better. In third world developing countries such as India and Pakistan, ability is assumed by the common folk as largely God-gifted, predetermined and a natural talent. Such beliefs undermine the importance of training and development in learning situations such as school and colleges. If people believe they have some talents and lack others then they are less likely to seek to learn and more likely to try to live based on what they can already do and what they believe they know. On the other hand if people believe more in their capacity to learn, this significantly increases the importance as well as chances of training and development. Such a 'growth mind-set' promotes concept of life-long learning. The 'fixed-ability mind-set' on the other hand, retards effort-making. Children who are praised as 'working-hard' take on more challenging tasks than those who are praised for being 'born-smart'. Culture promotes particular type of beliefs that impact teaching and learning. For example fixed ability beliefs make one ego-involved and subjective; growth beliefs make people task-involved and effortful in learning style.

One's attribution style also reflects on work orientation and goals that underlay work. Weiner (1974) held that causal attributions mediate one's behavior. Teachers' attributions explain what teachers think of their students and what goals they have for thinking so. Attribution of *ability* or *effort* is salient to academic settings (Weiner, 1979). Higgens and Shaw (1999) found that attribution style moderates impact of controllability on helping behavior. In other words, helping behavior such as teaching is a function of perceived controllability of learning (a belief

whether student's capacity for learning is innately predetermined or it can increase with effort) as held by the teacher. In the former condition, teachers would be unsupportive and passive, in the latter case they would be supportive in their behavior as active facilitators.

The purpose of the present study is to ascertain the profile of in-service high school teachers in Pakistan in terms of their belief system and their motivational correlates. Second, the motivational implications of TE and PE aspects of teacher efficacy beliefs would be explored in interaction terms by means of 'levels of analysis' procedure to find if there are any reciprocal relationships and effects among variables rather than simple correlation relationship.

Hypotheses

1. Teachers would tend to believe that ability is predetermined or fixed rather than something that can be changed or enhanced with effort.
2. Teacher efficacy beliefs can be explained in motivation terms via teachers' concept of intelligence as a mutable quality, task motivation and effort-attribution.
3. Under conditions of high teaching efficacy as well as high personal efficacy, teacher motivation would be higher than when any one or both are low.

Method

Sample

Participants included 156 men and 71 women in-service teachers enrolled in Master of Education (M.Ed.) program. They had a B.Ed. degree as a precondition for qualifying entrance in teaching. Interested serving teachers apply for admission to M.Ed. program such as this group of participants. Half the respondents were, by requirement of admission policy, science or mathematics teachers; the other half were language, social studies or arts teachers and had studied these subjects at graduate level. Their average teaching experience was 5.3 years and about 58% were based in the rural areas. They were grouped together for going through a common training course in M Ed. Further, we kept this group intact for statistical analysis of the data. Else, bifurcation or any categorization into arts and science or male and female would have undermined the strength for statistical analyses.

Assessment Measures

The following instruments were used in this study.

Teacher Efficacy Scale (TES). The standard 16 items short version of the Teacher Efficacy Scale (Gibson & Dembo, 1984) was used in this investigation. Respondents were asked to rate themselves on a four point scale (strongly disagree – strongly agree) for typical teacher behaviors stated in the questionnaire. Examples: "I have enough training to deal with almost any learning problem; The hours in my class have little influence on my students compared to the influence of their home environment." Reliability estimates for the TE ($\alpha = .71$) and PE ($\alpha = .65$) components of Teacher Efficacy Scale (TES) were moderate in the local data. Henson, Kogan and Vacha-Hasse (2001) found across several western studies that average reliability index on TES was .778 and .696 for PE and TE dimensions, respectively.

Beliefs about Intelligence as Incremental Quality (BIIQ). A questionnaire was self-constructed to survey teachers' personal theories and beliefs about the nature of human intelligence. Examples: A less capable student can not succeed, no matter how hardworking he/she is; Students' memory power can be increased with training. Items were scrutinized by two experts who had knowledge of both measurement and personality theory. The initial set of 29 items was reduced to15 after item-analysis on the responses of 43 student teachers. They responded to each item by agreeing or disagreeing with the items. Eight items were keyed for 'disagree' whereas seven were keyed for 'agree' response. KR 20 estimate of the scale was .73. The BIIQ correlated with TE ($r = .42$ $p<.01$) and PE ($r = .12$) differently attesting to its concept validity.

Task Motivation Scale. Task Motivation Scale (TMS) was self constructed measure of 20 items drawn on Nicholls' Goal Perspective Theory (1978). The scale taps classroom instructional and evaluation techniques that characterize a teacher's approach as task or ego involved. Examples: I advise my students to carry out their school work without caring how others are doing it — task involvement; I am satisfied with only those students whose work is absolutely error less — ego involvement. Task-items were scored as "agree" and ego-items as "disagree". Thus the obtained score indicated strength of task-achievement relative to ego-achievement goals. For instance a score of 10 or higher on a scale of 20 items indicated a prevalence of task-orientation over ego-orientation and vice versa if the score is less than 10. Agree or disagree response to the statements are indicative of teacher's actual or preferred style in teaching-self focused or task focused. Items represent

strategies generic to the process of learning and teaching. The task and ego sets of items bear significantly discriminant validity in terms of their inter-correlation (r = -.62). The K-R 20 estimate of TMS was .72.

Teacher Attribution Style (TAS). A set of three items was self constructed and used to ascertain style of teacher attribution about students' (a) success, (b) failure and (c) achievement through ability, effort categories. The items were: What causes students to fail in studies; what make them do well in studies; what factors generally contribute to students' achievement? Respondents were asked to attribute 'effort' or 'ability' factor to items 1-3 above and then also rate the attributed factor on a 4-point scale (very important = 4, important = 3, less important = 2, least important = 1). Belief in intelligence as incremental quality (BIIQ) was correlated with Effort attribution (r = .277, p <.05) and with ability attribution (r = -.221) to assess the concept validity of TAS.

Procedure

Questionnaires were administered to the participants in the last semester of their M.Ed program. These were administered in the following order: TMS, BIIQ, TES, TAS and an information Blank in a regular class session for 5 points as credit for this work. The study employed regression analysis in predicting teacher efficacy via a set of three motivation questionnaire. Interaction effect between TE and PE aspects of teacher efficacy was studied on teacher motivation via median split of TE and PE scores. Validity and reliability estimates of the measures were worked out and reported as auxiliary analysis.

Results

Distributions of scores was normal on most of the measures used in this study except on PE scale where an obtained mean score of 26.7 appeared to be quite higher than a theoretically expected mid score of 20 on 8 items rated 1-4. The scores were concentrated at the upper end of the distribution. On the TE statements, mean score of 17 was slightly below the theoretical mid scale value of 20. Further, the respondent teachers were more 'effort' than 'ability' centered in their attribution style. They scored 1SD above the theoretical average score of 10 on task motivation scale and that of 7.5 on incremental ability percept (Table 1).

Variables listed in Table 2 were used to assess PE and TE dimensions of teacher efficacy in terms of their motivational impact. Important correlates and constellations are noted below: First, TE scores were

positively correlated with incremental ability percept whereas PE was inversely related. Second, TE was strongly correlated with task motivation and effort attribution; PE was unrelated to both. Ability attributions were negatively related to all of these save PE. Third, TE and PE were uncorrelated as distinct constructs; the ability- effort attribution style was significantly inversely related. This set of results revealed PE and TE dimensions as different in motivation pattern. The major correlate of TE is task motivation and that of PE is ability-attribution as well as incremental ability percept in the inverse direction. Task motivation, effort attribution and incremental precept of ability were a set of positively related variables.

Table 1
Mean, Standard Deviation and Reliability Estimates of Various Measures (N = 227)

Measures	Items	*M*	*SD*	Range	Reliability
Beliefs about Intelligence as Incremental Quality (BIIQ)	15	9.85	2.37	5-13	.69[k]
Task Motivation Style (TMS)	20	12.70	2.16	8-17	.78[k]
Effort (attribution)	3	8.97	2.06	5-12	.68[α]
Ability (attribution)	3	5.45	2.11	3-10	.59[α]
Teaching efficacy (TE)	8	17.40	3.34	10-26	.65[α]
Personal efficacy (PE)	8	26.75	3.42	21-30	.71[α]

Note. Variables 3-6 follow a rating scale (1-4) and variables 1-2 are dichotomous measures. α = alpha. k = KR-20.

Table 2
Inter-Correlation among Various Assessment Measures

Constructs	II	III	IV	V	VI
BIIQ	.23	.27*	.22	.36*	.32*
Task Motivation Style		.53**	.25*	.64**	.04
Effort (attribution)			.46*	.38*	.08
Ability (attribution)				.115	.205
Teaching Efficacy (TE)					.114
Personal Efficacy (PE)					

Note. BIIQ = Beliefs about Intelligence as Incremental Quality
* $p < .05$. ** $p < .01$.

TE & PE Levels of (Efficacy) Analysis

Overall, motivational correlates of TE attitude do not align with PE. To explore functional relationship between the two, *levels of analysis* technique was used. It held that essentially the same contents can be qualitatively different at different levels of interaction (Edward & Water, 1981). For this purpose high and low levels of efficacy groups were created across the median split of TE and PE scores. Four categories were thus formed as indicated in Table 3. The following results were obtained.

Table 3
Efficacy Levels of Teachers and their Mean Scores / Attribution Ratings

Variables	Hi, Hi (*N*=68)	Hi, Low (*N*=63)	Low, Hi (*N*=48)	Low, Low (*N*=48)	*F* (3,223)
Incremental ability	10.22	9.91	10.40	8.83	2.14*
Task Motivation	14.07	12.59	12.85	11.62	7.30**
Attribution for failure					
Ability	1.90	1.97	2.59	2.30	3.85**
Effort	3.17	3.32	3.15	3.28	1.52*
Attribution for success					
Ability	1.87	1.91	2.27	2.11	2.18*
Effort	3.53	3.32	2.35	2.62	3.71*
Attribution for achievement					
Ability	1.13	1.56	1.63	1.45	1.24
Effort	3.04	2.81	2.43	2.52	1.53

* $p < .05$. ** $p < .01$.
Hi, Hi = high TE - high PE level
Hi, Low = high TE - low PE level
Low, Hi = low TE - high PE level
Low, Low = low TE - low PE level

First, the simultaneous effect of (high and low) levels of TE and PE interaction influenced Task Motivation ($p < .01$) as well as Incremental Ability Percept ($p < .05$) significantly differently across the four groups. Thus high or low levels of one dimension combined with that of the other influenced motivation scores: those high on both dimensions pursued stronger task goals than those low on one or both. Specifically teachers with low level of PE had low task motivation than those with high PE. Second, teachers high or low in both dimensions had very distinct attribution orientation than those who were high in one and low on the other. Since high-TE, low PE group endorses relatively heavy attribution

for effort in all the three situations/questions of TAS than their counterpart in low-TE, high-PE condition; they were not from the same population. Thus levels of analysis procedure revealed what could not have been ascertained by simple Pearson correlation. The expectation of difference for attribution pattern of teachers at different levels of efficacy was supported. When both the attitudes were high, effort prevailed as dominant cause explaining both success and failure situation a frame of mind profitable for leaning and teaching work.

Teacher Efficacy Prediction

Correlation data provided indication of co-variation among the study variables. Thus multiple regression was run to fine-tune estimates of the simultaneous effect of the three antecedent variables namely concept of ability, task motivation and attribution style on teacher efficacy, the consequent variable. Incremental ability percept was placed as core variable in the regression equation that influenced the rest. Task motivation mediated the effect on TE and PE. Effort and ability attributions were also set in the regression equation as predictor variables. The regression was run for effect variables PE and TE separately. Important estimates from Tables 4-5 follow below:

1. Incremental ability had a significant positive effect on TE and a significant inverse effect on PE.
2. The effect of task motivation was robust in predicting TE but negligible for PE. On the other hand, ability attribution is salient to PE, but irrelevant to TE.
3. Nearly 47% of the variation in TE was explained in this model. The same was only 20% in the case of PE; ability attribution (β =.22, p< .05) and incremental ability percept (β = -.31, p < .05) as the major variable.

Task motivation was irrelevant to PE. *Effort* attribution could not contribute to TE following TMS in the regression sequence since the two were strongly correlated (r =.53, p<.01). It had, nevertheless, significant relation with TE (r = .38). The above shows how TE and PE differ from each other. These are however tentative findings. There is a need to explore other variables that can possibly explain PE attitude in motivation terms. Needless to say, PE appears as more complex and illusive construct than TE with relatively low alpha value.

Table 4
Multiple Regression Analysis for Teaching Efficacy

Variables	β	*SE*
$BIIQ_1$	.25*	.25
TMS	.62***	.25
Effort Attribution	.06	.23
Ability Attribution	.07	.22

Note. R^2 = .46. *p < .05. ***p < .001.

Table 5
Multiple Regression Analysis for Personal Efficacy

Variables	β	*SE*
$BIIQ_1$	-.31*	.34
TMS	.05	.38
Effort Attribution	.13	.34
Ability Attribution	.28*	.28

Note. R^2 = .20. *p < .05.

Discussion

The inflated mean score of PE scale initially appears to be due to "I can---" nature of items that were overrated by the participants possibly under the influence of their vicarious mastery experiences in M.Ed. training program. PE attitude is in consonance with a tendency for a strong ability attribution and an inverse view of the incremental perspective of ability or intelligence. It is also unrelated to task motivation and effort attribution for academic success. This denoted PE as self focused and motivationally low entity. Teachers low on PE had weak task motivation irrespective of their level of TE. However where teachers had a high score both on PE and TE, high task motivation was displayed. Where both the conditions were weak, motivation strength was minimal. TE condition, on the other hand, is conducive for both task motivation as well as incremental ability percept. The participants of this study seem to bear strength on PE which is associated with fixed ability percept. However they also have an average level of TE.

Ability and effort attribution as causes of students' success and failure respectively, was consistent with the findings of Weiner (1974). Low PE teachers attributed failure to ability significantly more than high PE group did. The rating was in the other direction on effort attribution for success. Again PE dimension indicated preponderance for ability attribution which is generally perceived in pre-deterministic perspective.

Thus they scores low on BIIQ. It is psychologically defensive to hold ability as responsible for students' failure but this appears to be a cultural fact, given the pervasiveness of such responses across all categories of efficacy. The multiple efficacy group, that is one which was high on both dimensions (hi-hi) endorsed *effort* more than *ability* attribution whereas this distinctiveness in attribution was diffused in the rest of the efficacy categories.

Incremental concept of ability and task motivation explained TE scores significantly but the same variables weakly explained PE scores suggesting a need to tap PE variance by other variables. The multiple efficacy (high TE and high PE) condition is suggestive of more adaptive framework for bringing change in students. PE appears to be less straightforward a construct than TE. However, high level of PE along with high TE conditions could create a productive functionality of both the attitudes favorable for teacher motivation. Functional relationship between the two efficacy attitudes needs to be researched further using different methods and samples. This investigation, needless to say, had the limitation of being a study which largely employed self report and there is likelihood of method variance confounding results. However, the present results are suggestive of fostering both the dimensions of efficacy equally well in teacher development effort. Ashton (1987) believes in powerful paradigm for teacher education on the basis of construct of teacher efficacy as it has demonstrated a consistent relationship to student achievement as well as to teaching experience (Benz, Bradley, & Alderman, 1992). Development of teacher efficacy through beliefs change program could well be a worthwhile aim of teacher education effort building up their motivation.

References

Allinder, R. M. (1994). The relationship between efficacy and instructional practice of special education teachers and consultants. *Teacher Education and Special Education, 17,* 86-95.

Ashton, P., & Webb, R. (1986). *Making a difference: Teachers' sense of efficacy and student achievement.* New York: Longman.

Bandura, A. (1986). *Social foundations of thought and action,* Englewood Cliffs. N.J: Prentice Hall.

Benz, C. R., Bradly, L., & Alderman, M. K. (1992). Personal teaching efficacy: Developmental relationship in education. *Journal of Educational Research, 8*(5), 274-285.

Burley, W. W., Hall, B. W., Villeme, M. G., & Brockmeier, L. L. (1991, April). *A path analysis of mediating roles of efficacy in first year teachers' experiences, reactions and plans.* Paper presented in the annual meeting of the American Educational Research Association. Chicago.

Edward, B. L., & Water, A. D. (1981). Moderating effects of achievement motivation and locus of control on the relationship between academic ability and academic performance. *Educational and Psychological Measurement, 41,* 585-589.

Elliot, E. S., & Dweck, C. S. (1988). An approach to motivation and achievement. *Journal of Personality and Social Psychology, 54,* 615-627.

Fang, Z. (1999). A review of research on teachers' beliefs and practices. *Educational Research, 1,* 63-76. doi 10.1080/0013188960380104.

Gibson, S., & Dembo, M. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology, 76(4)* 569-582. Doi: 10.1037/0022-0663.76.4.569.

Guskey, T., & Passaro, P. D. (1994). *Teacher efficacy: A study of construct dimension.* American Educational research paper presented in the annual meeting of the Atlanta Psychological Association-Atlanta.

Henson, R K., Kogan, L. R, & Vacha-Hasse. (2001). A reliability generalization study of the teacher efficacy scale and related instrument. *Educational and Psychological Measurement, 61*(3), 404-420.

Higgens, N. C., & Shaw, J. K. (1999). Attribution style moderates the impact of causal controllability information on helping behavior. *Social Behavior and Personality, 27*(3), 221-236.

Maehr, M. L.. & Nicholls, J. G. (1980). Culture and achievement motivation: A second look. In N. Waren (Ed.) *Studies in cross cultural psychology* (Vol.2), pp 221-267. New York: Academic Press.

Midgley, C., Feldlaufer, H., & Eccles, S. J. (1989). Change in teacher efficacy and student self and task-related beliefs in mathematics during transition to junior high school. *Journal of Educational Psychology, 81*(2), 247- 258.

Nicholls, J. G., (1978). The development of the concept of effort and ability, and perception of attainment and undertaking that difficult tasks require more ability. *Child Development, 49,* 800-814.

Nicholls, J. G., & Miller, A. T. (1983). Development and its discontents: The differentiation of the concept of ability, IN J.G. Nicholls (Ed), *Advances in motivation* (Vol.3), pp.185-218. Greenwich, C.T: JAI.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research, 62*, 307-352. doi:10.3102/00346543062003307.

Soodak, L., & Podell, D. L. (1993). Teacher efficacy and student problem as factors in special education referrals. *Journal of Special Education, 27,* 66-81.

Weiner, B. (1974). *Achievement motivation and attribution theory.* Morris Town, NJ: General Learning Press.

Weiner, B. (1979). A theory of motivation for some classroom experiences *Journal of Educational Psychology, 71*, 3-25.