The present study aimed at studying and applying the attribution theory in industrial setting. The main issues focused in the study were: (1) causal attribution for high and low efficiency by high and low efficiency weavers, (2) generality in causal attribution across self and others, and (3) impact of training on causal attribution and performance efficiency.

The results obtained regarding the three issues are discussed in this section.

**Causal Attribution for High and Low Efficiency by High Efficiency and Low Efficiency Weavers**

Findings regarding the first issue revealed that there was asymmetrical causal attribution for high and low efficiency by high and low efficiency weavers i.e., high efficiency weavers attributed their efficiency significantly more to internal, controllable and stable factors than low efficiency weavers did for their low efficiency. This finding reflected self-serving attribution i.e., high efficiency weavers made ego-enhancing attribution and low efficiency weavers made ego-defensive or ego-protective attribution. This self-serving biases can be viewed in the light of several theories and explanations. Heider's (1958) balance theory is one such theory which has direct relevance to this finding. Heider considered balanced state as a state in which every-
thing fits together "harmoniously" without stress in the person's life space. Thus for Heider the concept of balance has gestalt connotations and refers to intra-individual processes. A lack of balance results in stress and pressure towards change. In other words, imbalance results in tension which forces a change towards balance. In this context it can be said that if a person who fails or gives low efficiency or gets negative outcome and attributes it to internal and controllable factors then it is very likely that this attribution which implies some blame to person himself and hence a threat to his self-concept can produce imbalance or disequilibrium in person's psychological space as it does not fit with one's self-concept. Thus disharmony takes place which results in stress or pressure which becomes intolerable to one-self. As a person prefers balanced or harmonious state of his psychological environment, he tends to avoid any blame caused by internal attribution for failure (negative outcome) and is inclined to deny the responsibility of failure by attributing it to external factors or uncontrollable factors. Heider further suggested that a negative self-attribution may also be avoided because it would undermine the individual's self-esteem. Whereas on the other hand a person can maintain or rather enhance the self-concept by taking personal credit for achievements.

Another theory which can explain the findings of the present study is Festinger's (1957) cognitive dissonance theory. The
underlying notion of this theory is that if a person holds two cognitions that are inconsistent with one another, he will experience the pressure of an aversive motivational state called cognitive dissonance, a pressure which he will seek to remove, among other ways, by altering one of the two "dissonant" cognitions. In short cognitive inconsistency gives rise to pressure to reduce the dissonance. This motivational process that may affect attributional bias is self-consistency motivation (Korman, 1976). According to proponents of the cognitive consistency theory of motivation (Festinger, 1957; Heider, 1958; Korman, 1970), people prefer outcomes that are consistent with their self-concept and experience dissonance concerning outcomes that are inconsistent with their self-concept. Following this reasoning, attributing responsibility to oneself for self-consistent outcomes and attributing responsibility for self-inconsistent outcomes to external factors helps to preserve cognitive balance (Feather, 1969).

Earlier studies have demonstrated the effects of self-consistency motivation on causal attributions for success and failure (Feather, 1969; Feather and Simon, 1971; Fitch, 1970; Gilmor and Minton, 1974).

According to Heider's (1958) "naive analysis of action" model, attributions of causality are influenced by subjective needs and wishes as well as by the more objective evidence. The
literature on attribution of success and failure (e.g., Bradley, 1978; Hastorf, Schneider and Polefka, 1970; Snyder, Stephan and Rosenfield, 1978) labelled the effects of needs and wishes on attribution as ego-defensive, ego-biased, ego-centric, egotistic, ego-enhancing, or self-serving. Specifically, it was suggested that people attempt to enhance or protect their self-esteem by taking credit for success and denying responsibility for failure. In general the biased-attrition principle i.e., self-serving attribution is double-edged that is people indulge both in self-protective attributions under conditions of failure and in self-enhancing attributions under conditions of success.

According to Heider, (1958) the selection of an acceptable causal attribution depends on two factors: (1) the reason has to fit with the wishes of the person, and (2) the datum has to be plausibly derived from reason (p.172). Thus, assuming it is plausible to do so, we try to explain our behaviour in terms that "flatter us" and "put us in a good light". This formulation is, of course, quite consistent with social psychological theories predicated upon self-esteem maintenance (e.g., balance theory, dissonance theory).

Hastorf, Schneider and Polefka (1970, p.73) have also noted that "we are prone to alter our perception of causality so as to protect or enhance our self-esteem. We attribute success to our own dispositions and failure to external forces".
Several researchers (e.g., Larson, 1977; Luginbuhl, Crowe and Kahan, 1975; Wortman, Costanzo, and Witt, 1973) have found evidence for a "self-serving bias" in causal attributions; that is, people tend to attribute their successes to internal factors (e.g., ability and effort) and their failures to external factors (e.g., luck or task difficulty).

The notion that internal attribution of success and external attribution of failure are self-serving was also supported by Nicholls (1975) and Riemer (1975) who showed that such attributions are related to more positive affective states.

In their review, Miller and Ross (1975) raised two questions regarding the concept of self-serving attribution: (a) are there data to support the contention that people employ self-protective attributions after failure and self-enhancing attributions after success? and if yes, (b) are there non-motivational interpretations for this self-serving effect?

In response to the first question, Miller and Ross claimed to have found support for self-enhancing attribution but only minimal evidence for self-protective attribution. In response to the second question, Miller and Ross offered three informational non-motivational processes which may account for the association between success and internal attributions: (a) people are more likely to expect success than failure (Parducci, 1968) and people tend to take responsibility for expected outcomes (Feather, 1969), (b) people are more likely to perceive covariation, and there-
fore, a causal relation (Kelley, 1971), between their behaviour and increasing success than between their behaviour and constant failure, and (c) erroneous conceptions of contingency lead people to infer personal responsibility from the co-occurrences of their responses and desired outcomes (i.e., success) while the co-occurrences of responses and negative outcomes (i.e., failure) are ignored (Jenkins and Ward, 1965; Smedslund, 1963).

Although Miller and Ross emphasized that non-motivational factors relating to perception and information processing may account for this self-serving bias, later evidence (Larson, 1977; Miller, 1976) tends to support the notion that this attributional bias does indeed stem from motivational processes. It is assumed, however, that the magnitude of this effect depends on the extent to which self-esteem concern is aroused (Gunn, 1975) and on other factors, either motivational or informational, which influence attributional decisions. Specifically, when the need to maintain self-esteem is not aroused, subjects do not need to make self-serving attributions. Furthermore, the tendency to make self-serving attributions may be suppressed by motives other than self-esteem or by informational processes Miller and Ross (1975). Studies by Miller (1976) and Nicholls (1975) suggested that ego-involving outcomes tend to evoke self-enhancing needs.
In his review paper Zuckerman (1979) also noted that when data from those experiments specifically designed to rule out non-motivational explanations is considered, the self-serving hypothesis receives strong support. However, he added that it would be wrong to conclude that motivational factors are the sole determinant of self-serving attribution, or that the available evidence is firm proof of motivationally based distortion; but he contended that insofar as the evidence reviewed is concerned, the motivational explanation is more effective than any of its informational alternatives.

Whether self-serving effects or biased attribution reflects biases in information-processing or self-esteem maintenance motive is an important question. Zuckerman (1979) in his review although indicated that self-serving effects for both success and failure are obtained in most but not in all experimental paradigms, his examination of research in which self-serving effects are obtained suggested that these attributions are better understood in motivational than in information-processing terms.

In some cases, as in complex causal environment, the relevant causal factors in the situation are not ignored but are simply not perceptible to the person. According to Fischhoff (1976), it is not the attributional information processing that is being questioned, but the information that the attributor uses. This may happen due to either from inefficient informa-
tion gathering or hedonic distortion of what is happening, not from difficulties in handling or combining information.

Ego-centric assumptions are important when the evidence for the attribution is incomplete. For example, Heider suggests that attributions are often made on the basis of what he refers to as the "minimum data pattern" which is simple presence-absence test of object and effect.

Thus, one type of attributional errors stem from 'non-motivational' causes, such as unavailability or misuse of relevant information, while the other type of attributional errors have 'motivational' causes, and such errors serves in a ego-defensive or ego-enhancing way. But it is not yet clearly assessed that the particular attributions made by the subjects stem from motivational factors or from errors in information processing.

Weary (1979) noted that different explanations of self-serving attributions are not supported by empirical evidence collected so far and that what previous authors have viewed as a perceptual bias in the causal inference process may be better seen as a response bias or as a strategic self-presentation designed to maximize public esteem.

The relative explanatory values or power of the motivational and non-motivational interpretations of assymetrical causal attributions remains to be assessed (Miller and Ross, 1975).
The results of the present study have shown that those low and those high in efficiency attribute their level of efficiency differently, however, whether the self-serving bias observed in the present study stemmed from motivational processes i.e., motive to maintain self-esteem or from non-motivational information processing errors is not known. To answer this question specific experiments designed for the purpose need to be conducted.

Generality in Attribution

Regarding the issue of generality in causal attribution across self and other's efficiency, it was found that complete generality existed in attribution of reasons in high efficiency group; but in low efficiency weavers group although generality existed to a large extent but complete support was not obtained. However, in case of attribution of causal dimension, strong support was found regarding the generality both in high as well as in low efficiency weaver groups.

These findings are in line with Weiner (1979) who proposed that attributional style or general beliefs concerning causality for outcomes may influence how individuals perceive the causes in a specific situation.

Very few studies have been reported regarding the causal attribution across self and other. Feather and Simon (1971) found that outcome of self and other was attributed to same
causal factors. But complete support for generality was not found, as for positive outcome (i.e., success) and negative outcome (i.e., failure) separately, the attribution was not generalized.

Wortman, et.al. (1973) found generality for success, but for failure subjects assigned causality for their own performance to external factors but the same was not done for others' failure.

The findings of present study regarding generality in attribution of reasons for high efficiency supported the hypothesis, but for low efficiency weavers group, it was found that they attributed their low efficiency more to external factors than they did for the high efficiency of their counterpart weavers.

Regarding the generality of attribution of causal dimensions across self and other, a strong support was obtained for high efficiency as well as low efficiency weavers group. High efficiency weavers attributed their outcome as well as their counterpart weavers' outcome to internal, stable and controllable factors, whereas low efficiency weavers attributed their outcome as well as their counterpart weavers' outcome to more external, unstable and uncontrollable factors. This implies that although attribution of causal categories was not generalized completely, but the meaning of attributed causal categories i.e., causal dimensions were generalized across self and other in both high and low efficiency weavers.
groups. This finding becomes significant as it opens a new avenue in causal attribution research since no study on generality has incorporated all the three dimensions of causal attribution.

The obtained generality in causal attribution across self and other's efficiency implies that causal attributions provided by weavers are not limited to their own outcomes only, but are generalized to other's efficiency as well.

**Impact of Various Kinds of Training on Causal Attribution and Performance**

Regarding the third issue of this study i.e., whether training can bring about a change in causal attribution of low efficiency weavers and whether differential trainings had differential impacts on causal attribution and performance, it was found that training did influence causal attribution and performance and also that different kinds of training had differential impacts on causal attribution and performance.

Specifically, it was found that attribution changes were highest in combined attribution and skill training group. The same was the case in the impact of training on performance efficiency. This finding is significant since it shows the applicability of attribution theory in practical context i.e., firstly, people's attributions can be altered and secondly, the altered
attributions affect performance. There is hardly any study in real life situation on the changes in attribution and the effect of these changes on performance in job context.

Totman (1982) contended that it is very difficult to determine when people are misattributing in absence of any standard to judge the validity of attribution. He said that it is a requirement of attribution theory that we take as our data the accounts people themselves give so how can we say when they are misattributing? By what standard does the attributionist judge the attribution of others to be valid or invalid? But, in the present study, the criterion or standard for judging the validity of weavers' attribution was available because of the specific selection of position of weavers in the study and the criterion employed to select the sample of weavers. In this situation the real causes of weavers' efficiency were known to be lying within the weavers.

It was found that low efficiency weavers attributed their low efficiency mostly to external factors. This deviation from valid attribution in low efficiency weavers can be considered as invalid attribution or misattribution. Thus, there was a scope for altering the attribution of low efficiency weavers through training.

The findings provide support for the causal attribution model of action proposed by Weiner (1972). The model postulates that particular causal event i.e., success or failure gives
rise to particular causal attribution which in turn generates particular feelings that ultimately determine a person's action or behaviour. Due to the practical limitations of the study on the sample of weavers, it was not possible to apply the full model (i.e., "affect" was not included), therefore it can not be said confidently whether causal attribution influences the final outcome through "affect" or causal attributions can directly affect the performance. But it is assumed that shifting the low efficiency weavers' causal attribution from uncontrollable external or uncontrollable internal factors to controllable internal or external factors (particularly to "proper work method" that implies 'effort' which is an internal controllable factor) might have generated feelings like shame or guilt as proposed in theory in low efficiency weavers and these feelings might have stimulated them to improve their work practices.

It has also been found that changed attribution i.e., making the low efficiency weavers feel responsible for their own low efficiency alone is not sufficient to bring significant change in performance, because weavers may not have the required skills to do the job and hence might not be able to perform better even after change in their attribution. The results from both skill training and attribution training had shown that none of these by themselves improved performance significantly. The change in causal attribution would affect the
performance only when weavers have the skills to do the job in correct ways.

Some support for these findings comes from studies of de Charms (1972), Dweck (1975), Chapin (1976), Andrews (1978) and Hoffman and Weiner (1978) which report that attribution change affected performance, motivation and persistence. Also found was that success feedback or success experience not alone but along with attribution change affects performance or behaviour significantly. The findings of the present study are consistent with above mentioned studies, but the present study specifically included skill variable also and found that attribution change along with skill training affects performance significantly.

**SOME SIGNIFICANT DEPARTURES FROM OTHER STUDIES**

The significance of the present study lies in that so far very few attributional studies have been conducted in industrial setting, and almost no study has been done regarding the application of attribution theory to job performance. An attempt was made in the present study to apply it in training for the improvement of performance efficiency. So far in many laboratory studies hypothetical outcomes have been considered, whereas the present study included actual performance in industrial setting.
Again, unlike most studies which included only one dimension of causality the present study included all the three dimensions of causal attribution. Such other studies which included all the three dimensions, the meaning of the subject's causal attribution was usually interpreted by the researchers i.e., whether causes were stable or unstable, internal or external etc., assuming that accurate interpretation of the subject's causal attributions was possible.

Russell (1982) had warned that the translation by the researcher of causal attributions into causal dimensions, such as internal-external or stable-unstable involves the danger that the researcher and the attributor may not agree on the meaning of a causal attribution as attributional statements are often ambiguous and therefore very difficult to interpret. Moreover, even when the meaning of a causal attribution is clear, the attributor may perceive the cause quite differently than the researcher. As Weiner (1979) has noted that the placement of a causal attribution in terms of causal dimensions may vary greatly from person to person, as well as from situation to situation.

In this situation Russell (1982) suggested that it may be possible to assess directly how the attributor perceives his or her own causal attributions in terms of causal dimensions, rather than having the researcher code the attributional statements into dimensions.
The present study overcome the problem of coding the causes into dimensions by asking respondents to mention the causes of their high or low efficiency, and also the dimensions of the causes by asking the respondents whether each of the causes mentioned by them was internal or external to them, stable or unstable over a period of time and was controllable or uncontrollable by them.

Another positive feature of the present study was that there was no limit put on the number of causes to be mentioned by the respondents. This open-ended approach to assess causal attribution in new and specific situation has been advocated by researchers like Elig and Frieze (1979) who stated that subjects may find open response questions easier and more natural to respond to; these questions also have utility for the researcher who is asking for causal attributions in a new situation. Frieze (1976) also noted that there are problems with structured response measures, which confine subjects to a limited set of factors defined in advance by the experimenter as important for the situation as this set may include the factors of importance for some subjects but not for others. Open-ended response measure helps to avoid this problem as well as allow subjects considering causal possibilities that they may not have spontaneously considered.

Russell (1982) also pointed out that no measure so far has been developed to assess the respondent's perceptions of causes in a particular situation. Forgers, Morris and
Furnham (1982) also argued that context-specific causal categories need to be constructed before any analysis of attributions for real-life situation is attempted.

Another strength of the present study was that it also included training to change causal attributions in real-life condition to improve the performance efficiency of weavers. To this researcher's knowledge no study using attribution theory has so far been conducted in this context. The results of the present study have shown that causal attribution can be changed through training and that attribution change affects performance efficiency. However, it has been noticed that attribution change along with skill training affects the performance efficiency more than skill training alone or attribution training alone. This finding opens up possibilities of formulating retraining programmes for improving performance in job context.

LIMITATIONS OF THE PRESENT STUDY

Although efforts were made to make the study as complete as possible still it has some flaws and limitations. Firstly, since the theory of attribution was to be studied in the real-life situation, it became necessary to modify certain assumptions of the theory e.g., in place of success and failure, high and low efficiency were treated as causal events and to drop some assumptions which could not be tested in
the job situation. Thus, the full model of the temporal sequence of causal attribution was not tested.

For measuring the generality of causal attributions across self and other's outcome, the outcome also differed as the two groups of respondents were different in terms of their own performance efficiency i.e., some provided attribution for high and other's low efficiency while some provided attribution for own low and other's high efficiency.

In imparting the three kinds of training, although care was taken to isolate "skill" from "attribution" it was difficult to do so completely as some aspects of skill training included attribution also. Similarly it was also not possible to devote an equal amount of time on "skill" and "attribution" in combined training of skill and attribution as some of the points of skill training logically followed the attribution training and vice versa. In imparting the combined training of attribution and skill the duration of training also doubled as compared to skill and attribution training alone. Hence, the three types of training not only differed in content but also in time duration. It is not known what impact this difference in time duration had on the outcome of training.

CONCLUSIONS

(1) High efficiency and low efficiency weavers attributed their performance efficiency to qualitatively different causal factors.
(2) High efficiency and low efficiency weavers differed significantly in their perception of various causal dimensions of attribution.

(3) The three causal dimensions are interrelated significantly for high efficiency group, while the same was not the case with low efficiency group.

(4) Causal attributions for high and low efficiency were generalized, i.e., the causal attributions for own as well as the counterpart's efficiency were the same.

(5) All the three kinds of training, i.e., skill training, training in attribution, and skill training in conjunction with attribution training resulted in a significant difference in weavers' causal attribution for the dimensions of "controllability" and "internality" but not in "stability".

(6) Skill training by itself or attribution change alone was not sufficient to bring about a significant change in the performance of weavers whereas the skill training in conjunction with attribution change resulted in significant improvement in efficiency.

(7) A significant difference was found in causal attributions of trained and untrained weavers.

(8) There was a significant difference in "on-the-job" performance of trained and untrained weavers.
SUGGESTIONS FOR FURTHER STUDY

The present study has clearly shown that training can bring about changes in the causal attribution of weavers with poor efficiency records. The change in attribution from external uncontrollable or internal uncontrollable factors to controllable factors, when coupled with skill training helps in improving the performance of less efficient weavers. During the follow-up period of 7 months, the changes brought about through training were retained. In this study, an attempt was made to apply a theory of motivation in practical work setting. Although the results are encouraging but it would be premature to arrive at definite conclusions and make generalizations. Replication of similar studies in more situations as well as extensions of this work to other kinds of behaviours and in other types of achievement situations are required.

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