Chapter-I

Introduction

The concept of feedback has occupied a hollowed place in literature of applied psychology. It was first used by the developers of radio back in early 1900. Wiener (1948, 1950), a mathematician is usually credited with defining the concept of feedback to behavioural sciences and popularizing its use (Nadler, 1979). According to Wiener "Feedback is method of controlling any system by reinserting into it the results of its past performance". At most basic level, feedback is information about his or her previous behaviour (Anett, 1969). This is rather a scholarly way of saying that feedback is a system in which one learns from one's own mistakes to make better adjustments and improve performance. It provides some information about the correctness of response (Bourne, 1966).

Blum and Naylor (1984) have mentioned in their book of industrial psychology that information regarding one's own performance is a necessary condition for learning. This is consistent with the notion that "feedback is central to learning to expertise (Hogarth, 1981). If one has no idea of
Fig. 1: Showing the various types of feedback.
what is wrong; there is no way of knowing what to correct.

By providing necessary feedback, one learns to control one's own performance by observing, reacting and correcting previous mistakes (John E. Cyr. 1980).

The feedback can be categorised in various parts (Fig.1).

Depending upon the source of information feedback is differentiated as extrinsic and intrinsic feedback. When the knowledge about task performance comes from cues internal to the organism, such as muscle tension, general body equilibrium etc., this feedback is called intrinsic feedback. An example would be the knowledge about flight performance that a pilot might receive when flying blind simply due to gravitational forces upon his body. Extrinsic feedback, on the other hand, refers to cues about performance which come from sources outside the organism.

Extrinsic feedback, in itself can be categorized into primary and secondary feedback. Any
knowledge of results (KR) which can be considered as being an integral part of task itself is referred to as primary feedback. Information about performance from a source outside the task is called either secondary or supplemental feedback. For example, if one is to shoot the target, the target holes in target will provide primary feedback about performance; the comments and facial expressions of the instructor may be an excellent source of secondary feedback.

Both the primary and secondary feedback can be differentiated into general and specific feedback and augmented and summary feedback respectively (Fig. 1). General feedback refers to global primary feedback while specific feedback refers to very precise primary feedback.

Augmented feedback is used to describe information about performance that occurs almost concurrently with the actual performance; there is a minimal time lag between doing and secondary feedback. Because of this short time lag, augmented feedback is usually very precise information and accordingly ranks high on the information-giving quality of KR. While summary feedback as
the name implies, involves a delayed overall summary of task performance. It is thus more global in nature than is augmented feedback. For example, an instructor is to comment on each item individually as soon as it is completed by a trainee, this will be considered augmented feedback. If on the other hand, he is to wait until all the items have been completed and then discuss total test performance, this will be the summary feedback.

Besides, this feedback could be either direct or indirect. Direct feedback is more objective in its nature as it does not involve any other human being as a source of information; for example observing meter on gauge when controlling gasoline pump, clarity of sound while tuning radio, observing typed page while typing a letter. In indirect feedback the subject is not observing his performance directly rather than the performance is evaluated by some other sources and the information is provided to the subject e.g. acceptance or rejection of product by inspector.

Any kind of feedback it may be, generally it improves the performance on a task. It has been already mentioned and is clear from the above information that providing the necessary knowledge
of results helps in knowing one's own performance and provides one with the self-evaluation.

Feedback on job influences individual's performance in two ways. Firstly, it can provide the information to motivate the individual. Secondly, an information feedback can facilitate performance by making the individual aware of his errors and by providing the directions for correcting them.

The usefulness of feedback in improving the performance has been described as a thoroughly tested principle in modern day psychology (Chapanis, 1969). Fairly consistent with this principle, the efficacy of feedback to enhance performance was observed in laboratory (Church & Camp, 1965) and also in field studies (Payne and Hanty, 1955).

Archer and Kagan (1973) while measuring inter-personal communication skills, found that participants in the video tape feedback groups scored significantly higher than did the control group. The similar was concluded by Leamon, 1974; Quilitch, 1975; Cantano, 1976; Seligman and Darley, 1977.
The effect of feedback on performance, however, is not really so simple to understand. The question is what brings such changes in the performance. The various factors that influence the effect of feedback on performance are divided into two parts. First is related to the characteristics of feedback itself. These factors are external to the individual involved. Secondly, the changes in the internal environment are important, like the feedback influences the self-confidence level and finally the performance alters.

Among the first category the form of feedback and its characteristics will be discussed.

Whatever be the kind of feedback, i.e. extrinsic - intrinsic, primary - secondary, direct - indirect, it can take two forms i.e. either positive or negative feedback. Positive feedback may also take a form of praise, recognition, reward, admiration etc. It refers to the information yielded by a person or persons with the purpose of improving the task performance and raising the motivation of adults as well as children.

Vallerand (1983) indicated that the subjects receiving positive verbal feedback displayed a much
higher level of motivation irrespective of the amount of feedback.

Contrary to positive i.e. negative feedback is generally given with the intention to decline the performance. Besides the direct knowledge of poor results, reprimand, ridicule, sarcasm, criticism etc. are also included in this category of feedback. They produce progressively poorer results. Negative feedback was found to be less credible than positive feedback (Jacobs, 1973). It has a deteriorating effect on performance.

Hafner (1973) pointed out that negative reinforcement produced a successive decrease in the rate of responding in a task of ranking.

To summarise these effects in brief, positive consequences are associated with increases and negative with decreases (Snyder and Gerald, 1986). The effect of various forms of negative feedback was studied by (Maier, 1970). In this study reprimand has been shown to improve results, though all the other constituents of negative feedback caused declining effect on performance of college students.

Besides this, the usefulness of feedback in various conditions is influenced by its own characteristic. There are two major characteristics of feedback - credibility and power (Ilgen, Fisher and Taylor, 1979).

Credibility is the extent to which the
recipient of the feedback believes that the source can legitimately evaluate the recipient's past performance. Factors like supervisor's expertise, the extent to which he is able to observe the subordinate's performances affect the supervisor's credibility. Power is the formal power to control valued rewards of the subordinate. Fisher et al. (1979) reported that both credibility and power of source influence the extent to which feedback recipients—

(1) Accurately perceive the feedback.
(2) Believe that feedback is accurate.
(3) Desire to respond according to the feedback.

The feedback from personnel evaluation originates from some source; usually the individual's immediate supervisor (McCormick, 1981). As a result, the feedback message to the individual is not merely an information about his/her past performance but the information from certain person or persons about past performance. The latter cannot be stressed enough for the extent to which the individual's reaction to the person who provides the feedback.

Finally, the effect of feedback is determined by the level of self-confidence of an individual.
The positive knowledge of results enhances the level of self-confidence and a negative knowledge lowers the level of self-confidence which in turn may alter the performance level of an individual. Research on the effect of positive and negative feedback suggests that the low confident people are affected differently than high confident people by the success and failure feedback (Lckes and Layden, 1978).

Self-confidence seems to be one of the most important and heuristic concepts for the study of personality. Self-confidence connotes how individuals perceive their ability to succeed at a particular endeavor or how they judge their effectiveness once the task is finished.

Self-confidence seems to be related to self-esteem. According to Cohen (1959), a person with high self-esteem tends to deal with the life confidently and values the self highly. On the other hand, a person with low self-esteem tends to deal with life less confidently and places a low value on self.

Similarly, Schlenker et al. (1976) suggested that individuals with high self-esteem are accustomed to experience personal success with high self-confidence
levels. Individuals with low self-esteem, on the other hand, are accustomed to experience failure. From the above explained view points, it appears that there is a linear relationship between self-esteem and self-confidence. But Kimble and Helmreich (1972) suggested that individuals with moderate self-esteem are most independent and well-adjusted. Such individuals are more aware of their own strength and weaknesses and recognise that both personal successes and failure would occur. In contrast, individuals with high or low self-esteem have greater need for social approval.

Furthermore, females often tend to act like low-esteem subjects whereas males tend to act like high self-esteem subjects (Ickes and Layden, 1978). Lenney (1979) suggested that more attention should be focused on how the females and males lead to environmental situations. Although the favourable attitude from society for women's careers have increased, women are more likely than men to show comparatively low self-confidence level in achievement situations (Maccoby and Jacklin, 1974). The sex-difference in self-confidence has been found in many studies across a variety of tasks and settings. Crandall (1969), for example, while experimenting on numerous subjects performing various intellectual tasks found that in each case,
females had lower pre-task expectancies than did males. This conclusion was supported by Rychlak and Eacker (1962); Rychlak and Lerner (1965); Battle (1966); Montanelli and Hill (1969); and Feldman-Summers and Keisler (1974).

It is difficult to say whether these results are attributed to some fundamental hereditary sex-differences or to the expectations or learning from birth onward. Broverman et al. (1972) have reported that in general women are perceived as being dependent, passive and subjective and lacking such attributes as competitiveness, ambition and leadership ability. But gender differences in self-confidence appear to have been eliminated in different conditions (McMahan, 1973). A comprehensive review of literature clearly indicates that women do not display lower self-confidence in all achievement situations. In fact, there appear to be at least three kinds of situational variables that influence women's self-confidence relative to men.

First, whether women are lower in self-confidence than men depends upon the nature of the specific task. Stein, Pohly and Mueller (1971) stated that both boys and girls expected to do the best on those tests which were presented as
most appropriate for their sex and less well on those that were presented as sex inappropriate.

Women may make higher estimates than men at certain kinds of tasks, although it is not clear exactly what task dimensions underlie this effect (Nicholls, 1975).

Second the nature of sex-difference in self-confidence depends upon the availability of clear and unambiguous information on individual's abilities at a specific task. That is when externally provided information on their specific task abilities is unequivocal and immediately available, women do not make lower ability estimates than men. Feather and Simon (1971) found no sex-difference in confidence when the subjects were given information at a subsequent anagram test. However, when such feedback is absent or ambiguous, women seem to have lower opinions of their abilities and often do underestimate relative to men (Rychlak and Lerner, 1965).

Finally whether women are lower in self-confidence than men in a given situation appears to depend upon the presence and nature of certain social comparison or social evaluation cues. When
women work alone or in situations in which they do not expect their performances to be compared with those of others, their ability estimates are likely to be no lower than men's (Feather and Simon, 1971). However, when women work in situation in which certain social aspects of environment are emphasized, their estimates are usually lower than men. It is important at this point to consider the possibility that this effect occurs not because of women's genuinely low self-confidence but because of their simple desire to appear modest in front of others (Benton, 1973; House 1974).

Hence it is evident that gender influence the performance estimates, achievement behaviour and self-confidence. But this sex-difference was found to be altered due to the presence of some situational variables such as nature of specific task, social evaluation cues, the kind of feedback etc. In some experiments, presence of clearcut feedback even raised the self-confidence of women higher than that of men. In order to have an idea of the specific relationship between feedback and performance/self-confidence, the related studies would be reviewed in the second chapter.