CHAPTER I
INTRODUCTION
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Beliefs refer to a person’s subjective probability judgement concerning some discriminable aspect of his world; they deal with the person’s understanding of himself and his environment (Fishbein and Ajzen, 1975). More specifically, Fishbein and Ajzen (1975), have defined belief as the subjective probability of a relation between the object of the belief and some other object, value, concept or attribute. Thus a person may believe that he possesses certain attributes (that he is intelligent, honest, punctual etc.), that a given behaviour will lead to certain consequences.

Jones and Gerard (1967) have reported that beliefs refer to complex cognitions that relates two or more cognitive categories which do not define each other for example the statement, "higher education is too costly" is a belief because neither "higher education" nor "too costly" define the other. The statement merely relates two cognitive categories.

Interests, beliefs, attitudes, opinions and feelings etc. are important parts of our personality. They provide a directive, dynamic influence on our perception about ourselves and others consequently effecting our interpersonal behaviour. The distinctions between some of
the terms such as opinions, attitudes, intention, value, belief etc have some time been made (Fishbein and Ajzen, 1975). One distinction that has been repeatedly put forward is the age old trilogy of affect, cognition and conation and is mentioned over here. Affect refers to a person’s feelings toward and evaluation of some object, person, issue, or event; cognition denotes his knowledge, opinions, beliefs and thought about the object; and conation refers to his behavioural intentions and his actions with respect to or in the presence of the object. This suggest a classification consisting of four broad categories. Affect (feeling, evaluation), cognition (opinion, beliefs), conation (behavioural intention) and behaviour (observed overt acts). The term "attitude is used for affect, "belief" for the second category i.e. cognition and "intention" for the third category i.e. conation.

Attitude refers to a person’s favourable or unfavourable evaluation of an object, belief represent the information he has about the object, a belief links an object to some attribute, the object of a belief may be a person, a group of people, an institution, a policy, an event etc and the associated attribute may be any object, trait, property, quality, characteristic, event etc, belief be measured by a procedure which places
the subject along a dimension of subjective probability involving an object and some related attribute (Cronkhite, 1969; Scheibe, 1970; Warr and Smith, 1970).

Behavioural intentions can be taken as a special case of beliefs, in this the object is always the person himself and the attribute is always a behaviour, the strength of an intention is indicated by the person's subjective probability that he will perform the behaviour. Intention can be measured by a procedure which places the subject along a subjective probability dimension (Fishbein and Ajzen, 1975). Fishbein and Ajzen, 1975 have given a schematic presentation (Figure 1.1) of conceptual framework relating beliefs, attitudes, intentions, and behaviours with respect to a given object A.

**Types of belief**

Belief formation involves the establishment of a link between any two aspects of an individual's world. One obvious source of information is direct observation i.e. observing through any of the sense modalities, that a certain object has certain attribute i.e. round, flat etc. These direct experiences with a given object result in the formation of descriptive beliefs about the object. Beliefs that go beyond observable events are called inferential beliefs.
**Descriptive Beliefs:** Much of the information about the formation of descriptive beliefs in the attitude area comes to us in the form of incidental data collection or manipulation checks. In a typical experiment, subjects are exposed to a complex situation containing physical objects, persons, instruments, instructions etc. Independent variables are manipulated by systematic variation in some of these stimuli, eg. some subjects interact with a male experimenter, some with a female, the experimenter may reward or punish the subject; another person may agree with the subject's judgements; different subjects may be exposed to different communications, etc. Information about the formation of descriptive beliefs is obtained when the experimenter attempts to check the effectiveness of such manipulations by asking his subjects some direct questions about the manipulations. Subjects have been asked to indicate whether they had been rewarded or punished by the experimenter, whether another person had agreed or disagreed with their judgements, who the source of communication was, etc.; Belief formed tend to accurately reflect what occurred in the situation. In the context of learning theory beliefs are viewed as stimulus - response bonds.

**Inferential beliefs:** The most characteristic feature of inferences is that the individual uses residues of past experience in
addition to the stimulus situation to make his judgements. For example, a person who has a negative attitude toward the army rule of Pakistan and who positively values democracy and freedom of women. Imagine further that this person has never received any direct information about the degree of freedom of women. If now after having known that Pakistan has freedom for women, he would have no difficulty in making a judgement. Clearly, his judgement would represent an inference rather than a descriptive belief.

Heider (1944, 1958) suggested that two elements will be perceived as forming a unit relation when both elements have the same dynamic character i.e. when both are positively or negatively evaluated. When one element is evaluated positively and other negatively, there tends to develop no relation between the elements, they tend to be segregated.

In most general form, this principle suggests that inferences follow along the lines of evaluative consistency. A person is expected to infer that liked objects have positive attributes and that disliked objects have negative attributes.

Inferential belief i.e. linking an object and an attribute in an evaluatively consistent manner may actually be based on probabilistic
rather than evaluative consistency. A simple example of inferential belief that "hypochondriacs are anxious". Since both "hypochondriac" and "anxious" are negatively evaluated, the belief exhibits evaluative consistency, and it is possible that this evaluative consistency led to the inference. A more interesting example is that "John was immature". In terms of evaluative consistency this inference would be made by individuals who disliked John as well as immaturity; in terms of probabilistic consistency, this inference could be a function of the belief that John took off his shoe and banged it on the table in the party hosted by his friend and the belief that people who behave in this way are immature.

**Informational beliefs:** When beliefs are formed neither on the basis of direct experience with the object of the belief nor by way of some inference process, instead the information is provided by an outside source such beliefs are called informational beliefs. Such sources include books, magazines, newspapers, television, radio, lecturers, friends etc. For example, we may read in the magazine India Today that Ramesh wears black shoes. On this basis we may form the belief that Ramesh wears black shoes. Thus, beliefs formed by the information proved by an outside source may be termed informational beliefs (Fishbein, Ajzen, 1975).
Specialists belief:- refers to the belief of persons specialized in a particular area for example a mental health professional may believe that a particular type of mental illness may either be hereditary or environmentally determined. This belief further influences the course of intervention i.e. if the mental health professional believe that schizophrenia is genetically determined then he may believe that the chances of cure are very few and if it is environmentally determined the course of the treatment will be different and he may believe that the chances of cure are quite high.

For more than a century genetists and social scientists have been trying to prove that mental illness is hereditary. Today most professionals and even lay people believe that the hereditary nature of schizophrenia and various mental illnesses has been confirmed by accumulation of various evidence. However a review of that evidence (Schoenewolf, 1996) finds that it is far from conclusive. Schoenewolf (1996) has suggested that the stubborn insistence on the genetic theory of mental illness is itself a part of the problem. Neher (1996) presented a critique of Jung’s theory of archetype. The critique focuses on Jung’s belief that the origin of archetype (and their basis in the collective unconscious) transcend the individual, in that they reflect an ancestral or universal essence. Neher has suggested that these notions are

Snyderman and Rothman (1987) conducted a survey regarding expert opinion on intelligence and aptitude testing. They found that psychologists and educational specialists with expertise in areas related to intelligence testing hold positive attitude about the validity and usefulness of intelligence and aptitude tests. It was also found that there is overwhelming support for a significant within-group heritability for IQ, and a majority of respondents feel that black-white and socio-economic status IQ differences are also partially hereditary.

**Trait Inferences:** Asch's (1946) studies of impression formation represent the initial work on trait inferences. In one experiment, subjects were read one of two lists of seven personality traits that were supposedly descriptions of a real person; the lists were identical except for the fourth trait in the list, which was either cold or warm. Two lists used were intelligent, skillful, industrious, (warm or cold), determined, practical, cautious. After learning the list, subjects were
asked to write brief description of the person the traits brought to mind, and to indicate for each of 18 pairs of different bipolar traits the term that test fitted the impression they had formed. Not only did the two lists of traits produce qualitatively different written impressions, but there were huge quantitative differences with respect to some of the items on the checklist for example when the description included the trait warm. most subjects perceived the person involved to be generous, humorous, sociable, popular, and good natured. Inclusion of the trait cold in the stimulus list led not to these generally favourable impressions but to their bipolar opposites.

In another series of experiments, Asch varied the order of traits describing a stimulus person eg.


Order B: Envious - stubborn - critical - impulsive - industrious - intelligent.

Subjects receiving order A were more likely than those receiving order B to infer that the stimulus person was happy, good-natured, good-looking, and restrained. Asch reported somewhat weaker order effects when he used another set of traits in the following two orders:

Order B: Evasive - cautious - practical - determined - industrious - skilful - intelligent.

Asch concluded that these studies demonstrated a primary effect in impression formation.

Much of the research in this area has attempted to provide systematic descriptions of the perceived relationships among traits. The most prominent finding has been that inferences from one trait to another follow a consistent pattern. Asch’s findings concerning the effect on trait inferences produced by using warm or cold among a set of stimulus traits can be understood in terms of the dimensions underlying stimulus and response traits (Rosenberg, Nelson and Vivekananthan, 1968). In contrast to the assumption of evaluative consistency that underlies much of attitude measurement as well as the notions of balance, congruity, affective-cognitive consistency etc research on trait inferences suggest that probabilistic rather than evaluative consistency plays a predominant role in inferential belief formation. Indeed, only in the absence of probabilistic consistency does evaluative consistency appear to determine the formation of inferential beliefs at least so far as
trait inferences are concerned.

**Cue utilization:** The basic research paradigm in studies of trait inferences is - a stimulus person is described as possessing trait A, and the subject is asked to indicate how likely it is that the stimulus person has trait B. For example the stimulus person might be described as rich, and the subject could be asked to indicate his subjective probability that the person is intelligent. The subject's task is to infer the position of a stimulus person on one content dimension on the basis of information about his position on some other content dimension. This procedure can be extended by providing the subject with more than one item of information or cue about the stimulus person. There are several examples in everyday life, like in hiring a job applicant, a personnel director may have to predict the applicants probability of success on the job on the basis of information about the applicant's intelligence, previous experience, letters of reference, and amount of education. Likewise, stock brokers may predict about stock market behaviour on the basis of such information as volume of trade, Dow Jones averages, etc (Fishbein & Ajzen 1975).

**Multiple cue learning:** In multiple cue learning, a subject is shown a set of cues describing some object and is asked to make an
inferential judgement about the object. After each judgement he is given feedback as to the accuracy of his judgements. Sometimes subjects are simply told whether their inferences were correct or incorrect. Alternatively, they may be given information about the degree to which they have placed appropriate weights on the various cues (Hammond and Summers, 1972).

Models of Beliefs

Formal Inference models (Fishbein & Ajzen 1975): Inferences are often based on perceived relations among beliefs. These lawful relations among beliefs tend to be based on probabilistic consistency. Various models derived from probability theory deal explicitly with the relations between subjective probabilities i.e. beliefs. Only recently models of this type attracted the attention of investigators in the attitude area. Prior to the development of mathematical probability theory, philosophers concerned with logic and syllogistic reasoning also attempted to formalize the inference process.

Syllogistic Reasoning

Logical syllogisms: One possible interpretation of the person's behaviour in concept formation or problem solving situations is that he attempts to eliminate alternative hypotheses by some process of logical
reasoning. The logical sequence then serve as a normative model of the subject's behaviour and the experimenter looks for evidence of this logic in the subject's actual behaviour (Bourne, Ekstrand, and Dominowski, 1971).

Results of several studies indicated that these judgements were influenced primarily by three factors: Whether the item involved induction or deduction, whether the evidence was subject-specific or object-specific, and the kind of verb used. For inductive items, object-specific evidence produced greater agreement than subject specific evidences, whereas opposite was true for deductive items. Further, the amount of agreement produced by inductive or deductive items depended on the nature of the verb in the conclusion. Attempts to explain the unanticipated strong effect of the verb have focussed on the universality of propositions. Abelson and Kanouse (1966) found that different verbs influence the amount of evidence required to produce agreement with the ambiguous conclusion.

**Bayes's Theorem:** Probability models deals with the interrelations among beliefs, when applied to change, they deal with the effect of change in one belief on changes in related beliefs. These models, do not address themselves to the question as to how the initial change is
brought about. Bayes's theorem deals specifically with this problem, that is, it is concerned with the formation or revision of beliefs in light of new information. Again note that Bayes's theorem is a normative model in that it describes optimal revisions in probabilities; that is, it describes how probabilities should change if the available information is properly utilized. The theorem deals with revision of beliefs or hypotheses (H) on the basis of new information or data (D). In its simplest form it is expressed as

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P(H/D) = \frac{P(D/H) P(H)}{P(D)}
\]

**Heredity**

Though a detailed technical description is beyond the scope of this dissertation yet as the topic demands only a brief and simple description of the hereditary or genetic determination of traits or characteristics is given here. Heredity is a complex biological process that result in progeny resembling their parents in many characteristics; progeny are not exact duplicates of their parents but usually differ in many traits (Encyclopaedia Brittanica, 1978). This difference is called variation. Heredity and variation are two sides of the same coin. Heredity was for a long time one of the most puzzling and mysterious phenomena of nature.
This was so because the sex cells, which form the bridge across which heredity must pass between the generations, are usually invisible to the naked eyes. Only after the invention of microscopes early in the 17th century, and the discovery of the sex cells, could the essentials of heredity be grasped.

The term ‘Heredity’ as is used here refers to biological heredity. An individual’s heredity consists of the specific genes which he receives from each parent at conception. The genes are grouped into chromosomes. The number of chromosomes in each cell is, in general, constant within each species, but differs from one species to another. When the individual has attained sexual maturity, a different type of cell division occurs in the formation of the specialized reproductive cell, the ova of the female and spermatozoa of the male. This process is known as reduction division. The hereditary basis for individual differences i.e. furnished by the almost limited variety of possible gene combinations. A gene always exerts its effect in the presence of other genes; hence has arisen the idea of genic balance, by which is meant that any character is the result of entire gene complex acting in a given environment. Variation in a character may be produced by variations in a single gene, but always in the presence of the rest of the genes.
It has been shown that the sex cells contain in the chromosomes of their nuclei material particles called genes. Variations in the quality or the dosage of the genes produce visible or phenotype changes in the organism. When parents carry different genes, their hybrid offspring show a distribution of the phenotype traits as described by Mendel's laws. Between the genes in the sex cells and the traits, such as eye and skin colour, there intervene, however very complex processes of the individual's development. The genes determine an organism's potentialities, some of which are gradually realized in a body growing and developing in a certain sequence of environments.

**Environment**

In addition to heredity, the other major determinant of human characteristics/traits is the environment, the term environment as is used here, refers to the sum total of stimulation which the individual receives since conception until death. This is an active concept of an environment, i.e. the physical presence of the objects does not in itself constitute environment unless the object serve as stimuli for individual. This definition is also more inclusive than the popular one, or covering all forms of stimulation and extending over the entire life cycle. However
environment is commonly referred to an individual's surrounding i.e. the geographical and residential ones but as is explained above the mere presence of physical objects do not constitute the environment.

Encyclopaedia Britannica (1978) has mentioned that the contemporary environmentalists recognize that physical surroundings are only part of a total environment that includes social and economic factors, cultural tradition and reciprocal influences between societies and their environment. The popular identification of an environment with "external" and heredity with "internal" influences has to be discarded in the light of increasing knowledge of the operation of heredity and environment.

This view is more popularly accepted view than the earlier held view that classified behaviour into "instincts" and "habits" corresponding to "native behaviour" and "acquired behaviour". The heredity-environment relationship has been conceived as additive and as an interaction of heredity and environment. According to the first view both heredity and environment contribute to all behaviour development and the resulting behaviour characteristics can be analyzed as the sum of heredity - environment influences. The interaction view represents that the effect of heredity-environmental factors are not cumulative or
additive, rather the influence is determined by the interaction of heredity and environment. This says that the behaviour is the function of genetic X environmental factors (B=GXE).

Belief in heredity/environment

Though both heredity and environment have been widely accepted as the major determinants of behavioural characteristics yet there are groups of scientists emphasizing either heredity or environment as a major determinant. One group represent those who believe that the behavioural characteristics are largely determined by genetic factors. The other group represent those scientists who stress that behavioural characteristics are largely determined by environmental factors for eg. in case of intelligence Jensen (1972) represent the genetists and Kamin (1974) represent the environmentalists. There are some others who believe that neither heredity nor environment rather the hereditary factors in interaction with the environment determine the behavioural characteristics. Anastasi (1979; Overton 1973).

Not only scientist even lay men are concerned about this controversy, some people believe that behavioural characteristics are largely determined by genetic factors and some other believe that these are determined by environmental factors that is everyone has his own
belief in heredity or environment with regard to behavioural characteristics. Furnham, Johnson and Rawles (1985) have reported that not only scientists even lay people apply a simple additive model. They concluded that every individual can be located somewhere on a continuum which runs from strong environmental belief to strong genetic (heredity) belief.

A brief review of the recent literature with regard to studies relating to belief in heredity/environment about human characteristics in general and measurement of belief in particular is presented in the next chapter.