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Motivational correlates of risk taking

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Motivational correlates
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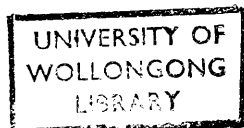
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C O N T E N T S

Chapter IV.   Hypothesis and Resultant Methodological Issues

Chapter V.   Method

ABSTRACT

This thesis reports a revision of Atkinson's (1957,etc.) theory of achievement motivation undertaken in order to ensure that: all terms used were empirical in nature; relationships between terms were more consistent with research findings; and the interaction of n Achievement with fear of failure was expressed in terms of Maher's (1964) theory of conflict. Hypotheses derived from the revision: that in a game of skill median risk level chosen will be above .50 for the achievement oriented, below .50 for the failure oriented and above .50 but between the other groups for the intermediate; that mean degree of risk chosen by a group correlates with group mean achievement orientation; and that an achievement oriented group will choose a higher risk level than a failure oriented group; were tested using 84 first year University students in a situation allowing subjects to assess their objective probability of success at various levels of task difficulty and to choose an objective level of risk preferred for assessment of performance. Measuring n Achievement by the T.A.T. and fear of failure by the T.A.Q., the first two hypotheses were confirmed and the disconfirmation of the third was marginal and readily traceable to difficulties inherent in the procedure. A slope index substituted for the T.A.T. failed to replicate the findings and the two measures of n Achievement were found to be uncorrelated.

It was concluded that the revision of Atkinson's theory had received adequate support to justify the general theoretical procedure. Lines of enquiry, revealed by the revision, along which achievement motivation research could valuably be pursued, were discussed.

C H A P T E R   I

Introduction

1.1. The aim of the study

Under the influence of McClelland and Atkinson, their co-workers and students, research into the achievement motive has largely been undertaken within the framework of a single general conceptual system. This approach took specific form in the theory of achievement motivation first published by Atkinson in 1957, revised and extended since, and stated in a fairly complete form by Atkinson & Feather in 1966.

It is true that a variant system of conceptualising achievement related behaviour has developed on the Continent under the influence of Heckhausen (see especially Heckhausen, 1967) however, as Heckhausen complained in 1968, its influence on the American theorists has been negligeable.

The theory promulgated by Atkinson has been a very fruitful one in terms of the experimental research that it has generated. However, as a psychological theory it suffers from dependence upon a number of entirely subjectively defined variables which are in no way open to direct empirical investigation. At the time of the first formulation of the theory, this was only to be expected because of the obvious limitations upon knowledge of achievement behaviour. However, as one might expect from a theory which generated so much research, the new knowledge that was forthcoming has made it obvious that a restatement of the theory in more empirical terms was not just desirable, but also possible, and perhaps necessary. It is clear that any conceptual scheme relying heavily on non-empirical

entities faces difficulties when required to predict the behaviour of factors open to empirical investigation.

While, in this thesis, Atkinson's theory must come in for criticism, it is to be realised that this is criticism in retrospect with a great deal more data to work upon than had Atkinson. Nevertheless, Atkinson's theory will be shown to be, in its present form, no longer adequate as a conceptual framework for research on achievement motivation and the major purpose of this paper is to present and test an alternative.

In so doing, Atkinson's theory will still remain the basis upon which the alternative is constructed. However, those terms which are in his theory set to describe subjective states will be recast in an empirical form that makes them open to experimental testing. The relationships Atkinson postulated to exist between his variables will be evaluated on logical and empirical grounds, and also in the light of the changes which correspond with the change to objective variables. Those relationships which do not stand up under such an examination will be amended to a form which is logically and empirically sound. Finally, as it has already been recognised by both Atkinson and Heckhausen that other theoretical areas can be related to the area of achievement motivation (specific cases will be described and referenced where relevant), but as the implications of this recognition have never been followed through, these implications will be explored to see whether they require a revision of the theory.

The end product of this evaluative process will be a theory, in form similar to Atkinson's but which will obviate the problems associated with theories based on subjective variables. The advantages of an empirically cast theory over one based on non-empirical statements, will not at this

stage be considered, but consideration will be given to the gains inherent in a move to the former when evaluating the new theory with respect to its precursor, after first empirically testing the former.

It will be demonstrated that the predictions which follow from the restated theory differ in some major respects from those to which Atkinson's theory leads. These predictions will be the basis of the empirical test of the theory.

1.2. Limitations of the study.

Research upon achievement motivation soon leads to a realisation of the hydraform nature of the problems. Each issue that is dealt with gives rise immediately to new unanswered question; each line of thought is revealed as only the stem of a number of branching but interelated problems.

Any study must of necessity be self limiting in this area as the problems themselves do not fall into a set of clearly defined separate issues. Such limitation will mean the neglect of a number of questions that, for completeness, it would be desirable to be able to deal with.

In this study it is considered necessary to restrict the research to the area of choice of preferred risk level amongst a series of possible choice levels. As will soon become clear, even so restricted, this is a very complex question. This has meant the acceptance of a number of propositions, which are themselves still matters of research, as being fully valid. For example, throughout the Thematic Apperception technique of assessing achievement motivation, developed by McClelland (McClelland, Atkinson, Clark, & Lowell, 1953), is accepted as the measure of n Achievement without written consideration of either its validity or reliability. This is not the result of lack of awareness of such issues, but rather of

the need for brevity coupled with the need to give greater emphasis to issues more germaine to the central problem considered.

The criterion for the consideration of a line of research or theory was at all points, except one, the degree of relevance of the issue to choice of a level of risk. The one exception was the evaluation of the slope index of achievement motivation (Morgan, 1964) which had the advantages of being, as a theoretical issue, fairly insulated from other lines of enquiry, and as a practical problem, a simple question to resolve.

So to save continual cross reference throughout the thesis, other issues of interest are best followed up initially in Atkinson & Feather (1966a) and Heckhausen (1967, 1968) which have the value of drawing together a wide range of research data from two divergent theoretical outlooks.

CHAPTER II

Presentation and Assessment of

Atkinson's Theory of Achievement Motivation

2.1. Theoretical orientation

Atkinson's theory of achievement motivation, first published in full

in the Psychological Review of 1957, has its roots far earlier. Atkinson

(1957) himself acknowledges a debt to Lewin (Lewin, Dembo, Festinger, &

Sears, 1944), Rotter (1954) and Tolman (1955); and Feather (1959a)

demonstrates a similarity of conceptualisation also in the work of Ramsey

(1931), Savage (1954), Coombs & Beardslee (1954) and Edwards (1954, 1955).

In the formulation of the theory both the cognitive orientation of Tolman,

Rotter and Lewin and the mathematical orientation of the decision theorists

clearly have their echoes. While the basic nature of the theory has

remained unchanged, Atkinson has, at times shown a recognition of the need

to re-evaluate the theory to account for new experimental findings, and a

realisation of the relationship of his theory to other areas of

psychology. (See Atkinson, 1966b; Atkinson & Feather, 1966b.)

2.2. Atkinson's parameters and the assumed pattern of relationships.

The cornerstone of the theory of achievement motive is that

'motivation' (Atkinson, 1957), or 'tendency' (Atkinson & Feather, 1966b),

to behave in a certain way is a multiplicative function of 'motive',

conceived of as "a disposition to strive for a certain kind of satisfaction,

as a capacity for satisfaction in the attainment of a certain class of

incentives (Atkinson, 1957, p.324)," of 'expectancy', "a cognitive antici-

pation ...... that performance of some act will be followed by a particular consequence (ibid, p.323)," and of 'incentive', "the relative attractiveness of a specific goal that is offered in a situation or the relative unattractiveness of an event that might occur as the consequence of some act (ibid, p.323)."

Behaviour in a situation where "performance is likely to be evaluated against some standard of excellence (ibid, p. 325)," assuming no other motivational tendencies are involved, can according to Atkinson & Feather (1966b) be predicted from the formula:

$$T_s + T_{-f} = (M_s \times P_s \times I_s) + (M_{AF} \times P_f \times I_f) \quad (p.333)$$

where T_s is tendency to approach success, T_{-f} is the inhibitory tendency to avoid failure, M_s is achievement motive, P_s is subjective probability of success, I_s incentive value of success, M_{AF} motive to avoid failure, P_f subjective probability of failure and I_f is the (negative) incentive value of failure.

P_s and I_s are considered situation specific variables dependent upon the individuals past experience in similar situations (Atkinson, 1964). This relationship to an observable, past experience, Atkinson does not develop, but it will later be shown to be invaluable in an attempt to reinterpret the theory in objective terms. P_s is assumed to be inversely proportional to perceived task difficulty and I_s inversely proportional to P_s. Atkinson takes a similar approach to the expectancy of failure and the incentive value of failure in that P_f is directly proportional to perceived task difficulty and I_f inversely proportional to P_f.

These assumptions, if valid, mean that three of the four terms dealt with are redundant as given, for instance P_s, one can immediately derive

P_f, I_s and I_f and all the functions these serve in the full model. Atkinson is himself aware of this and presents Edwards' (1962) simplification of his theory:

$$T_s + T_f = (M_s - M_{AF}) \times (P_s \times (1 - P_s))$$

with the assertion that this demonstrates "quite clearly that the theory of achievement motivation represents a specification of the personality and environmental determinants (Atkinson & Feather, 1966b, p. 333)." While the $I_s = 1 - P_s$ and $I_f = 1 - P_f$ assumptions may be algebraically convenient and acceptable in a mathematical model, to consider this, as Atkinson seems to, as representing the 'real' relationship between them is to assume that the causal factors underlying a person's judgement of probability of success are the same as those underlying his assessment of the incentive value of success, probability of failure and incentive value of failure. Heckhausen (1968) has argued that experimental evidence is far more consistent with an $I_s = .7 - P_s$ assumption and cites Wendt (1967) in support of the possibility that linearity may also be an erroneous assumption.

It will be argued in this thesis that in fact the causal factors are not the same, and that the assumptions made about the relationship between expectancies and incentives needs to be related to these causal factors. To assume causal independence between these factors will not necessarily destroy the model. Feather (1959a) provides evidence only for the accuracy of Atkinson's assumption about their relationships to perceived risk levels, and does not necessarily establish the interdependence of the factors.

2.3. The functioning of the model.

The multiplicative relationship of expectancy and incentive assumed

in the theory leads to the conclusion that these make their strongest
contribution to the tendencies to approach success and avoid failure
at a level of task difficulty equivalent to a .50 level of perceived
risk (Atkinson, 1957). (Throughout, following Atkinson's precedent,
levels of risk will be expressed in proportional terms). This multi-
plicative assumption is also explicit in Lewin's model (Lewin et al,
1944) and Edwards' model (Edwards, 1955) and according to Feather (1959a)
is also favoured by Tolman (1955) and Rotter (1954) and would seem to
have justified itself by its experimental productivity.

In this formulation, however, Atkinson has also assumed the independ-
ence of motive from expectation and incentive values. This assumption
is open to question and Atkinson & Feather (1966b) make some attempt to
incorporate this possibility into the theory. They do not pursue this
to a reconsideration of their basic parameters and indeed express concern
about the likely effects, considering that if such interrelationships are
the case, "the theory is hopelessly entangled in a complex circuit of
mutual influence (Atkinson & Feather, 1966b, p. 359)." It will be
demonstrated later that, while such influences do complicate the model,
they do not make it unworkable, and they produce important testable
hypotheses.

As both the motive to achieve success and the motive to avoid failure
are assumed to be independent of task difficulty, their role in the model
is to intensify the differential tendencies to perform already established
by subjective probabilities and incentives but not to alter them in any
way. This means that any slight tendency towards performance at a .50
level of perceived risk will be magnified in direct relationship to the

strength of the motive. Thus both T_s and T_{-f} are strongest at the .50 level and decrease in strength the easier or the more difficult the task becomes, and the stronger the underlying motive the more marked this effect becomes.

2.4. The relationship between response tendencies.

The relationship between T_s and T_{-f} is represented as being additive with T_{-f} representing a negative or inhibitory tendency. T_s is conceived as tending the subject to respond at, especially, a .50 level of risk, while T_{-f} inhibits this tendency. Atkinson entirely committed himself to the assumption of the inhibiting nature of the T_{-f} in 1964 (as against his 1957 paper) and specifically states: "..... the threat of failure does not directly excite avoidant actions or 'task - relevant' actions (sic.) (Atkinson, 1964, p. 246)." As T_{-f} is based on the motive to avoid failure, this involves a certain logical inconsistency, for perhaps the one common feature of motivational theories is that motive is always conceived of as related to the instigation and sustaining of behaviour, and not in terms of its inhibition, except in so far as it may instigate antagonistic responses. The intrinsic contradiction of this stance becomes obvious in consideration of the situation where T_{-f} exceeds T_s, for although an inhibitory tendency may reduce a response to zero (in the model where $T_s = T_{-f}$), no meaning can be given to the concept of inhibition below zero. Atkinson's utilization of extrinsic motivation to explain the fact that behaviour occurs (Atkinson, 1964), masks the practical difficulty, but not the logical.

However, Atkinson (1964) provides the clue to a solution himself, by considering the situation as an example of approach-avoidance conflict.

It would have been valuable had he pursued the implications of this,

that T_s and T_{-f} are antagonistic behaviour tendencies which do not operate

in an additive manner, but rather of which the stronger will occur.

2.5. Behavioural implications of the model.

However, on the basis of his assumed additive relationship between

T_s and T_{-f} Atkinson is able to make certain predictions about choice of

risk in an achievement related task. Where $M_s = M_{AF}$, whether they both be

strong or weak, "there is no basis for predicting a risk preference, level

of aspiration, or even performance of an achievement related task (Atkinson,

1964, p. 247)." Where $M_s > M_{AF}$ there will be a tendency to choose to

perform at a .50 level and to perform most strongly at this level. If,

however, $M_s < M_{AF}$, Atkinson (1964) says, "..... the resultant is negative

and strongest where P_s is .50. This implies avoidance or inhibition of

achievement related activities (p. 247)." While this could be taken to

be an inconsistency after his rejection of the role of T_{-f} in exciting

avoidant responses, it is more likely that he means that this level of

risk will be avoided in favour of other levels and is thus referring to

outcome not process. The need to provide some explanation for the fact

that this group performs at all, led to the introduction of the concept

of an 'extrinsic positive tendency (ibid, p. 247)' whose effects were again

to be added to the resultant tendency $(T_s + T_{-f})$. This represented:

"..... the strength of the tendency to act which is attributable to the

influence of other motives and incentives that are not intrinsically

related to the evaluation of performance as are the two achievement-related

motives (p. 247);" and was assumed to be unrelated to difficulty level.

If this assumption does not hold, as Atkinson & O'Connor (1966) suggests,

the use of extrinsic tendency as a basic factor in the theory is unfortu-
nate. While it cannot be denied a role, it would be better if it could
be treated as a complication and the entire model be made dependent only
upon T_s and T_{-f}. It will be shown that this is possible.

Atkinson's theory, then, predicts a direct relationship between
strength of response at a .50 level of risk and the degree to which M_s
exceeds M_{AF} and an inverse relationship to the degree to which M_{AF} exceeds
M_s.

2.6. Effect of success and failure on risk choice.

Consistent with this basic theory is Atkinson's approach to the effects
of success and failure upon the tendency to perform at various levels of
risk. Persons where M_s predominates, will gradually adjust their risk
choices till they achieve a .50 level of risk, while those who are mainly
failure motivated will either fixate at the level they first choose or may
make 'paradoxical' shifts from one extreme to the other. There is, of
course, some difficulty in conceiving of a person suffering "continued
failure at a very easy task (Atkinson, 1957, p. 336)" and some of the
paradox is inherent in the confusion of subjective terminology. Although
an increase in risk after failure is predicted from the theory, it is not,
as Atkinson seems to imply, a shift from a high P_s, past intermediate P_s,
to low P_s, but rather a movement from a low P_s (established by continued
failure) to an even lower one. It is important to note that Atkinson (1957)
saw this as occurring only if no easier choice levels were available.
Nevertheless, the prediction of the operation of such atypical responses
is valuable, especially if it can be related to objective rather than to
subjectively defined risk levels, as risk taking behaviour is normally

carried out against a background of previous success and failure.

2.7. <u>An attempted objectification of the theory</u>.

Atkinson has made some attempt to relate this theory to objective measures of difficulty in saying that, "..... the relative strength of a motive influences the subjective probability of the consequence, consistent with that motive, i.e. biases it upwards (Atkinson, 1957, p. 333)". That is, in "somewhat novel situations (ibid, p. 334)" subjects for whom achievement motivation predominates should tend to prefer levels of objective risk somewhat higher than .50 while those for whom fear of failure is dominant should avoid a level of objective risk somewhat below .50. It is implied that as a subject discovers his objective probability of success he will adjust his subjective perception to correspond and so tend back to the .50 level.

This seems to be a post hoc addition to the theory in the light of some earlier experimental studies (McClelland, Atkinson, Clark, & Lowell, 1953; Pottharst, 1955), and is not derivable from the theory itself. In fact Heckhausen (1968) argues against the hypothesis on the ground that the supposed bias persists "even after they (subjects) have become intimately acquainted with their actual success probabilities (Heckhausen, 1963b; (sic) Decharms & Dave, 1965), although there is a very occasional exception (e.g. Wendt, 1964) (p. 157)."

It does suggest, however, some possibility of linking the theory to objective criteria, although a far more complete analysis must be made before a theoretical basis can be given to such predictions as Atkinson is making.

2.8. The relationship of this study to Atkinson's theory.

Although the theory of achievement motivation as formulated by Atkinson has led to some very valuable insights and relatively consistent experimental findings about risk taking behaviour, it is open to three major criticisms.

The essentially subjective nature of the theory raises considerable methodological difficulties. Until such time as clear identities can be established between the subjective terms of theory and the operational terms of experimentation no definitive test of the theory, qua theory, is possible.

Subjective level of risk, subjective probability of success and incentive value of success are each essentially unmeasurable and in the operational definitions of these terms it is often difficult to see the required relationship between the two types of construct. For instance, the common assumption that the median of levels of risk actually chosen in the experiment is useful as a definition of a .50 level of subjective risk is only justifiable if the result to be tested, that subjects group around a .50 level of risk, is first assumed to be true. The hypothesis would still be confirmed even when I_s = .70 - P_s (Heckhausen, 1968 pp. 154 - 156) rather than I_s = 1 - P_s, so that subjects, in fact, grouped about a level of risk greater than .50. The possibility also remains open that an hypothesis falsified on one operational definition may be validated by a change in definition (e.g. Brody, 1963).

Atkinson's (1957) argument that with practice subjective probability comes to be very highly correlated with objective probability, while having a high face validity, is also essentially untestable.

The major thrust of this thesis will be to restate Atkinson's theory of achievement motivation within an objective frame of reference and to test the hypotheses generated by such a reformulation. This will involve objectification of not only the parameters of the theory but also of the experimental methods of manipulating and assessing them.

Atkinson's mathematical biases have also come in for criticism. Heckhausen (1967) states: "Atkinson's theory appears to be a mathematized calculus rather than a psychological model (p. 99)." Heckhausen seems to imply that a psychological model should not be mathematical which is not a valid assertion (Simon & Newell, 1956; Lachman, 1960). However, he does highlight the point that often Atkinson seems more concerned with keeping his mathematical terms simple than with reflecting behavioural reality. Instances have been demonstrated in outlining the theory.

No attempt will be made to avoid the basically mathematical nature of the model, however, where a choice must be made between mathematical simplicity and behavioural reality, as far as possible the formulation of an adequate psychological rationale for the model has been given first priority.

Finally, although Atkinson touches on other theoretical areas he has not worked through to logical conclusions the consequences of their relationships to his own theory. This is especially evident in the case of the approach-avoidance conflict he, like Heckhausen (1967), sees involved in risk choice (Atkinson, 1964). This thesis will describe risk choice behaviour in an achievement situation as a specific case of conflict behaviour and represent such behaviour in terms of the parallel gradients model of approach-avoidance conflict (Maher, 1964). This will also have

the advantage of obviating the logical inconsistency (described earlier) which was built into the model in its 1964 revision.

By formulating the theory of achievement motivation as a special case of an established theory within a behavioural orientation, and by giving a behavioural definition to all its terms, it becomes, most importantly, directly open to empirical testing, but also more closely allied to other areas of psychology. Such integration of theoretical positions has the value of allowing research findings made in relation to one area to be generalised to others, and removes many differences which, being terminological in nature, may well prove to be pseudo-problems.

C H A P T E R   I I I

A Theory of Achievement Motivation

Within an Objective Frame of Reference

3.1. Expectancy and incentive

The criticism of Atkinson's theory, in the previous chapter, emphasized the subjective nature of the terms he uses, and an initial task in an objective reformulation must be to clarify the nature of the parameters.

To incorporate Atkinson's subjective probability of success, which is, as he states (Atkinson, 1957, p. 323) equivalent to the cognitive concept of expectancy, into an objective framework one must recognise it as a theoretical construct mediating the likelihood of the occurrence of different response patterns, and as having neither empirical nor onto-logical status. The term 'expectancy' has been chosen for this variable, but this does not indicate that it is cognitive in nature. Rather, its preference over 'subjective probability' represents an intention to relate it firmly to both antecedent and consequent external events, as is always necessary with such hypothetical variables.

The establishment of an expectancy is dependent on the pairing of certain stimuli and the effects of certain responses, and its operation in any environment depends on the similarity of that environment to the situation wherein it was established. Faced with an entirely novel task, an organism will have no specific expectancies to act upon; and in other cases the laws of generalisation will determine the degree to which expect-ancies are transferable between similar situations. Across a multiplicity

of achievement tasks an organism has established expectancies of success
and failure, and expectancies in new achievement situations will be a
function of the similarity of those situations to others where the
organism has experienced success or failure.

Thus in a situation <u>where it has been possible to establish expect-
ancies of success and failure</u>, it is possible to approximate a graph of
the relation between these specific expectancies and objective difficulty
or probability of success as proportional linear functions of the form
$E_s = P_s^o$ and $E_f = 1 - P_s^o$ where E_s is expectancy of success, P_s^o,
objective probability of success and E_f, expectancy of failure. The
accuracy of these functions depends entirely on the similarity between
the situation where expectancy was established and the test situation.
Their linearity assumes that expectancy is independent of motive strength,
an assumption later to be qualified, with consequent changes in the graph,
and the conclusion that $E_f = 1 - E_s$ is also only an artifact of this
assumption.

The second parameter, incentive, is not considered as necessarily the
inverse of expectancy, but is separately related to its causal factors.
It is again a theoretical construct representing the fact that the more
difficult a task is, the more success at it is valued and the less failure
at it is of negative value. This is learned from a past experience of
greater reward for achievement at greater levels of difficulty and greater
punishment for failure at relatively simple tasks, in terms particularly
of parental, but also of others' praise and blame. Heckhausen's (1967)
finding that the exercise of competence is itself reinforcing, possibly
represents the development of this pattern into a secondary motive, and as

the more difficult the task is, the greater will be the competence

exercised, the same pattern pertains. Again the laws of generalisation will

mediate the transference of this learned incentive from one task to

another. So long as incentive is considered independent of motive strength

a reasonable approximation, to the graphs relating the incentive values

of success and failure (I_s and I_f respectively) to _objective_ difficulty

(P_s^o) can be represneted by the functions $I_s = 1 - P_s^o$ and $I_f = P_s^o$

although the assumption of linearity here is even more tenuous than for

expectancies.

At this time I have not considered Heckhausen's (1968) alternative

possible function ($I_s = .70 - P_s$) as, without specific experimental

evidence to the contrary, the proportional relationships provide a

theoretically more parsimonious structure. This is not to deny the

validity of this proposal, (its incorporation into the present theory

would only strengthen the conclusions to be drawn) but as Heckhausen

is still theorising in subjective terms his proposition is no easier to

test empirically than is Atkinson's.

Although the form of the theory parallels Atkinson's model, certain

useful departures from his approach have been incorporated. First, the

use of theoretical constructs explicable in terms of observable ante-

cedent events to describe the relationship between stimuli and responses

has replaced explanation in terms of entirely non-empirical constructs.

Second, although expectancy and incentive maintain a measure of

mathematical complementarity, this is fortuitous and as they are not

necessarily based on the same causal factors, they are realistically

defined as independently operating factors. Third, the accuracy of

prediction based on these parameters, rather than being a constant,

is specifically limited to the degree to which the situation in which

prediction is to be made resembles the situation in which the

expectancies and incentives were established.

3.2. The interdependence of motive, expectancy and incentive

The assumption of the independence of expectancy and incentive

from motive strength is now rejected in favour of the alternative

assumption that they interrelate. This reconsideration is justified

in terms of the factors operative in the establishment of levels of

achievement motive and of fear of failure. Because of the early

appearance of achievement activities (Heckhausen & Roelofsen, 1962) and

the relative consistency of the motive over time (Moss & Kagan, 1961)

theorists have tended to relate its development to the child raising

practices of the parents. While considerable experimentation has been

undertaken in order to formulate a description of the parent whose

child tends to be high in achievement motivation (Drews & Teahan, 1957,

though related to 'achievement' per se; Winterbottom, 1958; Rosen &

D'Andrade, 1959; Crandall, Preston, & Robson, 1960; Rosen, 1961; Moss &

Kagan, 1961), work on the origins of failure anxiety is far more limited

(Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960; McGhee & Teevan,

1965; and indirectly Levin & Baldwin, 1959; and Paivio, 1964).

Conceptualising achievement motive and fear of failure as two independent

learned motives, four categories of parental behaviour need to be

considered: that which will develop both motives to a high degree; that

which will lead to a high achievement motive but not develop fear of

failure; that which will produce the converse; and that which will fail

to develop a great intensity of either motive.

The achievement motive, being an approach motive, must be based on positive reinforcement for success, and fear of failure, being an avoidant related motive, based on negative reinforcement for failure. The bulk of the evidence strongly supports these contentions. Apart from a Japanese study (Hayashi & Yamaushi, 1964), whose discordant results are discussed by Heckhausen (1968), studies on the parents of high need achievers has shown them to be rewarding of independence and achievement behaviour, and as McGhee & Teevan (1965) say, children "whose mothers were neutral following satisfactory behaviour and punishing following unsatisfactory behaviour had higher fear of failure motivation than those Ss (sic) whose mothers were rewarding and neutral, respectively (cited by Heckhausen, 1968, p. 134)."

It is disappointing that no studies are available which simultaneously consider achievement motive and fear of failure in relation to child rearing practices, but extrapolating from the available studies, parents of children high on both motives reward success and punish failure; where only achievement motivation is high they reward success but do not react to failure; for the converse there is punishment for failure without reward for success; and where neither is high little reinforcement is available for achievement oriented activities. As the first three of these groups demand a similar thing of their children, i.e. success against some standard of excellence, many aspects of their behaviour are likely to be similar.

From the child rearing practices of the parents, it follows that

the child high on achievement motive and low on fear of failure
(hereafter 'achievement oriented') will have received relatively
more positive reinforcement for perceiving situations in achievement
terms and for striving to excel in them. Beceause of this
differentially greater tendency to strive in such situations, he will
have had more experience of success than children not achievement
oriented, in situations of similar difficulty. His parents will have
encouraged him to overestimate, and reinforced him for overestimation
of, his own competence, and because of the greater effort he will
put into tasks, this overestimation may well be self-rewarding in
terms of the acquisition of increased competence. "Success-motivated
Ss (sic) experience a degree of excellence as having 'demand quality'
if it lies above their level of achievement, but only if it is
slightly above, so that it can still be reached with a concerted effort
(Heckhausen, 1967, p. 24, cf. also his chapter on the origin and
development of the achievement motive)."

It therefore follows that a person high on achievement motive
will tend to overestimate his probability of success comparative to
a person low in achievement motive. This overestimation will operate
most powerfully where the situation is most ambiguous (i.e. inter-
mediate task difficulty) as there will be an increasing credibility
factor operating as we approach either extreme of risk possibilities,
that is, a person is more likely to know those objective levels where
he never succeeds or always succeeds, than the exact levels where he
can succeed .50 or .60 of the time. This greater awareness of the
objective situation will limit the operation of the biasing effect.

However, even if this assumption proves not to be the case, so that the factor postulated below becomes monotonic relative to task difficulty, no major disruption to the theory is necessitated but only some variation in detail.

Thus the expectancy function may be revised to $E_s = P_s^O + j$ where 'j' is a small positive factor varying from person to person directly with strength of achievement motivation and varying in any situation from a limit of zero at the points where the task may always or may never be solved to a maximum at around a point of intermediate objective risk (.50).

Similarly, it can be argued that the parent whose child becomes achievement oriented, by overestimating, and encouraging the child to overestimate his capacity for achievement, lessens the incentive value of success in any task by rewarding less and altering the child's own estimate of the difficulty of the task. The incentive function must then be written $I_s = 1 + k - P_s^O$ where 'k' is a small negative factor with the same attributes as 'j'.

Thus, on a theoretical level, assuming expectancy and incentive are related multiplicatively in their contribution to behaviour tendency, Atkinson's (1957) post hoc statement of the effects of relating achievement tendency to an objectively established base is justified. There will be a biasing of the point of maximum tendency to respond to a level of difficulty greater than .50, however, now this biasing can be directly related to the strength of the achievement motive (Figures 1 & 2. The simplest appropriate curve which will pass through three points, (0,0), (1,1) and (x,y), where x and y are both

between 0 and 1, may be described by the formula $(x - a)(y - b) = ab$ and the curves shown in Figures 1 & 2 and hereafter are developed from this basic equation.).

A number of studies (Pottharst, 1955; Kausler & Trapp, 1958; Litwin, 1958; McClelland, 1958; Atkinson, Bastian, Earl, & Litwin, 1960; Atkinson & Litwin, 1960; Brody, 1963; DeCharms & Dave, 1965; and Meyer, Heckhausen, & Kemmler, 1965) can be read as support for this theoretical position, though, because most of them are based on subjective values, they need not be so. They do at least suggest the .50 assumption is tenuous even on subjective criteria, and for achievement oriented subjects levels above .50 are often chosen.

The downward biasing of tendency to avoid failure predicted by Atkinson (1957) for subjects high in fear of failure has some inherent difficulties. High fear of failure, as suggested earlier, presupposes a history of negative reinforcement in achievement situations, which implies a consistent pattern of failure. An underestimation of competence will lead a person to succeed more often than he expects to, as he will tend to overstate the difficulty of his succeeding at tasks. Therefore, a tendency to underestimate, or even a realistic appraisal, of competence, would not normally result in the history of failure necessary to establish a high level of fear of failure motivation. On the contrary, what is required is that the person overestimate his level of competence, so that he will fail to live up to his expectations for himself. Thus, although paradoxical, the view, that the person high on fear of failure overestimates his competence, is more consistent, on logical grounds, with the possibility of
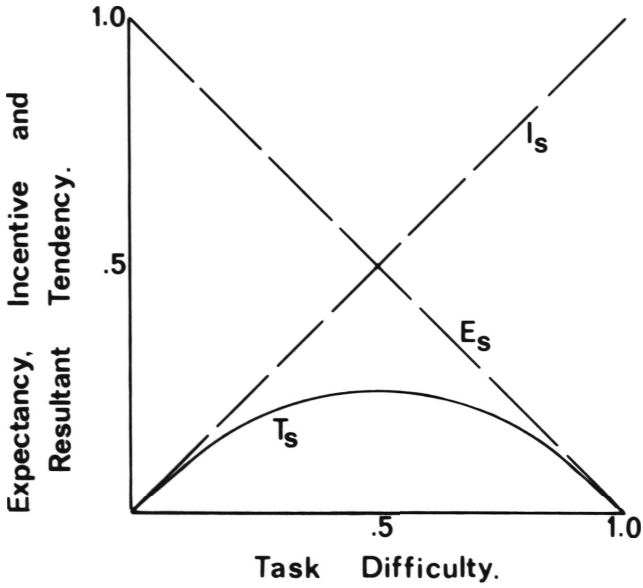
Fig. 1. Theoretical values of expectancy and incentive value of success, and achievement tendency, as functions of task difficulty for low n Achievement. (max. j = 0, max. k = 0.)
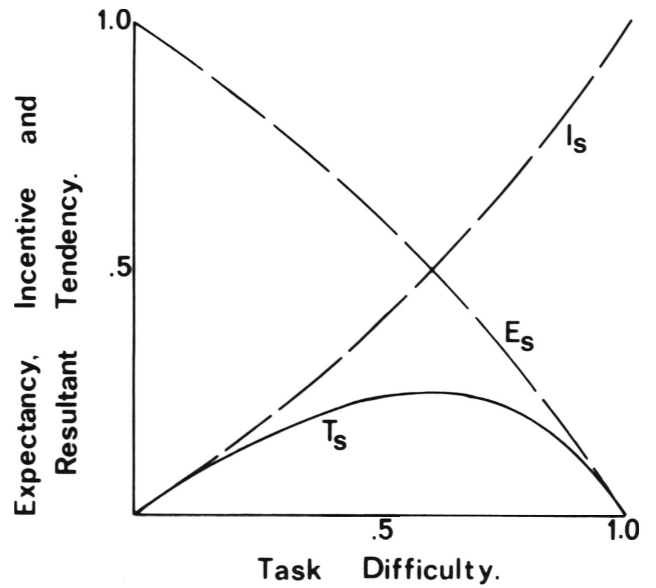
Fig. 2. Theoretical values of expectancy and incentive value of success, and achievement tendency, as functions of task difficulty for high n Achievement. (max. j = .2, max. k = .2.)
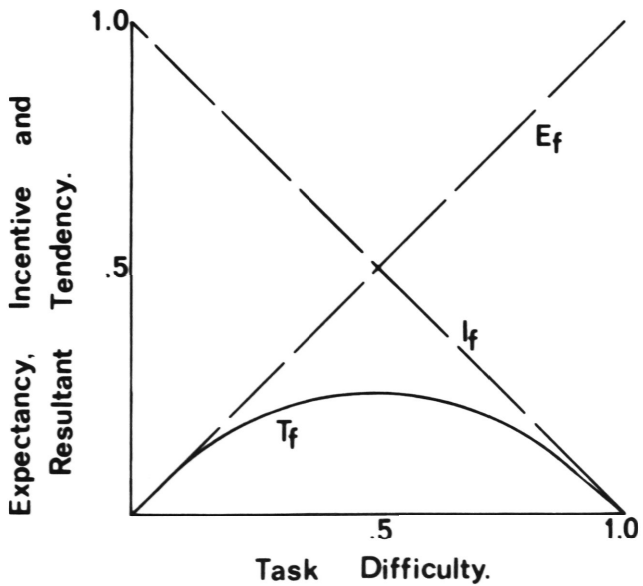
Fig. 3. Theoretical values of expectancy and incentive value of failure, and tendency to avoid failure, as functions of task difficulty for low fear of failure. (max. l = 0, max. m = 0.)
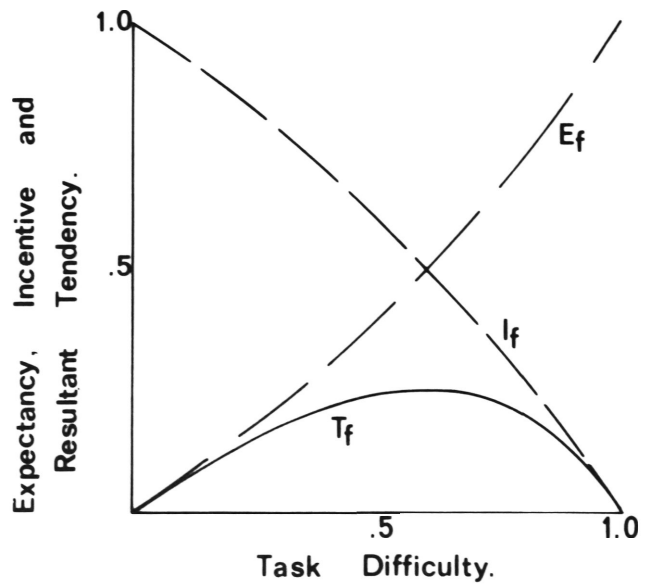
Fig. 4. Theoretical values of expectancy and incentive value of failure, and tendency to avoid failure, as functions of task difficulty for high fear of failure. (max. l = .2, max. m = .2.)

establishing that high fear of failure, than is Atkinson's contrary suggestion.

However, whereas the achievement oriented person will strive harder to gain the reward (and so possibly do so), the person with low achievement motive and high fear of failure (hereafter 'failure oriented') will be more likely to expend his energy defensively trying to leave the field and so lessen his chances of success. Moreover, as McGhee & Teevan (1965) found, the achievement oriented subject will have been rewarded and not punished for striving in such a way, but the failure oriented subject will have been punished and not rewarded. So while the failure oriented person is like the achievement oriented in his overestimation of his competence, he differs in that, because of his disposition to evaluate situations in terms of failure and punishment, he will try to avoid, or will be inhibited in, the situation and therefore if constrained to perform will tend to be even more likely to fail and reinforce further his fear of failure.

The problem left to be resolved is why failure oriented subjects do not, therefore, alter their estimation of their competence downwards, as indeed Feather (1965) has argued they do. While it is necessary to concur with Feather in his conclusion that there is "an autistic biassing of probability of success among subjects high in M_s, especially under conditions where I_s is high (i.e. where the task is presented as difficult), and a defensive biassing of these judgements among subjects who are high in M_{AF}, especially under conditions where I_f is high (i.e. where the task is presented as easy) (p.125)", his use

of the term 'defensive' may be argued. As he describes it, this latter biasing is an <u>adaptive</u>, rather than defensive, response to a history of failure. However, failure frustration is more likely to promote the truly 'defensive' response of rigidity of attitude whereby the person's competence continues to be highly estimated despite constant evidence of lack of competence (cf. Maier, 1949, 1956, on frustration and fixation). Indeed, as previously argued, only such a proposition, that there is a <u>defensive</u> bias towards an <u>overestimation</u> of competence, is consistent with the establishment of high levels of fear of failure. Although Feather's (1965) evidence must be seen as initially in disagreement with this position, two factors should be weighed against this. First, the present theory is held to be applicable only when the subject is fully aware of, and has had experience in the situation, or a parallel. Feather's results only apply to initial choice and fade thereafter. Secondly, requiring the subjects to state an estimate of success probability before commencement of the task, raises the possibility that they interpreted the task as òther than Feather intended. If success in the task was interpreted as being in some way dependent on such ratings, subjects with high failure anxiety are likely to state an underestimation as this will increase the likelihood of their exceeding their stated estimate. As Atkinson & Feather (1966b) say: "it seems more consistent with the general theoretical position adopted to view any self descriptive verbal report as a complexly determined instrumental

act and to undertake the task of explicit conceptual analysis of the determinants of this type of instrumental activity (p. 348)". Feather's study is not sufficiently unequivocal for it to be used to justify a theoretical position which is in doubt on a priori grounds.

It is the assertion of this argument that, as the failure oriented subject must have experienced a history of failure, it follows that he normally overestimates his ability and therefore the expectancy and incentive functions must be corrected as were those for achievement motivation except that the factor added to the expectancy function will be negative and that added to the incentive function positive. ('l' and 'm' will be used to express these values). Resultant tendency to avoid failure, being the product of these two terms will be biased upwards also, meaning that fear of failure will exercise its strongest effects at a level above .50 (Figures 3 & 4).

On the basis of the argument so far, it can be concluded that, assuming a multiplicative relationship between them, expectancy and incentive effects are strongest, for both achievement desire and fear of failure, not at a .50 level of objective risk but at some point above that, depending on the strength of the appropriate motive.

3.3. Tendency to approach success and tendency to avoid failure.

As the complex relationships that exist between motive, expectancy and incentive have been controlled by incorporating them into the discussion of expectancy and incentive, motive to achieve success and motive to avoid failure may be dealt with as simple uniform

functions following Atkinson's pattern (see above). As implied earlier no better model for the interaction of the three parameters than Atkinson's multiplicative approach is available, for, despite a lack of any but a mathematical rationale for this, its predictive success has been high enough to justify its retention.

Thus the relationship between resultant tendencies for success and failure and objective risk for various strengths of achievement and failure motivation will be of the form presented in Figures 5 and 6.

3.4. Relative strength of need achievement and fear of failure.

To diagramatically and arithmetically present his theory, Atkinson is forced to create an arbitrary scale of strength for both need achievement and fear of failure (as was also necessary in Figures 5 & 6 of this presentation). However, the assigning of equal units of strength to each results in the need to postulate a considerable degree of 'extrinsic motivation (Atkinson, 1964, p. 247)' to explain why those persons whose fear of failure exceeds their desire for success do not avoid performing altogether.

While not denying an important role to such extrinsic motivation, a more parsimonious explanation is that for the normal person the desire to achieve success is generally more potent than the fear of failure and that the latter is mainly a limitation on the former. That is not to say that for certain tasks the desire to avoid failure may not predominate in some individuals, however, in terms of general lifestyle, the alternative is to conceive of a personality where, unless constantly under external pressure, the individual will
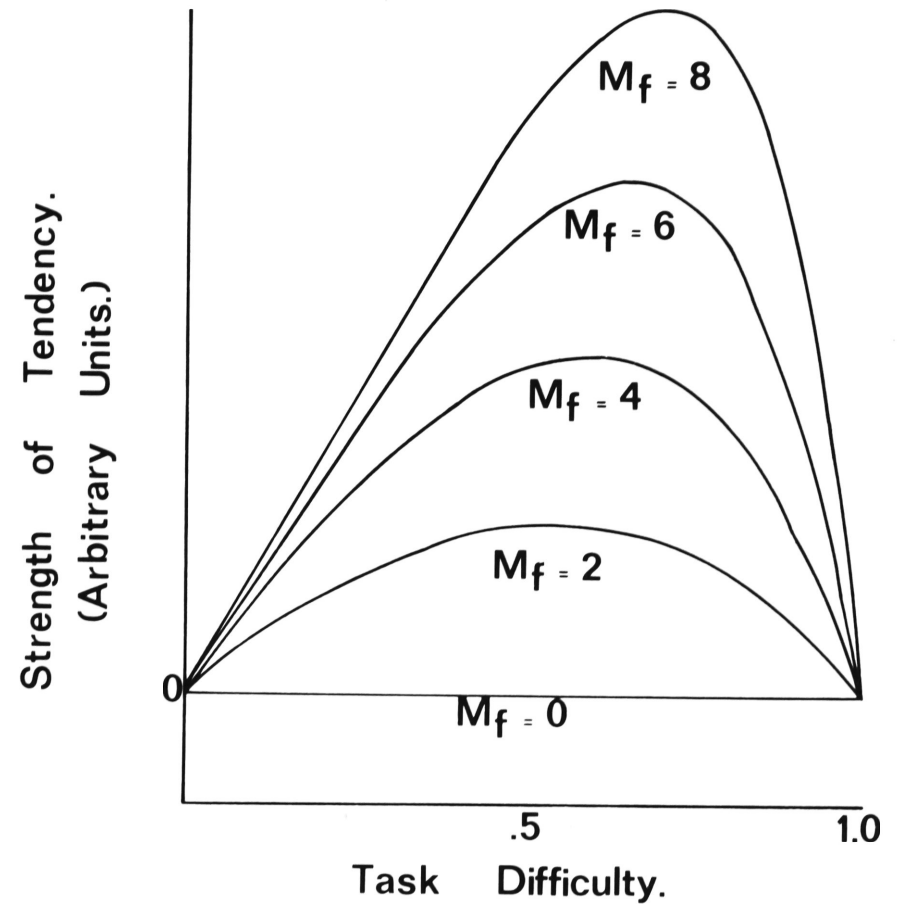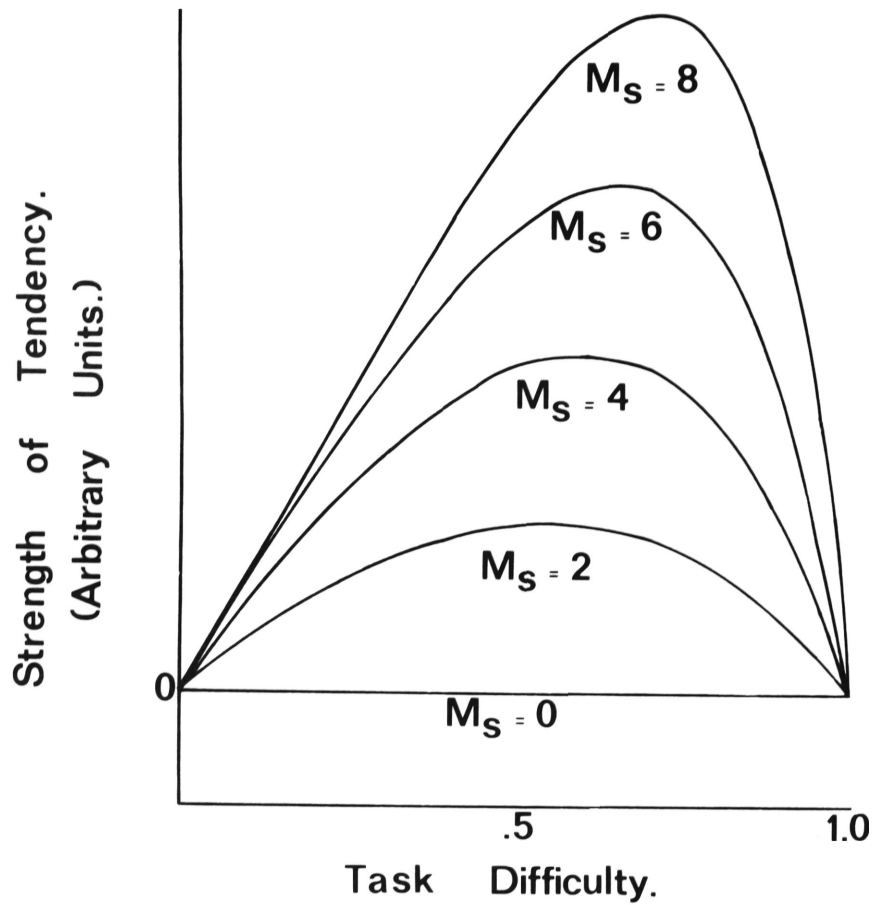
Figs. 5 & 6. Tendency to strive for success and tendency to avoid failure as functions of task difficulty for five levels of achievement motive (M_S) and of fear of failure (M_f). (Assuming for convenience that the relationship between 'j' and 'k' and M_S can be expressed by the formula max. j = max. k = .05M_S arbitrary units and between 'l' and 'm' and M_f by the formula max. l = max. m = .05M_f arbitrary units.)

inevitably avoid any exercise of competence.

The assumption that for the majority of people the desire to achieve is stronger allows the theory to be formulated in terms related entirely to achievement without the need to use extrinsic effects as explanatory concepts, (although for practical purposes these would still need to be considered).

3.5. Conflict theory as a basis for understanding behaviour in achievement situations

Given then that only two tendencies (to approach success and to avoid failure) are initally involved, (as in practice Atkinson always has), the original theory arrives at the tendency to behave in terms of an additive relationship between these two. Yet, concurrently, both Atkinson (1964) and Heckhausen (1967) recognise that it is in fact a conflict situation. To assert that conflict is involved is both to reject the concept of motive to avoid failure as an inhibitor of behaviour, as the very definition of conflict (Lewin, 1935; Miller, 1944; Yates, 1962; Kimble, 1964; Maher, 1966) is in terms of mutually exclusive 'response' tendencies; and also to reject the idea of an additive relationship between the two tendencies. There is great value in approaching the joint operation of tendency to approach success and tendency to avoid failure as an approach-avoidance conflict, using as a basic framework Maher's (1964) 'parallel gradients' revision of Miller's (1944) theory of conflict. Maher's theory generates hypotheses not directly available from Atkinson's presentation and its approach is much closer to the 'Zeitgeist' of modern psychology. Although Maher's revision has been selected as a

basis, Miller's original theory would yield very similar results, so no attempt will be made to argue the relative merits of each.

3.6. The goal gradients.

The first prerequisite in such a presentation is again a specification of the nature of the parameters. The tendency to approach success T_s on any task is represented in terms of a positive goal gradient (cf. Miller's (1944) first postulate). There will be a different goal gradient for every level of task difficulty, having the same shape but being higher where T_s is higher. Therefore, for subjects with high need achievement, the goal gradient to approach success, that is the gradient of approach to perform at a level of risk will be strongest at a point above .50, while for subjects with low need achievement it will be strongest at .50, and for each it will progressively diminish on either side of these points. As for all goal gradients, the gradient at any level of difficulty becomes stronger the closer (not necessarily spatially) the person come to responding, and so, a strong extrinsic orientation to one level of difficulty may bring a person to a position where the goal gradient for that level is stronger at that point than the maximum goal gradient is at the same point. This may cause him to experience the strongest approach tendencies to a difficulty level other than that representing maximal tendency to achieve. For this reason, every possible effort needs to be taken to avoid the operation of extrinsic factors in test situations. This is the major weakness of Atkinson & Litwin (1960), upon which evidence Atkinson leans fairly heavily (e.g. Atkinson, 1964),

especially in the light of Atkinson & O'Connor (1966).

A similar analysis pertains for the avoidance gradients based on fear of failure. Again the gradients are maximal at a point above .50 where the underlying motive is strong and approach a maximum at .50 as the motive lessens in strength. Again, for all levels of difficulty the gradients increase in strength with proximity to the goal point, (i.e. the level of risk chosen for performance). This is in accord with Miller's (1944) second postulate.

3.7 The operation of the model

To demonstrate the dynamics of the model it will be necessary to consider the four cases derived by pairing high or low desire for achievement with high or low fear of failure[1] in terms of the conflict between the resultant response tendencies to approach and avoid (Figures 7,8,9 & 10).

In the 'parallel gradients' model of conflict (Maher, 1964, 1966), the gradients of approach and avoidance are represented as diminishing at an equal rate with distance from the goal and conflict only occurs where the approach gradient is the higher. Instead of Miller's (1944) 'conflict point', there is a 'zone of conflict' which stretches for a certain distance from the goal and the intensity of the conflict is dependent on the extent of this zone, which, in turn, depends jointly on the absolute and relative strengths of the two tendencies, as the organism passes into the zone at the point where the two tendencies become functionally equivalent and this is a function of the difference in the magnitude of the two tendencies

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[1]High and low are defined within the single motive and not relative to one another as it has already been assumed that n Achievement is normally the more powerful motive.
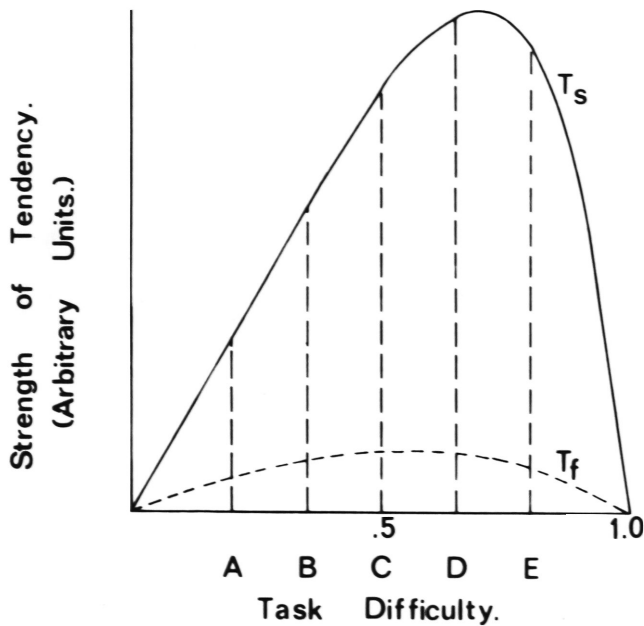
Fig. 7. Strength of resultant approach tendency (T_s) and avoidance tendency (T_f) as functions of task difficulty for high n Achievement and low fear of failure.
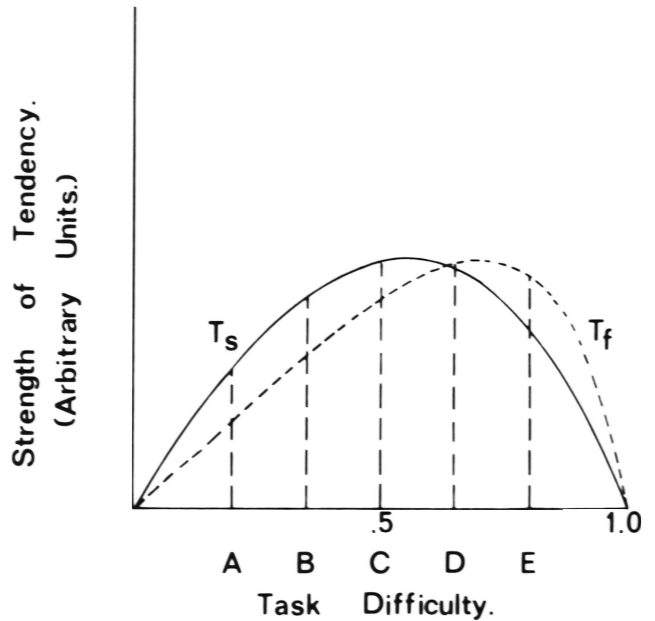
Fig. 8. Strength of resultant approach tendency (T_s) and avoidance tendency (T_f) as functions of task difficulty for low n Achievement and high fear of failure.
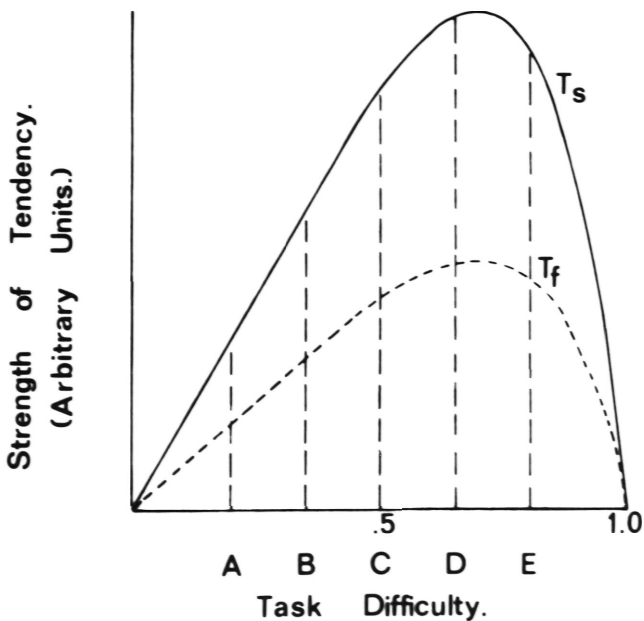
Fig. 9. Strength of resultant approach tendency (T_s) and avoidance tendency (T_f) as functions of task difficulty where both n Achievement and fear of failure are high.
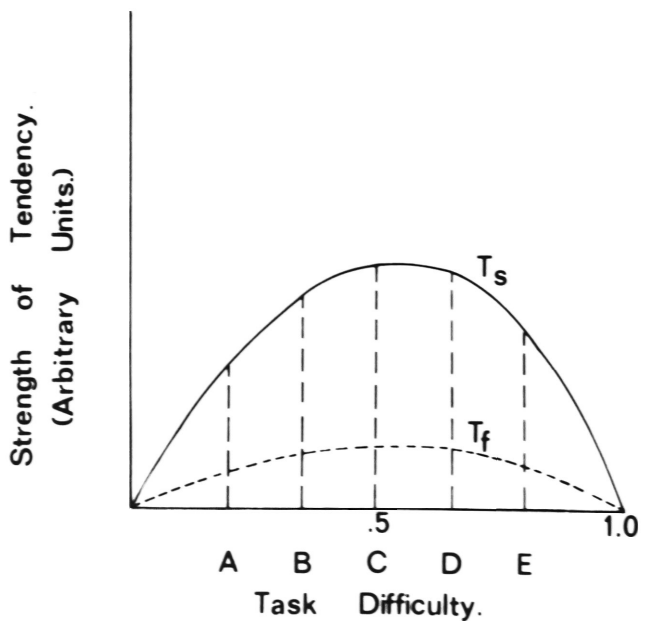
Fig. 10. Strength of resultant approach tendency (T_s) and avoidance tendency (T_f) as functions of task difficulty where both n Achievement and fear of failure are low.

relative to the absolute strength of either. If we apply this model

to the case where achievement motive is high and fear of failure

low, (Figure 7) we can graph the conflict situations at points

A,B,C,D, and E and so demonstrate where along the scale of task

difficulty the conflict involved in making a decision to act is

minimal (Figures 11-15).

It is clear that the most extensive, and therefore most intense,

conflict zone applies at low risk (P_s^o = .85, Fig. 11) and the conflict

becomes easier to resolve as we approach a point of moderately high

risk (P_s^o = .35, Fig. 14) and then becomes more troublesome as the

task continues to increase in difficulty. Thus, when constrained

to perform at some level of risk ‡he individual will be able to do

so with minimal exposure to conflict at a moderately high level of

risk. However, an intermediate (.50) level of risk will still be

preferred to either extreme of risk.

A similar analysis of Figure 8, that is of the situation con-

fronting the person of low achievement desire but higher fear of

failure will reveal that moderately low risk levels involve least

conflict and so will be preferred in the constrained situation, and

that overall, the conflict level will be higher and the differences

between task difficulty levels less marked than in the converse

motivational case. Maximal conflict will occur at moderately high

risk and at greater risk levels the tendency to respond must be

assessed in terms of the strength of the avoidance response.

Where both motives are strong (Figure 9) there will be a

differential tendency to prefer moderately high risks, however, the

relative difference between levels will be less and the overall conflict
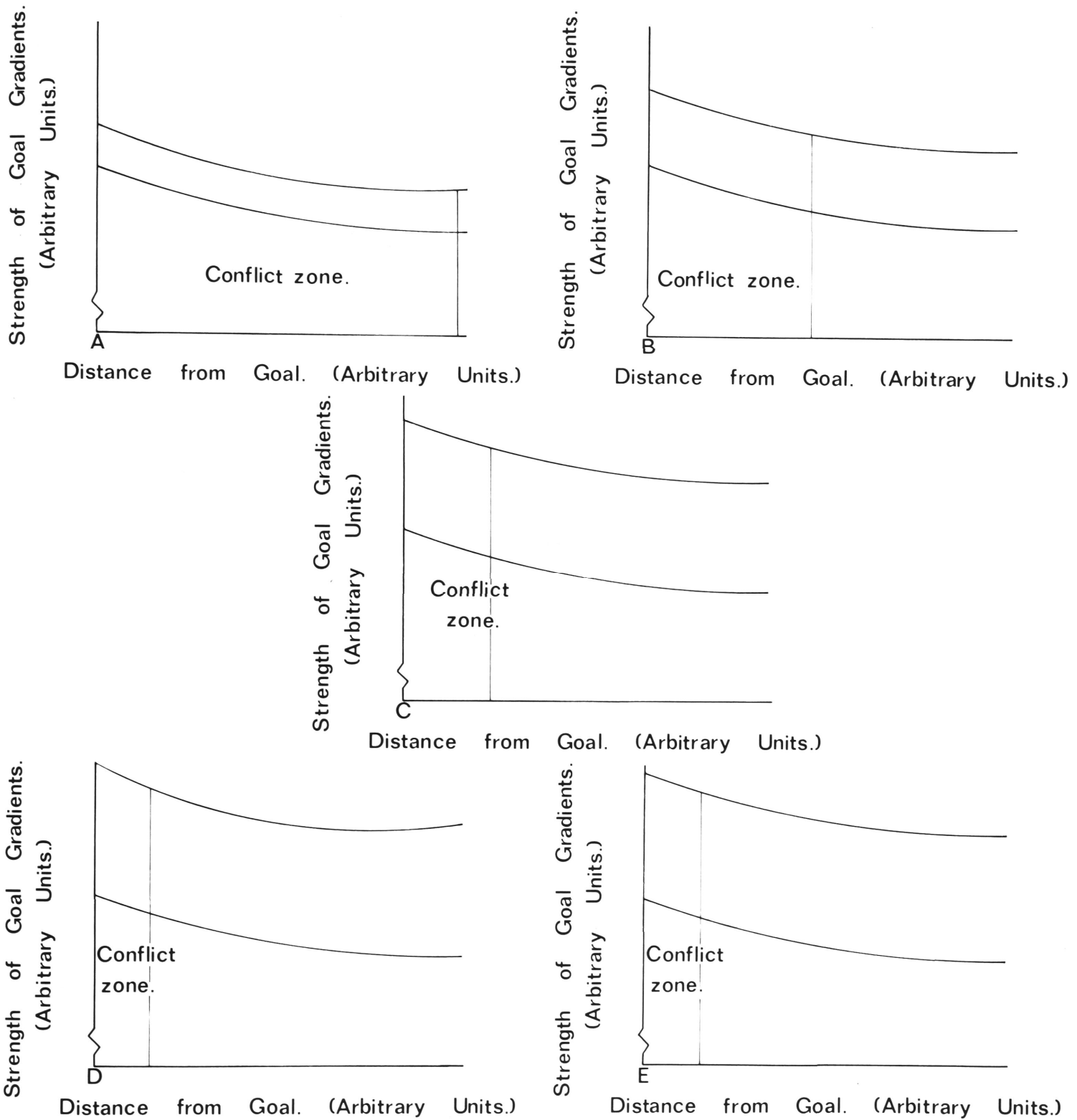
Figs. 11, 12, 13, 14 & 15.   Goal gradients of approach (solid line) and avoidance (dotted line) for high n Achievement, low fear of failure, at points A (Fig. 11), B (Fig. 12), C (Fig. 13), D (Fig. 14) and E (Fig. 15) derived from Fig. 7.

greater than where only achievement desire is strong. Where both motives are weak (Figure 10) preference will be for an intermediate level of risk with a low conflict level and small differences between various risk alternatives.

Therefore, the strength of ultimate tendency to respond at various risk levels for these four alternatives can be graphed as in Figure 16, however, the relative strength of these tendencies are assigned somewhat arbitrarily in the graph.

As the actual probability of response at any level of risk depends not only on the absolute strength of the tendency to respond at that level but also on the relative strengths of tendency to respond at all other levels, the probabilities of response at each level for the four alternatives may be represented as in figure 17. (Areas under each of the curves have been equalised.).

3.8. Direct behavioural consequences of the model

Making the justifiable assumption that people tend to choose to perform in such a way as to minimise conflict and so avoid levels of risk where conflict experienced is great we are able to specify some conclusions about the <u>objective</u> risk levels people will prefer and it becomes clear that more complex relationships are involved than Atkinson's presentation suggests. Often, in fact, the conclusions are directly at variance with the original conclusions.

Whereas Atkinson represents the resultant tendency curves as symmetrical around .50 it is now asserted that relative to objective criteria the achievement oriented curve is negatively skewed with its mode at a point below .50. This means that the achievement oriented
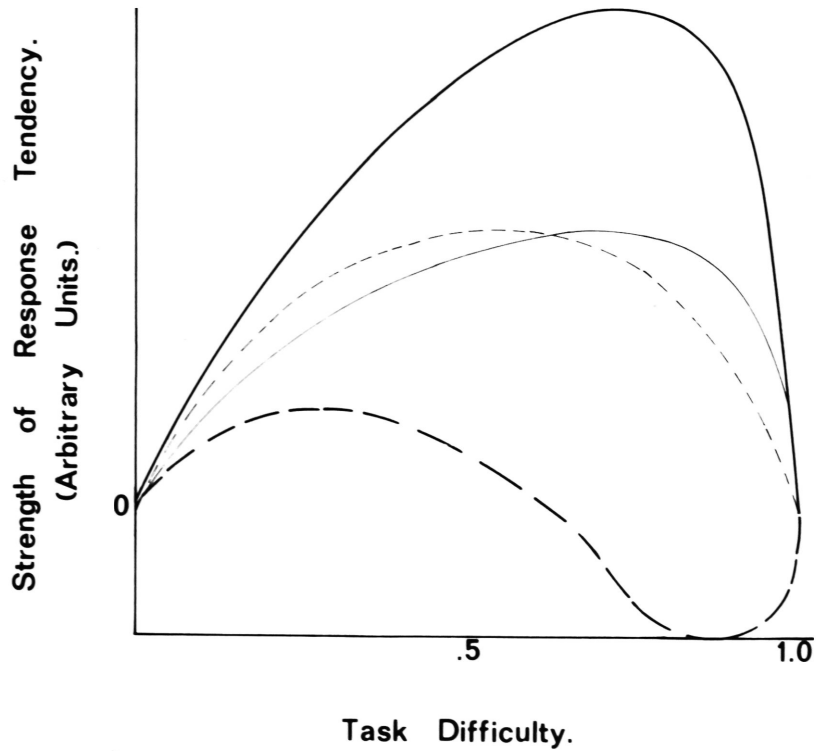
Fig. 16. Theoretical curves representing the ultimate tendency to respond at all levels of task difficulty for subjects who are achievement oriented (solid thick line), failure oriented (dotted thick line), high on both motives (solid thin line), and low on both motives (dotted thin line).
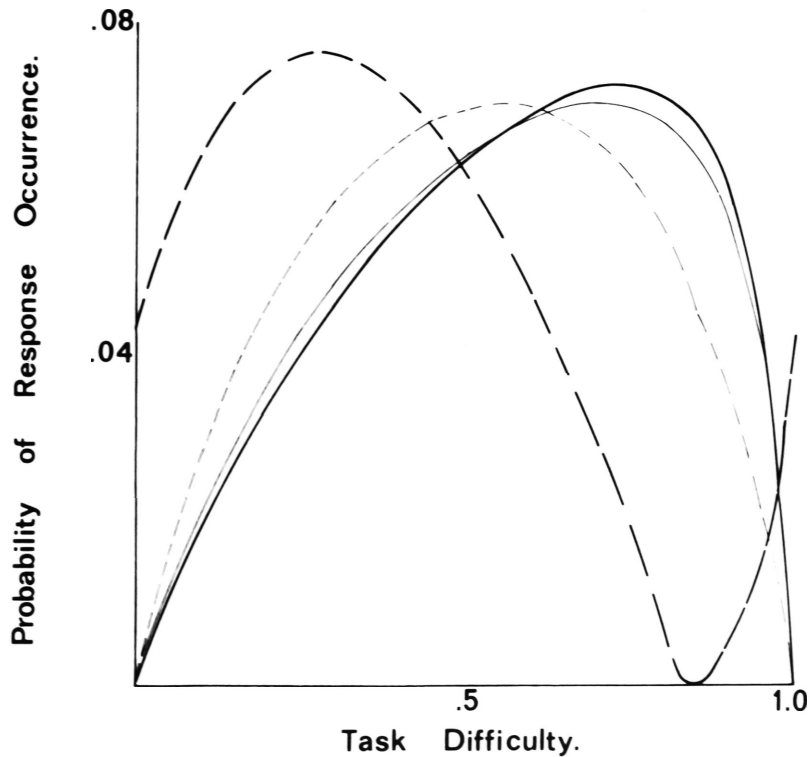
Fig. 17. Probability of the occurrence of a response at all levels of task difficulty for subjects who are achievement oriented (solid thick line), failure oriented (dotted thick line), high on both motives (solid thin line) and low on both motives (dotted thin line).

person will tend to take greater risk than the failure oriented person. The findings that the achievement oriented person is more likely to prefer 'intermediate' subjective risk and the failure motivated person to avoid it (Litwin, 1958; Atkinson & Litwin, 1960: Brody, 1963; Littig, 1963) is possibly attributable to the fact that subjects high on both motive prefer the same objective risk to those where achievement motivation dominates, and where both are low a .50 level of risk is chosen. If an overall median is taken it will be closer to the median value of the achievement motivated group than to that of the failure motivated group. Thus the former will seem less dispersed from 'intermediate' risk. In fact, as figure 17 shows, the distribution of the failure oriented is the more leptokurtic in form and it is the position of that mode, and the second mode at very high risk that is responsible for the apparently greater dispersion. However, the intermediate groups are more dispersed around their own mode than either the achievement or failure oriented, although differences are not great.

It has been assumed hitherto that there is always conflict between the approach and avoidance tendencies. However, within a conflict theory framework, it is clear that if achievement motive is sufficiently greater than fear of failure, there will be no conflict at all, as no conflict zone will exist. As the difference between tendency to achieve and tendency to avoid failure increases, this area of no conflict will spread from moderately high risk towards both extremes.

Unlike Atkinson's theory where an increased discrepancy leads to

an intensification of the tendency to intermediate risk, this suggests that there is an optimal level beyond which several levels of risk may be reached without conflict and extrinsic variable will become much more important in the specification of risk choice. Other motives, or simple spatial orientation may be the deciding factors.

If fear of failure exceeds achievement motive in its effects for all levels of risk, then, without a clear specification of the effects of extrinsic motivation, no prediction is possible. This varies from Atkinson's suggestion that extrinsic motive can simply be added as a single value to all risk levels and the predictions made from the theory once some positive tendency was established.

3.9.   Other behavioural implications.

Atkinson's conclusion that, with experience of success and failure, achievement oriented subjects will adjust their level of response to an intermediate risk level is confirmed, with the qualification that the adjustment is to a level of risk somewhat above intermediate.

Where fear of failure is high and achievement motive low (i.e. as this model suggests, where they are closely equivalent) the picture is more complex. If the person chooses and succeeds at a low level of risk, unless it is extremely low (e.g. P_s^o below .10) there will be little tendency for him to change this, although he will slowly adjust towards moderately low risk. Success at inter-mediate risk may well produce Atkinson's 'paradoxical' decrease in risk but only until the appropriate moderately low risk is achieved.

Failure at what was assumed to be a low risk will normally lead to a rapid lowering of risk level chosen to a level consistent with moderately low risk. However, in the event of such a reaction being impossible there are two possible alternatives which may be predicted. The first is fixation at the same risk level as a result of frustration; but more likely is the reaction predicted from Figures 8 and 16. As the avoidant tendency comes closer to equality with the approach tendency (Figure 8) then conflict increases, to the point where (in Figure 16) the resultant tendency to respond reaches zero as the approach and avoidance tendencies negate each other. But as soon as the avoidance tendency exceeds the approach tendency by an appreciable amount (as it may for very high levels of risk when fear of failure is close to the desire to achieve in strength) then response is made entirely to it and the person will seek the point where it is least strong. This means, as shown in Figure 16 that it is possible for the ultimate tendency to perform for this group to rise again at very high levels of risk. Thus a failure oriented person whose pattern of failure suggests moderately high risk may increase their risk level if it is impossible to decrease it.

Unlike the subjective presentation of the theory, it must be assumed that there will not be deliberate choice of risk levels above .50 and the appearance of such choices in certain individuals will suggest either an extraordinarily high level of fear of failure relative to achievement motivation or the operation of over-riding extrinsic. factors. Moreover, contrary to Atkinson's approach, failure at a supposed intermediate level of risk will only rarely lead to

an increase in risk level.

Thus the major differences in the approach here presented from that of Atkinson are that atypical increases in risk will be a rare occurrence relative to atypical decreases in risk, and further that the changes with regard to low level of risk operate identically with the changes for achievement oriented subjects but with a different point of maximal tendency to respond.

Moulton (1965) unfortunately presents no evidence on the direction of atypical shifts and so his results can be read in support of either position. However, his initial choice figures suggest some verification of the pattern in figure 16 with the exception that the failure oriented group is grouped closer to .50 than predicted.

The theory of achievement motivation, as here presented, has the advantages of a closer relationship to other theories current in psychological thought and of an objective frame of reference. It is at variance with Atkinson's presentation at several points and the intention of the experiment described in this thesis is to evaluate these two approaches at some critical points of difference.

CHAPTER IV

Hypotheses and Resultant

Methodological Issues

The hypothesis which follows from the theory outlined in Chapter III is that the level of preferred risk will increase with the degree to which achievement motivation exceeds failure anxiety (although the possible existence of supraoptimal levels has been foreshadowed) and that preferred level of risk will be somewhat above .50 for the achievement oriented, and somewhat below .50 for the failure oriented.

Three specific hypotheses which will enable a test to be made of the validity of the theory, may be derived from the above proposition and the argument which leads to it.

Empirical curves of risk level chosen by achievement oriented and failure oriented groups should approximate in general form the theoretical curves developed in Chapter III (Figure 17) and therefore the median of the achievement oriented group will be expected to lie above .50 and that of the failure oriented group below .50. The median of an intermediate group, comprising the joint results of those high, or low, on both motives should lie between the medians of the achievement and failure oriented groups and slightly above .50. The median was preferred to the mode as the basis of comparison, as the small number of choice alternatives would make the mode too gross a measure, and also to the mean, as the theoretical likelihood

of a few extremely high risk choices in the failure oriented group would bias the mean further than the median from the most commonly preferred level.

Therefore the first hypothesis may be stated: <u>that the median risk level chosen will be: (a) above .50 for an achievement oriented group; (b) below .50 for a failure oriented group; (c) above .50 and between the medians of the achievement and failure oriented groups for a group whose orientation is intermediate between the two.</u>

In any single risk choice of any individual a wide range of motivational and situational factors would be expected to influence that particular choice. However, if subjects were arranged in groups ranging from extremely failure oriented, through intermediate to extremely achievement oriented, this would have the effect of diminishing the influence of the extraneous variables that affect an individual's choice, and thus, of clarifying the influence of achievement and failure orientation. If subjects are so grouped, the theory leads to the expectation that the level of risk chosen will increase with the degree to which achievement orientation is predominant over failure orientation. Thus the second hypothesis may be stated: <u>that, based on group means rather than individual scores, degree of risk chosen is positively correlated with the degree to which achievement motivation predominates over fear of failure motivation.</u>

If this is true, especially as more extremely different groups are chosen, achievement oriented subjects will choose a higher mean

level of risk than will failure oriented subjects. It is hypothesised:
that an achievement oriented group of subjects will choose a
significantly higher level of risk than a failure oriented group.

Testing these hypotheses creates certain methodological problems
which need to be considered before a detailed methodology can be
developed.

4.1. The measurement of achievement motivation.

It has been normal in experiments of this kind to use a projective
measure of achievement motivation such as the Thematic Apperception
Technique (T.A.T.), devised by McClelland et al (1953) from Murray's
Thematic Apperception Test (Murray, 1943), or the French Test of
Insight (French, 1955b, 1958). The former, which has the backing of
more extensive theory and research (cf. Heckhausen, 1967), was chosen
for use. The scoring was carried out by a rater[1] experienced with the
test as, despite the assurances in McClelland et al (1953, i.e. a
.96 rank order correlation between experienced and inexperienced
raters), the value, in terms of validity, of experience in rating
projective material could not be overlooked.

The difficulties inherent in the use of a projective measure led
to the inclusion of a second measure of n Achievement, one pioneered
by Morgan, (1964), because of the possibility it offers of an
entirely objective measure of n Achievement, which still avoids some
of the problems of self-rating questionnaires. While a theoretical
case (Morgan, 1964) can be made for the generality of Morgan's
technique, it gains its experimental support entirely in terms of
socio-economic achievement striving (Strodtbeck, McDonald, & Rosen,

[1]Dr. J.L. Morris who scored the tests has had considerable experience
with McClelland's measure and has demonstrated a high level of
consistency with other experienced raters.

1957; Morgan, 1964), and its predictive value in other risk related tasks is yet to be tested.

Certain changes in the test were necessary to adapt it for Australian usage. Though the occupations chosen were as in the original, in three cases a terminological change was effected. 'Mail Carrier' became 'Postman', 'Bookkeeper' became 'Clerk-Accountant' and 'Drugstore Owner' was altered to 'Pharmacist'. While the parallels are not perfect, as close a correspondence as possible was attempted. It was evident, moreover, that the N.O.R.C. occupational prestige scale (Barber, 1957) upon which Morgan based his ratings could no longer be used. Morgan, himself, noting the discrepancies between the N.O.R.C. ratings and his empirical values, commented: "A better index could presumably be developed by using the rankings from our study (1964, p. 248)." Extending this idea, in the present study each subject provided his own ranking for difficulty of succeeding in each occupation (this being more theoretically sound than a prestige rating which may involve many extrinsic factors), and it is against these rankings that his 'value' ratings were evaluated, rather than an arbitrary external scale or group decision. The scale derived by this method will be referred to as the Revised Morgan Scale (R.M.S.).

Morgan (1964) reports that his scale did not correlate with the T.A.T. in one study, and fails to detail support for his statement that: "Other attempts to correlate the two measures have been more successful (p. 251)." If the Morgan measure is to find acceptance as a measure of achievement motivation, it must either correlate with the

T.A.T. or prove as adequate a predictor of behaviour. This requires

the testing of the two hypotheses: <u>that n Achievement scores based</u>

<u>on the Revised Morgan Scale will be positively correlated with</u>

<u>n Achievement scores based on the Thematic Apperception technique;</u>

<u>and that the Revised Morgan Scale will allow prediction of behaviour</u>

<u>with equal certainty to the Thematic Apperception technique.</u> Thus

if the three major hypotheses are confirmed using the T.A.T.,

confirmation is also expected using the R.M.S. The T.A.T., being

widely accepted as a basically valid measure of n Achievement, is

therefore used as the criterion for evaluating the R.M.S.

4.2. The measurement of fear of failure.

On the basis of the confidence of Atkinson and his co-workers;

(Litwin, 1958,; Atkinson & Litwin, 1960; Feather, 1961, 1963; Littig,

1963; Moulton, 1965; etc.) in the Mandler-Sarason Test Anxiety

Questionnaire (TAQ) (Mandler & Sarason, 1952), the college form of

that test was chosen for use in this study. It proved necessary to

omit one question as inappropriate to Australian students. Although

there is a considerable body of literature to suggest that the T.A.T.

and T.A.Q. are uncorrelated (Litwin, 1958; Atkinson & Litwin, 1960;

Brody, 1963; Atkinson & O'Connor, 1966; Smith, 1966), the occasional

findings of a degree of correlation (Raphelson, 1957; Smith, 1966)

and especially the suggestion (Smith, 1966) that this is closely

related to conditions under which the tests were administrated,

necessitated that the possibility of such correlations be assessed in

this study. It is necessary also to establish the independence of the

R.M.S. from the T.A.Q.

4.3. The measurement of risk preference

As the present theory of achievement motivation is stated, the hypotheses to be tested can only validly be so in a test situation in which the subject has had sufficient experience to establish soundly based expectations. However, to allow maximum control, it should also be a task in which prior experience, that is, experience of which the experimenter has limited knowledge, should be minimised. To meet the second of these requirements a quoits game (the American 'ring toss', as in Atkinson & Litwin, 1960) was selected as, although virtually everyone has at some time played quoits, very few people have an extensive achievement related experience of the game. Two subjects had to be omitted from the study, one who had played competition quoits and one who played socially every week.

Because the subjects came to the situation with a minimum of specific expectations about their ability, in a practice session intended to fulfil the first requirement mentioned above, it was possible not only to directly establish their expectations on the basis of their own observed ability, but also by keeping a record of their ability, to allow the experimenter the closest possible knowledge of those expectations. This approach, also used by DeCharms & Dave (1965), brings subjective probability of success as close as possible to the objective probability, and thus, with some caution, it is possible to relate directly the level of risk chosen by the subjects, to their expectations.

It is therefore possible to fulfil a further requirement of the theory, an objective framework, as an objective definition of risk

level based on the subject's assessed ability will closely approx-
imate the subject's expectations. It is disappointing that,
although DeCharms & Dave recognise this possibility in their
'probability deviation' score, they give more weight to a measure
of intermediate risk based on the group norm.

In summary, by recording success and failure during an extended
practice session, it becomes possible to record with a tolerable
degree of accuracy the subject's expectation of success for various
levels of objective task difficulty. For instance, if in practice
a person succeeded on .50 of occasions at all distances tested between
seven feet and nine feet from the quoits peg, but more often closer and
less often further away, then that defines <u>for that individual</u> the
range of intermediate risk. A similar. rationale applies for all
other levels of risk.

The preservation of a record of the subject's probability of
success at different distances meant, further, that he could be
required to choose a 'level of risk' directly (as in DeCharms &
Dave, 1965), rather than the experimenter having to draw inferences
from his choice of distance (as in Atkinson & Litwin, 1960). On
at least two occasions when subjects, without waiting for full
instructions, chose distances at which to perform, they altered those
choices when made aware of the probability of success involved. The
choice of a distance can represent the effects of a multiplicity of
factors, as exemplified by one of those two subjects who, on
questionning, after the task was completed, about the change he had
made, volunteered that he had felt 'comfortable' at the chosen distance

but that when the low level of risk involved was specified to him, he felt capable of success at a more difficult task.

Unlike Atkinson & Litwin, but similarly to DeCharms & Dave, subjects were tested individually, despite the great increase in experimental time involved, largely because of the possibility of significant effects from the affiliation motive (Atkinson & O'Connor, 1966). Though the very presence of an experimenter introduces an affiliation problem (Rosenthal, 1966), it is nevertheless important to at least eliminate the effects of peer group influences. (Note Atkinson & Litwin's 'informal banter').

The subject was only allowed one free choice of risk level as either a measure based on the averaging of a number of free choices (DeCharms & Dave have twenty test trials) or the acceptance of each of a series of consecutive choices (Atkinson & Litwin used ten for each subject) introduces the effects of a variety of factors such as the influence of success and failure on subsequent choices. Indeed, Atkinson & Litwin's finding that achievement oriented subjects showed less dispersion in risk preference than failure oriented subjects may be attributed to the former being more easily able to adapt towards intermediate risk, than the latter, due to a greater flexibility of response.

4.4. The subjects used.

Allowing only one choice response raises considerably the number of subjects needed to develop usable figures in comparison, particularly, with Atkinson & Litwin's approach, and subjects needed to be able to attend three separate sessions of some duration. The insurmountable

difficulties involved in finding a large enough section of the
general population willing to so commit themselves, in association
with the fact that there is no inherent limitation to the applic-
ability of the theory, led to the choice of a mixed-sex group of
undergraduate students. This choice, however, presupposed certain
problems.

Although evidence against a relationship between intelligence
and achievement motive is considerable (Heckhausen, 1967 citing
McClelland et al, 1953; French, 1955a; Krumboltz & Farquhar, 1957;
McClelland, 1958; Weiss, Wertheimer, & Groesbeck, 1959; Mahone, 1960;
Hayashi, Okamoto, & Habu, 1962; Bartmann, 1963; Caron, 1963; Vukovich,
Heckhausen, & Von Hatzfeld, 1964; Smith, 1964) some studies do
suggest such a relationship (French & Thomas, 1958; Meyer et al, 1965;
Robinson, 1961, 1964; all of whom used groups of high I.Q., and
McClelland et al, 1953) and there is considerable evidence for a
relationship to academic success (McClelland et al, 1953; Rosen, 1956;
Weiss et al, 1959; Uhlinger & Stephens, 1960; Shaw, 1961; Robinson,
1964; Meyer et al, 1965; but cf. Lowell in McClelland et al, 1953;
Mitchell, 1961; Cole, Jacobs, Zubok, Fagot, & Hunter, 1962; Hayashi
Okamoto, & Habu, 1962; Caron, 1963). Although the issue is unclear
(see Heckhausen, 1967 for a discussion) the use of a limited range of
intelligence seems unlikely to affect achievement motivation beyond a
possible slight attenuation of the range towards higher levels. There
seems to be no studies relating intelligence to fear of failure. So,
at least initially, the only effect of the restricted range of intelligence
assumed to be possible is an increased difficulty, probably slight, in

obtaining significant differences due to restriction of the degree
to which groups could differ in n Achievement and fear of failure.

Intelligence test scores were available for most of the subjects,
so the relationship between intelligence and n Achievement, as
measured by the T.A.T. and R.M.S., and fear of failure, as measured
by the T.A.Q. was investigated to throw further light on this issue
and to ensure that intelligence was not operating as an extraneous
variable in this experiment.

Most studies of achievement motivation have used only male
students (McClelland et al, 1953; French, 1955b; Atkinson & Reitman,
1956; Moulton, Raphelson, Kristofferson, & Atkinson, 1958; Feather,
1959b; Atkinson & Litwin, 1960; Littig, 1963; Moulton, 1965; Smith,
1966; Atkinson & O'Connor, 1966; etc.) although there are exceptions.
(Atkinson, 1958b used females; McClelland, 1958 and O'Connor,
Atkinson & Horner, 1966 used mixed sex groups of children.) The
preference for male subjects has its basis in the findings of Veroff
(1950; described by McClelland et al, 1953) and Wilcox (1951;
described by Veroff, Wilcox, & Atkinson, 1953 and McClelland et al,
1953) that the increase in achievement imagery observed to occur
with males in the 'achievement oriented' presentation of the T.A.T.
relative to the neutral condition cannot be observed to occur with
females. However, these findings, suggesting that the T.A.T. is an
inappropriate instrument for use with females, have not been
replicated elsewhere (Angelini, 1959; Hayashi & Habu, 1962; Heckhausen,
1963), and Field (1951; reported by McClelland et al, 1953) has
shown that the increase can be effected with females with a change in

the nature of the instructions. Thus it appears that the projective measure may not be invalid for use with both sexes, however, if an achievement oriented presentation is used great care must be taken to find an approach which will engage the achievement related schema of both sexes. Further to this, from one series of studies (Lesser, Krawitz, & Packard, 1963; French & Lesser, 1964) it is clear that intra-sex differences may be as significant as inter-sex differences and so a technique needed to be developed to allow subjects to provide their own achievement orientation in light of their own achievement related values.

Thus, the session where subjects completed the T.A.T. followed by between one and two weeks, the performance of the risk choice task. Immediately before starting the T.A.T., the subjects were required to write down a short description of how they had felt during the performance of the risk task, the rationale being that this would cause them to recall the achievement feelings and orientation intrinsic in the task situation, yet allow them to supply, even if implicitly, their own frame of reference for these feelings.

To ensure that the use of a mixed-sex group had not seriously affected the experiment and especially to ascertain that males and females were performing consistently on the T.A.T., steps were taken to ascertain that male and female subjects did not differ in their mean response or dispersion of responses on the T.A.T., the R.M.S., the T.A.Q., or choice of risk level.

4.5. Summary

Three major hypotheses for testing were proposed in this Chapter.

They were:

Hypothesis 1.   That the median risk level chosen will be:

        (a) above 0.5 for an achievement oriented group;

        (b) below 0.5 for a failure oriented group;

        (c) above 0.5 and between the medians of the achieve-
            ment and failure oriented groups for a group whose
            orientation is intermediate between the two.

Hypothesis 2.   That, based on group means rather than individual
            scores, degree of risk chosen is positively correlated
            with the degree to which achievement motivation
            predominates over fear of failure motivation.

Hypothesis 3.   That an achievement oriented group of subjects will
            choose a significantly higher level of risk than a
            failure oriented group.

These three hypotheses were to be tested using both the T.A.T. and R.M.S. to measure n Achievement allowing the efficacy of the R.M.S. to be tested by comparison with the T.A.T. in two hypotheses:

Hypothesis 4.   That n Achievement scores based on the Revised Morgan
            Scale will be positively correlated with n Achievement
            scores based on the Thematic Apperception technique.

Hypothesis 5.   That the Revised Morgan Scale will allow prediction of
            behaviour with equal certainty to the Thematic
            Apperception technique.

Other methodological issues gave rise to nine minor hypotheses which were also tested relating to: the relationship between the T.A.Q. and (i) the T.A.T.; (ii) the R.M.S; the relationship between

intelligence and (iii) the T.A.T.; (iv) the R.M.S.; (v) the T.A.Q.; and the comparability of male and female responses on (vi) the T.A.T.; (vii) the R.M.S.; (viii) the T.A.Q.; and (ix) the risk choice.

C H A P T E R   V

Method

The methodology of the study will be presented under four major headings: Subjects; Apparatus; Procedure and Analysis of data.

5.1. Subjects.

Of an original group of 121 students from the first year of an undergraduate course in Psychology, eighty-two were selected as the experimental sample, of whom thirty-three were males and forty-nine females. The remainder were rejected on at least one of the following grounds: they served as trial subjects to allow refinements in procedure; their ability against distance decay curve was too steep (from $P_s^o = 1$ to $P_s^o = 0$ in one foot); they were very experienced in quoit throwing; they were completely negative in the experimental task; they falsified responses on the T.A.Q.; or they failed to attend one or more of the experimental sessions.

Scores on the ACER Advanced Test N (Australian Council of Educational Research, 1963) were available for seventy-two of these. All subjects were naive as to the theory of achievement motive, the intention of the experiment and the fact that the separate procedural steps were related.

5.2. Apparatus.

5.2.1. The Revised Morgan Scale.

As it was used in this study, the R.M.S. consisted of three sheets: an 'Occupational Difficulty Scale' (O.D.S.); an 'Occupational Satis-

faction Scale' (O.S.S.); and a work sheet. The O.D.S. required S's

to rate the percentage to the nearest 5% of male third form students

who could succeed at a list of nine occupations (based on Morgan, 1964)

which were listed in alphabetical order (Appendix 1). The O.S.S.

required students to rate how "most people would feel if a boy of

theirs chose each of ..." the same nine occupations as in the O.D.S.,

using the same five point scale of response as Morgan (Appendix 1).

The third sheet contained a pair of axes, the vertical titled

'Occupational Satisfaction' and marked at equal intervals with the

five scale points from the O.S.S., and the horizontal titled

'Occupations in order of perceived difficulty from least to most

difficult' and numbered from one to nine at equal intervals. Space

was left for S's to write in the nine occupations as they perceived

them to increase in difficulty from the O.D.S. The measure of n

Achievement was computed as the tangent of the angle of the line of

best fit (least squares method) of the points derived from graphing the

value ratings for each subject against his ratings of difficulty

(Appendix 1), and this value is the basis of all statistics related

to the R.M.S.

5.2.2. The Thematic Apperception Technique.

Slides of the four pictures numbered in order 2, 1, 8, and 7 by

Atkinson (1958a) were used in conjunction with foolscap response

sheets containing the four questions McClelland et al (1953) adapted

from Murray (1943) (Appendix 2).

The slides were projected onto a screen for group presentation

and the response sheets were scored according to 'Scoring System C'

of McClelland et al (1953).

5.2.3. Test Anxiety Questionnaire.

The college form of the Mandler-Sarason Test Anxiety Question-
naire (Mandler & Sarason, 1952) with the omission of question 15 as
inappropriate to Australian conditions was scored on a 10 point
scale. (Appendix 3).

5.2.4. The quoits and related material.

Six rope quoits, six inches in external diameter, were thrown to
a ten inch high peg, with diameter tapering from one inch to half
an inch, five inches in advance of a vertical backing board. Two
experimental instruction sheets (Appendix 4) were used with the quoits.

5.2.5. The setting.

A large store room was used with the quoits peg against the wall
at one end and the floor marked in chalk at six inch intervals from
the peg to a distance of twenty feet. A small table was placed to
the side of the area used for the quoits.

5.3. Procedure.

5.3.1. Session one.

In six class groups subjects were required to complete the O.D.S.
from the R.M.S. under the supervision of an experimenter not otherwise
involved in the experiment.

5.3.2. Session two.

One week later in the same groups, S's did the T.A.Q. and then the
O.S.S. of the R.M.S. Their O.D.S. was returned and the work sheet
relating it to the O.S.S. was then completed.

5.3.3. Session three.

Subjects were asked to volunteer to attend a fifteen minute
private testing session within the two week period following session
two. As each S entered the experimental room, he was shown the sheet
headed 'Ring Toss Ability' and the instructions on the sheet were
read and explained. (On the basis of several trial subjects, the
instructions were changed insofar as the experimenter (E) pointed
out that he would make the graph record as subjects found it difficult
and time consuming to alternate between that and the quoits throwing.)
Starting two feet from the peg, S was given eighteen practice throws
at, initially, one foot intervals, but at six inch intervals in
cases of rapid performance decline, as he retreated from the peg.
Considering three throws as a 'unit', and defining success, in a
unit as two quoits on the peg, (thus giving a score out of six on
eighteen throws), it was possible to graph a decay of ability with
distance curve for each S as he moved away from the peg. The
practice session ended with no successes on two successive intervals.
S was then shown the graph of his achievement at various distances
and his likelihood of success at these distances was outlined.

With the graph still before him, S was shown the sheet headed
'Ability/Risk Judgement' and the appropriate instructions were read
to him. Subjects who did not immediately understand were instructed
again in the same general way although the examples were altered to
probabilities of one in six and five in six, and the final 'motivating'
comment was related to choice of levels of study in the N.S.W. Higher
School Certificate. S was then required to choose a level of risk at

which he would prefer to throw, (he was not allowed to choose a distance or favoured place,) and the shortest distance appropriate to that level of risk was derived from the graph.

The subject then threw three quoits from that distance and the distance, the probability of success and number of quoits thrown onto the peg were recorded. The subject was allowed to leave after being asked not to talk about the task.

5.3.4. Session four.

In the first week following the end of session three occurences, S's, again in their original class groups, were told that, as part of their course work, they were to be subjects of a projective personality measure, the T.A.T. While the projector was being focussed etc., subjects were asked to provide some written feedback on how they had felt and what they had thought during session three. The slides were then shown immediately following the recall of the achievement situation, using the timing and instructions suggested by McClelland et al (1953).

5.4. Analysis of data.

For each subject were available raw scores on the R.M.S., T.A.T., T.A.Q. and level of risk chosen, and for seventy-two subjects scores on the A.C.E.R. Advanced Test N were also available (Appendix 5). A composite achievement/failure orientation score was developed for each subject by transforming his scores on the T.A.T. and T.A.Q. to standard scores and subtracting the latter from the former. This was repeated using the R.M.S. and T.A.Q. All operations involving the 'composite score' were executed on both these figures (so read

hereafter).

5.4.1. Major hypothesis one.

Subjects were ranked by composite score and on this basis divided into three equal groups, (with the extra subject arbitrarily assigned to the central group), ideally representing achievement orientation, failure orientation and an intermediate group. The median risk level chosen by each group was then computed.

5.4.2. Major hypothesis two.

On the basis of composite score ranking subjects were divided into ten approximately equal groups. (The two extra subjects were assigned to the most intermediate groups). The mean composite score and the mean probability of success chosen for each of the groups were found and correlated using a Pearson's product moment correlation. A significant negative correlation represented confirmation of the hypothesis.

5.4.3. Major hypothesis three.

The mean probability of success chosen by 'achievement oriented' groups was subtracted from that of 'failure oriented' groups taking progressively more extreme definitions of achievement and failure orientation (i.e. median split, highest and lowest thirty-two subjects, twenty-four subjects, sixteen subjects and eight subjects. A student's 't' test of significance (one tailed) was applied to the differences between means so calculated. To fully confirm the hypothesis, the differences should steadily increase and the achievement oriented group should choose a significantly higher level of risk than the failure oriented group (i.e. a lower probability of

success), especially, for the more extreme groups.

5.4.4. The validity of the R.M.S.

Subjects' scores on the R.M.S. were correlated with their scores on the T.A.T. using Pearson's product moment correlation to test the fourth hypothesis. A significant positive correlation was required for confirmation.

The fifth hypothesis was tested indirectly by establishing whether the results gained using the R.M.S. in testing the major hypotheses were consistent with the results gained using the T.A.T.

5.4.5. The relationship between achievement and fear of failure

   measures.

To ensure the independence of the T.A.Q. from the T.A.T. and R.M.S. subjects' scores on the former were separately correlated with each of the latter using Pearson's product moment correlation. No significant correlations were expected. In view of the doubt over the use of both sexes, the correlations were repeated for each sex separately.

5.4.6. The effect of intelligence.

The T.A.T., R.M.S. and T.A.Q., scores for the seventy-two subjects for whom intelligence test scores were available were correlated separately with those scores, again using Pearson's technique. Very small to insignificant correlations were expected.

5.4.7. Sex differences in response.

Male and Female mean scores and variances on the T.A.T., T.A.Q., R.M.S. and risk choice were compared using students 't' and the F distributions respectively to test for significance of differences.

No significant differences were expected.

C H A P T E R   V I

Results
_____

6.1. Major hypothesis 1.

When n Achievement was assessed using the T.A.T. method, risk

choice for a relatively achievement oriented, a relatively failure

oriented and an intermediate group were distributed as shown in Fig. 18.

The means, medians and modes of these groups were as in Table 1.

As indicated earlier the median was considered the most appropriate

measure for the purposes of testing the first hypothesis and it is

immediately apparent that the hypothesis is strongly confirmed. The

objective probability of success chosen by the achievement oriented

group represents a risk level of above .50 and that chosen by the

failure oriented group a level below .50. The intermediate group is

both above .50 and between the medians of the other two groups.

Thus the distribution of medians is precisely as stated in the

hypothesis.

Table 1. Mean, median and modal levels of chosen objective probability
of success for three groups differing in the degree to which n Achieve-
ment or fear of failure motivation was the dominant motive. (T.A.T.
and T.A.Q.)

	Mean	Median	Mode
Achievement oriented	.42	.44	.33 & .50[*]
Intermediate	.51	.48	.50
Failure oriented	.50	.52	.50

[*]For the achievement oriented group an equal number of subjects chose an
objective level of risk of .33 and .50
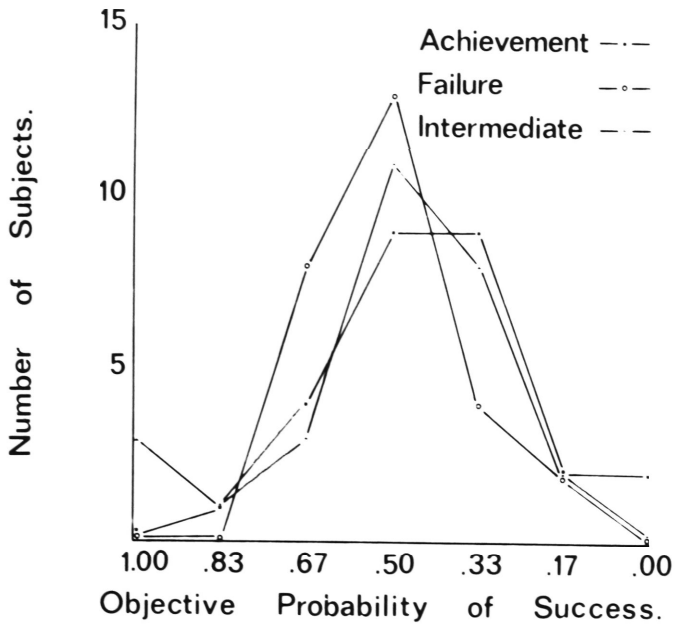
Fig. 18. Frequency polygons of the numbers of subjects choosing various levels of risk for achievement oriented, failure oriented and intermediate groups, using the T. A. T. to measure n Achievement and the T. A.Q. to measure fear of failure.
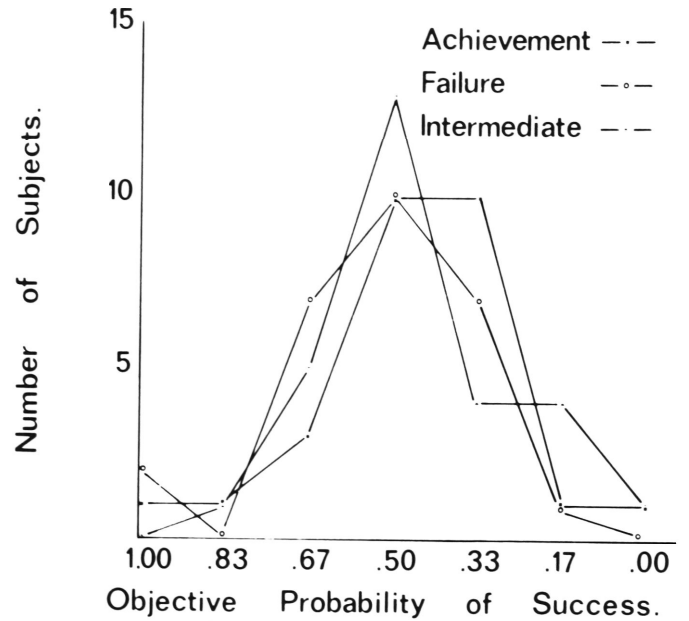
Fig. 19. Frequency polygons of numbers of subjects choosing various levels of risk for achievement oriented, failure oriented and intermediate groups, using the R. M. S. to measure n Achievement and the T. A.Q. to measure fear of failure.
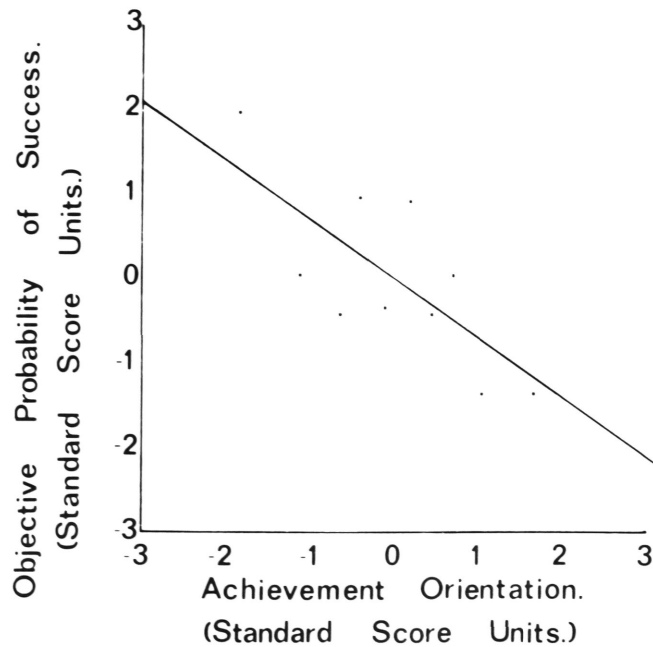
Fig. 20. Observed relationship between mean degree of achievement orientation of, and mean risk level chosen by, groups, showing the line of best fit through the points obtained, calculated using the method of least squares.

The general nature of the distributions of risk choice were
similar to what might be predicted from Fig. 17, except at the
extremes. The intermediate group had an unexpected number of subjects (3)
choose an objective probability of success of 1.00 (reflected in the
mean of 0.51), and the expected grouping of a number of failure
oriented subjects at a very high risk level failed to appear.
However, the small numbers electing the outermost levels of risk at
either end render it unwise to draw any firm conclusions about the
status of the revealed discrepancies. (3 subjects chose a probability
of success of 1.00, 2 of 0.83, 6 of 0.17 and 2 of 0.00).

When the R.M.S. was substituted for the T.A.T. the distributions
for the same three groups were as in Fig. 19 and Table 2 is
parallel to Table 1. The results thus obtained are similar to those
obtained using the T.A.T. in that the medians follow the pattern
predicted in the hypothesis.

Table 2. Mean, median and modal levels of chosen objective probability
of success for three groups differing in the degree to which n Achieve-
ment or fear of failure motivation was the dominant motive. (R.M.S. and
T.A.Q.)

	Mean	Median	Mode
Achievement oriented	.46	.45	.50 & .33[*]
Intermediate	.45	.47	.50
Failure oriented	.52	.52	.50

[*]For the achievement oriented group an equal number of subjects chose an
objective level of risk of .50 and .33

The general nature of the distributions is again similar to the
projection from Fig. 17 although the intermediate group's favouring of

a 0.67 level of objective probability of success more often than a 0.33 level is somewhat incongruous. Again the small numbers in extreme levels mitigates against any useful conclusions being drawn about choices at these levels.

6.2. Major Hypothesis 2.

Confirmation of the second hypothesis, which stated that there was a positive relationship between the mean achievement orientation of a group (as defined in Chapter 4 and 5.4) and their mean choice of degree of risk, was very strong when the T.A.T. and T.A.Q. were the tests used but the hypothesis was not confirmed for the R.M.S. and T.A.Q. In the former case the mean composite score for groups established according to their ranking on that composite score, showed a high negative correlation with the mean choice of objective probability of success of the groups ($r = -.76$ which is significant beyond a .005 level for a one tailed test). Thus variation in achievement orientation accounts for 57.76% of the variance between groups on risk choice. The strength of this relationship is further demonstrated in Fig. 20.

Substituting the R.M.S. for the T.A.T. lowers the correlation to $r = -.30$ which is not significant at a .05 level for a one tailed test and which would indicate that only 9% of variance between groups on risk choice would be accounted for by variation in achievement orientation.

6.3. Major Hypothesis 3.

When the T.A.T. was used to measure n Achievement, as the difference between the groups defined as achievement oriented and

failure oriented increased, so did the difference between their mean choice of objective probability of success, as is shown in Table 3. As is also shown, the differences in mean risk level chosen gave 't' values throughout which failed to exceed a .05 level of significance. Nevertheless, the differences became increasingly close to significance as the groups became more extremely differentiated and where the top and bottom sixteen subjects were considered only barely failed to achieve significance (critical value of 't' for d.f. = 30 is 1.697 and the obtained t value was 1.6899). So although the results are not strong enough to allow the acceptance of the hypothesis, these results need to be evaluated in the light of the method which, by allowing to each subject only one choice in one situation, inflates the effects of extraneous variables which operate in any single situation. Therefore, a hasty rejection of the hypothesis on the basis of this failure alone would be inappropriate.

The situation is less complex when the R.M.S. was used to measure n Achievement as the predicted trend failed to appear (Table 4) and on the only occasion on which the difference approached significance, the difference between the groups on achievement and failure orientation was at one of the least extreme levels.

6.4. The status of the Revised Morgan Scale.

As Table 5 indicates, the correlation between the T.A.T. and R.M.S. proved to be very small. Neither the combined groups correlation of .07, nor either of the single sex correlations (.18 for males and -.07 for females) proved significant, and so Hypothesis 4 must be

Table 3. Means, standard deviations, and tests of significance of difference between means of choice of risk level for various definitions of achievement oriented and failure oriented groups where the T.A.T. is used to measure n Achievement.

Definition of achievement and failure oriented groups.	Mean risk choice (failure group)	Standard deviation (failure group)	Mean risk choice (achievement group)	Standard deviation (achievement group)	Difference between means	t	p (one tailed test)
Median split	.4959	.1797	.4593	.2073	.0366	.8414	<.25
Highest & lowest 32 Subjects	.5052	.1663	.4428	.2149	.0624	1.2761	<.15
Highest & lowest 24 Subjects	.5000	.1482	.4375	.1971	.0625	1.2279	<.15
Highest & lowest 16 Subjects	.5208	.1479	.4167	.1864	.1041	1.6899	<.10
Highest & lowest 8 Subjects	.5625	.1740	.4167	.1864	.1458	1.5124	<.10

Table 4. Means, standard deviations and tests of significance of difference between means of choice of risk level for various definitions of achievement oriented and failure oriented groups, where the R.M.S. is used to measure n Achievement.

Definition of achievement and failure oriented groups	Mean risk choice (failure group)	Standard deviation (failure group)	Mean risk choice (achievement group	Standard deviation (achievement group)	Difference between means	t	p (one tailed test)
Median split	.4919	.1887	.4634	.1999	.0285	.6552	< .30
Highest & lowest 32 Subjects	.5156	.1798	.4479	.1919	.0677	1.4435	< .10
Highest & lowest 24 Subjects	.5347	.2002	.4583	.2044	.0764	1.2733	< .15
Highest & lowest 16 Subjects	.5104	.1923	.4792	.2259	.0312	.4063	< .35
Highest & lowest 8 Subjects	.4583	.1843	.4375	.1136	.0208	.2543	< .45

rejected.

Despite the confirmation of Hypothesis 1 using the R.M.S., its failure to parallel the results of using the T.A.T. in Hypothesis 2 and 3 must lead to a rejection of Hypothesis 5.

6.5. Other relations between measures.

Neither the T.A.T. nor the R.M.S. showed any relationship to the T.A.Q. (Table 5). It is therefore valid to assume that the measures of n Achievement and fear of failure in this study were independent.

Nor were any significant relationships found between any of the three motivational measures and intelligence. Correlation coefficients based on the A.C.E.R. Advanced Test N were .01 for the T.A.T., -.06 for the R.M.S. and -.13 for the T.A.Q.

Table 5. Correlations between the Thematic Apperception Technique, Revised Morgan Scale and Test Anxiety Questionnaire for males, females and combined groups found between these measure and intelligence.

Tests Correlated	r (males)	r (females)	r (combined)
T.A.T. and R.M.S.	.18	-.07	.07
T.A.T. and T.A.Q.	-.04	.14	.06
R.M.S. and T.A.Q.	.22	-.12	.06

6.6. The use of female subjects.

Males and females did not differ significantly in mean score for any of the motivational measures, nor for risk choice (Table 6). However, they did differ in dispersion of scores on the R.M.S. (p < .02) and on risk choice (p < .05). In each case the scores for males showed most dispersion (Table 6). The latter difference does not

affect the validity of the testing of the three major hypotheses as

no differences were found for either the T.A.T. or T.A.Q.

Table 6.   Results of t tests of significance of difference between
means and F tests of significance of differences between variances
for males and females of the T.A.T., R.M.S., T.A.Q. and choice of
risk level.

	T.A.T.	R.M.S.	T.A.Q.	Risk Choice
Mean for males	7.4848	.3891	171.5454	.4646
Mean for females	7.2245	.4363	170.6735	.4864
t	.2503	1.2620	.0862	.4877
p	> .8	> .2	> .9	> .6
Variance for males	44.2576	.0475	1993.6307	.0558
Variance for females	33.9694	.0146	2032.1828	.0275
F	1.3029	3.2534	1.0193	2.0291
p	> .1	< .02	> .1	< .05

CHAPTER VII

Discussion

7.1. Methodological issues.

7.1.1. The measurement of achievement motivation.

The change in the method of presentation of the T.A.T. necessitated by the use of a mixed group of subjects did not prevent the test from working effectively, as evidenced by a high level of achievement content in the protocols (cf. Appendix 5), suggesting that the procedure parallels the 'achievement oriented condition' of McClelland et al (1953).

The attempt to establish the R.M.S. as a valid measure of n Achievement proved less successful. No significant correlation was found between n Achievement scores derived from the T.A.T. and those derived from the R.M.S. This failure to verify hypothesis 4 is in accord with the results cited by Morgan (1964).

His explanation for the failure of the tests to correlate is that the occupations were in general below the interest level of the university students used as subjects. In support of this he points out that his student sample had twice as many percent in the group scoring above .35 on the test as the national sample did, and that none scored below .15 as against 22% of the broader sample. Similarly, in this study, the sample of students had 3.5 times as many percent in the group scoring above .35 as the U.S. national sample and only about one sixth of the percentage of that sample scoring below .15. Furthermore, if one takes the mean value ratings from the national

sample (Table 7) and calculates an n Achievement score by graphing

these against the N.O.R.C. rankings (Table 8) a 'typical' score

for that sample is derived as .27. If as Morgan, following Atkinson

(1966a), suggests, the order is taken not from the N.O.R.C. ratings

but from the value ratings themselves (Table 8), which seems to

beg the question of the relationship of value to difficulty, this

'typical' score rises to only .29. If however, the mean value

ratings in this study (Table 7) are similarly graphed against the

most common difficulty ratings found (Table 8), the 'typical' score

is found to be .44 which is well in excess of that of the national

sample.

While this can be seen as clear evidence of a difference between

the student samples and the national sample in how they score on the

Morgan Test, it argues against the explanation of the differences

Morgan proposed. The effect of the occupations being below the

interest level of the student sample would be to depress the value

ratings of all these occupations (especially those at the lower end

of the scale) and thus to depress the score that the subjects would

gain on the test. But clearly the evidence shows that it is

augmented rather than depressed, relative to the general population.

As difficulty, (or in Morgan's study, prestige) is fixed on an equal

interval scale, only a move towards a regular increase in value from

one occupation to the next will cause the increase discovered in the

student samples.

From Table 7 it is clear that the major contributing factor in

this change is an increase in the value ratings students give to the

Table 7. Mean occupational value ratings of parents on a five point scale derived from this study and the national sample in the U.S. reported by Morgan (1964).

Occupation	University sample	U.S. National sample
Night Watchman	1.32	1.25
Automechanic	2.42	2.31
Carpenter	2.26	2.30
Mail Carrier Postman	1.48	2.15
Bus Driver	1.58	1.75
Bookkeeper Clerk-Accountant	3.01	2.54
Drugstore owner Pharmacist	4.21	3.39
High School Teacher	3.91	3.19
Doctor	4.59	3.96

top three or four occupations. To some extent this may be accounted

for by terminology changes, however, that it also applied to 'High

School Teacher' and 'Doctor' argues against that as a total explanation.

It is proposed that, rather than the occupations being below the

interest levels of students, differences between the two samples' value

ratings for the lower occupations being small and as often in favour

of the student as the national sample, the explanation for the

difference lies in the more limited range of occupational horizon of

a large section of a nationally selected sample. For most university

Table 8. Ranking of occupations on the N.O.R.C. scale, the mean value ratings from Morgan's (1964) study, and the most usual difficulty ratings in this study.

N.O.R.C.	MORGAN (1964)	CUPIT (1970)
Night Watchman	Night Watchman	Postman
Automechanic	Bus Driver	Nigth Watchman
Carpenter	Mail Carrier	Bus Driver
Mail Carrier	Carpenter	Carpenter
Bus Driver	Automebhanic	Automechanic
Bookkeeper	Bookkeeper	Clerk-Accountant
Drugstore Owner	High School Teacher	High School Teacher
High School Teacher	Drugstore Owner	Pharmacist
Doctor	Doctor	Doctor

students the occupations at the higher end of the scale represent a

real possibility. For a considerable number within a national sample

such occupations will be high above what they consider possible for

themselves and their children and cognitive dissonance (Festinger,

1957) will tend to cause these high prestige occupations to be lowered

in prestige to a level closer to the respondents' own occupational

levels.

If such a factor does account for the lower ratings in the national

sample, that is, if values are partially arranged in order to

maximise, within the limits of credibility, the value of occupations

of similar status to the respondents' occupation, relative to those

higher in general community prestige, then the relationships Morgan

reports between scores on the scale and occupational groups can be

accommodated without reference to n Achievement. Occupation groups

with higher prestige will suffer less dissonance and so scores on the test will increase as Morgan found. That the results can be so explained is necessary if the T.A.T. measures n Achievement and the slope index of Morgan is not correlated with the T.A.T.

Thus, following the rejection of Hypothesis 4, it must be assumed that the R.M.S. is not measuring the same factor as the T.A.T. and that Morgan's (1964) results are better explained in terms of cognitive dissonance theory than as a result of differing n Achievement levels. This assumption is further strengthened by the rejection of Hypothesis 5.

Despite a superficial similarity between T.A.T. results and R.M.S. results on Hypothesis 1, the failure of the R.M.S. to replicate the results obtained using the T.A.T. on the other major hypotheses, must lead to the rejection of an hypothesis which asserts the equivalence in predictive utility of the two tests.

However, the failure of the R.M.S. should not necessarily be attributed to invalidity of the general idea of a slope index, but rather to the specific form in which this method has been used to date. As the difference between Morgan's national sample and university samples suggests, the test as at present formulated, is easily influenced by extraneous factors. In the present case the two most important would seem to be sex and socio-economic factors.

The wider dispersion of males than females on the test, suggesting that it is discriminating more finely amongst males than amongst females, is traceable to a strong masculine bias in the test itself. Not only did the instructions relate the test only to third form boys

but five of the nine occupations are, in Australia, peculiarly male domains. In the same way as the original 'achievement oriented' presentation of the T.A.T. did not engage the need achievement of female students (Veroff, 1950; Wilcox, 1951), the female students can avoid projecting their own achievement need into the situation to a far greater extent than can the male students.

A related but more serious limitation is the restriction of the present form of the test to vocational achievement. Even disregarding the difficulties discussed earlier this is a far too restrictive approach to such a general motivational factor. As Anstey (1966) points out, such a test must represent an adequate sampling of the fields of achievement striving, or else one must seek a test which measures achievement without specific reference to any particular areas at all, as seems essentially to be the case with the T.A.T.

The general method of the slope index, having a sound theoretical rationale, as well as practical features, to recommend it, should not be too swiftly set aside. A form more consistent with the requirements listed above is likely to generate results comparable with those found using the T.A.T.

Nevertheless, the R.M.S. has not been established as a useful measure of n Achievement, and so hereafter this discussion will concentrate only on results obtained using the T.A.T. as the measure of achievement motivation.

7.1.2. The measurement of fear of failure.

As was predicted the T.A.Q. was correlated with neither the T.A.T. nor R.M.S. It is clear, as earlier studies have reported (Litwin, 1958;

Atkinson & Litwin, 1960; etc.), that fear of failure, as measured by the T.A.Q. is a factor independent of the achievement motive as measured by the T.A.T. Similarly, the R.M.S. is not measuring any significant 6lement of failure anxiety.

It may seem gratuitous to question the value of a test which has been consistently used in studies of n Achievement and has repeatedly shown itself capable of providing an adequate predictive criterion for fear of failure. Yet informal discussion with the subjects of this experiment has suggested that an alternative test to the T.A.Q. is desirable. Many subjects reported having felt the test was not very serious because of the apparent triviality of such questions as those on perspiration and heartbeat, especially as they felt they could do no more than guess the answers to these questions. An even larger number reported that they found the test to be boring.

It is unknown to what degree the unfortunate attitudes in the subjects thus engendered may effect their performance on other areas of the experiment. Certainly the development of a test which would give comparable results, but have a greater degree of 'credibility' and interest value, could only be an advantage.

7.1.3. The measurement of risk preference.

As a consequence of the use of trial subjects, it became evident that the situation was more complex for the subjects than the written instructions presupposed. This difficulty was overcome by allowing the instructions to be re-explained, as outlined in the procedure. Thereafter, no major problems arose in the conduct of the task (save for the fatigue suffered by the experimenter due to retrieving well

over one hundred quoits for each subject). Most subjects expressed
involvement in the task and understood clearly what was expected of
them. Three subjects had to be omitted from the results when they
clearly and deliberately threw to miss, making a valid assessment
of their abilities impossible.

The experimental situation revealed an inherent weakness when on
a few occasions a subject's ability decreased from complete success
to complete failure within a distance of a foot or less. The
smallest space between throwing points being six inches, in this
situation at least four of the seven risk levels had to be defined
by extrapolation. As the maximum difference between risk levels
had to be no more than two inches risk levels so derived cannot be
held to have any real validity. Fortunately, the number of subjects
so excluded was small.

Although the experimental task was certainly effective in most
instances, certain practicalities suggest an alternative task would
be preferable for future research. Individual testing of subjects
demanded a great deal of time (circa thirty hours in all), and a
task which could be administered in a group situation, yet to
individuals would be far more economical. Especially when using
students, a less 'manual' and more 'intellectual' task would have
advantages as being more intrinsically achievement related.

Nevertheless, the basic method: choosing a task to which the
subjects are unaccustomed and which has various levels of difficulty;
establishing the objective probability of success for each subject
through practice trials at the various levels of difficulty; and

then allowing a choice of one of those objective probabilities for
a further task of the same kind; comes far closer than methods
previously used in studies of n Achievement to providing an
adequately empirical procedure for assessing and operating upon
probability of success. The great value of the approach is that,
all the terms of the experiment being objective and therefore open
to direct observation, no assumptions need to be made about the
values of subjective entities.

7.1.4. The subjects used.

Results from correlations with the A.C.E.R.N. show that intelli-
gence so measured is in this study related to none of the motivational
measures used. While this does little to clarify the conflicting
results of earlier studies, adding only some further support to
those who have contended that the motivational factors are independent
of intelligence (see Heckhausen, 1967), it does demonstrate that
the intelligence of the subjects has not directly affected the
results obtained in this study. Although one may expect a decrease in
the correlation coefficients due to the attenuation of the range
of intelligence sampled (but cf. French & Thomas, 1958; Robinson, 1961;
1964; and Meyer et al, 1965), the coefficients obtained are so small
as to suggest that even with an increased range of intelligence
noteworthy correlation coefficients would not be forthcoming.

It seems, therefore, most unlikely that the results obtained
are greatly affected by the general high level of intelligence of
the subjects per se. It remains possible that educational
experience may influence the results, but for such a proposition it

is difficult, at present, to establish any adequate theoretical rationale.

A more plausible suggestion would be that the results are influenced by the social groups to which most students belong. Katz, Barrett, & Firth (undated) have presented figures showing that in 1969, the year before the subjects involved entered the University of New South Wales, over 50% of students enrolling at the university came from backgrounds which could be described as 'middle class' and less than 15% from less affluent socio-economic backgrounds. This is especially significant as the subjects were drawn from a College of the university providing this data, so the proportions are likely to be approximately the same in the sample.

Heckhausen (1967 citing Rosen, 1956, 1962; Douvan & Adelson, 1958; Veroff, Atkinson, Feld, & Gurin, 1960; Littig & Yeracaris, 1963, 1965; Carney & McKeachie, 1963; Nuttall, 1964; and Morgan, 1964) relates achievement motivation and socio-economic status in such a way as to suggest that the group used in this study in general tend to be biased towards a high level of n Achievement. If this is so, the effect would be to increase the difficulty of substantiating the hypothesis by decreasing the degree to which subjects can be differentiated on the achievement motive. This, however, would only serve to strengthen any positive results obtained and not to render the results invalid.

The use of both males and females as subjects has not introduced any systematic error into the result. Responses on the T.A.T., T.A.Q. and risk choice did not differ significantly in central tendency between the two groups. Even though dispersion of male scores was

significantly greater on risk choice (a result worthy of further investigation), this does not invalidate the results because of the lack of any similar difference in either of the motivation measures.

It is therefore concluded that the only systematic effect the choice of subjects could possibly have on the results is to make it slightly more difficult to obtain significant differences between groups where n Achievement is one of the criteria of differentiation.

7.2. Results of major hypotheses.

7.2.1. Hypothesis one.

The median choice of risk level for the three groups designated achievement oriented, intermediate and failure oriented were consistent with the predictions stated in the hypothesis. The achievement oriented group chose a median objective success probability of .44 which represents a level of risk above .5u; the failure oriented group median was .52, a level of risk below .50; and the intermediate group median choice was .48, which was both a level of risk above .50 and between the other groups. Thus all predictions were confirmed.

Although the medians of the achievement oriented and intermediate groups are consistent with the prediction made by Atkinson (1957) about objective measures of difficulty, the result for the failure oriented group is clearly contrary to Atkinson's suggestion that the failure oriented person most strongly tries to avoid objective levels of risk below .50 and that the median risk choice for this group should have been at a level of success probability of less than .50.

The shapes of the choice distribution curves of the three groups approximate those of the theoretical curves presented in Fig. 17. Because of the arbitrary nature of the parameters underlying those theoretical curves, little more than that can be said at this stage of our knowledge. The variation in parameters which would be needed to generate curves of the form of the empirical data in this study would not be such as to necessitate any alteration in the basic theory. For instance, the failure to find an upturn at high levels of risk in the distribution for failure oriented subjects, which is not a unique finding (Atkinson & Litwin, 1960), demands only that tendency to approach success be assigned a value which is at all points greater than the value assigned to tendency to avoid failure.

Thus the results of hypothesis one, albeit statistically crude, are entirely in accord with predictions which follow from the objective restatement of the theory of achievement motivation. More adequate confirmation was provided by the results of hypothesis two.

7.2.2. Hypothesis two.

The relatively high correlation (.76) found between the mean degree of achievement orientation of a group and the mean degree of risk that group will choose is a strong confirmation of the theory presented in this thesis. The complexity of extrinsic motivational factors which operate on an individual on any single trial, make it likely that significant correlations between individual achievement orientation and degree of risk chosen on a single trial will be obscured. In fact, in this study a correlation of only .17 was obtained (p < .2). The obviation of the effects of extrinsic factors, possible by

repeated trials on the same individual, or, as herein, by using the combined results of a number of individuals, allows the influence of the achievement motive and fear of failure to be more appropriately assessed. By the grouping employed, achievement motivation was shown to account for close to 58% of the variance in risk choice between groups.

Atkinson's suggestion about the effect of using objective measures would not lead one to predict this finding.

72.3. Hypothesis three.

Failure to fully confirm the hypothesis that an achievement oriented group would choose a significantly higher risk level than a failure oriented group is the most disappointing aspect of the experiment. However, given the extrinsic motivational effects mentioned in relation to hypothesis two, this failure is under-standable, as their effect would be to greatly increase the variability of the choices of individuals and therefore to lower considerably the power of the test to discover a difference that did exist. Even the t test that came closest to revealing a significant difference (the t value being a mere .0071 short of the critical value at a .05 level of significance), that between the highest and lowest sixteen subjects on achievement orientation, had a power of only .33 (assuming H_1 : $\mu_1 - \mu_2 = .05$). So the likelihood of Type 2 error is very high and other indications strongly suggest this to be the case. These indications were the consistency of the direction of all the differences with the hypothesised direction; the steady increase in the magnitude of the difference between groups

as more extreme groups were chosen; the steady decrease in the
likelihood that these differences are due to error effects (the most
extreme groups represented an exception but the t test does
represent a halving of the degree of freedom compared with the
immediately previous comparison); the close approach to significance at
extreme levels despite the very low power of the test; and the
strong correlation obtained on hypothesis two. However, the failure
to be able statistically to reject the null hypothesis means that
we must, at least, return an open verdict on this hypothesis.

Further experimentation should increase the power of the test
by either sampling a larger number of subjects or by lowering the
variance within groups. The first of these possibilities is further
desirable because of the small numbers of subjects taking extremes
of risk as mentioned earlier. The latter suggestion could be
effected by using the repeated observations of individuals in a
number of different risk choice situations. This involves the
assumption that the mean choice of risk level for an individual on
repeated trials in varying situations tends to the mean risk choice
of several individuals, of an equal level of achievement orientation,
on a single task. This will hold to the extent to which the
extrinsic motivational effects are randomly distributed, as,
representing error effects, they may be expected to be. However,
if under one of the above two conditions the difference still failed
to attain significance the theory would be seriously called into
question.

7.3. Status of the objective statement of the theory of achievement motivation.

As an initial test of the theory outlined in Chapter III, the results of the experiment are very gratifying. Two of the three critical hypotheses were fully confirmed and although confirmation was not forthcoming for the third hypothesis, the results were not such as to demand a complete rejection.

The theory was able to predict the direction in which median objective risk choice would deviate from a .50 level for three groups differing on the degree to which achievement or failure orientation predominated. Moreover, the degree, as well as the direction, of deviation was found to be, as the theory suggests, closely related to the strength of the achievement motive relative to fear of failure. In the light of the strong support lent to the theory by these two findings, the failure to find significant differences between groups in mean choice of risk level is not strong enough by itself to disprove the theory, especially when consideration is given to the explanation proposed above to account for this failure.

Thus while the failure to validate the third hypothesis demands that the theory be not given unequivocal acceptance, the evidence is certainly strong enough to argue that the approach shows a great deal of promise. The results are definitely such as to promote the attempt to set the theory of achievement motivation on a more firmly empirical base.

It remains for the predictions which follow from the theory to be tested under a variety of different conditions, including extension into

such areas as the work on persistence. Although the ultimate

predictions of the full theory have received some support, in

developing the theory some relationships were assumed or argued on

a priori grounds for which there is not as yet adequate empirical

support.

Many, such as the relationships between expectancies, incentives

and objective probability of success, are, of course, not open to

empirical testing. While objective probability of success is open

to operational definition, expectancy and incentive, being hypothetical

constructs are not. The attempts by Feather (1965) and Litwin (1958)

to trace their relationships to subjective probability of success are

suspect because of the assumed correspondence between expectancy and

statements about expectancy and between incentive and stated values

given to success. As intimated earlier, with direct reference to

Feather's (1965) article, but applying generally, the person with high

fear of failure has a motivational stake in understating his actual

probability of success as this effectively lowers the criterion against

which he may expect to be judged. Similarly, expecting failure he will

tend to understate the incentive value of success to him to lower the

sense of loss he will experience. As with Morgan's (1964) results,

this can be well restated as an exercise in cognitive dissonance, verbal

statements being made to lessen the dissonance expected to occur after

failure.

If then, it is clear that the intervening variables of expectancy

and incentive are not open to empirical testing, it certainly follows

that the second order hypothetical variables designated 'j','k''l'and 'm'

in this theory are similarly not available for experimental falsification. However, in the same way as it is necessary for intervening variables to be anchored to antecedents as well as consequents, it is also necessary that these antecedents be empirically valid. In this case the antecedents upon which the existence and 'behaviour' of the intervening constructs was premised are open to testing but have not as yet been adequately verified. For instance, that people high on n Achievement are rewarded for success and those with high fear of failure are punished for failure is strongly indicated by Winterbottom (1958), Rosen & D'Andrade (1959), Crandall et al (1960), Rosen (1961), Moss & Kagan (1961), McGhee & Teevan (1965), Levin & Baldwin (1959) and Paivio (1964) when jointly considered, yet it would be far preferable if in a single study it could be demonstrated that the achievement oriented person has a history of reward for success and also relative lack of punishment for failure, that the failure oriented show the reverse pattern and that those intermediate have a history of relative equivalent degrees of success and failure.

From this it ought to follow, for instance that children with high fear of failure have parents who are equally eager for their children to do well and display competence as are the parents of highly achievement motivated children. It remains to be found whether the effective difference between the two groups lies in the reasons for their desiring competence in their children or merely in the exercise of different child-rearing practices.

Further, to these studies of antecedents in terms of parental attitudes and behaviour, it is necessary to adduce evidence to demonstrate

that the failure oriented person, despite favouring somewhat less

objectively difficult or risk prone tasks as measured against capability,

does in fact fail more often than the more venturesome achievement

oriented person.

Certainly, also, in the area of conflict theory to which the

theory of achievement motive has been tied, many questions of detail

remain unanswered even though the basic theory commands a great deal

of theoretical and experimental support (Miller & Dollard, 1941;

Miller, 1944, 1948, 1951, 1959; Brown, 1948; Dollard & Miller, 1950;

Rigby, 1954; Yates, 1962, 1965; Kimble, 1964; Maher, 1964, 1966; etc.).

Findings in conflict theory will have great relevance to the theory

of achievement motivation and the application of generally applicable

data about conflict behaviour to the specific case of achievement

behaviour should prove fruitful. While it is beyond the scope of this

discussion to explore at depth the predictions which may follow from

the integration of the fields (beyond the general concept tested),

achievement motivation theory has concentrated on behaviour in the

constrained situation, where evaluation of competence cannot be avoided,

and an advance in understanding achievement behaviour could follow

from applying what is known of conflict resolution in the free situation

to the achievement conflict. For instance, achievement motivation theory,

in insisting that achievement motivation is a constant trait in the

individual, has not accommodated the possibility that the achievement

desire may be capable of displacement from certain activities, so that,

even a person with high n Achievement may not act 'typically' in all

situations. Such work as that of Janis (1959) could provide an interesting

area of cross-linking for the theories.

7.4. Comparative utility of the subjective and objective presentations

of the theory of achievement motivation.

This study was not intended as a rejection, but as an extension of
Atkinson's theory of achievement motivation. Because of its essentially
subjective character, Atkinson's approach is not open to empirical
falsification and so the validity, in terms of accuracy of description
of phenomena, of that theory is not in question. Certainly, its value
as a conceptual scheme is evident from the wide range of studies which
it has engendered.

It is not necessary to rehearse, however, the general value of an
empirically based theory over one which relies heavily on postulated
subjective variables, yet, certain specific advantages of the objective
approach put forward in this thesis may be highlighted.

Firstly, what were entirely subjective and cognitive elements of
Atkinson's theory: subjective probability and incentive value of
success and failure; are transformed into hypothetical constructs tied
firmly to both antecedent and consequent events which are fully
objective and empirical in nature. This means that the source,
development and operation of these constructs are no longer necessarily
limited to the status of postulates, but may be predicted on the basis
of certain stimulus events and tested in terms of consequent behaviour.

The stimulus-response theorist will assert, with justice, that it
is therefore theoretically possible to restate the theory entirely in
terms of the antecedents and consequents and without reference to
hypothesised intervening variables. This, while true, mistakes the role

of these intervening constructs which is to summarise in gross form the effects of an extremely complex variety of stimuli, delivered over a long period, and the set of relationships which describe their manner of influencing behaviour. It is as such that intervening constructs such as expectancy and incentive fulfil a valuable conceptual role. A pure S-R theory in this case would be too complex to describe. It is not always parsimonious to omit such variables.

Another advantage closely related to the restatement of the intervening variables in objective terms, is the ability, which follows therefrom, to fully and directly validate or falsify the theory, as the case may be. It should be reiterated that it is not Atkinson's theory per se that is so affected, as the predictions which follow from that theory and those predictions which follow from an objective theory are based on and deal with different entities. Atkinson's theory can never be so validated.

To the theory of achievement motivation has also been added a greater degree of specificity in experimental prediction and also of possible sophistication of experimental technique. While a theory is formulated entirely in terms of unobservables, experimental work can only ever be carried out in terms of approximations. Thus, for instance, the prediction, which follows from Atkinson's theory, that the achievement oriented prefer specifically a .50 level of subjective probability of success, must be diluted to the empirical proposition that they prefer to be near the median of obtained choices. This, of course, results from the extreme difficulty of finding a specific operational equivalent of the cognitive term. By initially casting the theory in

objective terms, it is possible to make a direct translation to an operational level with no loss of precision of meaning of the terms employed.

Additionally, in translation of results back into theoretical terms it is less likely that results based on an objective theory will gather an accretion of surplus meaning than it is when the terms of the theory are themselves necessarily full of surplus meaning relative to their operational parallels.

The fact that subjective entities are not open to direct observation is a great limitation upon the practical utility of Atkinson's theory as, in one way or another, dependence has always to be placed on the verbal self rating of the person as an accurate representation of the subjective factor. Such ratings introduce a high possibility of extraneous variables influencing the results in a deleterious manner. Particular cases have been instanced in considering previous research. On the other hand by basing the theory entirely upon objective constructs, it is possible directly to predict for practical situations in which it is possible to assess such factors as objective levels of ability.

Perhaps, the major long term advantage of the revised theory of achievement motive presented in this thesis is its closer relationship to that general stock of data and concepts derived from other areas of research in Psychology and so the greater ease with which it can be integrated with these other areas. Acceptance of the applicability of Miller's, or subsequently, Maher's theory of conflict to the achievement situation, presumes the possibility of application of those other fields

which have been shown to be useful in explaining conflict behaviour, to behaviour in achievement related conflicts. An isolated theory explaining a particular form of behaviour in terms peculiar to that theory, is naturally of less value than a theory which can either incorporate the constructs of, or systematise the relationship of its terms to the terms of, a more diversely appropriate theory. The present formulation has done no more than make a first tentative step in this direction, but it has demonstrated the possibility and value of such a procedure for the theory of achievement motivation.

So despite the recognised value of Atkinson's theory in conceptualising achievement behaviour, the use of empirical constructs and consistency with other psychological theory, which are the major advances of the revision attempted in this study, increase markedly its potential utility.

7.5. Conclusions.

In general, the results of this study are confirmatory of predictions which follow from the objective revision of Atkinson's theory of achievement motivation. When achievement motivation and fear of failure are assessed by the T.A.T. and T.A.Q. respectively, achievement oriented subjects tended to prefer levels of risk representing an objective probability of success of less than .50 and failure oriented subjects chose to take a lower level of risk with an objective probability of success greater than .50. Although evidence for a significant difference in risk choice between groups differentiated on degree of achievement orientation is equivocal, degree and direction of mean risk choice for a group can be directly related to the mean

degree by which achievement motivation exceeds fear of failure for that group.

On the other hand, the attempt to validate the R.M.S. as a possible substitute for the T.A.T. was entirely unsuccessful as it neither was correlated with that test, nor could reproduce any of the behavioural trends evident when the T.A.T. was used. The failure seems particular to the form in which the slope index has been cast in the R.M.S. rather than necessarily general to the slope index concept.

Thus, the evidence presented in this thesis strongly argues the case for such a theory of achievement motivation based on objective empirical constructs, as that outlined in this thesis. The theory itself is at no more than a relatively basic level of development but refinement of the nature of the relationships between constructs awaits only the results of experimental manipulation of these constructs. At the same time, development of the implications of other theories for achievement behaviour, which the present approach allows, will mean that a far greater sophistication of the constructs and their mutual interelationships can be developed by adapting the relationships established between constructs in those other theories.

Therefore, the revision of Atkinson's theory developed and largely validated in this study, makes possible the development of a comprehensive theory allowing quite specific predictions and a clear understanding of achievement behaviour in a wide range of different contexts.

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<u>Appendix 1</u>   Facsimile of the Three Sheets Comprising the

Revised Morgan Scale.

UNIVERSITY OF NEW SOUTH WALES,

WOLLONGONG UNIVERSITY COLLEGE,

DEPARTMENT OF PSYCHOLOGY.

<u>OCCUPATIONAL DIFFICULTY SCALE</u>

Various occupations differ in their degree of difficulty. We

wish to assess whether students can accurately decide upon this

as a test of their ability to adequately estimate the risk involved

in 'real' situations. Out of a representative group of 100 male

3rd form students what percentage (to the nearest 5%) do you think

could succeed, that is adequately compete with others and hold their

position, at each of the following occupations.

<u>Occupation</u>	<u>% Succeeding</u>
Automechanic	
Bus Driver	
Carpenter	
Clerk-Accountant	
Doctor	
High School Teacher	
Night Watchman	
Pharmacist	

(Occupations drawn from N.O.R.C. Scale of Occupational Prestige)

Appendix 1   (Cont/...)

OCCUPATIONAL SATISFACTION SCALE

(After Morgan 1964)

We are interested in how people compare occupations. How do you think most people would feel if a boy of theirs chose each of these types of work. You may use one of five responses: not happy, wouldn't mind, happy, very happy, delighted. Place a cross in the relevant square.

OCCUPATION	Not Happy	Wouldn't Mind	Happy	Very Happy	De-lighted
Automechanic					
Bus Driver					
Carpenter					
Clerk-Accountant					
Doctor					
High School Teacher					
Night Watchman					
Pharmacist					
Postman					

(Occupations drawn from N.O.R.C. Scale of Occupational Prestige).

Occupational

Satisfaction

Delighted	5-
very happy	4-
happy	3-
wouldn't mind	2-
not happy	1-

1 2 3 4 5 6 7 8 9

Occupations in order of perceived

difficulty from least to most

difficult.

<u>Appendix 2</u>

Pictures used for

Thematic Apperception Technique

Appendix 2   (Cont/...)

<u>Facsimile of Thematic Apperception Response Sheet.</u>

1.   What is happening?   Who are the persons ?

2.   What has led up to this situation?   That is, what has happened

in the past?.

3.   What is being thought?   What is wanted?   By whom?

4.   What will happen?   What will be done?
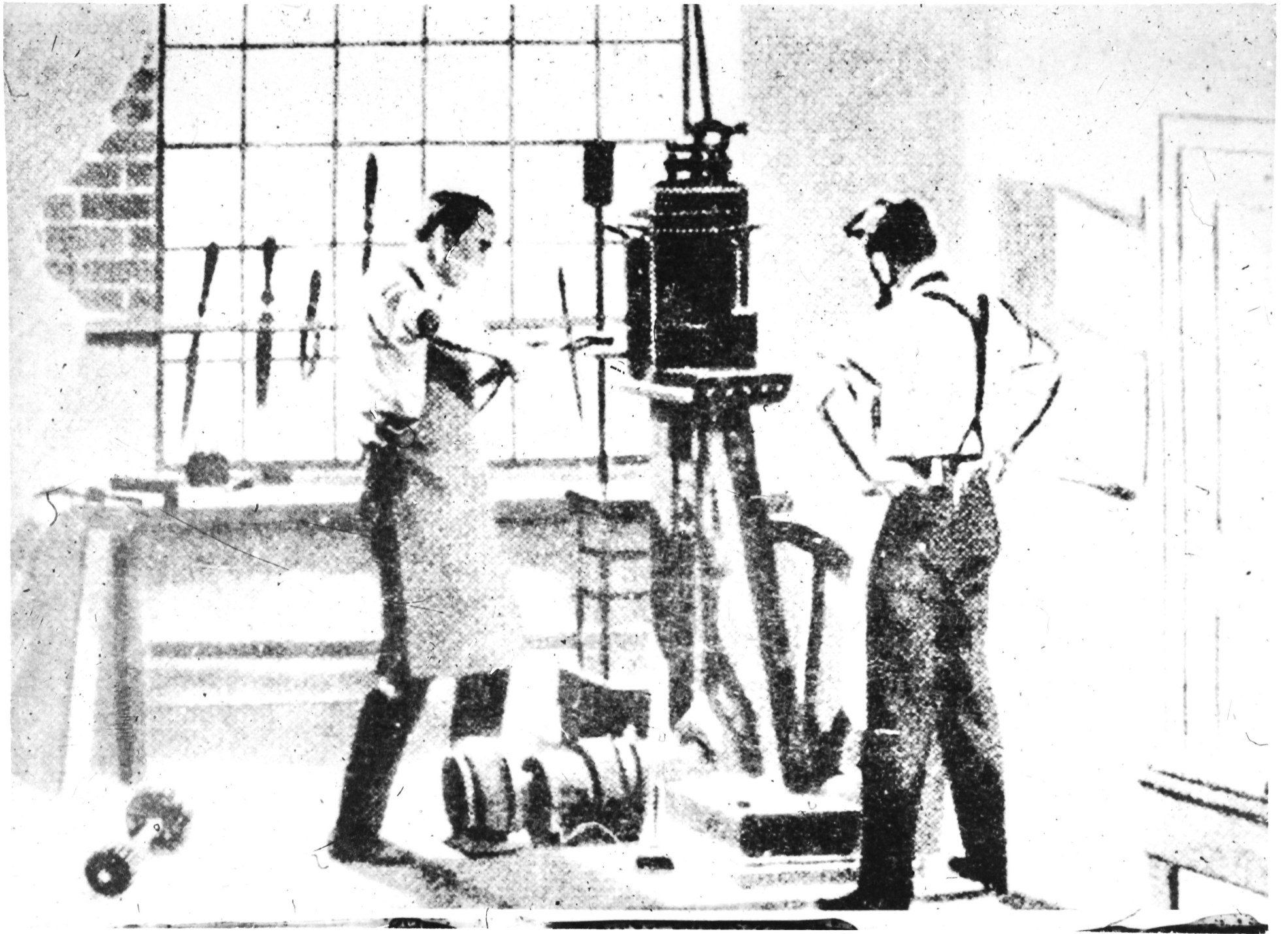
Appendix 3

Facsimile of the Test Anxiety Questionnaire Form.

TEST ANXIETY QUESTIONNAIRE

COLLEGE FORM

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK

(X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH

OF YOUR FEELING OR ATTITUDE.

Section 1

The following questions relate to your attitude toward and experience with group intelligence or aptitude tests. By group intelligence tests we refer to tests which are administered to several individuals at a time. These tests contain different types of items and are usually paper and pencil tests with answers requiring either fill-ins or choices of several possible answers. Scores on these tests are given with reference to the standing of the individual within the group tested or within specific age and educational norms. The College Entrance Board tests which you have taken represnet this type of test. Please try to remember how you usually reacted toward these tests and how you felt while taking them.

1. How valuable do you think group intelligence tests are in determining a person's ability?

| Very valuable | Valuable in some respects and valueless in others | Valueless |

2. Do you think that group intelligence tests should be used more widely than at present to classify students?

| Should be used less widely | Should be used as at present | Should be used more widely |

3. Would you be willing to stake your continuance in College on the outcome of a group intelligence test which has previously predicted success in a highly reliable fashion?

| Very willing | Uncertain | Not willing |

4. If you know that you are going to take a group intelligence test, how do you feel beforehand?

| Feel very unconfident | Midpoint | Feel very confident |

5. <u>After</u> you have taken a group intelligence test, how confident do you feel that you have done your best?

Feel very unconfident	Midpoint	Feel very unconfident

6. When you are taking a group intelligence test, to what extent do your emotional feelings interfere with or lower your performance?

Do not interfere at all	Midpoint	Interfere a great deal

7. <u>Before</u> taking a group intelligence test, to what extent are you aware of an 'uneasy' feeling?

Am very much aware of it	Midpoint	Am not aware of it at all

8. <u>While</u> taking a group intelligence test to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

9. <u>Before</u> taking a group intelligence test to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

10. <u>While</u> taking a group intelligence test to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

11. <u>Before</u> taking a group intelligence test to what extent do you worry

Worry a lot	Midpoint	Worry not at all

12. <u>While</u> taking a group intelligence test to what extent do you perspire?

Perspire not at all	Midpoint	Perspire a lot

13. <u>Before</u> taking a group intelligence test to what extent do you perspire?

Perspire not at all	Midpoint	Perspire a lot

14. In comparison with other students how often do you think of ways of avoiding a group intelligence test?

| Less often than other students | Midpoint | More often than other students |

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELINGS OR ATTITUDE.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION II

The following questions relate to your attitude toward individual intelligence tests and your experience with them. By individual intelligence tests we refer to tests which are administered to one individual at a time by an examiner. These tests contain different types of items and thus present a variety of tasks. Those tasks can be both verbal and manipulative, i.e. verbal or written answers to questions or manipulation of objects such as is involved in puzzles, form boards, etc. Examples of tests of this type would be the Stanford-Binet test and the Wechsler-Bellevue test. Please tryp to remember how you have usually reacted toward these tests or how you would expect to react to them.

16. Have you ever taken any individual intelligence tests?

    YES   NO   (Circle the appropriate answer)

    IF your answer to the above question is YES, indicate in the questions below how you do or did react to individual intelligence tests.

    IF your answer to the above question is NO, indicate in the following questions how you think you would react to or feel about individual tests.

17. When you were taking an individual intelligence test, to what extent do (or would) your emotional feelings interfere with your performance?

Would not interfere with it at all	Midpoint	would interfere a great deal

18. If you know that you are going to take an individual intelligence test, how do you feel (or expect that you would feel) beforehand?

Would feel very unconfident	Midpoint	Would feel very confident

19. While you are taking an individual intelligence test, how confident do you feel (or expect that you would feel) that you are doing your best?

Would feel very confident	Midpoint	Would veel very unconfident

20. **After** you have taken an individual intelligence test, how confident do you feel (or expect that you would feel) that you have done your best?

Would feel very un-confident	Midpoint	Would feel very confident

21. **Before** taking an individual intelligence test, to what extent are you (or would you be) aware of an 'uneasy' feeling?

Am not aware of it at all	Midpoint	Am very much aware of it

22. **While** taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

23. **Before** taking an individual intelligence test to what extent do you (would you) experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

24. **While** taking an individual intelligence test to what extent do you (would you) worry?

Worry a lot	Midpoint	Worry not at all

25. **Before** taking an individual intelligence test to what extent do you (would you) worry?

Worry a lot	Midpoint	Worry not at all

26. **While** taking an individual intelligence test to what extent do you (would you) perspire?

Would never perspire	Midpoint	Would perspire a lot

27. **Before** taking an individual intelligence test to what extent do you (would you) perspire?

Would never perspire	Midpoint	Would perspire a lot

28. In comparison to other students, how often do you (would you) think of ways of avoiding taking an individual intelligence test?

More often than other students	Midpoint	Less often than other students.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

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SECTION III

The following questions relate to your attitude toward and experience with course examinations. We refer to major examinations, such as mid-terms and finals, in all courses, not specifically in any one course. Tryp to represent your usual feelings and attitudes toward these examinations in general, not toward any specific examination you have taken. We realize that the comparative ease or difficulty of a particular course and your attitude toward the subject matter of the course may influence your attitude toward the examinations; however, we would like you to try to express your feelings toward course examinations generally. Remember that your answers to these questions will not be available at any time, to any of your instructors or to any official of the University.

29. Before taking a course examination, to what extent are you aware of an 'uneasy' feeling?

Am not aware of it at all	Midpoint	Am very much aware of it

30. When you are taking a course examination, to what extent do you feel that your emotional reactions interefere with or lower your performance?

Do not interfere with it at all	Midpoint	Interfere with it a great deal

31. If you know that you are going to take a course examination how do you feel beforehand?

Feel very unconfidant	Midpoint	Feel very confident

32. After you have taken a course examination, how confident do you feel that you have done your best?

Feel very unconfident	Midpoint	Feel very confident

33. While taking a course examination, to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

34. <u>Before</u> taking a course examination, to what extent do you experience an accelerated heartbeat?

Heartbeat does not accelerate at all	Midpoint	Heartbeat noticeably accelerated

35. <u>While</u> taking a course examination, to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

36. <u>Before</u> taking a course examination to what extent do you worry?

Worry a lot	Midpoint	Worry not at all

37. <u>While</u> taking a course examination, to what extent do you perspire?

Never perspire	Midpoint	Perspire a lot

38. <u>Before</u> taking a course examination, to what extent do you perspire?

Never perspire	Midpoint	Perspire a lot

39. When, in your opinion, you feel <u>well</u> prepared for a course examination, how do you usually feel just before the examination?

Confident	Midpoint	Anxious

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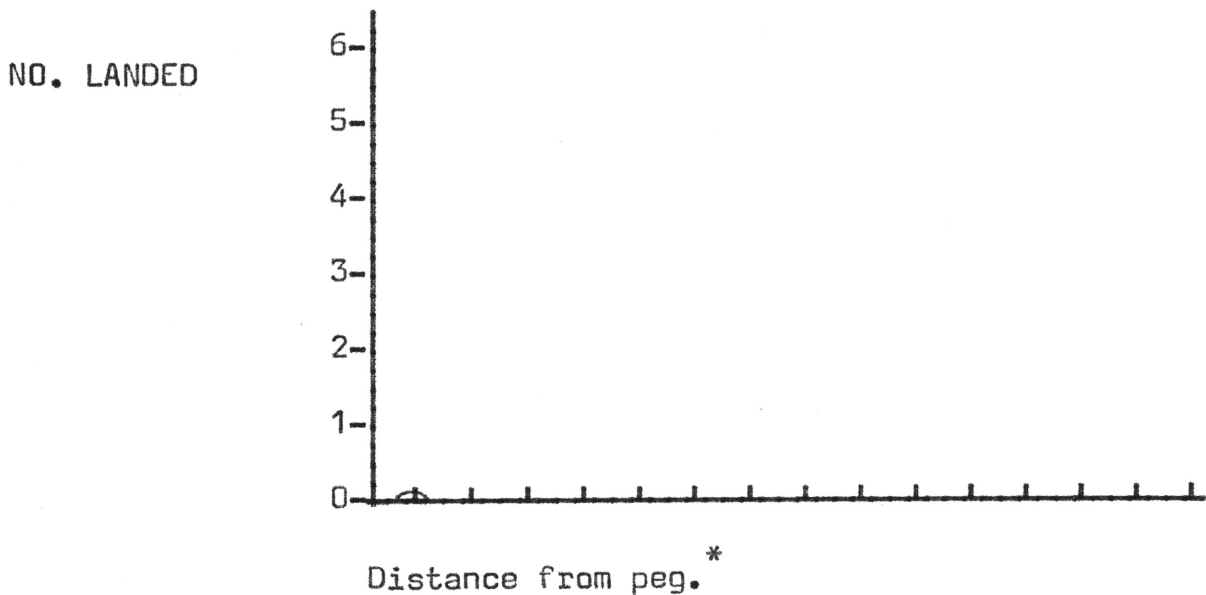
Appendix 4

<u>Facsimile of Experimental Instruction Sheets.</u>

EXPERIMENTAL INSTRUCTIONS 1.

<u>RING TOSS ABILITY</u>

The first part of this experiment involves our assessment of your absolute ability at the ring toss (quoits). You will receive six opportunities to throw the quoits at each of the distances marked out on the floor. Please record on the graph below the number of time out of six you are able to get at least 2 (two) out of 3 (three) quoits on the peg. You may throw any way you wish.

NO. LANDED

6-
5-
4-
3-
2-
1-
0-

Distance from peg.*

*You will notice no absolute sizes are given. You will write in the distances yourself beginning with the last level at which you can still achieve two out of three six times.

Appendix 4   (Cont/...)

ABILITY/RISK JUDGEMENT

We wish to find out which students can most accurately appraise their own capacity where some risk of failure is involved. The successful student will be the student who can successfully score two out of three in the ring toss on one trial at the highest level of risk in relation to his own basic ability. Thus if you score 2 out of 3 when you have only 2 chances in 6 of doing so (according to the graph you plotted earlier) you will do better than someone who succeeds at a 4 chances in 6 level. But if you fail to get 2 rings on the peg, the person who succeeds at a safer level will do better than you. ABILITY TO ADEQUATELY APPRAISE THAT LEVEL OF RISK WHICH IS THE HIGHEST AT WHICH A PERSON CAN PERFORM SUCCESSFULLY (even on simple motor tasks) IS CLOSELY RELATED TO A STUDENT'S ABILITY TO COPE WITH THE CHOICE SITUATIONS INVOLVED IN DOING A COURSE AT A UNIVERSITY TYPE INSTITUTION.

Distance:

Probability of success:

No. of quoits landing on peg:

Appendix 5

Summary of Raw Data

Table 9. Means, standard deviations and numbers of subjects providing results for the T.A.T., R.M.S., T.A.Q and A.C.E.R.N.

Test	Mean	Standard Deviation	Number of Subjects
T.A.T.	7.33	6.10	82
R.M.S.	.42	.16	82
T.A.Q.	171.02	36.77	82
ACERN (score)	46.81	8.04	72
ACERN (I.Q. equivalent)	c.121	c.7.5	72

Table 10. Frequency distribution of choice of objective probability of success.

Success Probability	Frequency
1.00	3
.83	2
.67	15
.50	33
.33	21
.17	6
0.00	2