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AN APPLICATION OF THE THEORY OF ACHIEVEMENT MOTIVATION TO ACHIEVEMENT IN SECOND LANGUAGE LEARNING

Lorraine Y. Bourque

Thesis presented to the School of Graduate Studies
of the University of Ottawa as partial fulfillment
of the requirements for the degree of
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CURRICULORUM STUDIORUM

Lorraine Y. Bourque was born October 5, 1931, in Basse Aboujagane, Westmorland County, New Brunswick. She received a Teacher's License from the Department of Education of New Brunswick in 1955, a Bachelor of Arts degree from Université de Moncton in 1968, a Bachelor of Education degree from Université de Moncton in 1971, and a Master of Education degree in Measurement and Experimentation from University of Ottawa in 1972. The title of her interim report was Empirical Study of Robert E. Thayer's Activation-Deactivation Adjective Check List.

TABLE OF CONTENTS

page

LIST OF TABLES AND FIGURES

Tables

Tables

Figure

ABSTRACT OF

An Application of the Theory of Achievement Motivation to Achievement in Second Language Learning

The purpose of this study is to provide an empirical test of propositions pertaining to the theory of achievement motivation.

Raynor, in his elaboration of the theory of achievement motivation, hypothesizes that when a task is perceived instrumental to a goal, success-oriented subjects should perform better and failure-threatened subjects should perform worse than if the task were not instrumental. This interaction hypothesis has not, however, been consistently supported. A critical analysis of Raynor's algebraical formulation and a study of Atkinson and Birch's revised rationale lead one to consider that Raynor's proposition as to the effects of perceived instrumentality on failure-threatened subjects may be inappropriate. It is argued that the subjects' verbal reports of the perceived instrumentality of a task may be an indication that the specific properties of a stimulus situation (incentive value) correspond to the reactive properties (motives) of an individual. If so, the greater the correspondence, the better would be the performance.

Atkinson and Birch also consider that, whenever a correct response is given to a task which is perceived instrumental to a goal, its incentive value is reinforced, up to a

saturation point, by the anticipation of the excitement of the goal satisfaction. If the correct response is not given, there is no such reinforcement. The successive participation or non-participation in the excitement of the goal satisfaction would determine for the next occurrence of this task or similar tasks the level of anticipation of satisfaction associated with these. If this is so, it is thought that the subjects' verbal report of their expectation of success should be a good indication of this anticipation of satisfaction. This verbal report of expectation of success is considered a different variable from Atkinson's subjective probability of success. In the present case, it is predicted that the higher the subjects' verbal report of their expectation of success, the better their performance.

To test the hypotheses of a main effect due to (a) perceived instrumentality and (b) expectation of success, the theory of achievement motivation was applied to a second language learning situation. The hypothesis that success-oriented subjects would have a better performance in French as a second language than would the failure-threatened subjects was also included as a retest of the theory.

The subjects were 362 high school students. They answered the Achievement Test in French, the Perceived Instrumentality of French scale, the Expectation of Success in French scale, the need Achievement test, and the Test

Anxiety Questionnaire. The last two tests yield a measure of Resultant Achievement Motivation and this is used to determine whether a subject is success-oriented or failure-threatened.

The hypotheses were tested using a correlational analysis, with sex included as one of the variables. Expectation of Success was found to be significantly correlated with Achievement Test in French with all other variables partialed out. Perceived Instrumentality of French and Resultant Achievement Motivation were significantly correlated with Achievement Test in French when Expectation of Success was not included in the variables to be partialed out. When the latter was included, the correlations did not remain significant. Regression equations were computed to test Raynor's interaction hypothesis. His hypothesis was not supported. It can then be said that Expectation of Success in French, Perceived Instrumentality of French, and Resultant Achievement Motivation explain some of the variance in the performance in French.

The present research has thus helped to clarify ambiguities in the theory of achievement motivation. It has also shown that the theory may be applied to a second language learning situation.

INTRODUCTION

A number of rationales have been proposed to explain the influence of different variables on performance. Some theorists have been particularly interested by the influence of personality characteristics; others, by the environment and its influence on one's responses; still others, by the influence of both personality characteristics and environment. J.W. Atkinson is in the latter category. It is the theory of achievement motivation which he and his collaborators developed that will serve as theoretical framework to this research.

In the first chapter of this thesis, the theory of achievement motivation will be presented and discussed. It will include Atkinson's initial formulation of the theory, Feather's contribution to the study of expectancy of success, Raynor's addition of the variable perceived instrumentality, and Birch's contribution to the reconstruction of the theory of achievement motivation.

In order to test the theory, it will be applied to the learning of French as a second language. The purpose of the experimental design which is presented in the second chapter is to test the influence of the variables motive dominance, perceived instrumentality and expectation of success on achievement.

In the third chapter, the results of this research are presented and discussed. The bibliography, a copy of the measuring instruments used, and the raw data conclude this report.

CHAPTER I

REVIEW OF THE LITERATURE

The purpose of this chapter is to provide the essential background information for the present research project, to discuss ambiguities in the theory of achievement motivation, and to delimit the scope of this research. First, the concepts and basic framework of the theory of achievement motivation proposed by Atkinson (1957, 1964) are presented. This is followed by a critical analysis of some of these concepts. Raynor's (1969, 1974) interaction hypothesis as to the effects of perceived instrumentality and subjects' motive dominance on performance is then examined. An explanation to the inconclusive research results that were obtained is attempted. In the next section, Atkinson and Birch's (1970) modifications to the theory are presented. This is followed by the conclusions derived from an analysis of the revised theory. Finally, a statement of the research problem and the hypotheses are presented.

Atkinson's Theory of Achievement Motivation

Definitions, Assumptions, and Propositions

Atkinson (1957, 1964) perceives the basic structure of personality as consisting of relatively general and relatively stable dispositions of personality which he calls

motives. Of the various motives that may influence the selectivity of behavior, Atkinson has given the greater attention to the motive to achieve success and the motive to avoid failure.

The motive to achieve success (M_S) is defined as a disposition to strive for success and a capacity to feel pride in accomplishment (Atkinson, 1964, p. 241). The motive to avoid failure (M_{AF}) is defined as a disposition to avoid failure and a capacity for reacting with humiliation and shame when one fails (p. 244). Both motives usually exist concurrently. An individual whose motive to achieve success is greater than his motive to avoid failure is considered achievement- or success-oriented ($M_S > M_{AF}$); the individual whose motive to avoid failure is greater than his motive to achieve success is considered failure-threatened ($M_{AF} > M_S$) (Atkinson & Feather, 1966, p. 367). The motives, and especially the dominant one, lead the individual to interpret the stimuli to action within the situational environment as either challenges, or threats, or both. As a result, either the tendency to achieve success, or the tendency to avoid failure, or both, are generated.

The arousing components of situations to which Atkinson (1964) gives the greater consideration are expectancy (subjective probability of success or of failure) and incentive value (p. 241). Whether a situation arouses mostly an

expectancy of success or an expectancy of failure is generally considered to depend chiefly on the individual's past experience and the cues present in the situation. The expectancy of success, also called subjective probability of success (P_s), refers to the expectation that success will be attained as a consequence of the performance of a task. The expectancy (or subjective probability) of failure (P_f) is the expectancy that some act will lead to failure. When an individual feels that he has only 30 chances out of 100 to succeed at a given task, the expectancy of success at this task (or subjective probability of success) is only .30, while the expectancy of failure at this same task is .70. Thus, Atkinson assumes that $P_s + P_f = 1$ (p. 241).

Atkinson (1964) considers that the incentive value of success (I_s) is equivalent to the attractiveness of success at a given activity. This attractiveness is assumed to be greater when a task is of greater difficulty. Thus, I_s is assumed to be equivalent to $1 - P_s$ (p. 242). When an individual succeeds at a task for which his probability of success was only .30, it is considered he feels more pride than if he had a .90 probability of success. The incentive value of failure (I_f) is considered equivalent to the repulsiveness that is felt for failure. Atkinson assumes that the easier a task is, the greater the incentive value of failure for that task ($I_f = -P_s$) (p. 244). He considers that there is not much

humiliation to fail at a very difficult task, but that it may be a considerable source of embarrassment to fail at an easy task.

In this subsection, the basic concepts in the achievement motivation rationale have been defined; in the next subsection, Atkinson's use of these concepts in algebraic formulations is presented.

Algebraic Formulations Pertaining to the Tendency to Engage in an Activity

Atkinson has expressed the combined impact of the above personality factors and situational components in algebraic formulations that express the strength of the tendency to engage or not to engage in an activity A (T_A). This T_A is calculated by summing up the tendency to achieve success (T_s) and the tendency to avoid failure (T_{-f}). These tendencies are defined below.

The tendency to achieve success (T_s) is defined as the product of the motive to achieve success (M_s), the subjective probability of success (P_s), and the incentive value of success (I_s) at a certain task, and is expressed by Atkinson (1964) as

$$T_s = M_s \times P_s \times I_s \quad \text{(p. 242)}. \qquad (1)$$

Since I_s is assumed equal to $1 - P_s$, the tendency to achieve success is also expressed as

$$T_s = M_s \times P_s \times (1 - P_s). \qquad (2)$$

The tendency to avoid failure (T_{-f}) is expressed as the product of the motive to avoid failure (M_{AF}), the subjective probability of failure (P_f), and the incentive value of failure (I_f):

$$T_{-f} = M_{AF} \times P_f \times I_f \quad \text{(p. 244)}. \tag{3}$$

Since Atkinson assumed that $P_f = 1 - P_s$ and $I_f = -P_s$, the tendency to avoid failure is also expressed as

$$T_{-f} = M_{AF} \times (1 - P_s)(-P_s) \tag{4}$$

$$\text{i.e., } T_{-f} = -M_{AF} \times P_s \times (1 - P_s). \tag{5}$$

Atkinson then expresses the tendency to engage in a given activity A (T_A) as the summation of the tendency to achieve success (T_s) and the tendency to avoid failure (T_{-f}).

$$\text{Thus } T_A = T_s + T_{-f}. \tag{6}$$

When equations (2) and (5) are substituted for T_s and T_{-f} respectively,

$$\text{then, } T_A = M_S \times P_s \times (1 - P_s) - M_{AF} \times P_s \times (1 - P_s) \tag{7}$$

$$\text{so that, } T_A = (M_S - M_{AF}) \times P_s \times (1 - P_s) \tag{8}$$

(Atkinson & Feather, 1966, p. 333).

This equation expresses the strength of the tendency to engage or not to engage in an activity, depending on which is the stronger, the motive to achieve success (M_S) or the motive to avoid failure (M_{AF}). Thus, Atkinson (1964) has predicted that success-oriented subjects will persist longer at a task than will failure-threatened subjects, and

that success-oriented subjects will perform better at a task than will failure-threatened subjects (p. 248).

Other predictions were also deduced from the formulated theory concerning the preference of success-oriented and failure-threatened subjects for typical levels of difficulty of activities in which they engage. However, some clarifications are needed as to subjective probability of success and incentive value of success before any conclusions can be reached as to the validity of these predictions. In the next subsection, clarifications as to both P_s and I_s will be attempted.

Subjective Probability of Success and Incentive Value of Success: Problems and Clarifications

Atkinson's theoretical rationale and the research which has been done to study the effects of the subjective probability of success and incentive value of success have not yet provided final answers as regards the impact of these variables on achievement-oriented activity.

Atkinson (1965) theoretically defines subjective probability of success (P_s) as "the strength of the expectancy (or subjective probability) that performance of a task will be followed by success" (p. 29).

The operational definitions of P_s have varied somewhat with experimenters. Some researchers have estimated it to be equivalent to consensual difficulty. Others have

assumed that their subjects believed the fictitious information which they provided; they then estimated the individual's subjective probability of success to be equivalent to the one that they had randomly assigned to subjects. Finally, other researchers have simply asked subjects to give an estimation of their probability of success; this was then accepted as the individual's subjective probability of success.

The maximum value of $P_s \times (1 - P_s)$ is attained when $P_s = .5$, i.e., when the subjective probability of success at a task is intermediate. Atkinson (1964) has therefore hypothesized that the tendency to achieve success is strongest for success-oriented subjects ($M_S > M_{AF}$) when the task is of intermediate difficulty, and the tendency to avoid failure is strongest for failure-threatened subjects ($M_{AF} > M_S$) when the task is also of intermediate difficulty. Nevertheless, only when M_S and M_{AF} are relatively strong was the effect of P_s expected to be discernible (p. 242; 244).

The above hypothesis cannot be considered to have received firm support from all researchers. Some studies in risk-taking and others in achievement motivation and performance where P_s was deliberately manipulated (Atkinson, 1958b; Atkinson & Litwin, 1960; McClelland, 1958; Moulton, 1965/1966; Raynor & Smith, 1966) give partial support to Atkinson's initial hypotheses as they were stated above. In

studies where P_s has been operationally defined as the subjects' verbal report of their probability of success, the results do not support Atkinson's (1964) initial formulation of his theory (Feather, 1963, 1965a, 1965b/1966, 1966). The above operational definitions can therefore not be used interchangeably.

In the research where P_s has been defined operationally as the subjects' verbal reports of their expectancy of success, it was not with the task of intermediate difficulty that the subjects performed better, but with the task for which they expressed a higher expectancy of success. In Feather's experiments, when subjects did not receive fictitious information or when the estimates were given in the middle or terminal part of the task, performance and verbal reports of expectancy of success were correlated positively. Since these results do not correspond to those predicted from the theory, this has led some researchers to reject this operational definition of P_s. While it may be true that Atkinson's theory is not supported when the above operational definition is used, it is nevertheless thought that this definition of expectancy of success is closer to some of the real-life situations to which the theory may be applied than the other two definitions. In a classroom setting, for example, the fictitious information given to subjects as to their own ability or as to the difficulty of

the task to be done does not recover all of the aspects associated with expectancy of success. In such a situation the subjects' verbal reports of their expectancy of success probably encompass some aspects of the variable which are not included in the other operational definitions of P_s. How this is so will be clarified further with the discussion of incentive value of success. In this study, to avoid any confusion between the different operational definitions that were used, the subjects' verbal reports of their expectancy of success will be referred to as "expectation of success" and will be identified as E_s. The other operational definitions will still be referred to as subjective probability of success and identified as P_s.

In some of his research, Feather (1965a, 1965b/1966, 1966) has investigated the effects of the variable expectation of success (E_s) and has studied its correlation with other variables. He also designed one of his studies in such a way as to be able to compare the effects of E_s with those of P_s, where P_s is operationally defined as the fictitious information given to the subjects.

In Feather's 1965b/1966 experiment, the subjects were led to believe that the task in which they were to engage was either moderately difficult or easy. Feather then asked the subjects to give their own estimations of their chances of success in the task at three different stages:

(a) at the initiation of the task, (b) during the middle part of the task, and (c) at the terminal stage of the task. The correlations between the estimate of success and performance during the initial part of the task were .31 ($p < .005$) for the moderately difficult experimental condition, and .14 (n.s.) for the easy experimental condition; for the middle and terminal parts of the task, the correlations were .60 and .60, respectively, for the moderately difficult condition; and .55 and .61, respectively, for the easy condition ($p < .0005$) (p. 269). It therefore appears that subjects readjusted their estimation of the probability of success as they proceeded with the task: except for the first estimate, they appeared more influenced by the perception of their own ability than by the fictitious information that they were given. In two other studies (Feather, 1965a, 1966) no fictitious norms were used, and subjects were given a truthful representation of the task in which they were to engage. In both instances, positive correlations were found between the subjects' estimated probability of success and their performance.

Atkinson and Feather (1966) have stated that the verbal report of one's expectancy of success is "another social act, an instrumental response determined by motives, expectations, and incentive values" (p. 355). Feather (1965b/1966) considers that past experiences of success and failure influence a subject's estimation of his chances of

success (p. 270). It is also accepted that an individual's motives are not only a function of heredity, but also of his formative environment (Atkinson & Raynor, 1974, p. 4). The experiences that have shaped an individual must certainly be considered to include the successes and failures that were encountered. In the 1965b/1966 experiment, the correlations obtained by Feather were as follows: (a) for subjects' initial probability estimates and need Achievement (n Ach: a measure of M_S), in the moderately difficult condition: $r = .20$, $n = 82$, $p < .05$; in the easy condition: $r = -.20$, $n = 86$; and (b) for initial probability estimates and test anxiety (a measure of M_{AF}), in the moderately difficult condition: $r = -.27$, $n = 82$, $p < .01$; in the easy condition: $r = -.39$, $n = 86$, $p < .0005$. For initial probability estimates, it must be noted that in the easy condition, the correlation or n Ach and subjects' estimates of success is negative rather than positive; the other correlations are in the predicted direction. The middle and terminal probability estimates were not correlated significantly to either need achievement or test anxiety.

It does not seem justified to interpret the above results as meaning that a subject's verbal report of his estimation of success is "determined by motives" (Atkinson & Feather, 1966, p. 355), any more than it could be said that motives are determined by the subjects' estimations of probable success. Rather, they are probably related to

past experiences which have influenced both what the individuals have become (their personalities) and how individuals usually judge a situation from the information that is available (their judgments). The fact that expectation of success (E_s) was correlated to need achievement and test anxiety in the initial stage of the experiment does not seem to justify not using E_s as a measure of the impact of the situational component. Even if E_s were determined by "expectations and incentive values", it appears that it is a more effective predictor of performance than the $P_s \times (1 - P_s)$ which Atkinson suggests as the measure of the effects of the situational components. The problem is that $P_s \times (1 - P_s)$ has more often than E_s enabled researchers to support Atkinson's predictions that success-oriented subjects perform better when there is an intermediate probability of success than when there is a high probability of success. One of the reasons for this finding might be due to the limitations which Atkinson has imposed on his theory by defining incentive value of success (I_s) in terms of P_s. A study of this aspect of the question might bring clarifications.

The main assumption as to incentive value of success (I_s) is that it is a function of subjective probability of success (Atkinson, 1964). Atkinson and Feather (1966) have also stated that there may be factors such as type of situation, degree of encouragement given, which may affect

the incentive value of success and which could improve the deductions predicted by the theory if they were controlled (p. 360). Besides the factors suggested by Atkinson and Feather, there is one other factor which may be quite important: the person's need to prove oneself to others. If this need is high, it probably is true that it will be important to succeed in tasks which are generally perceived as difficult, i.e., that have high consensual difficulty. This may be especially true if the tasks are such that other individuals who have succeeded at those tasks have acquired through their success a certain prestige. Not all individuals, however, are guided solely by the need of proving themselves to others. Some have acquired enough self-confidence to refuse to let their life be guided by this need. Maslow (1968), among others, does distinguish between individuals who are other-directed and those who are inner-directed. While inner-directed individuals probably do wish to test their strengths and abilities, the intrinsic satisfaction which they obtain from the activities that they value probably has more impact on the choice of their activities, and on their intent and resolution to succeed, than the somewhat more extrinsic satisfaction obtained by succeeding at a task which is generally considered difficult.

The factor of intrinsic satisfaction has not been ignored in the theory of achievement motivation. It is one

of the aspects considered in the measure of the motive to achieve success (McClelland, Atkinson, Clark & Lowell, 1958, p. 199-200). Nevertheless, Atkinson has not included this aspect in his measure of incentive value. As such, when he replaces the values of I_s and I_f by those of $1 - P_s$ and $-P_s$, respectively, his algebraic formulations of the tendencies to achieve success, to avoid failure, and to engage in an activity may not include characteristics of the situation which elicit in the individual his capacity for intrinsic satisfaction arousal.

In this section, the basic concepts, assumptions and propositions of the theory of achievement motivation have been presented, as well as algebraic formulations of the tendencies to achieve success, to avoid failure, and to engage in an activity. Also, clarifications as to the operational definition of subjective probability of success and incentive value of success are suggested.

Now that Atkinson's initial formulation of the theory has been discussed, the next step will consist of a discussion of the further refinements, revisions and elaboration of the theory. Raynor is one of those who have contributed to the theory of achievement motivation. His elaboration of the theory is discussed in the next section.

Raynor's Elaboration of the Theory of Achievement Motivation

Perceived Instrumentality: Raynor's Study of the Concept and of its Effects on Performance

The basis of Raynor's (1969, 1974) elaboration of the theory of achievement motivation is Atkinson's (1964) initial formulation of the theory. The modifications that were suggested by Atkinson and Birch (1970, 1974) are not incorporated in Raynor's rationale. Also, the definition of subjective probability of success ($\hat{P}_s$) is that which was accepted earlier by Atkinson. This means that in most cases P_s was defined operationally as the level of difficulty of the task.

Raynor's efforts were aimed at distinguishing between the effects of expectancy of success at tasks in which one could succeed or fail without affecting future goals, and the effects of expectancy of success at tasks in which success was essential in order to be able to engage in other activities leading to future goals. To conceptualize this distinction, Raynor (1970) uses the term perceived instrumentality. This term can be defined as the perception that a present activity is instrumental to the achievement of both immediate and future successes.

Raynor (1974) considers each of the activities that are perceived important towards the attainment of a goal as

a step in a contingent path. The perceived helpfulness of success in each (n) of these N steps leading to a goal is then considered to generate a tendency to achieve success in the immediate activity (T_s). The strength of T_s is determined by the summation of the component tendencies to achieve success (T_{s_n}):

$$T_s = T_{s_1} + T_{s_2} + \ldots + T_{s_n} + T_{s_N} \quad (9)$$

$$\text{i.e., } T_s = \sum_{n=1}^{N} (T_{s_n}). \quad (10)$$

To calculate the strength of the tendency to achieve success in each of the steps to a future goal (T_{s_n}), Raynor introduces a number of assumptions. He considers, for instance, that the strength of the subjective probability that the immediate activity (P_1) will result in a success at step n (s_n) ($\therefore P_{1s_n}$) is a multiplicative function of the subjective probabilities of success in each step of the path:

$$P_{1s_n} = P_{1s_1} \times P_{2s_2} \times \ldots \times P_{ns_n}. \quad (11)$$

He also assumes that the incentive value (I) of some anticipated success (s_n) ($\therefore I_{s_n}$) is an inverse linear function of the subjective probability that the immediate activity will result in some future success,

$$\text{i.e., } I_{s_n} = 1 - P_{1s_n}. \quad (12)$$

The tendency to achieve success at the n^{th} step (T_{s_n}) is then considered to be a multiplicative function of the motive to achieve success (M_S), the subjective probability that the immediate activity will lead to success at step n ($P_{1^{s_n}}$), and the incentive value of the anticipated success at step n (I_{s_n}):

$$T_{s_n} = M_S \times P_{1^{s_n}} \times I_{s_n}, \tag{13}$$

$$\text{so that, } T_{s_n} = M_S \times (P_{1^{s_n}})(1 - P_{1^{s_n}}). \tag{14}$$

Since the probability always exists, even if it is slight, that an individual may fail at an activity, the tendency to avoid failure (T_{-f}) is also calculated. Raynor assumes that the strength of this tendency is determined by the summation of the component tendencies to avoid failure at all the steps in the path to a goal, from the first (1) to the last step (N), n being used as a general term representing any particular step in the sequence:

$$T_{-f} = T_{-f_1} + T_{-f_2} + \ldots + T_{-f_n} + \ldots + T_{-f_N}, \tag{15}$$

$$\text{i.e., } T_{-f} = \sum_{n=1}^{N} (T_{-f_n}). \tag{16}$$

The strength of the tendency to avoid failure in each of the steps to a future goal (T_{-f_n}) is considered to be a multiplicative function of the motive to avoid failure (M_{AF}), the subjective probability that the immediate activity will result in some future failure ($P_{1^{f_n}}$), and the negative

incentive value of future failure (I_{f_n}),

$$\text{i.e., } T_{-f_n} = M_{AF} \times P_{1f_n} \times I_{f_n}. \quad (17)$$

Raynor (1969) states that "subjective probabilities of success and failure are assumed to vary between 0 and 1 and summate to 1" (p. 607). He then substitutes $1 - P_{1s_n}$ for P_{1f_n}. He also assumes that

$$I_{f_n} = -(P_{1s_n}). \quad (18)$$

Raynor then rewrites the algebraic formulation of T_{-f_n} as either $M_{AF} \times (1 + P_{1s_n})(-P_{1s_n})$ or $M_{AF} \times I_{s_n} \times (-P_{1s_n})$.

The resultant achievement-oriented tendency is then obtained by the summation of the tendency to achieve success at each perceived step toward a goal, and the tendency to avoid failure at each perceived step toward that goal from step 1 to step N, i.e., $\sum_{n=1}^{N} (T_{s_n} + T_{-f_n})$, so that,

$$T_s + T_{-f} = \sum_{n=1}^{N} (M_S \times P_{1s_n} \times I_{s_n}) + \sum_{n=1}^{N} (M_{AF} \times P_{1f_n} \times I_{f_n}). \quad (19)$$

Given the above assumptions as to subjective probabilities of success and failure and as to incentive values of success and failure, Raynor then concludes that it is possible to deduce that

$$T_s + T_{-f} = (M_S - M_{AF}) \sum_{n=1}^{N} (P_{1s_n} \times I_{s_n}). \quad (20)$$

Using this algebraic statement of the determinants of resultant achievement motivation, Raynor (1970) then deduces hypotheses pertaining to his elaboration of the theory. Success-oriented subjects are predicted to have better performance when an activity is perceived as instrumental than when it is not; failure-threatened subjects are predicted to have worse performance when an activity is perceived instrumental than when it is not. Thus, the difference in performance between success-oriented and failure-threatened subjects is considered to be greater when there is perceived instrumentality than when there is none (p. 29). This interaction is explained by the fact that perceived instrumentality would accentuate whatever tendency is already dominant in an individual, i.e., the tendency to achieve success for success-oriented individuals, and the tendency to avoid failure for failure-threatened individuals. The difference that already existed between the two groups of individuals would thus be emphasized, creating an interaction.

Raynor and other researchers have conducted a number of experiments to study the interaction effects of perceived instrumentality and motive dominance on subjects' performance. This research is now presented.

Research on the Interaction Effects of Perceived Instrumentality and Motive Dominance on Subjects' Performance

Among the studies which were set up to test Raynor's elaboration of the theory of achievement motivation was one by Raynor and Rubin (1971). The subjects were students in introductory psychology courses. Their performance on an arithmetic task, presented as the first of a series of four, was measured under two sets of instructions: one in which success was essential to guarantee the opportunity to continue at the other tasks, the other where it was not. These two conditions are called contingent and noncontingent; the terms have been used by Raynor as equivalents for situations with perceived instrumentality and situations with no perceived instrumentality, respectively. It was predicted that success-oriented subjects would perform at a higher level in the contingent than in the noncontingent condition, and that failure-threatened subjects would perform at a lower level in the contingent than in the noncontingent condition. An interaction was thus expected. The dependent variables were mean number of problems attempted and mean number of problems solved. A significant interaction was found for both dependent variables: $F\ (1, 26) = 23.68$ and 15.43, $p < .001$. This study is considered to be the one that gives the clearest support to Raynor's elaboration of the theory. It must be noted, however, that a stringent time limit had

been set: success in the contingent condition required that 20 out of 25 problems be completed within 2½ minutes.

Entin and Raynor (1973) did another study to ascertain whether other explanations could account for the results obtained in the 1971 study. They investigated whether reactions to a stated specific goal might be the factor that explained the better results of success-oriented subjects in the contingent condition; they also changed the experimental procedure to verify whether the fact that some subjects did not have to continue at a second task, while others were expected to continue, could have influenced either working less or more. Entin and Raynor also checked whether a two-step contingent path was sufficient to produce interaction effects, and whether the effects would be found for simple as well as complex tasks. Again a time limit was set: 2 minutes. Entin and Raynor report testing the interaction with an a priori comparison. They obtained a significant interaction for the complex task, but not for the simple task, although results were in the expected direction.

Raynor (1970) reports two other studies in which he investigated the effects of perceived instrumentality (PI) of grades and achievement-related motives on academic performance. In the first study, the predicted interaction between motive and perceived instrumentality was obtained: $F\ (1, 58) = 5.24$, $p < .05$. The success-oriented subjects

in the high PI group obtained better results than those in the low PI, and the failure-threatened subjects in the high PI group performed worse than those in the low PI. The second study included three analyses of variance with the following dependent variables: (a) mean grades in an introductory psychology course, (b) grade-point average for all courses taken during semester, (c) subjects' grade-point average in courses rated high as to perceived instrumentality versus grade-point average in courses rated low as to perceived instrumentality, using each subject as his own control. The students' motives were assessed, and, in each case, an index of perceived instrumentality as to the dependent variable was calculated. With grades in an introductory psychology course as a dependent variable, the interaction effect between motives and perceived instrumentality did not reach significance ($p < .10$), and motives did not significantly affect performance, but there was a significant effect due to perceived instrumentality of psychology. With grade-point average for all courses as a dependent variable, there was no interaction effect between motive classification and perceived instrumentality, no effect due to motive classification, and the effect of perceived instrumentality did not reach significance ($p < .10$). When subjects' performance in courses where they had high perceived instrumentality was compared with their performance in courses

where they had low perceived instrumentality, there was no interaction effect between motive classification and perceived instrumentality, and no effect due to motive classification, but the effect of perceived instrumentality was significant. In the second study, there was thus a trend towards a significant main effect due to perceived instrumentality but no significant interaction effect on performance due to perceived instrumentality and motive classification. In the same 1970 paper, Raynor reports that, in a 1968 study, he obtained similar results. Both success-oriented and failure-threatened subjects received higher grades when they expressed high perceived instrumentality than when they did not.

Atkinson, Lens and O'Malley (1976) report secondary analysis, done by O'Malley, of data obtained from a 1967 study by Bachman, Kahn, Mednick, Davidson and Johnston. A representative sample of male sophomore students in public high schools of the United States who had been asked in 1966, "How important do you think your high school grades are in making your plans work out?" were classified as to levels of perceived instrumentality. These students had also been classified as to motive. As of 1970, a significantly higher percentage of those who expressed high perceived instrumentality, both within the success-oriented and the failure-threatened groups, were still in some form of

post-high school education. The degree of significance was not reported. It is interesting to note that the authors of the 1976 paper (Atkinson et al) conclude that the most important of all the findings in O'Malley's secondary analysis is the solid evidence of the joint motivational impact of perceived instrumentality and motive classification (p. 50). They do not, however, propose any rationale to justify the above findings.

Gervais (1978) also conducted a study in which he tested the interaction effects on performance of personality motive and perceived instrumentality (PI). Again the predicted interaction was not obtained. Grade six French students received higher grades on a written test of French language when they perceived French as very important (high PI) than when they perceived it as less important (low PI): $F_r(1, 138) = 6.195$, $p < .01$. The difference was approximately the same for failure-threatened subjects (high PI: $M = 50.96$, $s = 17.80$, $n = 59$; low PI: $M = 41.94$, $s = 16.54$, $n = 24$; $d = 9.02$) as for success-oriented individuals (high PI: $M = 67.50$, $s = 22.37$, $n = 39$; low PI: $M = 59.40$, $s = 15.66$, $n = 20$; $d = 8.10$).

The results from the above studies are thus diversified. Raynor and Rubin (1971), Raynor (1970), in a first study, Entin and Raynor (1973), in one of two studies, obtained support for the predicted interaction between motive

and perceived instrumentality; Raynor (1970), in a second study, and in a 1968 study, O'Malley (in Atkinson et al., 1976), and Gervais (1978) did not obtain the predicted interaction, but rather a main effect due to perceived instrumentality. Although it is not possible to arrive at definite conclusions from the above studies, the results that were obtained cannot but lead to further analysis of Raynor's rationale.

A critical analysis of Raynor's elaboration of the theory of achievement motivation is given in the next subsection. It includes, along with an analysis of the assumptions that were used, a study of the algebraic formulations that Raynor uses.

A Critical Analysis of Raynor's Rationale

When Raynor's main algebraic formulation is analyzed, there is one variation from Atkinson's (1964) formulation which may not attract attention at first, but which is nevertheless of importance. With Atkinson's formulation, the same value is obtained for the strength of the tendency to engage in an activity A (T_A), no matter whether P_s or P_f values are used in the calculation of T_A,

$$\text{i.e., } T_A = (M_S - M_{AF}) \times P_s \times (1 - P_s)$$

$$= (M_S - M_{AF}) \times P_f \times (1 - P_f). \qquad (21)$$

Such is not the case with Raynor's algebraic formulation. To his original equation,

$$\text{i.e., } T_A = \sum_{n=1}^{N} (M_S \times P_{1^{s_n}} \times I_{s_n}) + \sum_{n=1}^{N} (M_{AF} \times P_{1^{f_n}} \times I_{f_n}), \quad (22)$$

Raynor has substituted the following equation:

$$T_A = \sum_{n=1}^{N} (M_S - M_{AF})(P_{1^{s_n}})(1 - P_{1^{s_n}}). \quad (23)$$

The value of $(P_{1^{f_n}})(1 - P_{1^{f_n}})$ is nevertheless not equivalent to the value of $(P_{1^{s_n}})(1 - P_{1^{s_n}})$ when the original values of P_f and P_s at each step of the task are used in the calculation of the impact of the situational component. To demonstrate their unequivalence, their values will be compared when the probability of succeeding at a task is quite high.

Let it be assumed that a set of three activities are perceived as instrumental in attaining a goal and that each of these activities is rather easy,

$$\text{e.g., } P_{1^{s_1}} = P_{2^{s_2}} = P_{3^{s_3}} = .9. \quad (24)$$

Since the subjective probability of success and the subjective probability of failure are assumed to summate to 1, then

$$P_{1^{f_1}} = P_{2^{f_2}} = P_{3^{f_3}} = .1. \quad (25)$$

In the following comparisons, $(P_{1^{s_3}})(1 - P_{1^{s_3}})$ and $(P_{1^{f_3}})(1 - P_{1^{f_3}})$ are contrasted.

Raynor assumes that

$$P_{1^{s}3} = P_{1^{s}1} \times P_{2^{s}2} \times P_{3^{s}3} \quad (26)$$

$$\therefore P_{1^{s}3} = .9 \times .9 \times .9 \quad (27)$$

$$\text{so that, } P_{1^{s}3} = .73. \quad (28)$$

$$\text{Then, } (P_{1^{s}3})(1 - P_{1^{s}3}) = (.73 \times .27) = .1971. \quad (29)$$

Since Raynor assumes that

$$P_{1^{s}n} = P_{1^{s}1} \times P_{2^{s}2} \times \ldots \times P_{n^{s}n} \quad (30)$$

and parallel methods of calculation have usually been used to determine the strength of the tendency to achieve success and of the tendency to avoid failure, let it be assumed that

$$P_{1^{f}3} = P_{1^{f}1} \times P_{2^{f}2} \times P_{3^{f}3}. \quad (31)$$

In this case,

$$P_{1^{f}3} = .1 \times .1 \times .1 \quad (32)$$

$$P_{1^{f}3} = .001. \quad (33)$$

$$\text{Then } (P_{1^{f}3})(1 - P_{1^{f}3}) = .001 \times .999 = .000999. \quad (34)$$

Since $(P_{1^{s}3})(1 - P_{1^{s}3}) = .1971$, (equation 29)

then $(P_{1^{f}3})(1 - P_{1^{f}3}) \neq (P_{1^{s}3})(1 - P_{1^{s}3})$ if the P_f values of each task are used when calculating the value of $P_{1^{f}3}$.

In order to determine the differences that would be found if P_{-f} values, and not the P_s value, were used to determine the tendency to avoid failure (T_{-f}), calculations were performed. Results are compared for easy, intermediate and difficult tasks (Table 1). One set of computations was done using Raynor's algebraic formula,

$$\text{i.e., } T_s + T_{-f} = (M_S - M_{AF}) \sum_{n=1}^{N} (P_{1^{s_n}})(1 - P_{1^{s_n}}) \quad (35)$$

Another set of computations was done using an alternative method of computation that takes into account the unequivalence of $(P_{1^{s_n}})(1 - P_{1^{s_n}})$ and $(P_{1^{f_n}})(1 - P_{1^{f_n}})$. The formula that was used is the following:

$$T_s + T_{-f} = M_S \times \sum_{n=1}^{N} (P_{1^{s_n}})(1 - P_{1^{s_n}}) - M_{AF} \times \sum_{n=1}^{N} (P_{1^{f_n}})(1 - P_{1^{f_n}}) \quad (36)$$

The results of computations in Table 1 allow the comparison of the strength of tendencies to engage in easy, moderate or difficult tasks which are instrumental to future success. With the alternative set of computations that is proposed, if a task is very difficult, even success-oriented subjects may have a tendency not to engage in an activity; if a task is quite easy, failure-threatened subjects may have more tendency to engage in an activity than not to engage. With Raynor's method of computation, perceived instrumentality is always considered as having positive effects for success-oriented subjects and negative effects

Table 1

Strength of Tendency (T) in the Presence of Perceived Instrumentality Computed for Easy, Intermediate and Difficult Tasks, and for $M_S > M_{AF}$ and $M_{AF} > M_S$ Subjects, According to Raynor's Method[a] and an Alternative Method[b] of Computation

Tasks	Raynor's method[a]		Alternative method[b]	
	$M_S > M_{AF}$[c]	$M_{AF} > M_S$[d]	$M_S > M_{AF}$[c]	$M_{AF} > M_S$[d]
Easy[e]	.882	-.882	1.222	.138
Intermediate[f]	.438	-.438	.438	-.438
Difficult[g]	.202	-.202	-.138	-1.222

[a] $T = (M_S - M_{AF}) \sum_{n=1}^{N} (P_{1^{S_n}})(1 - P_{1^{S_n}})$

[b] $T = M_S \times \sum_{n=1}^{N} (P_{1^{S_n}})(1 - P_{1^{S_n}}) - M_{AF} \times \sum_{n=1}^{N} (P_{1^{f_n}})(1 - P_{1^{f_n}})$

[c] Assumption: $M_S = 3$, $M_{AF} = 1$

[d] Assumption: $M_S = 1$, $M_{AF} = 3$

[e] Assumption: $P_{1^{S_1}} = P_{2^{S_2}} = P_{3^{S_3}} = .9$

[f] Assumption: $P_{1^{S_1}} = P_{2^{S_2}} = P_{3^{S_3}} = .5$

[g] Assumption: $P_{1^{S_1}} = P_{2^{S_2}} = P_{3^{S_3}} = .1$

for failure-threatened subjects. Moreover, with the $M_{AF} > M_S$ subjects, the higher the subjective probability of success, the stronger the tendency not to engage in the immediate activity. With the alternative method of computation, for the failure-threatened subjects ($M_{AF} > M_S$), the stronger tendency not to engage in the immediate activity is found when the subjective probability of success is low, not when it is at its highest point.

This alternative method of computation may help explain some of the inconsistent results obtained in research on perceived instrumentality. In the research that was done, perceived instrumentality does not always accentuate the tendency of failure-threatened subjects not to engage in the immediate activity. On the contrary, in a number of studies, it was shown that failure-threatened subjects performed better in certain instances when there was perceived instrumentality than when there was none (Raynor, 1970, second study; Atkinson et al., 1976; Gervais, 1978). Could it be that perceived instrumentality enhanced a weak positive tendency that was already present in certain cases and not in others? To explain all the above results, other factors no doubt also have to be considered. However, one may ask whether Raynor's approach to the calculation of the tendency to engage in an activity is appropriate.

In this section, Raynor's interaction hypothesis and the pertinent research in the area have been discussed. In the next section, Atkinson and Birch's revised rationale, which they have termed "the dynamics of action", is presented. In this latter rationale, a number of revisions and clarifications are given which may be more consistent with the research results in this area and with the alternative method of computation suggested.

Atkinson and Birch's Revision of the Theory of Achievement Motivation: The Dynamics of Action

Atkinson and Birch's Rationale and Its Main Concepts

Atkinson and Birch (1970) propose a rationale that provides a more complete analysis of the problems of behavior and motivation. In this section, the propositions in Atkinson and Birch's reformulation of the theory of achievement motivation that apply to this study will be presented. Due to the limits of this research, not all the mathematical formulations and derivations presented by Atkinson and Birch will be analyzed. Attention will be concentrated on the aspects of their theory that are considered essential to the understanding of expectation of success, incentive value of success, and perceived instrumentality.

The theory presented by Atkinson and Birch (1970) is not as stimulus-bound as it may first appear. Although the individual is often presented as reacting to a stimulus situation, the stimuli are not considered to cause the behavior. Rather, they function to selectively enhance a tendency that is already present (p. 24). According to Atkinson and Birch, behavioral tendencies which have been aroused, but not expressed, persist within the individual until they are acted on by some forces that either reinforce or weaken their strength. These persisting tendencies are called inertial tendencies (p. 10). They refer to one of Freud's views, that a wish or intention, once it has been aroused, persists until it is expressed in action and satisfied.

Freud's concepts of substitution and displacement are also accepted. Human tendencies are considered to belong to families of highly correlated tendencies. A factor that influences a tendency can have an indirect influence on other tendencies of that family. The term displacement is used to refer to the indirect strengthening of the tendency for one activity which must be attributed to the instigation of some other activity (p. 29). The term substitution is used to refer to the reduction of a tendency to engage in one activity which is attributable to the reduction of the instigation to engage in some other activity (p. 34). Involvement in one

activity may therefore not always be related to specific stimuli which require specific responses. Inertial tendencies, substitution and displacement are all factors which may, along with various stimulus situations, explain initiation or non-initiation of an activity. Atkinson and Birch's theory must therefore be viewed differently from traditional stimulus-response (S-R) theory.

Atkinson and Birch introduce several new terms including the following: instigating force (F), inhibitory force (I), consummatory force (C), force of resistance (R), selective attention, consummatory lag, conditioned and unconditioned forces. They discuss how these various constructs help to explain the variations in the strength of the action tendency (T), the negaction tendency (N), and the final resultant action tendency ($\bar{T}$). These terms and their importance to the theory are discussed below.

Instigating Force and Inhibitory Force

In Atkinson's (1964) original theory of achievement motivation, the product of the motive to achieve success with the subjective probability of success and the incentive value of success ($M_S \times P_s \times I_s$) was presented as representing the final strength of the tendency to achieve success (T_s). Atkinson and Birch (1974) view it, however, as the determinant of an instigating force to achieve success (F).

Thus, $F = M_S \times P_s \times I_s$.

Similarly, the concept of inhibitory force (I) replaces the concept of the tendency to avoid failure (T_{-f}) (p. 302).

$$I = M_{AF} \times P_f \times I_f.$$

This modification does not merely represent a modification of terms. An instigating force and an inhibitory force are considered by Atkinson and Birch (1970) not as final determinants, but as some of the determinants of the resultant tendency to engage in an activity. An instigating force (F) and an inhibitory force (I) are aroused by stimuli which may be overt or covert. An instigating force is defined as the rate of increase in the strength of the tendency to engage in an activity (p. 10). An inhibitory force is defined as the rate of increase in the strength of the tendency not to engage in an activity (p. 261). The longer the selective exposure to the stimuli that elicit the force, the greater the tendency to engage or not to engage in the activity will become. Instigating and inhibitory forces can thus be defined as the determinants of the rates of arousal. On the other hand, the tendency to engage in an activity and the tendency not to engage in an activity (termed, respectively, action tendency and negaction tendency by Atkinson and Birch) reflect the state or level of strength of a tendency at a particular time (p. 325).

Action Tendency and Consummatory Force

An action tendency (T) is defined by Atkinson and Birch (1970) as an inclination to act, or a motivational impulse to do something (p. 9). An understanding of the dynamics pertaining to action tendency and its increase or decrease in strength requires the introduction of the concept of consummatory force (C) and a study of its relation to the instigating force (F). To permit a better comprehension of the dynamics involved, the resultant tendency to act will first be studied in a context where no inhibitory force is present, and therefore, where no tendency not to engage in an activity is aroused. The dynamics involved with the inhibitory force and the force that reduces it (the force of resistance), and the final strength of the tendency not to act will be discussed later.

When individuals get involved in an activity, they remain in contact with the stimulus situation. Therefore, the instigating force which has been aroused continues to increase their action tendency as long as they are exposed to the situation. Also, at the moment they engage in the activity, they bring a new force into action: a consummatory force (C). The consummatory force may be defined as the rate of reduction of the strength of the action tendency and is attributable to the expression of the tendency to act (p. 16). Just as eating gradually decreases the tendency to

eat, the consummatory force, which develops while one is involved in an activity, weakens the strength of the action tendency.

The consummatory force of different activities is not considered to be equivalent. The main distinction is considered to be between goal activities and instrumental activities. Goal activities refer to activities which are undertaken as ends in themselves and would themselves be intrinsically enjoyable. Instrumental activities refer to the activities which are undertaken, not because of the innate satisfaction they give, but because they lead to something which is desirable. They are means to an end (p. 168-169).

Atkinson and Birch (1970) consider the distinction between obvious consummatory or goal activities, such as eating, and other activities that are preparatory or instrumental to these, such as getting the meal ready, as a quantitative one (p. 15). The consummatory value (c) of an activity, together with the vigor of the action tendency (T), determines the magnitude of the consummatory force (C):

$$C = c \cdot T \quad \text{(p. 16)} \qquad (37)$$

The instigating force continues to strengthen the action tendency as long as the individual remains in contact with the situation, and the consummatory force has the effect of reducing the action tendency during the period the

individual is involved in the activity. Therefore, the strength of the action tendency will increase or decrease depending on whether it is the instigating force or the consummatory force which is the stronger. Since this is an on-going process and since $C = c \cdot T$, at the onset of the activity, the consummatory force will also gradually increase or decrease depending on the rate of increase or decrease of the action tendency. This process will continue until the consummatory force becomes equal to the instigating force. The strength of the action tendency will then remain stable.

Since the stabilization level of the action tendency is reached when the consummatory force and the instigating force are equivalent,

$$\text{i.e., when } C = F, \tag{38}$$

$$\text{and since } C = c \cdot T, \tag{39}$$

$$\text{then, at the moment of stabilization } F = c \cdot T, \tag{40}$$

$$\text{that is, } T = F/c. \tag{41}$$

Therefore, the level at which a tendency to act stabilizes depends on the ratio of the strength of the instigating force to the magnitude of the consummatory value. So the stronger the instigating force and the lower the consummatory value, the greater the tendency to act will be (p. 19).

Since the consummatory value (c) of so-called instrumental activity (walking to the restaurant) is assumed

to be much lower than that of so-called goal activities (eating), this means that the level of strength of the tendency to act will stabilize at a higher level when one engages in an activity which involves instrumental activities than when one is involved in a goal activity. Since other tendencies to act, aroused by overt or covert situations, must get stronger than the aroused on-going tendency to act before they are acted upon, this also means that the individual will have a tendency to persist longer in on-going instrumental activities than in goal activities. If one persists longer in an activity, there are then more chances of greater cumulative achievement.

Negaction Tendency and Force of Resistance

As already indicated, the above presentation of the effects of instigating force and consummatory force on the resultant action tendency was done in a context where no inhibitory force and, therefore, no force of resistance to reduce it were present. The analysis of inhibitory force and force of resistance by Atkinson and Birch (1970) parallels that of instigation and consummation of action. This parallel treatment is made clearer by the comparison of the analogous terms which are used:

Instigating force, F	-	Inhibitory force, I
Action tendency, T	-	Negaction tendency, N
Action	-	Resistance
Consummatory force, C	-	Force of resistance, R
Consummatory value, c	-	Resistance value, r

A tendency not to engage in a specific activity is referred to as a negaction tendency. It tends to negate and block the expression of an action tendency. It does not, however, alter the strength of the action tendency (p. 205-206). A negaction tendency is strengthened by the presence of the inhibitory force. The longer the exposure to the stimulus situation which arouses the inhibitory force, and the greater the strength of the inhibitory force, the greater the strength of the negaction tendency (p. 208).

Two main forces thus affect the strength of the negaction tendency (N): the inhibitory force (I) increases it, and the force of resistance (R) reduces it. So, if $R < I$, N will increase, and if $R > I$, N will decrease. But since $R = r \cdot N$, the changes that occur in N will gradually affect the strength of R, causing it to increase as N increases, or decrease as N decreases. The strength of R must then finally become equal to the strength of I. At that point the negaction tendency (N) will reach a stable level.

Since, at the stabilization level, $R = I$ (42)

and since, $R = r \cdot N$ (43)

then, at the moment of stabilization, $I = r \cdot N$ (44)

so that, $N = I/r$ (45)

(Atkinson & Birch, 1970, p. 209).

The strength of the negaction tendency is therefore considered to become stable at a level that is proportionate to the strength of the inhibitory force. The greater the threat of punishment for an activity, the greater the resistance to that activity.

The force of resistance is assumed to be expressed in resistance to the action tendency. In the cases where $T > N$, the negaction tendency will block the expression of a part of the action tendency, but since $T > N$, it is the action tendency that will be expressed. In the cases where $N > T$, since the force of resistance can only oppose whatever action tendency there is, it must be considered dependent of the strength of the action tendency. If the part of the negaction tendency (N) which is equivalent to the action tendency is symbolized as $\bar{N}$, then $N = r \cdot \bar{N}$. This means that the vigor with which an action tendency is resisted also depends on the relative strength of the tendency to engage in the activity.

When a negaction tendency is greater than an action tendency, an individual may decide to walk away from the

situation. If, however, he remains in contact with the stimulus situation, changes in both the negaction tendency and the action tendency will continue. When N > T, it is assumed that the individual will not engage in the activity. Therefore, no consummatory force (C) reduces the action tendency (T). This means that T grows linearly. During the period of growth of T, the negaction tendency will gradually reach a level of stabilization. This means that, sooner or later the action tendency will become greater than the negaction tendency and the individual will then tend to engage in the activity (p. 208-212).

Delay in the initiation of an activity is thus considered to be one of the main effects of the negaction tendency. In a constant environment, such as a test situation, the detrimental effects on performance are therefore felt early rather than late in the period allowed for the activity. During the initial period of resistance, the negaction tendency is reduced and the action tendency continues to grow linearly. When the activity is initiated, the strength of the action tendency is then greater than if there had been no resistance. In the study of behavior of individuals, it is therefore important to remember that the effects of negaction tendency are considered by Atkinson and Birch to be transitory (p. 307).

Selective Attention and Consummatory Lag

As has been seen, the dominance of one tendency over another is not considered stable. It was shown that a dominant negaction tendency can be replaced by a dominant action tendency. It must therefore be asked how great the possibilities are that a newly dominant action tendency be maintained once the individual engages in action. At this point, it is necessary to present two other constructs introduced by Atkinson and Birch (1970). These are: selective attention and consummatory lag. With these concepts, some necessary links are provided between an ideal theoretical case and actual behavior.

When individuals engage in an activity, they systematically orient their attention to the relevant features of the environment that pertain to the on-going activity. Their attention is therefore selectively oriented towards the stimuli that are relevant to the given activity rather than towards other competing stimuli (p. 93). This effective contact with the environment, called selective attention, will therefore tend to make the dominant behavioral tendency more resistant to change. Atkinson and Birch (1970) assume that selectivity in attention is inherent to one's involvement in a given activity (p. 93).

A consummatory force was presented as a force which originated with the initiation and ceased with the cessation

of an activity. When actual behavior is initiated, Atkinson and Birch (1970) assume that in the initial period of transition, a time lag exists during which the effects of the consummatory force are not felt. Similarly, a time lag is found at the cessation of an activity during which the effects of the consummatory force continue to be felt. This discrepancy in time between the initiation of the activity and initiation of the consummatory force, and similarly, between the cessation of the activity and cessation of the consummatory force is referred to as a consummatory lag (p. 96-97). The tendency to eat is not reduced by the consummatory force with the first bite that is eaten, and this consummatory force continues to be felt for quite some time after the activity of eating has ceased. The consummatory lag pertaining to an activity such as solving a mathematical problem might be of much shorter duration. Different activities are thus considered to have consummatory lags of different durations. This duration would depend on the characteristics of the activity. However, it is assumed that consummatory lags are general phenomena.

The consummatory lag is one of the factors that prevent too great a fluctuation in the dominant tendency (p. 100). The fact that the consummatory force does not begin to reduce the action tendency as soon as the activity is initiated means that the action tendency continues to

grow linearly during that period. It can thus counterbalance for a longer period the forces that oppose or reduce it. Consummatory lag, together with selectivity in attention, therefore helps insure more persistence in the activity in which one is engaged. It also helps explain why even failure-threatened subjects will persist in certain activities once they get involved. The instances in which this is more likely to happen are those where the subject has been exposed to the instigating force for some time and the action tendency has grown in strength due to this exposure.

Another factor that can positively affect persistance in an activity pertains to the greater strength that some instigating forces have acquired by reinforcement due to their contiguity in the past with satisfying goal responses. The involvement in an activity can also be affected negatively by inhibitory forces that have acquired greater strength due to their contiguity in the past with responses that had negative consequences. This question of reinforcement of instigating and inhibitory forces has been treated by Atkinson and Birch (1970) under the terms of conditioned and unconditioned instigating forces and conditioned and unconditioned inhibitory forces. These conditioned forces are related with the forces to engage in activities which are perceived instrumental in attaining certain goals. The rationale pertaining to these forces is presented in the

next subsection.

Conditioned and Unconditioned Forces

Atkinson and Birch (1970) have considered it useful to integrate into their own theory, together with appropriate modifications, some of the findings pertaining to conditioning and learning theories.

Unconditioned instigating forces are found in goal activities. Atkinson and Birch assume that unconditioned instigating forces are elicited by cues which call for responses that are innately satisfying and which they consider to be ends in themselves. Conditioned instigating forces, on the other hand, are elicited by cues that pertain to instrumental activities the strength of which depends on their contiguous association with goal responses, i.e., with responses to unconditioned instigating forces (p. 141-144).

The conditioned and unconditioned instigating forces that lead to a goal activity are considered to become part of an elaboration of the tendency to engage in the activity. This elaborated tendency is assumed to be strengthened by the satisfaction obtained from the goal response which acts as a positive reinforcement. As the individual engages in the action, the correct responses to activities which are instrumental in attaining a goal elicit an anticipatory reaction to the expected satisfaction from the goal response.

This enhances the strength of the conditioned instigating force. Every time correct responses are given and the goal is reached, the instrumental activity is positively reinforced. The tendency to engage in the elaborated tendency comprising conditioned and unconditioned instigating forces would then tend to become somewhat greater than the preceding time, until a saturation point is reached. If incorrect responses are given and the goal is not reached, there is absence of positive reinforcement. The incorrect responses will therefore fail to acquire the anticipatory excitement related to the goal response. If an elaborated tendency has often led to the satisfaction of the goal response, the conditioned instigating force that is elicited by cues from the instrumental activity should then be stronger than if the goal has not been attained often (p. 144-146).

To permit a better comparison with Raynor's rationale on perceived instrumentality, the above deductions could be worded in terms of expectancy of success. Subjects who, because of past experience, have developed an elaborated tendency comprising instrumental and goal activities, and who have a high expectancy of reaching that goal (high perceived instrumentality and high expectation of success), should have a greater instigating force to engage in the instrumental activities than those who do not perceive that their activity is instrumental to a goal and/or have a low

expectation of success. However, before further comparisons with Raynor's rationale are attempted, Atkinson and Birch's theory as to conditioned and unconditioned inhibitory forces will be presented.

Conditioned and unconditioned inhibitory forces are associated with threats of pain or punishment. An unconditioned inhibitory force is one which is elicited by a stimulus that is inherently aversive, or that has the capacity of provoking an innate withdrawal reaction (p. 245). A conditioned inhibitory force, on the other hand, has acquired its aversiveness because it has become associated with an unconditioned inhibitory force. This has taken place because an activity, which by itself would not have had negative consequences, was immediately followed by an innately painful situation. This contiguity of the conditioned inhibitory force with the unconditioned inhibitory force has caused it to become part of an elaboration of the tendency not to engage in this aversive activity. A stimulus is considered to acquire for its next occurrence an inhibitory force which is just as great as the negaction tendency was the last time the individual resisted engaging in the activity. An inhibitory force which has been acquired by conditioning can only be extinguished if the activity occurs again without negative consequence. If the inhibitory force is very strong, it will tend to eliminate this possibility since the individual

will have too great a resistance to engage in the activity. A conditioned force does not always reach such a strength, however, and individuals do engage in activities which pertain to situations which may elicit an inhibitory force. If a negative consequence is again encountered, the conditioned inhibitory force will get stronger. If, on the other hand, there is no negative consequence, the conditioned inhibitory force becomes weaker and could even become extinguished if this occurrence was repeated a number of times.

Conditioned inhibitory forces and the elaboration of negaction tendencies are considered to be the consequences of punishment (p. 265) or of expectations of negative consequences (p. 256). Failure is usually considered to be a negative consequence. Therefore, if engaging in a series of contiguous activities leads to failure, all of these activities may be identified with the aversive effects of failure. If a subject has a high expectancy of failure at tasks that lead to a goal, it may be considered that the elaboration of the negaction tendency has been reinforced by frequent occurrences of failure in the past. Atkinson and Birch (1970) also consider that information or misinformation about the negative consequences of an activity will have similar implications (p. 258).

In summary, conditioned inhibitory forces are inhibitory forces that have been strengthened by their

contiguity with tasks that have led to negative consequences. On the other hand, conditioned instigating forces refer to instigating forces that have become stronger because the satisfaction obtained from instrumental tasks has been increased by the anticipatory excitement that is expected from the goal response.

As already mentioned, Atkinson and Birch's "conditioned forces" and Raynor's "perceived instrumentality" both refer to the question of the accentuation of the strength of tendencies to engage in activities that are considered instrumental to a goal, or tendencies not to engage in activities which have become associated with a negative consequence. In spite of certain areas of convergence on that question, there are divergences as to the conclusions that are derived from the two rationales that were presented. One of the reasons for the divergences is that Raynor's method of computation leads to the deduction that as far as failure-threatened subjects are concerned, a perceived goal is equivalent to a perceived failure. Atkinson and Birch's rationale allows for the discrimination of failure-threatened subjects that have a low expectancy of success and those that have a high expectancy of success. Moreover, Atkinson and Birch have added a number of constructs to the theory of achievement motivation that permit a more thorough explanation of expected behavior.

In the next section, conclusions that were derived from an analysis of some of the concepts and propositions of Atkinson and Birch's rationale will be presented.

Conclusions Derived from an Analysis of Atkinson and Birch's Rationale

Two areas which had to be clarified after the presentation of Atkinson's (1957, 1964) original theory of achievement motivation and Raynor's (1969, 1974) elaboration of this theory pertain to the incentive value of a task and the effects of perceived instrumentality. These two areas will now be discussed using Atkinson and Birch's rationale.

Although they have not been originally presented in this way, incentive value of a task and perceived instrumentality may be shown to have a rather close relationship. First, Atkinson and Birch (1970) do not consider stimulus situations as causes of behavior, but as potential arousers of the reactive properties of individuals. The magnitude of the instigating force and the inhibitory force thus depends on the properties of both the stimulus and the individual. The greater the positive or negative incentive value of a stimulus, and the greater the reactive property of the individuals (or motives of the individuals) to the kind of activity produced by that class of stimuli, the greater will be the instigating or inhibitory force to action (p. 143).

Atkinson and Birch thus consider that when the specific properties of stimulus situations correspond to the reactive properties of an individual, they will elicit either an instigation or an inhibition to undertake a particular activity. It should therefore not be surprising that an incentive value (I_s) which is defined only in function of the difficulty of the task ($1 - P_s$) would not capture all the arousing potential of the attractiveness or aversiveness of a task. Considering the rationale that has been presented above, it is felt that perceived instrumentality could be considered a good indicator of the reactive property of an individual to certain tasks. If an individual states that he perceives a task as instrumental in attaining one of his goals, this should mean that this task has the capacity to arouse the corresponding motive of the individual to this type of stimuli. In such a case, the subjects' verbal report of their perception of the instrumentality of a task might be a good measure of the fact that the properties of a situation (incentive value) do correspond to the subjects' dominant motive. As such, the stronger this indication, the stronger should be the tendency to engage in an activity.

As regards perceived instrumentality and failure-threatened subjects, it is also necessary to discriminate clearly between perceived goal and perceived failure. This lack of discrimination may explain why Raynor stated that

all failure-threatened subjects would perform worse when they perceived a task as instrumental to a goal than when they did not. If tasks are perceived as leading to failure, they may arouse conditioned inhibitory forces; however, if it is the negative consequence which is predominant, then the subject would usually not consider it as a goal to be attained. There would thus be no perceived instrumentality.

When there is a goal to be attained, Atkinson and Birch consider that cues associated with the correct responses to an instrumental activity begin to elicit, on their next occurrence, the excitement of the forthcoming consummatory goal reaction. Thus an activity which has been perceived instrumental in attaining a goal can acquire for its next occurrence a stronger instigating force than it would have if it were not instrumental. This is so whenever correct responses are given to the instrumental activity and this, no matter whether the subject be failure-threatened or success-oriented. Atkinson and Birch also state that subsequent exposures lead to an elaboration of a tendency comprising the instrumental and the goal activities, all of which share in the common goal satisfaction. All of this elaborated tendency can be strengthened or weakened depending on whether goal satisfaction is attained or not. When goal satisfaction is obtained, normally expectation of success for the next occurrence of this activity should become

higher. It is true that failure-threatened subjects have a weaker arousing potential (motive) to the stimulating property of a task (incentive value). Even then, when a failure-threatened subject perceives a task as instrumental to a goal he wants to attain, the prediction would be that his performance will be better when his expectation of success is high than when it is low. The hypothesis that Raynor had deduced from his algebraical formulation was just the opposite: failure-threatened subjects would perform worse in that situation. As was shown in a previous section, the alternate method of computation that was suggested contradicted this conclusion. It is thought that Atkinson and Birch's rationale would not support Raynor's conclusion either. It was seen that, due to its components, the tendency to engage in an activity should be greater if the activity is perceived to be important for a goal which corresponds to the subject's reactive properties (motives) than if it does not. Now, if the task is but one of the steps that lead to a goal, Atkinson and Birch consider that the consummatory force that reduces the strength of the tendency to engage into it is lower for such a task than it is for the goal activity itself. The strength of the tendency to engage in such activities should therefore be maintained for a longer period of time than if the activity were not instrumental to a goal. This should therefore also

insure better performance.

Another contribution of Atkinson and Birch to the comprehension of the dynamics of action pertains to the delaying effects of inhibitory forces. This factor may lead to a better understanding of some of the results obtained in research on perceived instrumentality. When the inhibitory forces are stronger than the instigating forces, Atkinson and Birch assume that resistance may reduce the inhibitory forces. The individual will then engage in the activity with a stronger tendency than if there had been no delaying effect. The selective attention and the consummatory lag would then insure the involvement with the activity for a certain time. It is the initial period of an activity which is adversely affected the most, however. When a strict time limit is enforced for completion of a task, failure-threatened subjects with the stronger inhibitory forces would then be more affected than the success-oriented subjects. This consideration may not have been given adequate attention in past experiments and may help explain some of the results that were obtained. Both the Raynor and Rubin (1971) experiment, which supported Raynor's interaction hypothesis, and the Entin and Raynor (1973) study, which was done to ascertain the previous results, had strict time limits (2½ and 2 minutes).

The main aspects of the theory of achievement motivation have now been presented and discussed. Much research

already has been done. There are certain areas, however, where more clarifications are needed. This may be true especially as regards the variables expectation of success and perceived instrumentality. It is felt that a study of these may help give a better comprehension of achievement motivation and its effects.

In the next section, a statement of the problem to be studied and the domain chosen for its study are presented.

Statement of the Problem and Domain of Application

The analysis of Atkinson's theory of achievement motivation has now been presented. It can be said that among the numerous factors which have to be considered to predict behavior, there are three variables that are somewhat more outstanding in the determination of the strength to engage in a given activity. These are the motives of the individual, the perceived instrumentality of an activity, and the expectation of success at a given activity. The main purpose of this research is to study the effects of these variables on performance. The domain that has been chosen to test the impact of these variables on achievement is the learning of a second language.

The reasons for choosing achievement in second language learning are twofold. First, learning French as

a second language is an achievement-oriented activity and the variables of interest in this research can be measured in a second language learning situation. Second, the theory of achievement motivation might provide a framework for a better understanding of the variables that influence achievement in second language learning.

There are two situational components to be measured in this study: perceived instrumentality and expectation of success. These are two variables which students of French can readily assess. In Canada, due to the rather recent implementation of a bilingual policy, some individuals should perceive achievement in a second language as instrumental to long-range goals while others would probably not. It therefore makes it possible to study the effects of perceived instrumentality in a situation where such goals are not imposed by the experimenter. As for expectation of success, the population of students who are to participate in this research already have had experience with courses in French. Their verbal report as to their expectation of success in French should therefore be sufficiently stable to justify its use.

The fact that achievement in second language learning depends on cumulative achievement is also pertinent. Atkinson has indicated that the theory of achievement motivation has its application not only in immediate achievement but on

cumulative achievement also. Since cumulative achievement is of great interest in education as well as in other domains, it is considered important that some research be done in this area.

An application of the theory of achievement motivation to performance in a second language is therefore considered a legitimate way to test the theory. In the next section, the research hypotheses are presented.

Research Hypotheses

Three research hypotheses are proposed. They pertain to the effects of motive dominance, perceived instrumentality, and expectation of success.

Atkinson hypothesizes that success-oriented subjects perform better than failure-threatened subjects in a wide variety of domains. It is not expected that performance in a second language would be any different.

The first research hypothesis is:

> Success-oriented subjects perform better in French as a second language than failure-threatened subjects.

It is expected that subjects with high perceived instrumentality are more positively aroused to the second language learning situation than those with low perceived instrumentality. If it is so, both failure-threatened and success-oriented subjects should perform better with high

perceived instrumentality than with low perceived instrumentality. Such a finding would be considered to support an aspect of Atkinson and Birch's rationale as interpreted in this study. While it is a main effect that is predicted in this research hypothesis, the results of the statistical analysis will also be checked for interaction effects on performance of perceived instrumentality and motive dominance. If interaction effects were present, this would indicate support for Raynor's rationale rather than for the position which is presented here.

The second research hypothesis is:

> Subjects who perceive the learning of French as a second language as having high instrumentality perform better than if they perceive it as having low instrumentality.

Atkinson has shown preference for a definition of probability of success which excludes the subjects' verbal report. The reasons for his choice were discussed and it was thought that it was justified to propose an operational definition similar to the one used by Feather in some of his experiments. Expectation of success is considered to be influenced by the subject's past experiences. As discussed above, cues associated with the correct responses to an activity (success) begin to elicit on the next occurrence of that activity, or of a similar activity, the excitement of the satisfaction associated with such an

activity. Atkinson and Birch (1970) consider that the willingness to initiate and persist in an activity is to be considered equal to the product of the strength of the expectancy that this activity will produce a certain consequence and the attractiveness of that consequence. In this study, however, it is not considered, as it had been by Atkinson, that the incentive value (attractiveness) of a task is a function of the expectancy of success; rather it is considered that the attractiveness of a task, for a particular individual, is indicated by his perception that the task is instrumental to one of his goals. It is therefore proposed that when expectation of success is strong, the instigating force to engage in the activity should therefore also be strong and should induce better performance than if the expectation of success is intermediate or weak.

Thus, the third research hypothesis is:

> Subjects who have a high expectation of success as to their performance in French as a second language perform better than those who have a low expectation of success.

CHAPTER II

RESEARCH DESIGN

The purpose of this chapter is to describe the procedures that were used in this research. It includes a discussion of the research subjects, the measuring instruments, the procedure used in the collection of data, and a plan for the statistical analysis of the data.

The Research Subjects

The research subjects were 489 students from 18 classes of five New Brunswick high schools. Four of these schools were located in urban centers and were attended by English-speaking students from urban and rural areas; the other school was located in a rural area relatively close to an urban center. These students were enrolled in classes of French as a second language and were taught by seven teachers who had agreed to participate in the research.

Because a new program of studies for French as a second language had been implemented in the last two or three years and had not begun at the same time in all high schools, some grade 11 students were enrolled in the same program as grade 10 students. All of them had completed Le Français International (LFI; Calvé, Germain, LeBlanc & Rondeau, 1972) Livre 3, and were working with Livre 4, but no material from

Livre 4 was to be included in the test that measured the students' results in French. The LFI had been implemented instead of a former more traditional approach. The program of studies for the schools was the one prepared by the Department of Education of the Province of New Brunswick.

In the next section, the measuring instruments that were used in this research are described.

The Measuring Instruments

Testing of the hypotheses required the administration of the following instruments: (a) the Perceived Instrumentality of French as a Second Language scale, (b) the Expectation of Success in French as a Second Language scale-- both of the above being included in the Questionnaire for Students of French--, (c) the need Achievement measure (n Ach), (d) the high school form of the Test Anxiety Questionnaire (TAQ-HS)-- these last two instruments providing a measure of motive dominance: $M_S > M_{AF}$ or $M_{AF} > M_S$--, and (e) the Achievement Test in French which provided a measure of the dependent variable.

Each of these instruments is discussed in the next subsections.

Questionnaire for Students of French

The Questionnaire for Students of French (see Appendix A) was constructed by the writer for students of high school age. Besides questions of general information, it includes a Perceived Instrumentality of French as a Second Language scale (Bourque, 1978; Bourque & Bossé, 1979) and an Expectation of Success in French as a Second Language scale (Bourque, 1978).

The Perceived Instrumentality of French scale includes four basic types of items: (a) the importance of French in helping to achieve specific goals; (b) the enriching aspects of the French language for six activities in which young people would engage, (c) the usefulness of the French language in each of these six activities; (d) the importance of the French language to future plans. The final version of the measure includes 20 items, each of which is on a 4-point Likert-type scale. Possible scores thus range from 20 to 80.

The Expectation of Success in French as a Second Language scale includes items measuring (a) expectation of getting at least a pass mark, (b) satisfaction level if only a pass mark were obtained, (c) level of success in French that would correspond to one's aspirations, (d) chances of attaining one's aspirations, (e) level of difficulty of French for the respondent. The scale includes five items, each of which is on a 3-point Likert-type scale. Possible

scores range from 5 to 15.

The first draft of the items for both the Perceived Instrumentality of French and the Expectation of Success in French scales was submitted to five students at Université de Moncton studying French as a second language. Comments were received and modifications were made accordingly. Then, in each of the stages of validation, the two tests were administered to grade 10 and 11 anglophone students who were studying French as a second language.

The first administration included 53 students. Considering the comments that were received and the correlation of each item with the remaining items, some of the items were modified. The test was then submitted to 201 subjects. At this time, it became obvious that one of the 21 items previously included in the Perceived Instrumentality of French scale should be deleted. Other very minor revisions were made in the items. At this stage, the alpha reliability coefficient for the Perceived Instrumentality of French scale (20 items) was .89. The correlations of each of the items with the sum of the remaining 19 items ranged between .36 and .63. For the Expectation of Success in French scale, the alpha coefficient was .81. The corrected item-total test correlation ranged between .52 and .69.

The final version of the Questionnaire for Students of French including the Perceived Instrumentality of French

scale and the Expectation of Success in French scale was then administered to another group of grade 10 and 11 anglophone students. The alpha reliability coefficient of the Perceived Instrumentality of French scale was .92 (n = 151). The correlations of each item with the sum of the remaining 19 items ranged from .39 to .69 with a median of .57. The test-retest correlation over a four-week period was .836 (n = 145). These were considered to give sufficient evidence of the reliability of the instrument.

To check the validity of the scale it had been hypothesized that perceived instrumentality should be related to four variables. These variables were (a) marks obtained on a previous French course; (b) expectation of success in the present French course as measured by the Expectation of Success in French scale; (c) decision to take more French courses; and (d) a decision to take the present course if it had been an optional course. Pearson correlations were .31 (n = 150), .46 (n = 149), .46 (n = 151), .46 (n = 151), respectively. These were considered of sufficient magnitude to provide support for the validity of the scale as a measure of perceived instrumentality.

The alpha reliability coefficient of the final version of the Expectation of Success in French as a Second Language scale was found to be .82 (n = 149). The correlation of each item with the sum of the remaining four items ranged between .55 and .71. The test-retest correlation over a

four-week interval was .90 (n = 142).

As a measure of the validity of the Expectation of Success in French scale, Pearson correlations were calculated between this scale and (a) a decision to take more French courses; (b) a decision to take the present course if it had been optional; (c) marks in French obtained on a previous report card; and (d) the Perceived Instrumentality of French as a Second Language scale. These were .62 (n = 149), .59 (n = 149), .82 (n = 148), .46 (n = 149) respectively.

The above indices of reliability and validity were considered of sufficient magnitude to warrant the use of this scale as a measure of expectation of success.

This presentation of the Perceived Instrumentality of French and the Expectation of Success in French scales is now followed by a discussion of the need Achievement Test.

A Measure of Need Achievement

The method of assessment of need Achievement (n Ach; see Appendixes C and D) which was developed by McClelland, Atkinson, Clark and Lowell (1953) is derived from the Murray Thematic Apperception Test. It is the result of experimental research and empirical verifications which were done mostly from 1947 to 1952 and then continued by Atkinson (1958) and his collaborators.

The n Ach test is a group test that involves the writing of imaginative stories in response to cues that are provided. While much of the early experimentation in the validation of the instrument was done using picture cues, verbal cues were also used. Verbal cues have been used with greater frequency in later years and have provided some evidence for the validity of this form of the n Ach measure (Entin & Raynor, 1973; O'Connor, Atkinson & Horner, 1966; Raynor & Rubin, 1971; Winterbottom, 1958). In the present study, all tests were written during class periods. In order not to use any more class time than was absolutely necessary, it was decided to use the verbal cues to elicit the writing of the required stories.

To guide subjects in their story-telling, four written questions are equally spaced upon the response sheet. Usually about 20 seconds are allowed to visualize the cue, and four minutes to write the story.

A method of content analysis is used to obtain a measure of need Achievement. Objectivity of assessment has been one of the aims of those who developed the instrument. Each story is scored +1 if reference is made to an achievement goal. For each of ~~ten~~ sub-categories of achievement imagery present the story is scored +1. If reference to achievement goals in a story is doubtful or absent, the story is scored zero or -1. Thus the range of possible scores is -4 to +44. The manual for scoring includes much practice

material which has been scored by established scorers. Before investigators attempt to score any new stories, they are required to acquire enough expertise to obtain a correlation of .85 to .95 with the scores reported by experts on the practice materials (Atkinson & Raynor, 1974, p. 191). This interjudge coding reliability is usually obtained after some twelve hours of practice (Smith & Field, 1958, p. 685).

A number of researchers have studied the internal consistency and the test-retest reliability of the need Achievement measure. The reliability coefficients that have been reported have usually been from low to moderate.

The correlation between two equivalent forms of four-picture measures administered at the same occasion was reported by Atkinson to be .42 (n = 32). With the eight-picture measure considered as one battery of test, the split-half reliability was reported to be .65 (n = 32) (McClelland et al., 1953, p. 188). While this eight-picture measure appears to have more reliability than the four-picture measure, Reitman and Atkinson (1958) have reported data that is indicative that a combined score from the first four stories written has a better predictive value than the combined score from eight stories obtained in a longer testing session (p. 677). The usual number of stories has thus usually been kept at four.

Weinstein (1969), with a coding reliability of .77 with practice materials, reports a split-half reliability of .27 (n = 173) (p. 161). Krumboltz and Farquhar (1957) report a test-retest reliability of .26 (n = 169) for a period of nine weeks (p. 227). Kagan and Moss (1959) report studying the presence of achievement imagery in protocols administered to children who were tested three times at three-year intervals. The test-retest correlations were .32 and .16 for the three-year intervals, and .22 (n = 86) for the six-year interval (p. 359). Haber and Alpert (1958) obtained a test-retest correlation of .54 (n = 26) with two comparable six-picture batteries with a three-week interval (p. 661). With an interscorer reliability of .89, Birney (1959), with three parallel forms of four pictures each, obtained correlations of .29 (n = 40) and .56 (n = 26), for a four-month and a six-month interval, respectively, and a .20 (n = 26) for the interval of two months between the last two administrations. With a six-picture battery administered previously to the same subjects, the correlations were .15 (n = 46), .40 (n = 40), .03 (n = 26) for periods of 14, 18 and 20 months respectively (p. 267). This six-picture battery had not been assumed to be a form parallel to the three other four-picture batteries that were used later. With an interscorer reliability of .89, Morgan (1953) obtained test-retest correlations of .56 (n = 53), .56 (n = 39), .64 (n = 61) for five-week

intervals, with alternate picture forms administered to three different groups of academic high school students (p. 290-291).

Split-half and test-retest reliabilities thus range from low to moderate. There are instances, however, where split-half reliabilities have been reported where no equivalent halves were intended, and test-retest correlations between forms of test that were not parallel. Certain authors such as Anastasi (1954/1976), Birney (1968), Harrison (1965), Kleinmuntz (1967), Murstein (1963), Rosenzweig (1951), Veroff, Atkinson, Feld & Gurin (1960/1974) have expressed doubts as to whether appropriate methods exist to measure the reliability of instruments that are projective in nature. It is suggested that until these methods are developed, that scorer reliability should remain an important consideration. Their arguments as to the inappropriateness of the reliability measures usually used are enhanced by Lowell's (in McClelland et al., 1953) demonstration that, with a product-moment correlation of .22 (n = 40) between two forms of the same n Ach test, there were 72.5% of the subjects who were classified similarly with both measures.

As for the validity of the n Ach test, a number of researchers have shown the relationship of n Ach and behavior. McClelland et al. (1953) report a correlation of .51 (n = 30, $p < .01$) between the n Ach scores and the average

grades obtained during the two semesters that followed this measurement of n Ach. For the same 30 male students, the correlation between the Scholastic Aptitude Test scores (SAT; verbal and mathematical) and n Ach was .42, the correlation of n Ach with grades adjusted for SAT was .39 (p. 237). A study by Lowell (in McClelland et al., 1953) is reported which involved Scrambled Words output. Correlations of n Ach with (a) increase in Scrambled Words output from first to fifth four-minute period and (b) score on Linguistic Scale of ACE were .48 and .28 (n = 35), respectively (p. 235). With the effects of linguistic ability partialed out, there was a significant relationship between n Ach and increase in Scrambled Words output ($r = .44$, $p = .01$; p. 235). The above findings were considered important because the learning that was involved over the five similar tasks of four minutes each was still evident after the partialing out of the effects of ability (p. 234-236).

Further evidence of the construct validity of the need Achievement score was investigated by McClelland et al. (1953) in a study of the origins of achievement motivation. In this case, the stories that were scored with the procedure that was outlined above included brief stories from the literature of each of eight American Indian cultures. Independent measures of parent behavior were obtained. Four hypotheses that had been proposed were supported. Kendall's

tau rank order correlation between n Ach and initial indulgence, age, severity, age and severity were -.56, .84, .64, and .91 (n = 8), respectively (p. 294).

Winterbottom (1958) tested a number of hypotheses pertaining to the association of need Achievement with a mother's stress on independence and mastery at an early age. The sample included 29 boys and their mothers. It was concluded that early training in those domains contributed to the development of strong need Achievement.

Besides the above studies in validation, a large number of researches have been conducted among which are many doctoral dissertations. A number of these have been reported in books edited by Atkinson and his collaborators (Atkinson, Ed., 1958a; Atkinson & Feather, Eds., 1966; Atkinson & Raynor, Eds., 1974). In the research that has been reported during the last thirty years, many of the proposed hypotheses were supported. These provide further support to the validity of the instrument.

It does appear that there may be greater evidence of the validity than of the reliability of n Ach. It is therefore possible that the low to moderate reliabilities that have been reported are partly due to the methods of computing reliability that have been used. Whether it be so or not, it has been shown that the n Ach test has a sufficient level of correlation with a number of hypothesized

variables to warrant its use as a measure of need Achievement. The above reasons, together with the fact that n Ach has been used regularly by Atkinson and his collaborators in their research on the theory of achievement motivation, has led to its use in the present research.

The Test Anxiety Questionnaire - High School Form

The high school form of the Test Anxiety Questionnaire (TAQ-HS) (Cowen, 1957; Mandler & Cowen, 1958) is a paper-and-pencil test designed to elicit self-ratings of one's level of anxiety in test-situations (see Appendix F).

Atkinson (1965/1974) argues that a self-report instrument concerning anxiety in achievement situations is appropriate to measure the motive to avoid failure because this motive, with the anxiety that accompanies it, is not aroused unless there is some anticipation of a negative consequence. In a testing situation, this anticipation may exist, and when subjects report how they feel about tests in the Test Anxiety Questionnaire, discrimination between those who are high or low in motive to avoid failure becomes possible.

The TAQ-HS consists of 52 items, four of which are fillers. The items are descriptive of anxiety reactions before, during, and after taking tests. Students are requested to express their own feelings about testing on a linear scale with the midpoint indicated and a written

description at both ends. An overlay with a 9-point scale is used to score each item. Total scores may range from 48 to 432.

Cowen (1957) has reported a split-half reliability of .90 (n = 286). While no test-retest reliability is reported for the high school form of the TAQ, this TAQ-HS is a modification of the college form of the TAQ for which some information is available. The test-retest for this college form is .91 (n = 70) (Mandler & Cowen, 1958).

Cowen (1957) shows that similar types of items in the high school form of the TAQ and Sarason's Test Anxiety Scale for Children discriminated consistently between high and low anxiety groups whether at the elementary or high school level.

Test anxiety has been hypothesized to affect scores on intelligence tests. A correlation of -.185 ($n = 232$, $p < .02$) was found by Cowen between TAQ-HS and the Otis Intelligence Tests mean scores. This correlation is approximately the same as that which has been reported by Sarason and Mandler between the Henmon-Nelson Test of Mental Ability and the college form of the TAQ ($r = -.209$, $n = 88$, $p < .05$).

A much larger number of studies on achievement motivation have been done with groups of students either at the college or at the elementary level than at the high school level. Not much data is therefore available as to research on achievement motivation using the high school form of the TAQ.

Moulton (1965/1966) used the TAQ-HS to research the effects of success and failure on level of aspiration as related to achievement motives. He hypothesized that the atypical reactions to success and failure occur more frequently among subjects whose anxiety is greater than their n Ach ($M_{AF} > M_S$) rather than among those whose n Ach is greater than their level of anxiety ($M_S > M_{AF}$). Although the number of atypical shifts formed only 36% of the reactions in the $M_{AF} > M_S$ group, the proposed hypothesis was supported ($\chi^2 = 8.37$, $p < .01$). When subjects high and low in anxiety were compared as to atypical reactions, the hypothesis was again supported ($\chi^2 = 7.70$, $p < .01$).

There is thus some evidence that the high school form of the TAQ has construct validity similar to that of the college form of the instrument.

In the next subsection, the Achievement Test in French is presented.

Achievement Test in French

The dependent variable was measured with the Achievement Test in French (see Appendix G) constructed by Lavoie (1978). The content of the test was strictly limited to material presented in Le Français International (Calvé et al.), Livre 1 to Livre 3. This was done to ascertain that the test would include content to which all of the

students had an opportunity to be exposed.

Lavoie's paper-and-pencil test includes 70 objective multiple-choice questions that are scored dichotomously so that the maximum score is 70. It includes knowledge of vocabulary (choosing synonyms, antonyms, related words, unrelated words, names of profession, telling time in French, completing sentences with appropriate words), grammar (using appropriate adjective form, verb form, adverb form, negative form), comprehension (choosing appropriate words to complete sentences related to accompanying texts), and pronunciation (recognizing homonyms and unrelated sounds). After a draft of the test had been prepared, it was reviewed by a French teacher using LFI, another French teacher, and the author of this dissertation. Suggested modifications were incorporated in the final form of the test.

The test was first administered to two groups of grade 11 students. At a later period, it was also administered as an early September pre-test to students in grades 7, 8, and 9 who were enrolled in classes of French as a second language. Information as to coefficients of internal consistency, standard errors of measurement, means and standard deviations for the different groups who wrote the test are given in Table 2. The fact that, as grade level increases a corresponding increase was found in the group mean was considered an indication that the test had some capacity

Table 2

KR 20 Coefficients of Reliability, Standard Errors of Measurement, Means and Standard Deviations for the Achievement Test in French

Grade	n	KR 20	Standard Error	Mean	Standard Deviation
11[a]	51	.886	2.48	58.37	7.34
11[a]	20	.870	2.56	57.55	7.10
9	49	.949	3.12	49.90	13.75
8	28	.946	3.11	49.71	13.36
7	36	.946	3.41	40.31	14.62

[a] The two groups of grade 11 students were from different schools. The KR 20 for all grade 11's is .880 (n = 71).

to be a valid measure of degree of knowledge in French as a second language. The KR 20 indices of reliability were also sufficiently high to lead to the decision that the instrument could be used as a measure of the dependent variable.

The instruments used in this research have been discussed. The procedures used to collect data are outlined in the next section.

Collection of Data

Administration and Correction Procedures

The n Ach Test, the TAQ-HS, the Questionnaire for Students of French and the Achievement Test in French were administered by the regular French classroom teachers after they had been given the appropriate information as to the procedures that were to be observed. The tests were administered during the last two weeks of April 1978 and the first two weeks of May 1978.

The students wrote the tests during their French period. This meant that some students wrote tests in the morning, others in the afternoon. Depending on the length of the class period, more than one test was sometimes administered during the same period. However, teachers were requested to administer the n Ach test at the beginning of a class period so that neutral conditions could be more

closely approximated. Each teacher was also provided with a timer so that she could accurately follow the directions as to alloted time for n Ach.

Instructions that were given to students as to the writing of the tests are included in the appendixes with the tests.

The need Achievement test was corrected by a graduate student[1] in counseling according to the procedure outlined in McClelland, Atkinson, Clark, & Lowell's (1958) scoring manual. The corrector had previously established a scoring reliability above the .90 level with the training materials scored by experts (Smith & Feld, 1958, p. 685-735). After a period of four months, he rescored the stories written by 60 subjects selected on a random basis out of the 458 subjects who wrote the n Ach. The score-rescore correlation was .903.

The high school form of the Test Anxiety Questionnaire was corrected twice by two independent scorers with the use of an overlay. There was a correlation of .997 between the two sets of scores. Whatever variations were noted appeared to be due to the scoring of items where the student's mark on the linear scale was covering part of the division line

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1 The author would like to thank Robert Baudouin for scoring the n Ach tests.

between two points on the overlay. Because the variations were minimal, the first scoring that had been recorded was kept as the student's score on the TAQ-HS.

Total scores were obtained on the Perceived Instrumentality of French, the Expectation of Success in French, and the Achievement Test in French.

In the next subsection, the number of subjects with complete results is presented together with the reasons for eliminating certain subjects when this had to be done.

Number of Subjects with Complete Results

The number of students who wrote the tests and the equivalent percent of the total group are given in Table 3. For each of the measuring instruments that were administered, at least 92% of the subjects were present.

There were a total of 387 students (79.1%) who completed all the required tests. In the Questionnaire for Students of French, 25 students stated that French was their mother tongue and nine of those who completed all tests indicated that they felt they had much less than a 50-50 chance of getting a pass mark. The first group of students was excluded from the sample since the dependent variable is achievement in French as a second language. The second group was excluded because it had been planned to include only students who felt they had at least a 50-50 chance of

Table 3

Number and Percent of Research Subjects Completing Each of the Measuring Instruments

QSF[a]		n Ach[b]		TAQ[c]		ATF[d]		Complete Sets of Tests	
n	%	n	%	n	%	n	%	n	%
465	95.1	458	93.7	453	92.6	468	95.7	387	79.1

[a] Questionnaire for Students of French. The QSF includes the Perceived Instrumentality of French scale and the Expectation of Success in French scale.

[b] Need Achievement scale.

[c] Test Anxiety Questionnaire.

[d] Achievement Test in French.

passing. It was not expected that many students would stay in the program if they thought they did not have much chance of succeeding. As expected, this group formed less than 3% of the total.

There were a total of 353 subjects with complete sets of tests from which the low and high groups could be formed as regards the independent variables that were used in the study. This group included 138 boys and 215 girls. There were 182 of them in grade 10, and 171 in grade 11. Their mean age was 15 years 11 months.

In the next section, the statistical procedures that will be used to test the hypotheses under their null form are presented.

Statistical Procedures

In the research hypotheses that were proposed in the preceding chapter, it was predicted there would be differences in the scores on the Achievement Test in French due to (a) perceived instrumentality of French, (b) expectation of success in French, and (c) subject's motive dominance, i.e., $M_S > M_{AF}$ or $M_{AF} > M_S$.

Because some of the variance in language tests has often been explained by the variable sex, this variable was also included to eliminate confounded effects.

The hypotheses were to be tested under their null form through analysis of variance with a four-factor design having two levels for each of the independent variables. The level of significance was set at .05.

While the hypotheses specified main effects only, it was planned to note whether or not there were interaction effects on achievement in French due to motive dominance and perceived instrumentality. If this interaction were significant, this would present evidence in favor of Raynor's rationale and would have to be taken into account.

Since the dependent variable, achievement in French, is the result of cumulative knowledge, it was felt that the influence of former teachers on students' achievement in French would have a cumulative effect. Because of this, it was decided that students would be used as the statistical unit.

In summary, in this chapter, the research subjects have been identified, the instruments that were used were discussed as to their reliability and validity, the procedures used for the collection of data were described, and the statistical procedures have been presented. In the next chapter, results are presented and discussed.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

In this chapter, the results of the research are presented and discussed. This chapter includes a section on the distribution of subjects into cells for an analysis of variance, and, based on the above, a revised plan for the statistical analyses of the data. It is followed by the presentation and discussion of the results as well as by post hoc analyses that complement the testing of the hypotheses.

Distribution of Subjects into Cells for Analysis of Variance

The classification of subjects into extreme groups was done using as cutting point the integer that was closer to the median except with the variable need Achievement. In this case, the median was -1.766. This was not considered to be an adequate cutting point since it was felt that students who had obtained negative scores could hardly be considered high need achievers. Subjects who had scores lower than zero were therefore classified as low on the n Ach test. The low n Ach group then includes 246 subjects while the high n Ach group includes 107.

The minimum and maximum scores, the medians and the size of the extreme groups for the variables used in the classification of subjects are presented in Table 4.

The method of determining motive dominance by considering subjects who are simultaneously high in n Ach and low in TAQ (High-Low) as success-oriented ($M_S > M_{AF}$), and those who are simultaneously low in n Ach and high in TAQ (Low-High) as failure-threatened ($M_{AF} > M_S$) was used. Subjects who were simultaneously High-High or Low-Low were not used as they could neither be classified as success-oriented or failure-threatened. In many studies, the hypotheses have been restricted to the success-oriented and the failure-threatened groups (High-Low and Low-High). In this study it was planned to use this approach. Using the above categories, there were 129 subjects who were classified as failure-threatened and 59 as success-oriented.

The distribution of subjects into 16 cells was done based on the two levels at each of the four independent variables: sex, motive dominance, perceived instrumentality and expectation of success. The number of subjects per cell is given in Table 5.

Revised Plan for Analysis of Data

The distribution of subjects into cells is highly uneven, with two cells including only one subject, another

Table 4

Minimum and Maximum Scores, Medians, and Number of Students Above and Below Cutting Points for Variables Used in the Classification of Subjects

Variables[a]	Min. score	Max. score	Median	Students below cutting point (n)	Students above cutting point (n)
PIF	27	79	58.016	179	174
ESF	6	15	12.629	169	184
n Ach	-4	9	-1.766[b]	246	107
TAQ	97	366	232.143	179	174

[a] PIF - Perceived Instrumentality of French.

ESF - Expectation of Success in French.

n Ach - Need Achievement.

TAQ - Test Anxiety Questionnaire.

[b] The cutting point was set at zero with subjects below zero assigned to the low n Ach group.

Table 5

Number of Subjects per Cell for a 2 x 2 x 2 x 2 Analysis of Variance

Sex	Motive dominance	Perceived instrumentality	Expectation of success	No. of subjects
M	$M_{AF} > M_S$	Low	Moderate	21
M	$M_{AF} > M_S$	Low	High	6
M	$M_{AF} > M_S$	High	Moderate	8
M	$M_{AF} > M_S$	High	High	1
M	$M_S > M_{AF}$	Low	Moderate	3
M	$M_S > M_{AF}$	Low	High	10
M	$M_S > M_{AF}$	High	Moderate	3
M	$M_S > M_{AF}$	High	High	12
F	$M_{AF} > M_S$	Low	Moderate	21
F	$M_{AF} > M_S$	Low	High	10
F	$M_{AF} > M_S$	High	Moderate	30
F	$M_{AF} > M_S$	High	High	32
F	$M_S > M_{AF}$	Low	Moderate	3
F	$M_S > M_{AF}$	Low	High	7
F	$M_S > M_{AF}$	High	Moderate	1
F	$M_S > M_{AF}$	High	High	20

three including three subjects, while others had up to 30 and 32 subjects. This was undoubtedly due to the existing relationships between some pairs of the independent variables. Since the subjects were so unevenly distributed, it was decided that the hypotheses might be more adequately tested using a correlational analysis rather than an analysis of variance. It was thus possible to use data from all of the subjects.

Since the method of grouping subjects into success-oriented (High-Low) and failure-threatened groups (Low-High) which was to be used for the analysis of variance does not specify any order for the groups that are High-High and Low-Low, this method of determining motive dominance was less appropriate in a correlational analysis. A number of previous studies (Atkinson & Feather, 1966; Horner, 1974; Weiner, 1965/1974) have used the difference between standard scores of the n Ach and of the TAQ to determine the level of dominance. This score is termed resultant achievement motivation and is used in the following analyses.

Since subjects with very low expectation of success in French were not expected to be numerous enough among the research subjects to be included in the analysis of variance, these were to be excluded. With a correlational analysis, it was no longer necessary to exclude these subjects. They were therefore included in all further analyses. The 362

research subjects that are included then comprise all subjects who had complete sets of data except those whose mother tongue was French.

Testing of the Hypotheses

Scatter diagrams of all pairs of variables were first examined to determine the possibility of departure from rectilinearity of relationship. Since no indications were found of such departure, hypotheses were tested with product-moment and partial correlations. The means and standard deviations of each variable and the Pearson product-moment correlations between all pairs of variables are presented in Table 6.

While no hypothesis was stated as to the effects of sex on achievement in French as a second language, numerous researchers have found that girls perform better than boys on language tests. In calculating the correlation coefficients reported in Table 6, the value 1 was assigned to boys, and the value 2 to girls. A positive correlation indicates that girls performed better than boys. There is a significant point biserial correlation between sex and each of the other four variables.

Since these point biserial correlations were significant, the variable sex was included in the other analyses.

Table 6

Means, Standard Deviations, and Pearson Product-Moment Correlations for Variables Used in this Study (n = 362)

Variables[a]	Means	Standard deviations	Correlations			
			ATF	SEX	PIF	RAM
ATF	57.16	7.53				
SEX	-	-	.146 (p=.003)			
PIF	57.71	10.50	.234 (p=.000)	.285 (p=.000)		
RAM	.00	1.41	.141 (p=.004)	-.158 (p=.001)	-.075 (p=.076)	
ESF	12.19	2.32	.589 (p=.000)	.169 (p=.001)	.333 (p=.000)	.243 (p=.000)

[a] ATF - Achievement Test in French.

PIF - Perceived Instrumentality of French.

RAM - Resultant Achievement Motivation.

ESF - Expectation of Success in French.

It is also of interest to note that the correlations between all possible pairs of variables are significant except that between Resultant Achievement Motivation and Perceived Instrumentality of French. Another result that must be noted is the negative correlation between sex and Resultant Achievement Motivation. This indicates that girls tended to score lower than boys on Resultant Achievement Motivation. The mean and the standard deviation of the boys on Test Anxiety Questionnaire were 217.48 and 43.56, respectively, and that of the girls were 241.39 and 45.61, respectively. On n Ach, the mean and the standard deviation were -1.05 and 2.26 for the boys, and -.90 and 2.72 for the girls. It therefore appears that the negative correlation results from the fact that the girls expressed more test anxiety than the boys.

The Research Hypotheses

The first research hypothesis to be tested pertains to the relationship between performance in French as a second language and resultant achievement motivation.

The results of the correlational analysis are presented in Table 7. There is a significant correlation between Achievement Test in French and Resultant Achievement Motivation when the product-moment correlation is computed. This remains true when the effects of sex and Perceived Instrumentality of French are partialed out either independently

Table 7

Correlations of
(1) Achievement Test in French
and (4) Resultant Achievement Motivation
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (3) Perceived Instrumentality of French,
and (5) Expectation of Success in French

Variables partialed out[a]	r	df	p
None (r_{14})	.1414	360	.004
SEX ($r_{14.2}$)	.1684	359	.001
PIF ($r_{14.3}$)	.1641	359	.001
ESF ($r_{14.5}$)	-.0024	359	.482
SEX and PIF ($r_{14.23}$)	.1788	358	.000
SEX and ESF ($r_{14.25}$)	.0101	358	.424
PIF and ESF ($r_{14.35}$)	.0063	358	.453
SEX, PIF and ESF ($r_{14.235}$)	.0149	357	.389

[a] PIF - Perceived Instrumentality of French.

ESF - Expectation of Success in French.

or in combination. This increase in the partial correlations would seem to result from sex and Perceived Instrumentality of French both correlating negatively with Resultant Achievement Motivation. When the effects of Expectation of Success in French are partialed out, either alone or in combination with the other independent variables, there is no significant relationship between performance in French and Resultant Achievement Motivation. It appears that Resultant Achievement Motivation by itself explains some of the variance in Achievement Test in French. However, when the effects of Expectation of Success in French are partialed out, the relationship between Resultant Achievement Motivation and achievement in French is no longer present.

The second research hypothesis to be tested pertains to the relationship between performance in French as a second language and perceived instrumentality of French.

The results of the correlational analysis are given in Table 8. There is a positive significant relationship between the Achievement Test in French and Perceived Instrumentality of French. This is also significant with the effects of sex and Resultant Achievement Motivation partialed out, either independently or in combination. When the effects of Expectation of Success in French, either alone or in combination with any of the other variables, are partialed

Table 8

Correlations of
(1) Achievement Test in French
and (3) Perceived Instrumentality of French
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (4) Resultant Achievement Motivation,
and (5) Expectation of Success in French

Variables partialed out[a]	r	df	p
None (r_{13})	.2342	360	.000
SEX ($r_{13.2}$)	.2030	359	.000
RAM ($r_{13.4}$)	.2480	359	.000
ESF ($r_{13.5}$)	.0504	359	.170
SEX and RAM ($r_{13.24}$)	.2116	358	.000
SEX and ESF ($r_{13.25}$)	.0371	358	.241
RAM and ESF ($r_{13.45}$)	.0507	358	.168
SEX, RAM and ESF ($r_{13.245}$)	.0387	357	.232

[a] RAM - Resultant Achievement Motivation.
ESF - Expectation of Success in French.

out, there are no significant correlations between Perceived Instrumentality of French and Achievement Test in French. Thus, when all variables except Expectation of Success in French are considered together, it appears that perceived instrumentality explains some of the variance in achievement in French. However, this correlation appears to be accounted for when Expectation of Success in French is partialed out.

The third research hypothesis to be tested pertains to the relationship between achievement in French as a second language and expectation of success in French.

Computed correlations are given in Table 9. The correlations of the Achievement Test in French and Expectation of Success in French are significant in all cases, even when the effects of sex, Perceived Instrumentality of French and Resultant Achievement Motivation are partialed out together. More than 34% of the variance in Achievement Test in French is common to Expectation of Success in French. When sex, Perceived Instrumentality of French and Resultant Achievement Motivation are partialed out, Achievement Test in French and Expectation of Success in French still have more than 28% of their variance in common. Expectation of Success in French is thus the variable which appears to explain the larger amount of variance in Achievement Test in French.

Table 9

Correlations of
(1) Achievement Test in French
and (5) Expectation of Success in French,
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (3) Perceived Instrumentality of French,
and (4) Resultant Achievement Motivation

Variables partialed out[a]	r	df	p
None (r_{15})	.5886	360	.000
SEX ($r_{15.2}$)	.5783	359	.000
PIF ($r_{15.3}$)	.5570	359	.000
RAM ($r_{15.4}$)	.5571	359	.000
SEX and PIF ($r_{15.23}$)	.5539	358	.000
SEX and RAM ($r_{15.24}$)	.5613	358	.000
PIF and RAM ($r_{15.34}$)	.5396	358	.000
SEX, PIF and RAM ($r_{15.234}$)	.5330	357	.000

[a] PIF - Perceived Instrumentality of French.

RAM - Resultant Achievement Motivation.

The results discussed in this subsection pertained to the testing of the three research hypotheses that were proposed. In the next subsection, analysis of data will be performed to determine whether Raynor's interaction hypothesis could be supported.

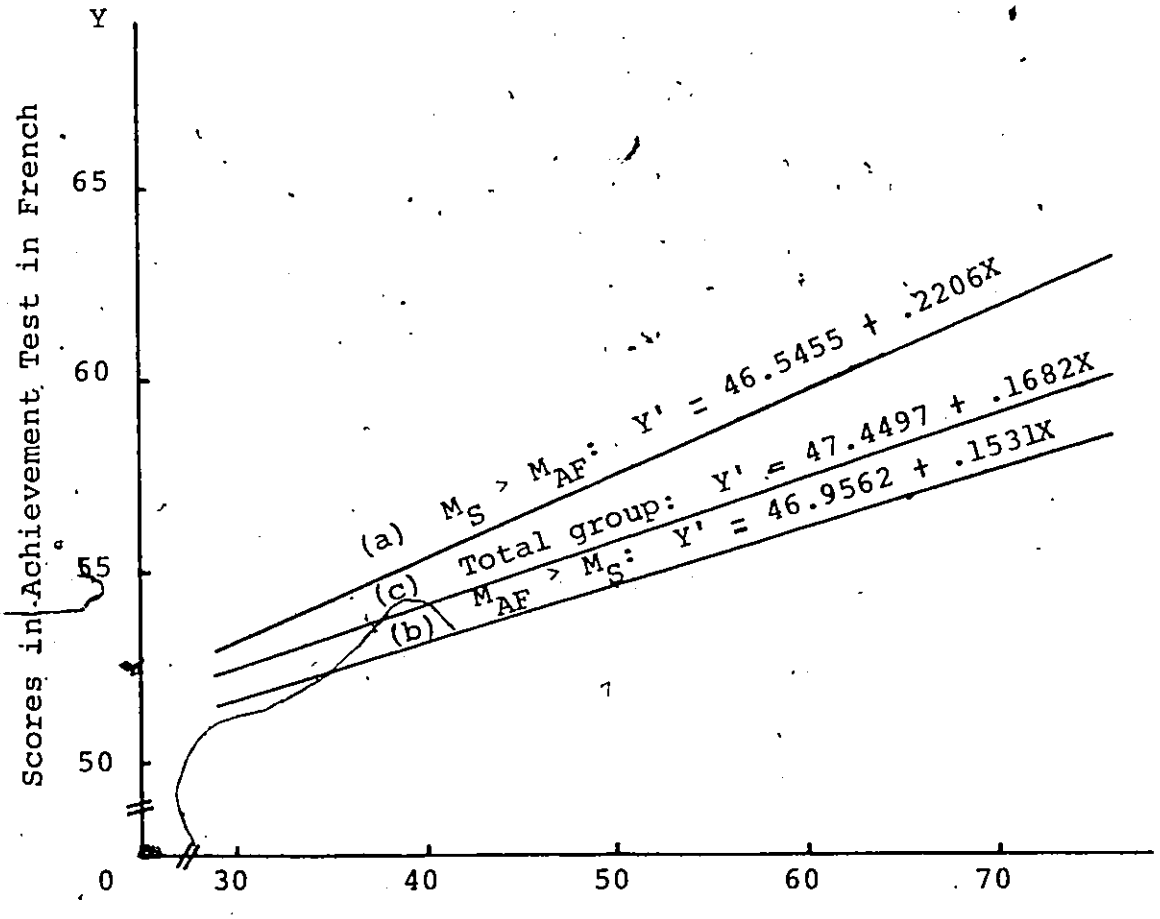
Combined Effects of Resultant Achievement Motivation and Perceived Instrumentality of French on Achievement Test in French

When a task is perceived as having high instrumentality, Raynor hypothesizes that success-oriented subjects should perform better and that failure-threatened subjects should perform worse than when the task is perceived as having low instrumentality.

To determine whether Raynor's hypothesis might be supported by the data that were collected for the present study, regression equations were computed to determine how achievement in French can be predicted from Perceived Instrumentality of French for (a) the total group of subjects, (b) the failure-threatened subjects, i.e., those in the lower quartile of Resultant Achievement Motivation, and (c) the success-oriented subjects, i.e., those in the upper quartile of Resultant Achievement Motivation. The regression lines are presented in Figure 1. They support the hypothesis that the performance of failure-threatened subjects, as well as that of the success-oriented subjects, is better when a task is perceived to have

Figure 1

Prediction of Scores in Achievement Test in French from Scores in Perceived Instrumentality of French for (a) Success-Oriented Subjects, (b) Failure-Threatened Subjects, and (c) Total Group



Scores in
Perceived Instrumentality of French
(Actual range of scores: 27 to 79)

high instrumentality than when it is perceived to have low instrumentality. This study therefore does not support Raynor's disordinal interaction hypothesis.

The above testing of the hypotheses has provided empirical support to the prediction that there is a positive relationship between Expectation of Success in French and Achievement Test in French. Even when the other variables in this study are partialed out, this relationship remains significant. As for the variables Resultant Achievement Motivation and Perceived Instrumentality of French, their contribution to the explanation of the variance in the results in French is evident only when Expectation of Success in French is not included in the set of variables.

To clarify the contribution of the different variables involved, results of post hoc analyses are presented in the next subsection.

Post Hoc Analyses

The partial correlations of either Resultant Achievement Motivation or Perceived Instrumentality of French with Achievement Test in French did not remain significant when Expectation of Success in French was partialed out. The correlations of Expectation of Success in French with Perceived Instrumentality of French and Resultant Achievement Motivation were .333 and .243, respectively. With the present group

of subjects, Expectation of Success in French was also found to correlate .457 (n = 344) with Carroll and Sapon's (1955/1958) Modern Language Aptitude Test (MLAT), short form. As for the correlations of MLAT with Perceived Instrumentality of French and Resultant Achievement Motivation, they were .134 and .167, respectively. Due to its content, MLAT no doubt depends much less on any previous successes and failures in learning French than does Expectation of Success in French, yet the two are correlated. This may indicate that the subjects' verbal report of their Expectation of Success in French is affected by their perceived aptitude. It was decided to repeat the correlational analyses using MLAT instead of Expectation of Success in French scale. In this manner it would be possible to determine whether or not Resultant Achievement Motivation and Perceived Instrumentality of French would maintain some relationship with Achievement Test in French when Expectation of Success in French was replaced by a measure of aptitude in learning a second language.

The partial correlation analyses are presented in Tables 10 to 12. When the variable MLAT is not one of those partialed out, the correlations are not affected substantially by the exclusion of the 18 subjects whose score on MLAT were not available. The correlations between Resultant Achievement Motivation and Achievement Test in French are all significant

Table 10

Correlations of
(1) Achievement Test in French
and (4) Resultant Achievement Motivation,
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (3) Perceived Instrumentality of French,
and (6) Modern Language Aptitude Test

Variables partialed out[a]	r	df	p
None (r_{14})	.1402	342	.005
SEX ($r_{14.2}$)	.1687	341	.001
PIF ($r_{14.3}$)	.1644	341	.001
MLAT ($r_{14.6}$)	.0757	341	.081
SEX and PIF ($r_{14.23}$)	.1795	340	.000
SEX and MLAT ($r_{14.26}$)	.0921	340	.045
PIF and MLAT ($r_{14.36}$)	.0992	340	.033
SEX, PIF and MLAT ($r_{14.236}$)	.1039	339	.028

[a] PIF - Perceived Instrumentality of French.

MLAT - Modern Language Aptitude Test.

Table 11

Correlations of
(1) Achievement Test in French
and (3) Perceived Instrumentality of French,
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (4) Resultant Achievement Motivation,
and (6) Modern Language Aptitude Test

Variables partialed out[a]	r	df	p
None (r_{13})	.2356	342	.000
SEX ($r_{13.2}$)	.2065	341	.000
RAM ($r_{13.4}$)	.2502	341	.000
MLAT ($r_{13.6}$)	.1998	341	.000
SEX and RAM ($r_{13.24}$)	.2154	340	.000
SEX and MLAT ($r_{13.26}$)	.1883	340	.000
RAM and MLAT ($r_{13.46}$)	.2085	340	.000
SEX, RAM and MLAT ($r_{13.246}$)	.1942	339	.000

[a] RAM - Resultant Achievement Motivation.

MLAT - Modern Language Aptitude Test.

Table 12

Correlations of
(1) Achievement Test in French
and (6) Modern Language Aptitude Test,
with None, Some, or All of
the Following Effects Partialed Out:
(2) Sex, (3) Perceived Instrumentality of French,
and (4) Resultant Achievement Motivation

Variables partialed out[a]	r	df	p
None (r_{16})	.4380	342	.000
SEX ($r_{16.2}$)	.4237	341	.000
PIF ($r_{16.3}$)	.4221	341	.000
RAM ($r_{16.4}$)	.4247	341	.000
SEX and PIF ($r_{16.23}$)	.4163	340	.000
SEX and RAM ($r_{16.24}$)	.4033	340	.000
PIF and RAM ($r_{16.34}$)	.4045	340	.000
SEX, PIF and RAM ($r_{16.234}$)	.3937	339	.000

[a] PIF - Perceived Instrumentality of French.
RAM - Resultant Achievement Motivation.

except for the one where the single variable MLAT is substituted for Expectation of Success in French. As for the relationship between Perceived Instrumentality and Achievement Test in French, all correlations are significant no matter whether MLAT is partialed out alone or in combination with any or all of the other variables.

The product-moment and partial correlations between Achievement Test in French and MLAT are all significant, as had been the correlations between Achievement Test in French and Expectation of Success in French. The correlations between the latter are higher, however, than those between Achievement Test in French and MLAT.

Two more partial correlations were calculated. One is the correlation of Expectation of Success in French and Achievement Test in French with sex, Resultant Achievement Motivation, Perceived Instrumentality of French and MLAT partialed out. This correlation is .4391 ($df = 338$, $p < .000$). The other is the correlation of MLAT and Achievement Test in French with sex, Resultant Achievement Motivation, Perceived Instrumentality of French and Expectation of Success in French partialed out. This correlation is .2350 ($df = 338$, $p < .000$). Expectation of Success in French therefore remains significantly correlated with Achievement Test in French even when Modern Language Aptitude Test is included in the set of variables partialed out. Modern Language Aptitude

Test is also significantly correlated with Achievement Test in French when Expectation of Success in French is included in the set of variables partialed out.

Discussion of Results

The analysis of the data that is presented above indicates that, among the variables that were used in this study, the single best predictor of achievement in French is Expectation of Success in French. The third research hypothesis is therefore clearly supported. The subjects' verbal report of their expectancy of success therefore appears to be a variable worth considering when predicting achievement. The scale Expectation of Success in French, which was used in this study, was meant to reflect the subjects' anticipation of the excitement of the goal satisfaction when a task is to be performed. Atkinson and Birch state that the successive participation or non-participation in the excitement of the goal satisfaction, when activities are performed, determine for the next occurrence of such activities the level of the anticipation (expectancy) associated with these. It is considered that the strength of an instigating force has a systematic relationship with the strength of the expectancy that an activity will produce a certain consequence and the attractiveness of that consequence. Since incentive value (or attractiveness) was not considered to be a function

of the expectancy of success, it was proposed that subjects who have a high expectation of success should perform better than those who have a low expectancy of success. This proposition was supported by the present study.

The variable Expectation of Success (E_s), however, must be considered different from the variable Probability of Success (P_s) which Atkinson uses in his algebraical formulation and which has a closer relation to the average difficulty of a task. Expectation of Success in French, as used in this study, reflects the subjects' confidence in their ability to succeed in the French course they are taking. The level of difficulty of the course as they perceive it no doubt influences their expectation of success, but this perception may vary from subject to subject even though the task remains the same. Expectation of success is no doubt also influenced by the subjects' aptitude, their past experience in this area and similar areas and their desires for good results. This may explain its correlation with the other variables in this study.

Although the Expectation of Success in French scale includes only five questions, it appears to reduce the need of variables such as Resultant Achievement Motivation and Perceived Instrumentality of French to predict achievement in French. It also accounts for a part of the relationship between Modern Language Aptitude Test and Achievement Test in

French. However, when the variables Resultant Achievement Motivation and Perceived Instrumentality of French are used without partialing out the effects of Expectation of Success in French, even the addition of Modern Language Aptitude Test is not sufficient to nullify their correlation with Achievement Test in French. The first and second research hypotheses concerning the relationship of Resultant Achievement Motivation and Perceived Instrumentality of French with the Achievement Test in French may therefore be said to have received some support. As predicted by Atkinson, the success-oriented subjects performed better than the failure-threatened subjects. Also, as was predicted in the second research hypothesis, subjects who perceived the learning of French as a second language as having high instrumentality (high PIF) performed better than those who perceived it as having low instrumentality (low PIF).

As expected, Raynor's interaction hypothesis was not supported. Not only the success-oriented subjects, but the failure-threatened subjects also, did perform better with high perceived instrumentality than with low perceived instrumentality. As observed earlier, there appears to be some problems with Raynor's formulae. Raynor's method of computation led him to deduce that failure-threatened subjects should always perform worse when there was perceived instrumentality than when there was none. It was as if the

perception of a goal were, in all cases, equivalent to the perception of failure for the failure-threatened subjects. Such a proposition is not supported by the findings in this research.

It is also interesting to note that the results of this study are consistent with the alternate explanation of perceived instrumentality which was presented when discussing Atkinson and Birch's rationale. In this presentation, perceived instrumentality was considered an indication that there is a correspondence between the specific properties (incentive value) of a stimulus situation and the subjects' reactive properties (motives). Using this approach, and integrating Atkinson and Birch's propositions as to conditioned instigating forces, it was argued that, not only success-oriented subjects, but failure-threatened subjects also, would perform better when the correspondence between the proposed activity and their motives was strong than when this correspondence was weak. High perceived instrumentality would thus lead to better performance than low perceived instrumentality for both failure-threatened and success-oriented subjects. This proposition was supported by the present research results.

The present research can thus be considered to have helped to clarify some aspects of the theory of achievement motivation.

Conclusions

In the preceding chapter, an analysis of the results that were obtained was presented. Previously, the evolution of the theory of achievement motivation was discussed. Three main variables were considered of interest for the present study: motive dominance, perceived instrumentality, and expectation of success. These variables were expected to explain some of the variance in the results obtained in learning French as a second language.

The three research hypotheses can be said to have been supported by the data. The relationships of the three variables of interest with achievement in French were not equally strong, however. The highest correlation with achievement in French was found with Expectation of Success in French.

The present research will have permitted to bring out the importance of the variable expectation of success. Feather's research already had led to insights in this area, but Atkinson's initial preference for the original operational definition of probability of success (P_s) had led most researchers to dismiss expectation of success (E_s) as a pertinent variable for the explanation of the strength of the tendency to engage in an activity. Although Atkinson and Birch did not forsake this initial position, they also

included in their rationale, arguments which can be interpreted as a support to the belief that expectation of success is a variable of importance in predicting achievement. While all of Atkinson and Birch's theory is of interest, their rationale concerning conditioned instigating force and instrumental activities provided arguments that led to the research hypotheses as to the influence of expectation of success and of perceived instrumentality.

It is felt that the support that was obtained as to the research hypothesis on perceived instrumentality, and the absence of interaction effects of motive dominance and perceived instrumentality on achievement, provides an indication that Raynor's algebraical formulation may not be acceptable. It is also considered that the distinction between perceived goal and perceived consequence is an essential one.

While perceived instrumentality may not be the sole indicator of the incentive value of a task, it appears that the perceived instrumentality of an activity may be a good indication that this activity has the capacity to arouse the subject's reactivity (his motives) and lead him to action. Thus, both high perceived instrumentality and high expectation of success would influence positively the tendency to engage in an activity and lead to a better performance.

The present study can therefore be considered to have helped clarify certain aspects of the theory of achievement

motivation. It also has shown that the theory is applicable to the second language learning situation. This theory might therefore be helpful in giving a better understanding of some of the variables that facilitate the learning of a second language.

In order to insure greater confidence in the results that were obtained, it nevertheless appears important that the research hypotheses on expectation of success and perceived instrumentality be also tested in other domains. This would provide evidence as to whether they apply only to the learning of French as a second language, or to other areas as well.

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APPENDIX A

THE QUESTIONNAIRE FOR STUDENTS OF FRENCH

APPENDIX A

QUESTIONNAIRE FOR STUDENTS OF FRENCH

Prepared by Lorraine Y. Bourque

All your answers to the Questionnaire for Students of French will be treated with the strictest confidentiality. At no time in the discussion of this questionnaire will your name ever be associated with any of your answers.

Note that there are no right or wrong answers to the following questions. We are asking you to be quite accurate and frank because this is the only way your answers will be of help in this research. If you do not want to answer a question, or for that matter, the whole questionnaire, you do not have to. However, your questionnaire will be useful to the extent you will endeavor to answer all the questions to the best of your knowledge.

THIS PAGE WILL BE REMOVED IMMEDIATELY AFTER THIS INFORMATION IS CODED

Numbers below are for office use only

PLEASE PRINT:

- Name _____ _____
  Last name First name

- Student number _____ N 1-6

- Sex: 1. Female ____ - Age ____ - Grade ____ S 7
  2. Male ____ A 8-9
  G 10-11

- Which language did you learn first?
  1. English ____ 2. French ____ 3. Other ____ 12

- Do you speak more than one language at home? 13
  1. Yes ____ 2. No ____

- If yes, which other one(s) besides English? 14
  1. French ____ 3. Spanish ____
  2. Italian ____ 4. Other ____

- How many years have you been studying French in class? 15
  1. Less than a year ____ 4. Five or six years ____
  2. A year or two ____ 5. More than six years ____
  3. Three or four years ____

- On your last report card, were your marks in French 16
  1. Below 40% ____ 5. 70-79% ____
  2. 40-49% ____ 6. 80-89% ____
  3. 50-59% ____ 7. 90-100% ____
  4. 60-69% ____

1 AMONG THE PLANS YOU ARE MAKING FOR THE FUTURE, WHAT ARE TWO GOALS YOU HOPE TO HAVE ATTAINED WITHIN THE NEXT TEN YEARS OR LESS?

a. _____

b. _____

2 WHEN YOU THINK OF THE NEXT FEW MONTHS, WHAT ARE OTHER PLANS OR POSSIBILITIES YOU HOPE WILL BECOME REALITIES?

a. _____

b. _____

3

GO OVER YOUR ANSWERS TO QUESTIONS 1 AND 2, AND REWRITE THEM BELOW (OR THEIR APPROPRIATE CODE NUMBER 1a, 2b, etc.) ACCORDING TO THE IMPORTANCE YOU ATTACH TO EACH. WRITE THE ONES OF GREATER IMPORTANCE FIRST.

4

USING CHECK MARKS (✓), INDICATE IN THE SPACES PROVIDED THE EXTENT TO WHICH YOU BELIEVE GETTING A GOOD GRADE IN FRENCH WILL HELP YOU TO HAVE EACH OF THE PLANS OR POSSIBILITIES NAMED IN QUESTION 3 WORK OUT.

	1. It will be of great help	2. It will be of some help	3. It will be of little help	4. It will be of practically no help	
1st					17
2nd					18
3rd					19
4th					20

5 A NUMBER OF ACTIVITIES ARE LISTED BELOW.

	a. HOW MUCH VALUE DO YOU ATTACH TO EACH? (1. A great deal 2. Much 3. Some 4. None at all)		b. HOW MUCH TIME DO YOU ALLOW FOR EACH? (1. A great deal 2. Much 3. Some 4. None at all)	
21	.... Watching T.V.....	27		
22	.... Working part-time (or full-time).....	28		
23	.... Reading.....	29		
24	.... Meeting friends.....	30		
25	.... Listening to the radio or records.....	31		
26	.... Attending social activities such as dancing, parties.....	32		

6 TO WHAT EXTENT DO YOU FEEL A GOOD KNOWLEDGE OF FRENCH WOULD GIVE YOU THE OPPORTUNITY TO ENRICH THE ACTIVITIES LISTED BELOW? CHECK (✓) ONE ANSWER FOR EACH OF THE LISTED ACTIVITIES.

	1. Much more opportunity	2. Some opportunity	3. Very little opportunity	4. No opportunity whatsoever	
Watching T.V.....					33
Working part-time (or full-time).....					34
Reading.....					35
Meeting friends.....					36
Listening to the radio or records....					37
Attending social activities such as dancing, parties.....					38

7 IF YOU CAN EXPRESS YOURSELF IN FRENCH OR IF YOU WERE NEARLY ABLE TO DO SO, HOW MUCH WOULD YOU BE WILLING TO LISTEN, READ, WRITE, OR SPEAK FRENCH IN THE ACTIVITIES LISTED BELOW. CHECK (✓) ONE ANSWER FOR EACH.

	1. I would try to make opportunities	2. Whenever the opportunity would arise	3. If it were really necessary	4. Practically never	
Watching T.V.....	—	—	—	—	39
Working part-time (or full-time)..	—	—	—	—	40
Reading.....	—	—	—	—	41
Meeting friends.....	—	—	—	—	42
Listening to the radio or records.....	—	—	—	—	43
Attending social activities such as dancing, parties.....	—	—	—	—	44

8 INDICATE WITH A CHECK MARK (✓) IN THE SECTION TO THE RIGHT HOW IMPORTANT A GOOD GRADE IS TO YOU IN EACH OF THE COURSES BELOW SO THAT YOUR FUTURE CAREER PLANS WORK OUT.

	1. Very important	2. Important	3. Not very important	4. Unimportant	
English course.....	—	—	—	—	45
French course.....	—	—	—	—	46
Math. courses.....	—	—	—	—	47
Science courses such as Physics, Chemistry, or Biology.....	—	—	—	—	48

9 FOR ALL YOUR FUTURE PLANS TO WORK OUT, HOW IMPORTANT IS IT THAT YOU BECOME ABLE

	1. Very important	2. Important	3. Not very important	4. Unimportant	
a. to read French.....	___	___	___	___	49
b. to write French.....	___	___	___	___	50
c. to speak French.....	___	___	___	___	51

10 WHAT DO YOU THINK ARE YOUR CHANCES OF GETTING AT LEAST A PASS MARK WHEN YOU FINISH THIS FRENCH COURSE? 52

a. The possibilities are much greater than 50-50..... ____ (1)

b. The possibilities are approximately 50-50..... ____ (2)

c. The possibilities are much less than 50-50..... ____ (3)

11 IF YOU GET NO MORE THAN A PASS MARK, WILL YOU BE SATISFIED WITH THAT? 53

a. Yes..... ____ (1)

b. Not very..... ____ (2)

c. No..... ____ (3)

12 IF YOU ARE TO BE SATISFIED WITH YOURSELF, WHICH ONE OF THE FOLLOWING OPTIONS BEST DESCRIBES YOUR EXPECTATIONS AS TO YOUR RESULTS IN THIS FRENCH COURSE? 54

CHECK (✓) ONE ANSWER ONLY.

a. To do extremely well in this French course..... ____ (1)

b. To get a good grade..... ____ (2)

c. To get a pass mark..... ____ (3)

13 IN THIS FRENCH COURSE, WHAT DO YOU FEEL ARE YOUR CHANCES OF REACHING YOUR EXPECTATIONS (AS YOU DEFINED THEM IN THE PREVIOUS QUESTION)? 55

a. My chances are much greater than 50-50.... _____ (1)

b. My chances are approximately 50-50..... _____ (2)

c. My chances are much less than 50-50..... _____ (3)

14 HOW DIFFICULT IS THE FRENCH COURSE? 56

a. Very easy FOR ME..... _____ (1)

b. Moderately difficult FOR ME..... _____ (2)

c. Very difficult FOR ME..... _____ (3)

15 WHEN THE COURSES BEGAN, IF YOU HAD FELT YOU HAD A CHOICE TO TAKE FRENCH OR NOT TO TAKE IT, WOULD YOU STILL HAVE ENROLLED IN THE FRENCH COURSE? 57

a. Yes..... _____ (1)

b. No..... _____ (2)

16 ARE YOU PLANNING TO TAKE ANOTHER FRENCH COURSE? 58

a. Yes..... _____ (1)

b. Undecided..... _____ (2)

c. No..... _____ (3)

17 IF YOU, AND ONLY YOU, WERE TO DECIDE WHETHER OR NOT TO USE FRENCH AT YOUR WORK AND IN YOUR SURROUNDINGS WHEN FRANCOPHONES ARE PRESENT, WOULD YOU CONSIDER IT IMPORTANT THAT YOU BECOME ABLE TO SPEAK FRENCH? 59

a. Yes..... _____ (1)

b. No..... _____ (2)

18 DO YOU THINK IT IS REASONABLE TO EXPECT THAT A NUMBER OF ENGLISH-SPEAKING PERSONS BECOME ABLE TO SPEAK FRENCH AT THEIR WORK OR IN THEIR SURROUNDINGS? 60

a. Yes..... _____ (1)

b. No..... _____ (2)

19 DO YOU FEEL MOST OF YOUR FRIENDS WOULD HAVE ANSWERED THE SAME WAY YOU DID TO THE LAST TWO QUESTIONS? 61

a. Certainly..... ____ (1)

b. Probably..... ____ (2)

c. Partly..... ____ (3)

d. I don't think so..... ____ (4)

e. Certainly not..... ____ (5)

THANK YOU VERY MUCH

* It is understood that at no time in the discussion of this questionnaire will your name ever be associated with any of your answers.

APPENDIX B

DIRECTIONS FOR SCORING PERCEIVED INSTRUMENTALITY OF FRENCH (PIF) AND EXPECTATION OF SUCCESS IN FRENCH (ESF)

APPENDIX B

Perceived Instrumentality of French (PIF)

The PIF includes the following questions from the Questionnaire for Students of French: 1, 2, 3, 4, 6, 7, 8 (French), and 9. Questions 1, 2 and 3 give information needed for question 4, but are not scored. The twenty scored items have the following numbers in the right margin: 17-20; 33-44; 46; 49-51. The answers to these items are scored from 1 to 4 points, In the present study, an SPSS program was used to score the questionnaire, and values were recoded, so that a score of 1 indicated least perceived instrumentality, and 4, highest perceived instrumentality. Lowest and highest possible scores are 20 and 80.

Expectation of Success in French (ESF)

The ESF includes questions 10 to 14 from the Questionnaire for Students of French. Questions 10, 12, 13 and 14 are scored in the same manner: a = 3, b = 2, c = 1; as for question 11: a = 1, b = 2, c = 3. Lowest and highest possible scores are 5 and 15.

APPENDIX C

ANSWER BOOKLET FOR THE n ACHIEVEMENT TEST

APPENDIX C

Name:_____

Sex: Female_____

Male_____

Write your name at to top of this page, both your first and your last names.

INSTRUCTIONS

You are going to read four sentences, and your task is to tell a story that is suggested to you by each of these sentences. Tell what the situation is, what led up to the situation, what the people are thinking and feeling, and what they will do. In other words, write as complete a story as you can -- a story with plot and characters.

You will have 4 minutes 30 seconds to read the sentence and write your story about it. Write your first impressions and work rapidly. I will keep time and tell you when it is time to finish your story and to get ready for the next one.

There are no right or wrong answers, so you may feel free to write whatever story is suggested to you when you read the sentence. Spelling, punctuation and grammar are not scored. What is important is to write out as fully and as quickly as possible the story that comes into your mind as you look at each sentence.

APPENDIX C

STORY 1: TWO PERSONS IN A FACTORY ARE WORKING AT A MACHINE.

1. What is happening? Who are the persons?

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

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

4. What will happen? What will be done?

APPENDIX C

STORY 2: A PERSON IS WORKING WITH A TYPEWRITER AND BOOKS.

1. What is happening? Who are the persons?

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

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

4. What will happen? What will be done?

APPENDIX C

STORY 3: AN OLDER PERSON IS TALKING TO A YOUNGER PERSON.

1. What is happening? Who are the persons?

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

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

4. What will happen? What will be done?

APPENDIX C

STORY 4: A PERSON IS STANDING: A VAGUE OPERATION SCENE IS IN THE BACKGROUND.

1. What is happening? Who are the persons?

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

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

4. What will happen? What will be done?

APPENDIX D

DIRECTIONS FOR SCORING OF n ACHIEVEMENT

APPENDIX D

The initial step in the scoring procedure of need Achievement is to classify each of the written story in one of three categories: (a) containing achievement imagery, (b) containing doubtful achievement imagery, (c) containing unrelated imagery. These are scored +1, 0, and -1 respectively.

To belong to the first category, stories must refer to one of the following three criteria: competition with a standard of excellence, a unique accomplishment, or long term involvement. In this case, additional scores of one (1) point are given for each of the ten following sub-categories, if present: (a) stated need for achievement, (b) instrumental activity toward a goal, (c) anticipation of attainment of goal, (d) anticipation of failure to reach the goal, (e) obstacles located within the person, (f) obstacles in the environment, (g) another person in the story giving help to attain the goal, (h) positive feelings associated with attainment of goal, (i) negative feelings associated with failure to attain goal, (j) achievement orientation forming central plot.

Stories that refer to achievement, but which do not meet one of the three criteria for achievement imagery are classified doubtful achievement imagery (second category). Those that do not refer to an achievement goal are classified as unrelated imagery (third category). These last two types of stories are not scored any further.

APPENDIX D

The manual for scoring prepared by McClelland et al. (1958) includes much practice material which has been scored by established scorers. New scorers are requested to obtain a high degree of correlation with the practice material before they attempt to score new stories. A correlation of .85 to .95 is considered desirable (Atkinson & Raynor, 1974, p. 191) and is usually obtained after some twelve hours of practice (Smith & Feld, 1958, p. 685).

APPENDIX E

LETTER OF AUTHORIZATION FROM JUDITH (COWEN) FUCHEL

APPENDIX E

QUEENS COLLEGE

of THE CITY UNIVERSITY OF NEW YORK

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DEPARTMENT OF SECONDARY EDUCATION

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October 10, 1979

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Dear Ms. Bourque:

You may certainly quote from my dissertation. I'm certain you will give the source of the data.

I'd like to see a brief resume of your study when it is completed.

Good luck!

Sincerely yours,

Judith C. Fuchel, Ed.D.
Assistant Professor

APPENDIX F

THE TEST ANXIETY QUESTIONNAIRE - HIGH SCHOOL FORM

APPENDIX F

QUESTIONNAIRE ON ATTITUDES TOWARD DIFFERENT TESTING SITUATIONS.

(HIGH SCHOOL FORM)

Many people have been interested in how students feel about tests and about taking tests. This questionnaire is designed to let you tell us how you feel about them. We know that different people may have different ideas and attitudes about the same thing. We are particularly interested in how people differ in their feelings about tests.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. Needless to say, your answers to the questions will be kept strictly confidential; they will not be made known to any teacher or official in the school system.

For each question there is a line on the ends of which are statements of opposing feelings. The statements refer to the question. In the middle of the line you will find the word Midpoint. This reflects a feeling which is in-between the feelings described above. You are required to put an X on the point on the line which you think best indicates the strength of your feelings about that particular question.

The midpoint is only for your guidance. Do not hesitate to put a mark on any point on the line as long as that mark reflects (shows) the strength of your feeling.

By scholastic aptitude test we mean the tests that all of you have probably taken at some time while in High School. These are usually tests for which you cannot prepare and for which you cannot study. By teacher-made test we mean the tests given to you during the term which your teacher announces in advance. These are tests covering material you have had in class; tests for which you can prepare. If we just say 'tests', we mean all kinds of tests.

READ EVERY QUESTION CAREFULLY

ANSWER EVERY QUESTION

PLEASE DO TELL US HOW YOU REALLY FEEL

Answer the questions quickly. Do not spend too much time on any one question. You will have time to complete the questionnaire. Raise you hand if you have any questions and we will try to answer them. ANSWER THE QUESTIONS AS YOU FEEL.

GO AHEAD TO THE FIRST PAGE

1. When under the pressure of a testing situation, I work better than I do when on my own time.

Work better under pressure	Midpoint	Work better on my own time

2. I enjoy taking a test.

Enjoy	Midpoint	Do not enjoy

3. I prefer difficult problems given as homework to similar problems presented on an examination.

Prefer difficult problems as homework	Midpoint	Prefer difficult problems on an examination

4. Before taking a scholastic aptitude test, I feel fairly confident that I will do well.

Feel confident	Midpoint	Do not feel confident

5. After taking a scholastic aptitude test, I feel fairly confident that I have done well.

Do not feel confident	Midpoint	Feel confident

6. Before taking a scholastic aptitude test, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

7. While taking a scholastic aptitude test, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

GO ON TO THE NEXT PAGE

Put a mark at any point on the line as long as that mark reflects the strength of your feeling.

8. While taking a teacher-made test, I do not perspire more than I do at other times in school.

Do not perspire	Midpoint	Perspire more than at other times

9. I find myself thinking about other things while taking a test.

Do not think about other things	Midpoint	Think about other things

10. While taking a scholastic aptitude test, I find myself thinking about how well I am doing on it.

Do not think about how well I am doing	Midpoint	Think about how well I am doing

11. Before taking a scholastic aptitude test, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

12. While taking a scholastic aptitude test, I do not perspire more than I do at other times in school.

Do not perspire	Midpoint	Perspire more than at other times

13. After taking a scholastic aptitude test, I do not feel very confident that I have done my best.

Do not feel confident	Midpoint	Feel very confident

14. Before taking a teacher-made test, I feel fairly confident that I will do well.

Feel confident	Midpoint	Do not feel confident

GO ON TO THE NEXT PAGE

15. I usually expect to do poorly on a teacher-made test.

Expect to do poorly	Midpoint	Do not expect to do poorly

16. When I feel well prepared for a course examination, I usually feel confident rather than anxious before the test.

Feel confident	Midpoint	Do not feel confident

17. After I have completed a scholastic aptitude test, I worry about how well I have done.

Worry about how well I have done	Midpoint	Do not worry about how well I have done

18. After taking a teacher-made test, I feel fairly confident that I have done well.

Do not feel confident	Midpoint	Feel confident

19. While I am taking a test, I find that I cannot seem to sit still.

Sit still easily	Midpoint	Cannot sit still

20. When the teacher announces that a test is going to be given, I become afraid that I am going to fail - that I will do poorly.

Become afraid that I will fail	Midpoint	Do not become afraid that I will fail

GO ON TO THE NEXT PAGE

Remember to put a mark at any point on the line as long as that mark reflects the strength of your feeling.

21. While taking a hard test, I find that I tend to forget facts that I thought I knew very well.

Do not forget facts	Midpoint	Forget facts

22. I am apt to aim for a perfect score on every test that I take.

Do not aim for a perfect score	Midpoint	Aim for a perfect score

23. Before taking a test, I worry about the possibility of failing it.

Do not worry about failing it	Midpoint	Worry about failing

24. While taking a scholastic aptitude test, I wonder about how well I am doing.

Do not wonder about how well I am doing	Midpoint	Wonder about how well I am doing

25. Before taking a teacher-made test, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

26. Before I begin to answer the questions on a scholastic aptitude test, I am aware that my heart is beating faster.

Heart does not beat faster	Midpoint	Heart does beat faster

27. Before I begin a course examination, I often feel that I cannot do well.

Feel that I cannot do well	Midpoint	Feel that I can do well

GO ON TO THE NEXT PAGE

28. While taking a scholastic aptitude test, I find it difficult to concentrate on the questions because I am concerned with how well I am doing.

Find it difficult to concentrate	Midpoint	Do not find it difficult to concentrate

29. I am not concerned with the grade I receive on a course test.

Am concerned	Midpoint	Am not concerned

30. While taking a teacher-made test, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

31. While taking a scholastic aptitude test, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

32. I feel that I cannot do well before I begin a course examination only if I have not studied for it.

Feel that I cannot do well	Midpoint	Feel that I can do well

33. I usually try to find something on which to blame my low grades on a course examination.

Accept low grade	Midpoint	Try to find something on which to blame low grade

GO ON TO THE NEXT PAGE

Remember to put a mark at any point on the line as long as that point reflects the strength of your feeling.

34. Before taking a teacher-made test, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

35. I expect myself to do better with difficult problems given as homework than with the same problems given on a course test.

Do better with the problems on a test	Midpoint	Do better with the problems given as homework

36. After I have completed a teacher-made test, I worry about how well I have done.

Worry about how well I have done	Midpoint	Do not worry

37. Before I begin to answer the questions on a teacher-made test, I am aware that my heart is beating faster.

Heart does not beat faster	Midpoint	Heart beats faster

38. After taking a teacher-made test, I do not feel very confident that I have done my best.

Do not feel confident	Midpoint	Feel very confident

39. While taking a teacher-made test, I find it difficult to concentrate on the questions because I am concerned with how well I am doing.

Do not find it difficult to concentrate	Midpoint	Find it difficult to concentrate

GO ON TO THE NEXT PAGE

40. I feel that a course test result (score) shows what I really know in the subject.

Does not show what I know	Midpoint	Shows what I really know

41. I try to improve my grades from one test to the next.

Try to improve	Midpoint	Do not try to improve

42. While taking a teacher-made test, I find myself thinking about how well I am doing on it.

Do not think about how well I am doing	Midpoint	Think about how well I am doing

43. I feel that my classroom participation shows what I know about a subject better than my examination scores.

Classroom participation shows what I know	Midpoint	Examination score shows what I know

44. While taking a teacher-made test, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

45. Sometimes while taking a test, my mind goes blank.

Mind does not go blank	Midpoint	Mind goes blank

46. I am very cirtical of myself when I do poorly on an examination.

Am very critical	Midpoint	Am not very critical

GO ON TO THE NEXT PAGE

Remember to put a mark at any point on the line as long as that mark reflects the strength of your feeling.

47. After a test, I am usually very interested in comparing my answers with those given by my friends.

Do not compare answers	Midpoint	Compare answers

48. Before I begin a scholastic-aptitude test, I often feel that I cannot do well.

Feel that I cannot do well	Midpoint	Feel that I can do well

49. Even though I prepare for a course examination, I expect to do poorly on it.

Expect to do poorly	Midpoint	Do not expect to do poorly

50. After I have taken a test, I tend to forget about it and not to be very concerned about the grade that I receive.

Not concerned about grade	Midpoint	Very concerned about grade I will receive

51. While taking a teacher-made test, I wonder about how well I am doing.

Do not think about how well I am doing	Midpoint	Wonder about how well I am doing

52. I usually expect to do poorly on a course test.

Expect to do poorly	Midpoint	Expect to do well

APPENDIX G

THE ACHIEVEMENT TEST IN FRENCH

APPENDIX G

ACHIEVEMENT TEST IN FRENCH

GILLS R. LAVOIE

GENERAL DIRECTIONS:

This achievement test evaluates your knowledge of Vocabulary, Grammar, Comprehension, and Pronunciation in French.

You are to answer on the provided answer sheet. DO NOT WRITE IN THIS BOOKLET. Answer on the answer sheet by blackening, with a heavy pencil mark, the rectangle corresponding to the letter of your choice. Make sure that the number on the sheet is the same as the number of the question you are answering.

Try to avoid erasing; if you must change an answer, be careful to erase completely.

Give only one answer to each question

April, 1978

Select the word, in each of the following lists, which is closest in meaning to the word given at the left.

1- heureux

(a) sérieux
(b) contente
(c) belle
(d) dangereux
(e) content

2- déjeuner

(a) viande
(b) poulet
(c) repas
(d) dessert
(e) restaurant

3- pomme

(a) légume
(b) fruit de mer
(c) fruit
(d) frais
(e) confiture

4- chaud

(a) pluie
(b) hiver
(c) été
(d) neige
(e) automne

5- piano

(a) instrument
(b) aliment
(c) apéritif
(d) sport
(e) électrique

Select the word or expression, in each of the following lists, which best completes the following statements.

6- Quand je suis en retard...

(a) je m'amuse
(b) je déjeune
(c) je marche lentement
(d) je me dépêche
(e) je flâne

7- Quand le réveil-matin sonne...

(a) je me couche
(b) je me lève
(c) je m'endors
(d) je me lave
(e) je mange

8- Quand je me lève le matin...

(a) je me lave
(b) je cours
(c) je pleure
(d) je danse
(e) je me couche

9- Quand je vais à un party...

(a) je me couche
(b) je travaille
(c) j'étudie
(d) je m'amuse
(e) je me lave

10- Quand je vais à l'aéroport, j'y vois...

(a) des trains
(b) le métro
(c) des autobus.
(d) des bateaux
(e) des avions.

Select, in each of the following lists, the pair of words which are most similar in meaning (synonyms).

11- (a) dame - homme
(b) natation - sport
(c) chambre - salle de séjour
(d) rester - demeurer
(e) salle de bain - sous-sol

12- (a) bon - mauvais
(b) sortir - entrer
(c) poire - pomme
(d) mal - bien
(e) aliment - nourriture

13- (a) heureux - joyeux
(b) heureux - triste
(c) beau - laid
(d) plein - vide
(e) gros - petit

In the following two numbers, select the pair of words which are most nearly opposite in meaning (antonyms).

14- (a) rester - demeurer
(b) petit - gros
(c) grand - haut
(d) bon - bien
(e) laid - lait

15- (a) auto - moto
(b) garagiste - mécanicien
(c) aimable - gentil
(d) remercier - reprendre
(e) vendre - acheter

Select the word or expression, in each of the following lists, that best completes the statement.

16- La maison est ...

(a) beau
(b) laid
(c) grand
(d) grande
(e) petit

17- La femme est ...

(a) gros
(b) petit
(c) grand
(d) grosse
(e) beau

18- C'est une ... dame.

(a) vieille
(b) beau
(c) vieux
(d) petit
(e) laid

19- Ces livres sont à moi. Ce sont ... livres.

(a) mon
(b) ma
(c) mes
(d) mais
(e) mien

20- ... un grand homme.

(a) Ces
(b) Cest
(c) Ses
(d) Sait
(e) C'est

21- Ces disques sont à lui. Ce sont ... disques.

(a) ses
(b) sait
(c) tes
(d) ces
(e) c'est

22- Jean a cinq dollars. Moi j'en ... dix.

(a) et
(b) ai
(c) a
(d) avoir
(e) as

23- Paul ... la télévision chaque soir.

(a) regardent
(b) regarder
(c) regardes
(d) regarde
(e) regardons

24- La forme négative de: "J'ai un beau manteau" est:

(a) J'ai pas un beau manteau.
(b) J'ai un pas beau manteau.
(c) Je ai pas un beau manteau.
(d) Je n'ai un beau manteau.
(e) Je n'ai pas un beau manteau.

25- En hiver, il ne fait ... chaud.

(a) bien
(b) beaucoup
(c) pas
(d) toujours
(e) encore

26- Jacques est en retard. Il n'est pas ... arrivé.

(a) toujours
(b) demain
(c) encore
(d) jamais
(e) bien

27- Samedi, tu vas aller à Fredericton? Non, je vais ... aller à Shédiac.

(a) surtout
(b) souvent
(c) parfois
(d) plutôt
(e) jamais

28- Vas-tu à la discothèque ce soir? Non, je vais y aller ...

(a) hier
(b) avant-hier
(c) hier soir
(d) demain
(e) la semaine dernière

29- Est-ce que tu veux des fruits? Non ...

(a) je veux pas des fruits
(b) vous voulez des fruits
(c) je ne veux pas de fruits
(d) vous ne voulez pas de fruits
(e) je ne veux de fruits

30- Je suis fatigué, je vais ...

(a) reposer
(b) travailler
(c) marcher
(d) me reposer
(e) magasiner

(continued next page)

Select the word, in each of the following lists, which sounds exactly like the given word (homonyms).

31- dents

(a) dentiste
(b) danse
(c) donc
(d) dans
(e) dont

32- ses

(a) cesse
(b) sais
(c) saison
(d) se
(e) ce

33- peut

(a) pleut
(b) peuvent
(c) peur
(d) pleure
(e) peu

34- lait

(a) laisse
(b) la
(c) les
(d) las
(e) laide

35- mes

(a) maison
(b) mettre
(c) mère
(d) messe
(e) mais

Reading Comprehension

Read the following text carefully, then complete the given statements with the best suitable statement.

Le matin je me lève, je me lave et je prends mon petit déjeuner. Je quitte la maison pour aller à l'école. Je rencontre mes amis, Jacques et Albert. Nous marchons ensemble jusqu'à l'école. Les cours commencent à 9 heures. L'avant-midi, j'ai un cours d'histoire, de mathématiques et de français. Je prends mon dîner à la cafétéria de l'école chaque midi.

36- Le matin, je me lave ... de manger mon petit déjeuner.

(a) avant
(b) après
(c) pendant
(d) avec
(e) lorsque

37- Jacques et Albert sont mes ...

(a) professeurs
(b) frères
(c) amis
(d) ennemis
(e) cours

38- Jacques, Albert et moi, nous ... jusqu'à l'école.

(a) chantons
(b) mangeons
(c) dormons
(d) travaillons
(e) marchons

39- Chaque avant-midi, j'ai ...

(a) pas de classes
(b) une classe différente
(c) deux classes semblables
(d) trois classes semblables
(e) trois classes différentes

40- Le midi, je mange ...

(a) au restaurant
(b) avec mon professeur
(c) à la cafétéria
(d) chez moi
(e) dehors

Fill in the blanks to complete the following text. Be very careful, this text includes questions 41, 42, 43, 44, 45, 46, 47, 48. You have 5 clue-words given a, b, c, d, e. Each word can be used more than once. Blacken the corresponding space on your answer sheet next to each number.

Ce soir, je vais au ___(41)___. J'ai reçu de l'___(42)___ en ___(43)___ pour mon anniversaire. C'est dans un restaurant ___(44)___ de la ville que je vais. J'aime ___(45)___ leur nourriture. C'est plaisant de recevoir de l'argent en ___(46)___. J'aime ___(47)___ aller manger dans un bon ___(48)___.

(a) beaucoup
(b) argent
(c) restaurant
(d) chic
(e) cadeau

(Continued next page)

Read the following text carefully. Then complete the statements 49 to 53 by selecting the best suitable answer.

Hourrah! C'est vendredi soir et nous avons un party. Le party est dans le sous-sol chez Roger. Nous allons nous amuser. Nous avons de bons disques. Nous allons danser. A la fin de la soirée, nous allons manger des sandwiches et du gâteau. C'est la fête de Marie. Ce sera une agréable surprise pour elle. Marie est la meilleure amie de Roger. Elle est la soeur de Betty, mon amie.

49- Ce soir, nous avons un party. C'est ...

(a) Roger
(b) samedi
(c) moi
(d) Marie
(e) vendredi

50- Nous allons dans le .... chez Roger.

(a) salle de séjour
(b) sous-sol
(c) salon
(d) garage
(e) cuisine

51- Nous fêtons l'anniversaire de ...

(a) Betty
(b) moi
(c) Roger
(d) Marie
(e) tous

52- Roger et Marie sont ...

(a) de bons amis
(b) frère et soeur
(c) mon ami
(d) frère de Betty
(e) surpris

53- Au party, nous allons danser parce que ...

(a) Roger joue de la guitare
(b) nous n'avons pas de disques
(c) nous avons un bon tourne-disque
(d) nous avons de bons disques
(e) nous allons chanter avec nos sandwiches

Select the best suitable answer, from the list given, to complete each of the following statements.

54- J'ai mal aux dents; je vais chez le ...

(a) dentiste
(b) journaliste
(c) mécanicien
(d) architecte
(e) pharmacien

55- Mon auto a besoin de réparations; je vais chez le ...

(a) dentiste
(b) journaliste
(c) mécanicien
(d) médecin
(e) pharmacien

56- J'ai besoin de médicaments; je vais voir le ...

(a) dentiste
(b) journaliste
(c) mécanicien
(d) architecte
(e) pharmacien

57- Mon père écrit des nouvelles. C'est un ...

(a) dentiste
(b) journaliste
(c) mécanicien
(d) architecte
(e) artiste

58- J'aime dessiner des nouveaux plans de maison. Je serai un ...

(a) dentiste
(b) journaliste
(c) mécanicien
(d) architecte
(e) pharmacien

59- On a besoin d'un couteau et d'une fourchette pour ...

(a) boire
(b) dormir
(c) se coucher
(d) manger
(e) travailler

60- Quand on veut acheter des timbres, on va ...

(a) à la banque
(b) dans une épicerie
(c) dans une discothèque
(d) dans une bibliothèque
(e) au bureau de poste

61- Quand on veut acheter des aliments, on va ...

(a) à la banque
(b) dans une épicerie
(c) chez le coiffeur
(d) dans une bibliothèque
(e) au bureau de poste

What time is it?

In the next four numbers, 62 to 65, you have to match each of the different given times with its corresponding written form in a, b, c, d, or e. Balcken the corresponding letter on your answer sheet.

62- 10:45

63- 10:05

64- 10:30

65- 10:35

(a) Il est dix heures trente.

(b) Il est dix heures et cinq.

(c) Il est onze heures moins quart.

(d) Il est onze heures moins vingt-cinq.

(e) Il est dix heures et dix.

66- Which word in this list does not contain the sound underlined in the word at the left?

plutôt

(a) bureau
(b) rue
(c) sous
(d) réunion
(e) mur

67- Which word in this list does not contain the sound underlined in the word at the left?

douze

(a) laissez
(b) maison
(c) treize
(d) zéro
(e) faisons

68- Which word in this list does not belong there?

(a) chien
(b) arbre
(c) chat
(d) poisson
(e) oiseau

69- Which word in this list does not belong?

(a) auto
(b) moto
(c) banane
(d) bateau
(e) avion

70- Which word in this list does not belong?

(a) pommes
(b) pois
(c) laitue
(d) haricots
(e) pomme de terre

APPENDIX H

SUBJECTS' RAW SCORES

APPENDIX H

Raw Scores

Abbreviations used:

ID	-	Student's identification number
ATF	-	Achievement Test in French
n Ach	-	need Achievement
TAQ	-	Test Anxiety Questionnaire
RAM	-	Resultant Achievement Motivation
PIF	-	Perceived Instrumentality in French
ESF	-	Expectation of Success in French
MLAT	-	Modern Language Aptitude Test
SEX	-	1 = Male; 2 = Female

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
1	60	-2	219	- .13	62	11	59	2
2	51	2	234	1.12	45	11	38	2
3	54	0	197	1.13	32	15	41	1
4	54	-2	259	- .99	57	11	37	2
5	64	-2	233	- .43	62	12	45	2
6	59	-3	251	-1.21	55	13	49	2
7	53	-1	225	.14	57	7	56	1
8	69	0	193	1.22	45	15	54	1
9	69	4	172	3.24	74	15	68	1
10	62	-1	253	- .47	63	14	55	2
11	67	5	218	2.64	70	15	57	2
12	56	-1	313	-1.77	74	15	47	2
13	39	-2	242	- .62	64	12	48	1
14	60	-1	254	- .49	55	12	-	1
15	64	-3	228	- .71	51	15	70	2
16	50	-1	321	-1.94	72	13	31	2
17	62	1	208	1.29	56	13	47	1
18	65	0	235	.31	72	15	43	2
19	55	2	175	2.39	64	12	38	1
20	63	0	183	1.44	65	15	51	2
21	64	-2	255	- .90	59	15	37	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
22	60	0	192	1.24	59	13	30	2
23	53	-4	263	-1.86	54	11	30	1
24	53	0	205	.96	43	11	42	1
25	62	-3	215	- .43	44	13	61	2
26	65	-4	256	-1.71	73	14	79	2
27	65	2	162	2.67	65	15	50	1
28	51	4	268	1.17	54	14	49	1
29	58	-2	255	- .90	72	14	72	2
30	63	6	216	3.08	68	14	55	2
31	56	-3	150	.97	52	13	47	1
32	63	-3	317	-2.64	79	15	42	2
33	48	0	224	.55	75	14	37	1
34	31	-4	282	-2.27	64	12	74	2
35	60	-2	266	-1.14	59	11	31	2
36	62	-3	172	.50	53	15	50	1
37	65	-2	208	.11	65	14	70	2
38	56	-3	335	-3.03	50	10	57	2
39	63	-4	262	-1.84	59	12	22	2
40	61	-2	221	- .17	70	10	29	1
41	53	-2	235	- .47	27	12	57	1
42	41	0	324	-1.61	54	7	30	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
43	53	-3	117	1.69	35	12	37	1
44	48	-3	269	-1.60	45	10	33	1
45	43	0	326	-1.66	68	8	20	2
46	49	-2	229	- .34	46	8	28	1
47	39	-2	223	- .21	38	8	27	1
48	44	-1	240	- .19	69	10	37	2
49	49	-3	189	.13	47	9	34	1
50	23	-2	222	- .19	40	5	26	1
51	46	4	276	.99	51	6	35	1
52	52	-1	196	.76	48	12	43	2
53	52	-3	233	- .82	65	8	46	2
54	55	-2	215	- .04	57	13	30	1
55	52	-1	220	.24	50	9	37	1
56	50	-1	221	.22	30	8	29	1
57	63	4	239	1.79	58	12	54	1
58	61	2	178	2.33	69	13	51	2
59	52	2	207	1.70	34	7	36	1
60	60	-3	279	-1.82	62	8	36	1
61	65	4	244	1.69	61	14	62	2
62	45	-2	219	- .13	49	10	27	1
63	40	-3	196	- .02	38	7	26	1

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
64	60	-2	227	- .30	46	12	49	1
65	55	3	254	1.08	61	13	46	2
66	34	2	243	.92	61	10	28	1
67	57	4	191	2.83	59	13	36	2
68	63	-3	151	.95	60	15	38	2
69	62	0	213	.79	61	14	52	1
70	58	1	245	.49	30	8	37	2
71	65	2	207	1.70	58	13	56	1
72	36	-4	301	-2.68	78	15	57	2
73	56	5	199	3.05	60	12	60	2
74	57	2	213	1.57	36	8	40	1
75	62	-3	257	-1.34	55	10	54	2
76	53	-4	235	-1.26	71	12	36	2
77	58	-2	326	-2.44	57	10	26	2
78	36	-2	216	- .06	64	7	22	2
79	51	-4	255	-1.69	36	6	22	1
80	65	-2	269	-1.21	75	14	24	2
81	44	-2	275	-1.34	29	7	31	1
82	62	-3	165	.65	74	8	49	1
83	55	-4	248	-1.54	46	10	32	1
84	58	0	306	-1.22	48	10	-	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
85	65	-1	236	- .10	58	13	35	2
86	48	-4	222	- .98	44	9	43	1
87	53	-2	184	.63	69	11	43	2
88	48	-4	213	- .78	52	12	35	1
89	64	-3	177	.39	63	14	53	2
90	23	-1	236	- .10	42	12	37	1
91	61	-4	162	.32	41	12	49	1
92	55	3	223	1.75	48	14	39	2
93	42	-2	191	.48	32	5	26	1
94	66	-3	285	-1.95	68	12	37	2
95	57	2	178	2.33	66	9	-	1
96	56	9	311	2.20	63	10	-	2
97	58	-2	244	- .67	61	11	43	2
98	66	-2	234	- .45	74	15	47	2
99	43	-4	261	-1.82	46	8	21	2
100	56	-2	156	1.24	61	15	47	1
101	61	2	176	2.37	63	13	48	2
102	57	-4	310	-2.88	68	10	30	2
103	62	1	188	1.72	71	14	47	1
104	49	-1	277	- .99	59	6	23	2
105	58	-1	190	.89	58	12	39	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
106	55	-3	233	- .82	49	12	36	2
107	52	-2	291	-1.68	57	8	21	1
108	58	3	245	1.27	57	12	33	2
109	62	-3	209	- .30	57	15	55	2
110	53	-3	270	-1.62	44	8	53	1
111	56	-2	236	- .49	76	13	49	2
112	54	-2	239	- .56	54	12	40	1
113	59	4	242	1.73	58	13	-	2
114	59	-1	232	- .02	39	10	34	1
115	58	-2	243	- .65	39	9	30	2
116	62	-4	116	1.32	53	15	42	1
117	60	1	97	3.69	57	14	34	1
118	54	-2	235	- .47	72	14	47	2
119	50	1	338	-1.52	69	11	34	2
120	66	3	279	.54	63	15	11	2
121	60	-2	269	-1.21	70	15	50	2
122	58	-2	313	-2.16	78	14	34	2
123	63	-3	219	- .52	62	15	55	2
124	62	-2	165	1.04	65	15	58	1
125	57	-3	297	-2.21	73	12	58	2
126	45	-3	281	-1.86	61	9	32	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
127	47	-2	141	1.56	50	15	45	2
128	55	-1	336	-2.26	62	13	59	2
129	66	4	185	2.96	54	15	86	2
130	66	-3	295	-2.16	72	12	60	2
131	66	-3	186	.19	45	15	52	2
132	58	-2	234	- .45	55	15	60	2
133	63	-1	270	- .84	65	13	46	2
134	60	8	231	3.54	61	13	-	2
135	57	-2	210	.07	53	12	68	1
136	61	-4	307	-2.81	76	15	54	2
137	47	-1	342	-2.39	69	9	41	2
138	47	-1	246	- .32	53	10	34	1
139	53	-4	198	- .46	67	13	37	2
140	69	-1	270	- .84	79	15	43	2
141	61	-4	149	.60	70	13	59	2
142	64	-3	190	.11	69	15	73	2
143	55	-4	271	-2.04	67	13	67	2
144	57	-3	179	.35	65	14	45	1
145	53	-3	334	-3.00	68	10	-	2
146	58	-3	157	.82	72	10	51	1
147	67	0	293	- .94	69	13	37	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
148	65	1	198	1.50	45	14	54	2
149	58	1	198	1.50	56	10	38	2
150	53	3	291	.28	54	8	36	1
151	65	-1	239	- .17	61	13	62	2
152	58	-3	243	-1.04	50	14	46	1
153	53	-1	183	1.04	45	9	32	1
154	53	-2	287	-1.60	51	9	52	2
155	57	-4	244	-1.45	43	12	8	1
156	66	0	237	.27	51	14	57	1
157	61	-3	145	1.08	47	11	52	1
158	59	1	338	-1.52	55	10	39	1
159	61	-3	366	-3.70	73	12	38	2
160	65	-2	207	.13	44	14	62	1
161	59	-3	206	- .24	46	10	16	1
162	60	-2	294	-1.75	57	15	38	2
163	63	-3	216	- .45	50	15	63	2
164	65	-2	163	1.08	62	15	58	2
165	57	-3	285	-1.95	58	11	41	2
166	62	-4	281	-2.25	47	13	57	2
167	53	-2	253	- .86	53	7	49	2
168	60	-3	214	- .41	66	11	54	2

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
169	64	-4	213	- .78	65	13	41	2
170	52	-4	204	- .59	56	11	39	1
171	61	-4	269	-1.99	69	14	42	1
172	66	6	228	2.82	67	15	71	2
173	65	0	195	1.18	37	15	66	2
174	64	-4	165	.26	47	13	54	1
175	53	-3	227	- .69	53	9	47	2
176	68	-3	274	-1.71	57	15	57	2
177	65	-2	207	.13	47	13	50	2
178	67	-2	221	- .17	62	15	52	1
179	67	-2	214	- .02	65	14	45	2
180	61	-3	223	- .61	45	12	67	1
181	59	-3	246	-1.10	59	11	38	2
182	61	-2	258	- .97	56	11	12	1
183	57	-3	301	-2.29	65	10	-	2
184	60	-2	203	.22	53	15	40	1
185	67	-2	202	.24	39	8	42	1
186	57	-3	189	.13	41	12	43	2
187	56	-2	297	-1.81	55	11	-	2
188	61	-2	240	- .58	60	13	40	2
189	61	-3	277	-1.77	74	12	47	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
190	64	-3	203	- .17	58	14	72	1
191	58	-2	189	.52	58	13	44	2
192	62	-1	138	2.02	65	15	54	2
193	66	0	225	.53	79	15	48	2
194	66	-2	266	-1.14	53	13	51	2
195	60	-3	281	-1.86	54	8	34	2
196	56	3	219	1.83	74	14	52	2
197	64	-3	223	- .61	61	14	57	2
198	64	0	235	.31	59	14	54	1
199	58	1	290	- .49	66	13	58	1
200	64	0	190	1.28	65	15	55	1
201	68	-2	213	.00	75	15	50	2
202	56	1	268	- .01	57	11	43	2
203	62	-2	266	-1.14	64	10	-	2
204	65	-3	297	-2.21	49	12	34	2
205	60	-3	279	-1.82	67	11	45	2
206	62	-3	200	- .11	57	13	46	2
207	62	-2	134	1.71	59	15	59	1
208	60	1	234	.73	71	13	50	2
209	62	2	202	1.81	54	14	39	2
210	58	-1	212	.42	65	13	23	2

APPENDIX H

RAW SCORES

ID	ATF	'n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
211	62	-1	285	-1.16	59	13	57	2
212	65	-3	274	-1.71	51	13	62	1
213	65	-3	225	- .65	69	14	34	1
214	61	1	239	.62	74	15	38	2
215	59	5	268	1.56	60	13	34	2
216	61	-1	154	1.67	56	10	46	1
217	60	-3	305	-2.38	71	13	46	2
218	67	-2	219	- .13	74	15	59	2
219	59	-3	233	- .82	66	12	57	2
220	57	-2	236	- .49	61	12	33	2
221	62	-2	179	.74	45	14	58	1
222	59	0	206	.94	48	14	49	1
223	63	-2	257	- .95	61	13	51	2
224	64	-3	208	- .28	66	14	38	1
225	60	-2	219	- .13	53	13	43	1
226	59	4	264	1.25	69	12	32	1
227	57	-2	142	1.54	62	14	54	1
228	50	-2	222	- .19	44	9	35	2
229	56	-2	249	- .78	72	12	39	2
230	57	-2	274	-1.32	57	12	37	2
231	59	-3	254	-1.28	70	13	52	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
232	61	-3	227	- .69	58	14	63	2
233	62	3	232	1.55	68	15	36	2
234	64	5	147	4.17	58	15	56	1
235	62	2	242	.94	53	11	40	1
236	51	9	272	3.04	38	9	37	2
237	58	1	275	- .16	42	15	46	2
238	60	-3	248	-1.15	47	13	51	2
239	52	1	266	.03	64	12	43	2
240	55	-3	206	- .24	54	12	40	2
241	52	-2	270	-1.23	63	10	38	2
242	54	-1	199	.70	55	13	38	2
243	62	0	228	.46	56	14	53	2
244	58	-3	252	-1.23	40	12	29	1
245	58	-3	193	.04	45	12	38	2
246	63	-1	306	-1.62	68	12	66	2
247	59	9	243	3.67	56	12	36	2
248	62	-1	199	.70	69	15	44	2
249	64	-2	285	-1.55	66	10	40	2
250	51	3	242	1.34	55	11	27	1
251	64	3	269	.75	66	14	-	2
252	57	-2	218	- .11	56	10	35	1

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
253	67	-2	294	-1.75	60	14	54	2
254	49	7	259	2.54	49	9	52	1
255	57	-1	163	1.48	57	10	48	1
256	57	-2	254	- .88	46	11	45	1
257	57	-3	251	-1.21	55	11	34	2
258	54	-2	209	.09	49	10	50	2
259	65	-3	199	- .09	66	13	53	2
260	55	-3	173	.48	67	12	56	2
261	61	-3	239	- .95	51	12	19	2
262	56	-2	303	-1.94	60	13	35	2
263	53	1	263	.10	53	11	52	2
264	58	4	308	.30	46	13	33	2
265	64	1	252	.34	51	13	42	1
266	58	-1	183	1.04	64	14	46	1
267	58	2	227	1.27	60	14	53	2
268	53	-3	265	-1.51	58	11	45	2
269	60	3	198	2.29	65	14	44	2
270	44	-2	284	-1.53	58	10	37	2
271	58	-2	196	.37	46	13	64	2
272	64	2	191	2.05	65	14	64	1
273	44	2	232	1.16	51	10	32	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
274	60	-2	146	1.45	41	15	57	1
275	63	-2	198	.33	70	15	35	2
276	58	-1	227	.09	60	14	54	2
277	51	-2	226	- .28	67	12	38	1
278	56	-3	274	-1.71	59	11	30	1
279	53	-3	178	.37	53	15	52	1
280	50	-2	227	- .30	66	12	31	1
281	60	3	271	.71	54	12	68	2
282	56	1	219	1.05	67	13	-	2
283	55	-3	157	.82	46	12	43	1
284	67	-2	209	.09	58	12	25	2
285	60	0	235	.31	59	14	47	1
286	61	-1	306	-1.62	77	12	36	1
287	57	-2	215	- .04	51	11	39	2
288	60	-1	238	- .15	64	15	51	2
289	66	2	225	1.31	64	14	34	1
290	55	-3	274	-1.71	60	11	42	1
291	61	1	231	.79	72	14	30	1
292	61	-2	199	.31	65	12	47	2
293	42	-1	241	- .21	48	7	23	1
294	60	-1	230	.03	64	14	53	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
295	69	-2	271	-1.25	63	15	-	2
296	57	4	275	1.02	48	10	56	2
297	61	-3	151	.95	59	15	39	2
298	53	3	260	.95	63	14	42	2
299	65	5	246	2.03	63	15	52	2
300	60	-1	246	- .32	49	13	29	1
301	58	2	225	1.31	48	11	-	2
302	52	-3	240	- .97	48	10	30	1
303	66	-2	97	2.51	53	15	-	2
304	61	5	136	4.41	68	14	62	2
305	54	-1	216	.33	31	13	29	1
306	65	-2	290	-1.66	50	14	38	2
307	56	-1	176	1.20	44	14	49	1
308	66	-4	218	- .89	69	15	49	2
309	64	-4	158	.41	61	13	50	2
310	53	-2	219	- .13	47	12	35	2
311	61	0	182	1.46	60	14	44	2
312	62	2	236	1.07	47	15	55	2
313	59	4	233	1.9[illegible]	58	15	61	1
314	62	2	154	2.85	62	15	58	2
315	55	-3	167	.61	52	12	32	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
316	57	3	239	1.40	58	13	32	2
317	54	3	232	1.55	53	15	36	1
318	55	-2	257	- .95	58	15	29	1
319	70	-3	230	- .76	54	15	-	1
320	46	-1	206	.55	74	11	34	2
321	58	-3	224	- .63	64	14	51	2
322	49	1	224	.94	63	14	40	1
323	63	-2	198	.33	59	14	60	2
324	63	-1	201	.65	45	11	35	1
325	44	-2	232	- .41	52	8	-	1
326	56	-2	279	-1.42	60	13	50	2
327	35	-1	226	.11	74	10	23	2
328	47	0	302	-1.14	49	11	-	1
329	45	-2	250	- .80	66	10	32	1
330	52	-1	232	- .02	49	13	49	2
331	65	2	184	2.20	68	15	61	2
332	59	2	136	3.24	61	11	36	1
333	54	-3	247	-1.12	77	12	27	1
334	55	0	306	-1.22	58	11	48	2
335	59	-3	240	- .97	53	14	22	1
336	66	-4	190	- .28	41	15	60	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
337	58	-1	242	- .23	46	12	44	2
338	60	-2	220	- .15	61	11	45	2
339	45	3	261	.93	58	11	31	2
340	40	3	268	.77	68	11	30	2
341	33	-3	236	- .89	41	8	25	2
342	43	-2	236	- .49	68	10	24	2
343	52	-2	246	- .71	64	10	41	2
344	54	-3	319	-2.68	67	12	34	2
345	49	-2	286	-1.58	42	8	22	1
346	49	-2	219	- .13	48	14	29	2
347	55	-2	139	1.60	56	14	45	1
348	54	6	216	3.08	54	14	36	2
349	54	-3	171	.52	55	9	28	1
350	56	2	216	1.51	71	14	46	1
351	61	-1	184	1.81	60	13	42	1
352	54	1	255	.27	53	8	58	2
353	46	-3	232	- .80	53	12	50	2
354	62	-1	206	.55	63	15	31	1
355	54	1	275	- .16	72	11	32	1
356	67	-1	163	1.48	64	13	40	1
357	30	-3	249	-1.17	59	11	34	2

APPENDIX H

RAW SCORES

ID	ATF	n Ach	TAQ	RAM	PIF	ESF	MLAT	SEX
358	55	-2	246	- .71	75	9	26	1
359	61	-1	326	-2.05	38	13	73	2
360	36	-3	253	-1.25	56	15	32	1
361	45	-3	158	.80	43	10	29	2
362	42	-2	298	-1.83	56	7	22	1