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THE EFFECTS OF TWO TYPES OF SIMULATIONS ON MEASURES OF WRITTEN PERFORMANCE IN BEGINNING COLLEGE FRENCH
THE EFFECTS OF TWO TYPES OF SIMULATIONS ON MEASURES OF
WRITTEN PERFORMANCE IN BEGINNING COLLEGE
FRENCH

DISSERTATION

Presented in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Elaine McKee, B.A., M.A.

***

The Ohio State University

1980

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Approved By

Adviser
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This dissertation is dedicated
to my husband

Darrell D. McKee
ACKNOWLEc^DMENTS

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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>i</td>
</tr>
<tr>
<td>VITA</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Theoretical Considerations</td>
<td>7</td>
</tr>
<tr>
<td>Objectives and Hypotheses</td>
<td>10</td>
</tr>
<tr>
<td>Operational Definitions</td>
<td>11</td>
</tr>
<tr>
<td>Assumptions</td>
<td>14</td>
</tr>
<tr>
<td>Value of the Study</td>
<td>14</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td>16</td>
</tr>
<tr>
<td>Introduction</td>
<td>16</td>
</tr>
<tr>
<td>Meaningful Learning</td>
<td>17</td>
</tr>
<tr>
<td>Depth of Processing</td>
<td>21</td>
</tr>
<tr>
<td>Related Classroom Research</td>
<td>24</td>
</tr>
<tr>
<td>Simulations</td>
<td>28</td>
</tr>
<tr>
<td>III. DESIGN AND PROCEDURES</td>
<td>31</td>
</tr>
<tr>
<td>Experimental Design of the Study</td>
<td>31</td>
</tr>
<tr>
<td>Population</td>
<td>35</td>
</tr>
<tr>
<td>Procedures and Implementation</td>
<td>36</td>
</tr>
<tr>
<td>Scoring</td>
<td>39</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>41</td>
</tr>
<tr>
<td>Statistical Analyses</td>
<td>42</td>
</tr>
<tr>
<td>IV. RESULTS AND DISCUSSION</td>
<td>46</td>
</tr>
<tr>
<td>Introduction</td>
<td>46</td>
</tr>
<tr>
<td>Experiment I: French-102 Level</td>
<td>47</td>
</tr>
<tr>
<td>Experiment II: French-103 Level</td>
<td>56</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>V. SUMMARY, CONCLUSIONS, LIMITATIONS, AND IMPLICATIONS</td>
<td>66</td>
</tr>
<tr>
<td>Summary</td>
<td>66</td>
</tr>
<tr>
<td>Conclusions</td>
<td>68</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>74</td>
</tr>
<tr>
<td>Implications and Recommendations for Future Research</td>
<td>75</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>A. PILOT STUDY</td>
<td>78</td>
</tr>
<tr>
<td>B. MAIN STUDY</td>
<td>94</td>
</tr>
<tr>
<td>C. PERSONALITY QUESTIONNAIRE</td>
<td>107</td>
</tr>
<tr>
<td>D. SUMMARY TABLES FOR MULTIVARIATE AND UNIVARIATE ANALYSES OF VARIANCE FOR MAIN STUDY</td>
<td>110</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>124</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Table 1</td>
<td>Three-Factor and Two-Factor Designs: Cell Frequencies</td>
</tr>
<tr>
<td>Table 2</td>
<td>Cell Frequencies for Personality Inventory</td>
</tr>
<tr>
<td>Table 3</td>
<td>Reliability Coefficients for Personality Questionnaire</td>
</tr>
<tr>
<td>Table 4</td>
<td>Means and Standard Deviations for $P_1$ Productivity: French-102 Level</td>
</tr>
<tr>
<td>Table 5</td>
<td>Means and Standard Deviations for $P_2$ Productivity: French-102 Level</td>
</tr>
<tr>
<td>Table 6</td>
<td>Means and Standard Deviations for $C_3$ Complexity: French-102 Level</td>
</tr>
<tr>
<td>Table 7</td>
<td>Means and Standard Deviations for $C_4$ Complexity: French-102 Level</td>
</tr>
<tr>
<td>Table 8</td>
<td>Means and Standard Deviations for $C_1$ Complexity: French-102 Level</td>
</tr>
<tr>
<td>Table 9</td>
<td>Means and Standard Deviations for $C_2$ Complexity: French-102 Level</td>
</tr>
<tr>
<td>Table 10</td>
<td>Means and Standard Deviations for Sentence Length: French-102 Level</td>
</tr>
<tr>
<td>Table 11</td>
<td>Means and Standard Deviations for $P_1$ Productivity: French-103 Level</td>
</tr>
<tr>
<td>Table 12</td>
<td>Means and Standard Deviations for $P_2$ Productivity: French-103 Level</td>
</tr>
<tr>
<td>Table 13</td>
<td>Means and Standard Deviations for $C_2$ Complexity: French-103 Level</td>
</tr>
<tr>
<td>Table 14</td>
<td>Means and Standard Deviations for $C_3$ Complexity: French-103 Level</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>15</td>
<td>Means and Standard Deviations for Complexity: French-103 Level</td>
</tr>
<tr>
<td>16</td>
<td>Means and Standard Deviations for Complexity: French-103 Level</td>
</tr>
<tr>
<td>17</td>
<td>Means and Standard Deviations for Sentence Length: French-103 Level</td>
</tr>
<tr>
<td>18</td>
<td>Summary of Analyses of Variance: Pilot Study</td>
</tr>
<tr>
<td>19</td>
<td>Multivariate Tests of Significance for Productivity and Complexity by Task Type: French-102 Level</td>
</tr>
<tr>
<td>20</td>
<td>Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type: French-102 Level</td>
</tr>
<tr>
<td>21</td>
<td>Multivariate Tests of Significance for Productivity and Complexity by Personality: French-102 Level</td>
</tr>
<tr>
<td>22</td>
<td>Multivariate Tests of Significance for Productivity and Complexity by Task Type/Personality: French-102 Level</td>
</tr>
<tr>
<td>23</td>
<td>Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type/Personality: French-102 Level</td>
</tr>
<tr>
<td>24</td>
<td>Univariate Tests of Significance on Sentence Length: French-102 Level</td>
</tr>
<tr>
<td>25</td>
<td>Multivariate Tests of Significance for Productivity and Complexity by Task Type: French-103 Level</td>
</tr>
<tr>
<td>26</td>
<td>Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type: French-103 Level</td>
</tr>
<tr>
<td>27</td>
<td>Multivariate Tests of Significance for Productivity and Complexity by Personality: French-103 Level</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.</td>
<td>A Comparison of the Main Characteristics of Simulators and Simulation Games According to Cruickshank (1977)</td>
<td>30</td>
</tr>
<tr>
<td>Figure 2.</td>
<td>Experimental Design: Task by Personality</td>
<td>33</td>
</tr>
</tbody>
</table>
CHAPTER I
THE PROBLEM

INTRODUCTION

Among the many developments and changes that have taken place in second-language education during the past decade is the shift from rote learning and linguistic proficiency to meaningful learning and communicative proficiency. Most second-language educators and teachers agree today that meaningful learning and communicative proficiency are the most important elements in second-language study (Rivers, 1971, 1976; Carroll, 1974; Jarvis, 1975a, 1975b, 1979a; Birckbichler, 1977).

Meaningful learning and communicative proficiency have been influenced directly by cognitive psychologists such as Ausubel, Smith, and Stevick in a quest to understand better the processes involved in learning. All agree that the learner's relevant background knowledge is the most important variable that affects learning. According to Ausubel et al. (1978), meaningful learning occurs if the learning task can be related in a nonarbitrary manner to what the learner already knows, and if the learner is willing
to do so. Taking a similar view, Smith (1975) defines meaningful learning simply as making sense of the world. The manner in which the learner maps out the world in his or her head determines how he or she interprets stimulus materials. Investigating also the importance of stored knowledge or past experience, Craik and Lockhart (1972) state that the greater the use learners can make of their past experience, the more efficiently material can be handled and retained.

Communicative proficiency is related closely to meaningful learning. Goyer (1970), for example, defines communication as the sharing of experience and meaning as a discriminative response to a stimulus. It is meaning that determines whether or not communication occurs. How a bit of information becomes meaningful or communicative to a user of the language is then a function of the cognitive change it involves, a change that must make sense to the individual personally. The relationship between meaning and communication is further brought out in Stevick's concept of communication as "making a difference" (Stevick, 1976). He states, "If 'communication' means 'making a difference,' then a single speech act may communicate on a number of different levels at once" (p. 36). As Jarvis (1979a) illustrates, the simple response "It's nice outside" may be a purely mechanical behavior, or it may be a genuine meaningful communicative act if the person has just been outside and is giving his or her interpretation of the weather (p. 96).
Although communicative proficiency is today the principal goal of second-language study in most institutions of learning, the idea of communication as "making a difference" is still all too often dismissed from consideration in many classrooms. Consequently, in many classrooms linguistic proficiency continues to be preponderant. Communicative proficiency is defined generally as the ability to get a message across to an interlocutor with a specific ease and effect (Clark, 1972), or the ability to receive, understand, and produce suitable and comprehensible messages (Zelson, 1976). In Stevick's view of communication, communicative proficiency may be described better as the ability to share experience by responding discriminatively to a particular stimulus.

Cognitive psychologists and many second-language educators believe today that the learner should practice with meaningful learning tasks. Evidence from various empirical studies indicates a superiority in performance when learners engage in meaningful practice. For example, Jarvis (1970) found that meaningful language practice produces a greater ability in language use in the productive skills than nonmeaningful practice. Both Savignon (1972) and Joiner (1974) concluded that communicative proficiency and linguistic proficiency are separate constructs, and the distinction between communicative or meaningful and noncommunicative practice is necessary for the development of communicative proficiency. Knorre (1975) and Birckbichler (1975) found also an advantage for semantic (meaningful) conditions over syntactic manipulations in measures of
vocabulary. Recently, Schaeffer (1979) obtained highly significant results in the use of meaningful practice exercises over mechanical practice.

The kind of activities that are increasingly used in the classroom, in textbooks, workbooks, and other scholastic second-language materials is further evidence that educators and writers believe in the advantage of meaningful learning tasks. Meaningful learning tasks include such activities as personalized questions, open-ended sentences, rating scales, ranking scales, sentence-builders, simulations, interviews, and many other formats. Jarvis (1975) points out three essential characteristics a meaningful learning task must have to foster a willingness to share experience with others. He states:

1. They [the learning activities] and materials must lead the learner in one way or another to examine what he thinks, feels, or believes.

2. They must cause him to want to express those thoughts, feelings, or beliefs; i.e., they must have sufficient inherent interest.

3. They must be structured so as to permit the student to express ideas within the range of his linguistic competence. (p. 223)

Clearly, when activities share these characteristics, the learner must attend to meaning in order to respond.

Many textbook writers and teachers strive today to incorporate these traits into various learning activities. To this end, activities involving a context, real or simulated, where the student is
coaxed to relate his or her past experience, is a practical educational tool for meaningful language use. Because real situations cannot always be experienced, the simulation format is useful in providing a model through which students can experience a portion of the real world. As Adams (1973) states, "In making decisions and taking action himself, even if only a game, the student has to recall ideas and relationships that are part of the simulation structure and previous experience" (p. 6).

Cruickshank (1977) has identified among others two types of simulations: the Simulator and the Simulation Game. While both capture the most relevant features (physical and/or psychological) of the real world, Simulators are more lifelike, rely less on chance, and require the participant to be himself or herself. Conversely, Simulation Games are less lifelike, rely more on chance, and require the participant to play the role of another person. For example, "Your friend forgets to pick you up on the way to the football game. What can you do?" is a Simulator; while "Imagine that you are a travel agent and are trying to arrange a trip to the U.S. for a young couple. How do you advise them?" is a Simulation Game. Variations of both types of simulations are used in the second-language classroom. For example, given several situations, students may be asked, "How do you react in the following situations?" or, "How do people react generally in the following situations?" Simulated activities can be acted out orally or in writing. According to McGuire (1976), however, written simulations have the advantage
of giving each individual full responsibility for all actions taken and guarantee a high level of involvement and acceptance (p. 6).

Many educators believe also that the sharing of experience is further encouraged when meaningful learning tasks incorporate the affective domain. They claim that simulation strategies in which the learner's personal experiences, values, and feelings come into play are best promoters of communicative acts. According to Christensen (1975, 1977), closely held values or deep-seated fantasies seem to be powerful generators of thought. The affective domain promotes stimulating language practice (Christensen, 1977). Both Curran (1968) and Stevick (1976) assert that people learn best from utterances in which they have a strong personal investment. Numerous laboratory studies (Kamano and Drew, 1961; Kleinsmith and Kaplan, 1963; Lott, Lott, and Walsh, 1970) have shown that personal involvement and emotional investment with the to-be-learned material made a significant difference in the ease with which learning occurred. In the second-language classroom, effects of personal involvement were also noted by Birckbichler (1975). She remarks, "Although referring to a predetermined character, the personal pronoun I was used. When students generated sentences, they were clearly referring to themselves... Students tended to produce sentences in which they used the personal pronouns I, you (both familiar and formal forms), and we" (p. 77). The present researcher's personal observation also concurs with the above findings. When students were asked to use novel words in sentences, the personal pronoun I was used in the
majority of cases. Indications are that students naturally include themselves and their experiences and, when asked to pretend, they eventually revert to their own person. Remaining oneself in certain activities may, therefore, have a facilitative effect on meaningful language use and the production of sentences. The extent to which the personal dimension encourages students to generate meaningful sentences has not, however, been investigated empirically. This study intends to do just that. More specifically, this study will investigate the relationship between two different types of involvement with a task and the productivity, complexity, and length of student-generated sentences.

THEORETICAL CONSIDERATIONS

Cognitive theories of learning advanced by Ausubel et al. (1978), Smith (1975), and Craik and Lockhart (1972) provide the theoretical bases for this study.

Cognitive psychologists such as Ausubel and Smith define learning in relation to the ideational background the learner possesses. Distinctions are made, therefore, between the logical meaning of stimulus material and psychological meaning. Logical meaning, according to Ausubel et al. (1978), is the meaning that is inherent in certain kinds of materials. Psychological meaning, on the other hand, is an idiosyncratic experience. It is the meaning that subsequently results from the stimulus material after the learner has brought his personal experience into it. For
example, the group of words "It's nice outside" has logical meaning; the words are potentially meaningful. If, however, they are the response of a person making a true evaluation of the weather because he or she has just been outside, psychological meaning is superimposed on the logical meaning. The information the learner extrapolates from stimulus materials (possibly the question "What's the weather like?") and relates to relevant experiences in cognitive structure affects the logical meaning of a word or sentence. Essentially, the person is saying in this example "I have been outside, I know it's nice." In commenting on the necessity to perceive relevance in material, Smith (1975) remarks that "meaning does not travel from the message to the listener or reader; the receiver must bring meaning into the message" (p. 92). As Smith (1975) further emphasizes, to make sense of language, the learner must impose his or her cognitive structure upon it and thus bring meaning into the language.

This notion of idiosyncratic cognitive structure is important to this study. It implies that each individual's initial perception of a particular learning task may be different because each individual perceives a particular task in relation to his or her previous experiences. Consequently, if a learner is asked to complete tasks in which he or she is invited to share personal experiences, performance should be facilitated because the logical meaning of the task can be transformed more readily into psychological meaning.

Craik and Lockhart's (1972) information-processing model of learning is also significant to this study. Generally, information-
processing models view learning and memory in terms of acquisition, storage, and accessibility of information and attempt to account for performance on cognitive tasks by investigating the levels at which information was processed. According to Craik and Lockhart (1972), the nature and longevity of memory trace are determined by the level at which a stimulus is processed. At deeper levels, the subject can make use of learned cognitive structures so that stimulus material will become more complex and meaningful. The greater use a learner can make of his or her past experiences, the more efficiently new material can be bridged to prior knowledge and retained.

If Craik and Lockhart's model holds true in second-language learning, a learner who is performing tasks that require cognitive decisions involving him or her personally should score higher on measures of performance than a learner performing tasks involving decisions made in reference to a potentially real situation or person. A simulated situation in which the learner remains himself or herself and therefore relates directly to the learner's personal past experiences should encourage and facilitate meaningful language use. This study will investigate the extent to which the production of student-generated sentences is facilitated when a learner is asked to complete a task in which he or she does not pretend to be someone else but remains self. It will also investigate the extent to which complexity and length of sentences are related to this type of involvement.
OBJECTIVES AND HYPOTHESES

It is hypothesized that activities having a simulation format where the learner remains himself or herself enhances the productivity, complexity, and length of sentences. If subject-matter becomes meaningful when it is nonarbitrarily related to a particular learner's cognitive structure, providing activities that directly involve the learner's true experiences should yield a better performance than when the learner is provided with only a potentially real situation. It is the objective of this study to provide data about the type of simulated situation that will encourage and facilitate the production of sentences. More specifically, this study will address the following questions:

(1) Does a simulation in which the language learner in a university remains himself or herself encourage and facilitate the productivity of sentences as opposed to a simulation in which the participant plays the role of another person?

(2) Is there a relationship between either type of simulation and the complexity of student-generated sentences?

(3) Is there a relationship between either type of simulation and sentence length?

Because findings concerning the influence of personality (particularly introversion/extroversion) on student performance are inconclusive and contradictory (Bartz, 1974; Rossier, 1975; Naiman,
a fourth question will be addressed:

(4) Is there a relationship between either type of simulation and personality factors?

Furthermore, because it is assumed that some students will have studied French at the elementary, junior high, or high school levels, a fifth question seems appropriate:

(5) Is there a relationship between productivity, complexity, and length of student-generated sentences and years of pre-college French?

OPERATIONAL DEFINITIONS

The terms used in this study are defined operationally as follows:

SIMULATION is defined as the product when one creates the appearance or effect of something else (Cruickshank, 1977, p. 1). Specifically, it refers to those activities that produce artificial environments or that provide artificial experiences for the participants in the activity. A simulation is a replica of processes observable in the real world; it provides an opportunity for one or more persons to perform a selected portion of these processes. A replica may be greatly simplified in comparison with the original (Garvey, 1971, p. 206). Although it captures the most relevant features of the real world, almost always the reality is distorted in some way (e.g., taking a situation out of context, creating a situation in the
classroom, creating a situation in paper and pencil format, thus not duplicating the noise that is always present in reality). Still, a simulation can provide a dramatic view of life and the reality in which we live (Adams, 1973, p. 4). According to Twelker (1971), a simulation can be represented as follows:

\[ \text{Simulation} = (\text{real life elements}) + (\text{represented elements of real life}) \]

**TYPE I SIMULATION** is defined as a simulation in which the learner does not pretend but remains himself or herself. The participant is himself or herself.

**TYPE II SIMULATION** is defined as a simulation in which the learner pretends to be another person or plays the role of another person. The participant is not himself or herself but "steps into someone else's shoes."

**PRODUCTIVITY** is defined in terms of **PRODUCTIVITY I** \((P_1)\) and **PRODUCTIVITY II** \((P_2)\):

\((P_1)\): The total number of sentences, comprehensible and incomprehensible, a student can generate when given a task to complete. A **comprehensible sentence** is a sentence that may be grammatically faulty but can be understood by a speaker of the language. An **incomprehensible sentence**, on the other hand, cannot be understood or cannot be made sense of by a speaker of the language.

\((P_2)\): The total number of comprehensible sentences only.
**COMPLEXITY** is defined in terms of four types of sentences:

\((C_1)\): Any simple sentence that has a simple subject and a simple predicate. An example of this type of sentence might be: "I like to play the guitar."

\((C_2)\): Any sentence that has a compound subject or a compound predicate or both. An example of this type of sentence might be: "My friend and I play the guitar and sing."

\((C_3)\): Any compound sentence. An example of this type of sentence might be: "My friend Mary plays the guitar, and I sing."

\((C_4)\): Any complex sentence. An example of this type of sentence might be: "My friend who plays the guitar is coming this evening."

**SENTENCE LENGTH** is defined as the total number of **IDEA UNITS**.

An **IDEA UNIT** is any main idea or any object (direct or indirect) or any accompanying modifiers (clausal or non-clausal).

A **main idea** is defined in terms of the conjugated verb and its subject.

A **clausal modifier** is any group of words formed by a subordinating conjunction or relative pronoun, the subject, and the verb, or relative pronoun acting as a subject and the verb of which it is the subject.

A **nonclausal modifier** is any single word modifier such as
adverbs, descriptive adjectives, participles, infinitives, gerunds, etc., and any prepositional, participial, adverbial, gerund, or infinitive phrases.

An example of sentence divided into idea units might be:
"My friend [is] (main idea) / who plays (clausal modifier) / the guitar (object) / coming (nonclausal modifier) / this evening (nonclausal modifier)."

**ASSUMPTIONS**

The following assumptions are made:

(1) It is assumed that all students participating in this experiment can read, understand, and follow directions in English.

(2) It is assumed that all students participating in this experiment will have read the directions before engaging in any of the tasks.

**VALUE OF THE STUDY**

This study is designed to investigate the effects that two different types of simulations have on student ability to generate sentences. It is hoped that it will reveal whether or not a simulation in which the learner remains himself or herself has a facilitative effect on the productivity of sentences; whether or not it encourages students to create more complex sentences; and, whether or not it stimulates students to write longer sentences.
The results of this study should provide valuable information to language teachers concerning the design of activities that best promote communication and thereby communicative proficiency.

Because the results of this study can be generalized only to situations using similar kinds of materials, productive skill, and same population of students, further studies will be needed to corroborate and refine the present findings.
CHAPTER II

REVIEW OF THE LITERATURE

INTRODUCTION

Much of what is done today in the field of second-language education has been influenced by cognitive psychologists. The very notion of meaningful language use is an embodiment of cognitive models of learning. Generally, cognitive theorists characterize learning in terms of how new information is stored, accessed, and operated upon. Distinctions are made between the different kinds and levels of learning. How a bit of information becomes meaningful to the user of the language is believed to be a function of his or her preexisting knowledge of the world.

In second-language learning, meaningfulness is of particular interest to the researcher, educator, and teacher because it relates closely to communicative proficiency. The efficacy of meaningfulness is supported by numerous experiments conducted both in the laboratory and in the classroom. Ample evidence supports the conclusions that meaningful learning is more effective than rote or mechanical learning; the deeper the level at which information is processed, the better
it is integrated with existing cognitive structure, and the better it is retained. The review of the literature in this chapter will therefore encompass (1) an overview of the concept of meaningful learning as advanced by Ausubel and Smith, (2) the concept of "depth" as proposed by Craik and Lockhart and Stevick, (3) classroom research as it relates to meaningful learning in second-language study and, (4) because of the role of simulation in the tasks tested, a brief overview of the concept of simulation.

MEANINGFUL LEARNING

Among the various kinds of learning, reception learning is, according to Ausubel et al. (1978), the most dominant form of school learning. In reception learning, the learning task does not require the learner to make any independent discovery. Content is merely presented to the student. The critical distinction Ausubel et al. (1978) elucidate, however, is between rote reception learning and meaningful reception learning. In rote learning, the new material is associated arbitrarily and verbatim to the learner's cognitive structure. In other words, as Novak, Ring, and Tamir (1971) point out, new knowledge is not associated with prior concepts to form new conceptual bases. For example, a learner might memorize roteley the list of words mon, ton, son, notre, votre, leur without associating them with the concept "possession" or the concept "adjective" and might therefore be unable to use these words correctly. In meaningful learning, on the other hand, new knowledge is associated in a
nonarbitrary, nonverbatim manner with already existing ideas or concepts in the learner's cognitive structure. While there are many important parameters in Ausubel's theory of meaningful verbal learning, attention is drawn here to requisite conditions within the to-be-learned material and the learner.

Ausubel et al. (1978) define meaningful learning in terms of the learner's cognitive structure. According to them, the learner's relevant background knowledge is the most important variable that influences learning. Ausubel states at the outset of their book: "If I had to reduce all educational psychology to just one principal, I would say this: The most important single factor influencing learning is what the learner already knows." (Ausubel et al. (1978, no page number.)

The extent to which previously acquired knowledge influences the learning process is the extent to which the to-be-learned material becomes meaningful. Meaningful learning then occurs to the extent that the new learning task can be related to the learner's cognitive structure.

Whether or not relatability of new material to preexisting knowledge in cognitive structure occurs depends upon (1) whether or not the learning material is logically meaningful, (2) whether or not the logical meaning of the stimulus material can be transformed into psychological meaning and, (3) whether or not the learner possesses a meaningful learning set.
Logical meaning corresponds to the meaning that the learning material exhibits if it meets the general and nonidiosyncratic requirements for potential meaningfulness (Ausubel et al., 1978, p. 49). These requirements are simply those elements that are inherent in certain kinds of materials by virtue of the very nature of the material. For example, the isolated words day, nice, study are logically meaningful because they "correspond to relevant ideas human beings are capable of learning" (Ausubel et al., 1978, p. 46). On the other hand, the syllables SBJ, XZD, GCR are not logically meaningful because they do not refer to anything in the physical, social, or ideational world.

Psychological meaning is an idiosyncratic cognitive experience. It depends solely on the background knowledge the learner possesses. When new learning material can be related nonarbitrarily and substantively to a particular learner's cognitive structure, its logical meaning becomes transformed into psychological meaning. It is this transformation from logical into psychological meaning that accounts for meaningful learning. Miller (1967) has asserted that the manner in which a sentence is manufactured or understood by users of the language, the particular cognitive processes they perform, is not a linguistic problem but a psychological one. Ausubel (1962) has stated earlier, "It is precisely this interaction of new learning tasks with existing cognitive structure that is a distinctive feature of meaningful learning" (p. 215). While Ausubel et al. (1978) primarily discuss meaningfulness of verbal material, it is interesting to note Morris,
Bransford, and Franks' (1977) observation. They remark, "Indeed perceptual artifacts, gestures, brush strokes, sounds, and so forth, may or may not be meaningful to a person depending on whether or not an appropriate knowledge framework, or sets of skills, is both available and activated at the time" (p. 530).

The latter observation is, in the light of Ausubel et al.'s theory of meaningful learning, pertinent to second-language learning particularly in classrooms where the use of native language is avoided. As Ausubel et al. (1978) point out, avoidance of the native language is simply not expedient on two counts: (1) even first language is learned indirectly through old known symbols and, (2) most concepts, syntactic codes, or structural patterns are directly transferable to second-language learning. Essentially then, avoidance of the native language in second-language learning prevents learners from making use of their preexisting cognitive structure.

The importance of preexisting knowledge in cognitive structure is also emphasized by Smith (1975). According to him, the process of language is part of an individual's theory of the world in the head. Individuals perceive the world and respond to events in a way that makes most sense to them personally. Thus, the meaning of a sentence to an individual is the way he interprets that sentence in relation to what he already knows about the world (Smith, 1975, p. 130). Smith notes further that even when a person responds emotionally to an event, it is because the event has been perceived in a particular way (p. 3). This implies that there may never be
perfect communication between two people or, as Goyer (1970) suggests, "perfect sharing of meaning in terms of vicarious experience probably occurs only by chance, since the backgrounds and experiences of individuals are so infinitely varied" (p. 10).

This idea of idiosyncratic cognitive structure is of importance to this study. It implies that those structures that relate directly to the learner's personal experiences, to his or her life and environment may be more readily activated than those structures that relate to other people and more distant environments. It seems reasonable to postulate, then, that activities that relate directly to the learner alleviate task demands and facilitate, therefore, performance on those tasks.

DEPTH OF PROCESSING

Another theory important to this study is the branch of cognitive psychology labelled "information-processing." Craik and Lockhart (1972), the principle proponents of this theory, propose that memory trace is a by-product of cognitive operations performed on stimuli. Rather than viewing memory as a multistore model or a single model store with two different codes, phonological and semantic, they argue that the nature and the durability of memory trace is determined by the level at which a stimulus is processed. According to them, processing levels can be envisaged as a continuum of analysis. They state, "Analysis proceeds through a series of sensory stages to levels associated with matching or pattern recognition and finally
to semantic-associative stages of stimulus enrichment" (p. 675).
Basically, Craik and Lockhart distinguish between two types of
processing: Type I and Type II. Type I processing is essentially
a repetition of analyses "which have already been carried out"
(p. 576). This type of processing does not lead to improved memory
performance. Type II processing carries the stimulus to a deeper
level of analysis. In this sense, depth of processing is the
degree of stimulus elaboration.

Deep semantic processing is associated with higher retention
than processing at a shallower perceptual level. At deeper semantic
levels, the subject can make more use of existing cognitive structures
so that the item will become more complex. Investigating the notion
of "depth," Haviland and Clark (1974) note that at a shallow level
we may be able to judge how comprehensible a sentence is without
actually comprehending it fully; at a deeper level, we may be able
to comprehend a sentence without relating it to context; and at a
still deeper level, we comprehend sentences with respect to context
(p. 519). Also in relation to cognitive depth, Stevick (1976) cites
an experiment in which subjects were given a list of words and were
then asked one of five questions about each word: (1) Is there a
word present? (2) Is the word printed in capitals or in lower-case
letters? (3) Does it rhyme with _____? (4) Is it a member of the
_____ category? (5) Does it fit into the following sentence?
Each sentence required the subject to process a word to a greater
depth than the question that precedes. Although deeper decisions
required additional time, they led to dramatically better performance both on a recognition task and on a recall task (Craik, 1975). Two related experiments conducted earlier by Bobrow and Bower (1969) also showed that when subjects were asked to look for misspelled words, performance on recall was inferior to that of those subjects who were asked questions about word meaning. For example, when given a sentence of the form "The cow chased the rubber ball" and after reading the sentence aloud, one group of subjects was asked whether a specific word (e.g., ball) was misspelled or not, while a second group was asked which meaning the word ball had in that sentence, "round object" or "dance." Subjects were then told this was a memory experiment and were asked, given the first noun of the sentence (e.g., cow), to provide the second (e.g., ball).

In the second experiment, one group of subjects was asked first to read the presented sentence aloud and then make up and say a sentence that was a sensible continuation, elaboration, or implication of the action or state of affairs in the sentence. In the second group, subjects were instructed to read aloud each sentence three times as rapidly as they could. A recall test followed. Results showed that in both experiments deeper processing led to better recall.

While the concept of depth of processing has been challenged in recent years (Arbuckle and Katz, 1976; Morris and Bransford, 1977; Stein, 1978; Stein, Morris, and Bransford, 1978), it appears to be more an argument concerning the inappropriateness of testing for a given mode of encoding than the annihilation of the concept itself.
Stein (1978) points out that "different modes of encoding affect how precisely certain aspects of the input are represented. When the test is appropriate for this kind of information, performance is a function of the congruity between the information encoded during acquisition and information acquired during testing" (p. 168). Stein et al. (1978) claim that rather than emphasizing the superiority of semantic over nonsemantic processing, it may be more useful to ask how people use what they know to encode more precisely, effectively elaborate, and retain information (p. 708). Basically, then, the arguments point to the fact that semantic acquisition–semantic test conditions are not always superior to nonsemantic acquisition–nonsemantic test conditions, but they do not exclude the possibility of several levels of processing or degrees of elaboration within the semantic mode of acquisition.

RELATED CLASSROOM RESEARCH

In the last decade, many experimental studies have supported the importance of meaningful learning tasks. Additional research is needed, however, to gain further insight into the kinds of tasks that best permit a learner to relate information to prior knowledge in cognitive structure and thereby enhance the learner's ability to communicate.

Although much experimentation in psychology laboratories also favors the idea that material can be learned more rapidly if subjects can bridge new material to their cognitive structure,
experiments conducted in the classroom are more appropriate for consideration in this study because material presented in the classroom is always logically meaningful. The following review of related research will be restricted, therefore, to classroom research.

An initial step toward meaningfulness was undertaken by Jarvis (1970). Jarvis studied the effects of contextualized practice with particularized referents (Contextual practice) versus practice with generic meaning (Drill practice) in a semester-long experiment at Purdue University. Fourteen classes of first-semester college French were involved. Contextual practice used primarily the question-and-answer format, while Drill practice included all types of pattern drills, cued question-and-answer exercises, and multiple-response practice. Although the data from the study revealed relatively small differences between the two treatment groups in the receptive skills (Listening and Reading), highly significant (p < .01) differences were found in the productive skills (Speaking and Writing) favoring the Contextual group.

Extending Jarvis' study, Savignon (1972) and Joiner (1974) each conducted an experiment focusing on the effects of communicative versus noncommunicative practice. Essentially, Savignon focussed on the effects of spending one 50-minute class period per week in a French-related activity. Savignon's semester-long study involved three groups of beginning college French students at the University of Illinois at Urbana. All three groups met for four 50-minute class
periods a week for the same basic course of instruction in French. The control group, however, spent the fifth class period in the language laboratory practicing the basic material presented in the course; the first experimental group spent the fifth hour training in specific communicative acts (greetings, asking for directions, making a date, discussing current events); the second experimental group spent the fifth hour in activities (viewing French films, discussing current political and social events, talking about French cuisine) conducted in English. The data obtained in this study showed that the first experimental group, the Communicative Skill group, performed significantly better than any of the other two groups on measures of communicative skills and teachers' evaluation of oral skill. No significant differences were found among groups on the standardized proficiency tests of reading and listening nor in final grades.

Joiner's study (1974), conducted at Winthrop College, South Carolina, also compared the effectiveness of communicative and noncommunicative oral practice in beginning college French. In this study, three classes experienced a guided experimental condition while three other classes experienced a communicative treatment. The Guided-Response group included a variety of pattern drills; directed dialogue; question-and-answer practice, which was visually or verbally cued; and free question-and-answer practice where such practice did not add new information to the situation. The Communicative group practiced primarily with the
question-and-answer format in which responses were student controlled. Questions were designed to elicit new information. When it became apparent that everyone knew the information, another question was used. Data indicated that the Communicative group performed significantly better than the Noncommunicative group on measures of communicative proficiency.

Two other experiments dealing with meaningful language learning were conducted concomitantly by Knorre (1975) and Birckbichler (1975) at The Ohio State University. Both examined the effects of types of learning tasks and types of cognitive processing (Morphological-Syntactic Processing, Semantic Processing) on measures of student learning. Specifically, Knorre's study utilized 18 classes of beginning college Spanish (Spanish 102 and 103) using as theoretical bases Craik and Lockhart's incidental paradigm and Bloom's taxonomy of student behavior. Treatment conditions comprised the following groups: (1) Morphological-syntactic analysis, (2) Morphological-syntactic synthesis, (3) Semantic analysis, (4) Semantic synthesis. Within each group, students were required to complete activities after which a subtest was administered to test (1) vocabulary, (2) student ability to apply grammar information, (3) student ability to use vocabulary and grammar structures in context.

Similarly, Birckbichler utilized 13 beginning French classes (French 102 and 103) at The Ohio State University. Birckbichler used the same types of tasks as Knorre, using as a framework Craik and Lockhart's levels of processing and Guilford's structure-of-the-
intellect model. Although the analysis of data from the two studies showed few significant differences beyond the .05 level, an advantage for semantic conditions over syntactic conditions was revealed on the vocabulary measures.

A recent experiment conducted by Schaeffer (1979) at the Air Force Academy in Colorado Springs, Colorado, further supports the importance of meaningful learning tasks. Schaeffer's study compared the effectiveness of two types of computer-practice exercises, structural and semantic. Structural exercises could be completed by attending to structure alone; semantic exercises, on the other hand, could be completed only if the student understood the meaning of the sentence. A significant difference was found between the two groups on the semantic measure ($p < .05$). Even where significant differences were not found, the semantic group consistently outperformed the structural group. Schaeffer eliminated many extraneous variables by using the computer and thus dissociating many aspects of human interaction from this study.

**SIMULATIONS**

Because simulation is an integral part of the tasks used in this study, a review of the literature would not be complete without a brief overview of what has been written concerning simulations.

Although simulations have been used for centuries, principally in war gaming and national security planning, and much has been written on the subject, simulation as an educational tool is relatively
recent and a still unexplored field. While simulation has developed a language of its own, there has been little consensus to date concerning the definition of terms such as simulation, game, role-playing, sociodrama, machine or computer simulation. In recent years, however, Cruickshank (1977) has tried to elaborate a step-by-step definition for the concepts of simulation and game in order to understand them better, to see their potential for instruction, and to be able to design them properly. While there are many types of simulations and games, of interest to this study are the terms simulation, simulator, academic game, and simulation game.

Cruickshank (1977) defines them as follows:

**Simulation**: the product resulting when you create the appearance or effect of something else (p. 1).

**Simulator**: a product resulting when you create the appearance or effect of something else; the product can be manipulated and works like the real thing (p. 1).

**Academic game**: a game primarily for and based on learning. The playing of the game is like the play of life (p. 19).

**Simulation game**: an academic game in which the players are given a role to play in a simulated environment in order to learn how the environment works; for example, war games (p. 20).

Specifically of interest to the foreign language educator and teacher are simulators and simulation games for which Cruickshank
(1977) gives the following diagram to compare them:

<table>
<thead>
<tr>
<th></th>
<th>Simulators</th>
<th>Simulation games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life like</td>
<td>more</td>
<td>less</td>
</tr>
<tr>
<td>Reliance on chance</td>
<td>less</td>
<td>more</td>
</tr>
<tr>
<td>Role</td>
<td>Participant is self</td>
<td>Player plays another</td>
</tr>
<tr>
<td>Competition</td>
<td>with self</td>
<td>with others</td>
</tr>
</tbody>
</table>

Figure 1. - A Comparison of the Main Characteristics of Simulators and Simulation Games According to Cruickshank (1977).

While no research exists on the use and the effectiveness of simulations in second-language learning, simulation strategies are used increasingly in the classroom and in textbooks to provide a context for meaningful language use and are seen as means for involving students in realistic problems or situations that motivate them and that develop the decision-making process involved in communication.
CHAPTER III
DESIGN AND PROCEDURES

EXPERIMENTAL DESIGN OF THE STUDY

In this study, two separate experiments sharing the same design and procedures were conducted at two different levels of instruction. Experimental treatments consisted of two sets of tasks. Activities were identical across levels of instruction.

Three separate analyses sharing the same design (2 x 2 factorial) were used. Two of the analyses were multivariate in nature, investigating (1) the two dependent measures constituting Productivity and, (2) the four dependent measures composing Complexity. The third analysis, employing Sentence Length as a dependent measure was handled univariately.

There were two independent variables. The first was the Task variable consisting of two levels:

(1) Type I Simulation ($A_1$)

(2) Type II Simulation ($A_2$)

The second independent variable was the Personality variable for which the Pittsburgh Social Extraversion/Introversion instrument was
utilized. This variable served as a blocking variable to control any main effect or treatment by personality interaction. This variable also consisted of two levels:

(1) Extroversion \((B_1)\)
(2) Introversion \((B_2)\)

Initially, a third independent variable, Pre-College French, was built into the design. It was used as a second blocking variable to control any main effect or treatment by pre-college French. This variable consisted of two levels:

(1) Presence of Pre-College French \((C_1)\)
(2) Absence of Pre-College French \((C_2)\)

After the data were submitted to a series of multivariate analyses of variance, this variable was eliminated from the final study for the following reasons:

(1) The vast majority of students indicated that they had had either 2 or 3 years of high-school French. At the French-102 level of instruction, out of 72 subjects only 14 indicated they did not have French at either the elementary or junior high levels or in high school. At the French-103 level of instruction, out of a total of 110 subjects 14 did not study French at either pre-college level.

(2) This variable created cells within the design of less than 5 subjects thereby rendering an errorfree multivariate analysis of variance impossible.
(3) A multivariate analysis of variance (not errorfree) showed no effects from Pre-College French.

After the elimination of the Pre-College French variable, cells were collapsed (See Table 1) and the data resubmitted to further analyses. A Two-Factor Design, illustrated below, was used:

\[
\begin{array}{c|c|c}
 & B_1 & B_2 \\
A_1 & & \\
A_2 & & \\
\end{array}
\]

Figure 2. - Experimental Design: Task by Personality.

There were seven dependent variables:

(1) Two separate measures of Productivity \((P_1, P_2)\)
(2) Four separate measures of Complexity \((C_1, C_2, C_3, C_4)\)
(3) One measure of Sentence Length

(The reader is referred to pp. 12-14 for the operational definitions of Productivity, Complexity, and Sentence Length.)
<table>
<thead>
<tr>
<th>Factors</th>
<th>Cell Frequencies</th>
<th>Factors</th>
<th>Cell Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRENCH 102</td>
<td></td>
<td>FRENCH 103</td>
<td></td>
</tr>
<tr>
<td>A B C</td>
<td></td>
<td>1 1 1</td>
<td>27 SS</td>
</tr>
<tr>
<td>1 1 1</td>
<td>21 SS</td>
<td>1 1</td>
<td>26 SS</td>
</tr>
<tr>
<td>1 1 2</td>
<td>5 SS</td>
<td>1 2</td>
<td>25 SS</td>
</tr>
<tr>
<td>1 2 1</td>
<td>22 SS</td>
<td>2 1</td>
<td>13 SS</td>
</tr>
<tr>
<td>1 2 2</td>
<td>3 SS</td>
<td>2 1</td>
<td>13 SS</td>
</tr>
<tr>
<td>2 1 1</td>
<td>11 SS</td>
<td>2 2</td>
<td>8 SS</td>
</tr>
<tr>
<td>2 1 2</td>
<td>2 SS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 2 1</td>
<td>4 SS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 2 2</td>
<td>4 SS</td>
<td></td>
<td></td>
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</tbody>
</table>
Subjects for this study were the entire population of students enrolled in the second and third quarters of French (French 102, French 103) in the regular class track at The Ohio State University during the 1979-1980 academic year. The majority of students enrolled in these courses study the language to fulfill a 20-credit-hour language requirement of the Colleges of Arts and Sciences. Specifically, the population comprised 8 intact classes of French 102 (N = 158) and 10 intact classes of French 103 (N = 185). At the time of the experiments, one French-103 night class was excluded because the instructor felt that she would not have enough time to cover the material prescribed by the departmental syllabus. Night classes at The Ohio State University meet generally twice a week for a shorter total class time per week than regularly scheduled daytime classes. The population of French 103 students was reduced, therefore, from 10 classes (N = 185) to 9 (N = 169). A high rate of absenteeism (due possibly to the mention of writing activities on the French-102 syllabus) further reduced the number of cases to 76 for French 102 and 114 for French 103.

The first quarter of study, French 101, was excluded from the experiments because student knowledge of the French language was not sufficient for the researcher to prepare tasks meeting the operational definitions for the dependent variables (Productivity, Complexity, Sentence Length).
PROCEDURES AND IMPLEMENTATION

With the concurrence of the Office of Human Subjects and the Director of the Undergraduate French Program, all data were collected during two separate days during the 1980 Spring quarter. Syllabi for French-102 students indicated that on Friday, April 25, students would engage in "Writing Activities." This information was omitted inadvertently from the French-103 syllabi for Monday, April 23. This incidence may account for the larger N in the French-103 experiment.

Within each level of instruction, intact classes were assigned at random to one of two groups:

(1) Type I Simulation Tasks
(2) Type II Simulation Tasks

(The reader is referred to p. 12 for operational definitions.)

During their regularly scheduled class period, students were asked to complete a set of writing tasks. Students were informed, in writing, that the activities were designed to develop their writing skills and to give the department information about the effectiveness of these activities. Upon completion of the tasks, all students were asked to complete a personality questionnaire. The instrument used in this study was the Pittsburgh Social Extraversion/Introversion Personality Test. It was selected because of its high reliability and brevity (See Appendix C). Bendig (1962) reported Kuder-Richardson 20 reliability coefficients of .87 for men (N = 502), .88 for women (N = 402), and .88 for the total
Following the personality inventory test, students were asked to indicate any number of years of pre-college French (elementary, junior high, high school) they might have had and were encouraged to add comments concerning any aspect of the activities.

Instructors of the participating classes were contacted and asked to participate in the experiments. As stated earlier, only one instructor objected on the grounds that the time necessitated for the completion of the tasks would slow down her students in their regular assignments. The researcher met with each instructor individually. Instructors were not given details concerning the real nature of the experiments but were informed that the collected data would be used by the researcher for doctoral dissertation research purposes. Because the researcher was not present for the experiments, sets of activities (one per student) were placed in the instructors' mailboxes the day before the study. It was thought that this would prevent disruption of the normal class period.

The constructed student activities (See Appendix B) were closely related to regular class assignments. Activities 1, 2, and 4 were based on activities in the reader *Connaître et se connaître* by Jarvis et al. (1976) and adapted to comply with each level of the first independent variable (Type I Simulation, Type II Simulation). *Connaître et se connaître* is a basic reader that stresses primarily communication, a fundamental element in this study. Activities 3
and 5 were developed by the researcher.

Because measures of Productivity, Complexity, and Sentence Length were of concern to this study, all activities (5 in total - 5 items where applicable) were designed to elicit responses from students. Selected activities comprised therefore:

1. Giving advice
2. Completion of open-ended sentences
3. Completion of a dialogue between two interlocutors
4. Question-and-answer format
5. Description of a person in a picture and the feelings of that person

Although activities 2, 3, and 4 were semi-structured, free responses were required. Students could answer in any way they wished and could write as much as time, imagination, or knowledge permitted. There was no prescribed time for any activity.

The textbook used by first-year students at The Ohio State University is *Invitation* by Jarvis et al. (1979). Before the experiments were conducted, the researcher verified carefully all lexical and grammatical components used in the criterion instruments to ensure that all items were covered by all instructors prior to the time of the experiments. Because activities were identical across levels of instruction, the level of difficulty did not exceed that of the material studied in French 102 up to the date of the experiments.
SCORING

The researcher scored all the tasks according to the criteria set in the operational definitions. (The reader is referred to pp. 12-14.) Productivity and Complexity were the total number of sentences having the respective characteristics cited in the operational definitions. An incomplete sentence or a sentence in English were considered incomprehensible. An English word used in a sentence with or without quotation marks was acceptable provided the sentence met the criterion of understandability.

Sentence length was an average of idea units per sentence. The reliability of the sentence-length measurement was checked by asking four persons not cognizant of the real nature of the experiments to divide a number of student-produced sentences into idea units. Three out of four persons counted exactly the same number of idea units as the researcher. The fourth person failed to count infinitives as nonclausal modifiers or separate idea units.

Responses to the personality questionnaire were scored on a scale of 1 to 6 (the higher number indicating extroversion) and scores were computed. The mean score for the entire group ($\bar{x} = 120.148$) served as the dividing line between extroverts and introverts. Scores falling above the mean designated extroverts; those falling below the mean designated introverts. Four subjects (2 within the French-102 group and 2 within the French-103 group) score 120. Within each group, therefore, one subject was placed in the extrovert category and the other to the introvert category. Subjects who did not complete the
questionnaire (4 in French 102 and 4 in French 103) were excluded from the study. Table 2 shows that cell frequencies for the personality test were almost equal.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>French 102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I Simulation</td>
<td>N = 26</td>
<td>N = 25</td>
</tr>
<tr>
<td>Type II Simulation</td>
<td>N = 13</td>
<td>N = 8</td>
</tr>
<tr>
<td>French 103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type I Simulation</td>
<td>N = 29</td>
<td>N = 27</td>
</tr>
<tr>
<td>Type II Simulation</td>
<td>N = 29</td>
<td>N = 25</td>
</tr>
</tbody>
</table>
PILOT STUDY

A pilot study was conducted in one French-102 class (N = 15) during the first week of the 1980 Spring quarter. One primary reason for conducting a pilot study was to verify whether or not students had ample time to complete the tasks and the personality questionnaire so that time would not be a factor in any measure of performance. Another reason for conducting a pilot study was the refinement of the activities and directions to students.

The pilot study was conducted under the same conditions as those in the main study. The same materials were used. The tests were scored and the data were submitted to a multivariate analysis of variance using the Wilks Lambda criterion. Because of the small size of the treatment groups (Type I Simulation, N = 7; Type II Simulation, N = 8) a One-Factor MANOVA was performed disregarding personality factors. The analysis showed that students scored significantly higher (p < .005) in the Type I Simulation condition on measures of Complexity and Sentence Length. Univariate F-tests revealed a p less than .05 in the compound-sentence variable (C3). Complete results of the analysis are reported in Appendix A.

An examination of student responses and comments on the activities also revealed that the majority of students did not have sufficient time for the completion of all items. Consequently, the researcher reduced the number of items in activities 2, 3, and 4 from 6 items to 5. Furthermore, responses in Activity 1 indicated that students were not familiar with the matching format. Initially,
Activity 1 comprised two columns of items to be matched to form a piece of advice (See Appendix A, p. 80). In the main study, no columns of items were given for this activity, and students were asked to create their own responses (See Appendix B, p. 96).

Students participating in the pilot study were excluded from the main study.

**STATISTICAL ANALYSES**

All data were analyzed on an IBM 370 computer by the Instruction and Research Computer Center at The Ohio State University and were submitted to univariate (ANOVA) and multivariate (MANOVA) analyses of variance. Univariate analyses of variance (ANOVA) were used as the principal follow-up tests for the MANOVA. The MANOVA program was developed by the Clyde Computing Service of Miami, Florida, and was adapted for The Ohio State University by David Poor and Lorne Rosenblood.

The Pittsburgh Social Extraversion/Introversion scale was submitted to a Cronbach Alpha to test its reliability for the population utilized in this study. Reliability coefficients were calculated for the total number of subjects, for the number of subjects by type of tasks, and for the number of subjects by levels of instruction. Table 3 indicates a reliability of .90 for the total group (N = 182), .87 for the French-102 level of instruction (N = 72), .91 for the French-103 level of instruction (N = 110), .88 for Type I Simulation treatment group (N = 107), and .91 for
### Table 3. - Reliability Coefficients for Personality Questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>( \alpha )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Group</td>
<td>182</td>
<td>120.148</td>
<td>19.670</td>
<td>.902</td>
</tr>
<tr>
<td>French 102</td>
<td>72</td>
<td>121.333</td>
<td>17.667</td>
<td>.873</td>
</tr>
<tr>
<td>French 103</td>
<td>110</td>
<td>119.372</td>
<td>20.920</td>
<td>.916</td>
</tr>
<tr>
<td>Type I Sim.</td>
<td>107</td>
<td>119.345</td>
<td>18.199</td>
<td>.889</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>75</td>
<td>121.293</td>
<td>21.671</td>
<td>.916</td>
</tr>
</tbody>
</table>
Type II Simulation treatment group (N = 75).

The following null hypotheses of no significance between groups were tested by means of a multivariate analysis of variance (MANOVA):

\[ H_0^1 \]: There is no significant difference between types of tasks on measures of Productivity and Complexity.

\[ H_0^2 \]: There is no significant difference between types of personality on measures of Productivity and Complexity.

\[ H_0^3 \]: There is no significant interaction between types of tasks and personality factors on measures of Productivity and Complexity.

The following null hypotheses of no significant difference between groups were tested by means of a univariate analysis of variance (ANOVA):

\[ H_0^4 \]: There is no significant difference between types of tasks on a measure of Sentence Length.

\[ H_0^5 \]: There is no significant difference between types of personality on a measure of Sentence Length.
$H_0.6$: There is no significant interaction between types of tasks and personality factors on a measure of Sentence Length.
INTRODUCTION

The purpose of this study was to investigate the effects of two types of simulation tasks on measures of student performance. A 2 x 2 Factorial Design was utilized at two levels of instruction (French 102, French 103). Within each level, random intact classes were assigned to one of two treatment groups:

(1) Type I Simulation Tasks
(2) Type II Simulation Tasks

(The reader is referred to p. 12 for operational definitions.)

Because personality factors were found to be influential elements in writing (Rossier, 1975), personality was considered and utilized as a blocking variable. The Pittsburgh Social Extraversion/Introversion scale was used, therefore, to control for any main effects by personality.

The criterion measures consisted of seven dependent variables:

(1) Two measures of Productivity ($P_1$, $P_2$)
(2) Four measures of Complexity ($C_1$, $C_2$, $C_3$, $C_4$)
(3) One measure of Sentence Length

Multivariate analyses of variance and follow-up univariate analyses of variance were conducted on the following data:

(1) Total number of sentences produced (comprehensible and incoherent)
(2) Total number of comprehensible sentences only
(3) Total number of simple sentences
(4) Total number of sentences with a compound subject or compound predicate or both
(5) Total number of compound sentences
(6) Total number of complex sentences

Univariate analyses of variance were conducted on Sentence Length.

Because of unequal cell frequencies in the French-102 groups (Type I Simulation, N = 51; Type II Simulation, N = 21), a classic regression approach (an option available in the Statistical Package for the Social Sciences (SPSS) ANOVA subprogram) was used to adjust maximally both main effects and interaction effects.

EXPERIMENT I: French-102 Level

During their regular class period, students were asked to complete a set of five activities, to fill out a personality questionnaire, and to indicate whether or not they had studied French at any pre-college level. Discussion of results in relation to the hypotheses made in Chapter III will follow. Results of multivariate tests of
significance and post hoc ANOVA follow-ups are listed in Appendix D.

Hypothesis I: There is no significant difference between types of tasks on measures of Productivity and Complexity. This hypothesis remains tenable for productivity but must be rejected for complexity. Data reported in Tables 4 and 5 indicate slight differences between overall means. With regard to $P_1$ productivity, the reported mean score for Type I Simulation is 29.103 as opposed to 24.654 for Type II Simulation.

Table 4. - Means and Standard Deviations for $P_1$ Productivity: French-102 Level.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>28.846 (8.451)</td>
<td>29.360 (9.124)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>25.308 (13.136)</td>
<td>24.000 (6.719)</td>
</tr>
</tbody>
</table>

With regard to $P_2$ productivity, the reported overall mean score for Type I Simulation is 28.514 as opposed to 23.899 for Type II Simulation.
An examination of the multivariate and univariate analyses of variance did not reveal, however, a significant F-ratio for either measure of productivity. An F-ratio significant at the .005 level was obtained for complexity. Post hoc ANOVA analyses of variance revealed F-ratios significant at the .001 and .05 levels for compound (C₃) and complex (C₄) sentences. Results indicate that subjects in the Type I Simulation condition performed better than those in the Type II Simulation condition on measures of compound (C₃) and complex (C₄) sentences. In the Type I Simulation condition, the overall mean for compound (C₃) sentences is 3.139 as opposed to 1.163 in the Type II Simulation condition.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>28.269 (8.521)</td>
<td>28.760 (9.024)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>24.923 (13.313)</td>
<td>22.875 (6.686)</td>
</tr>
</tbody>
</table>

Table 5. - Means and Standard Deviations for P₂ Productivity: French-102 Level.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>3.038 (2.537)</td>
<td>3.240 (1.964)</td>
<td>3.139 *</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>1.077 (1.038)</td>
<td>1.250 (1.488)</td>
<td>1.163</td>
</tr>
</tbody>
</table>

* $p < .001$

With respect to complex ($C_4$) sentences, the overall mean in the Type I Simulation condition is 5.015 as opposed to 3.389 in the Type II Simulation condition.

Table 7. - Means and Standard Deviations for $C_4$ Complexity: French-102 Level.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>5.231 (3.254)</td>
<td>4.800 (3.366)</td>
<td>5.015 *</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>3.154 (1.277)</td>
<td>3.625 (3.777)</td>
<td>3.389</td>
</tr>
</tbody>
</table>

* $p < .05$
In spite of the slight differences shown in overall mean scores between Type I Simulation and Type II Simulation, no significant differences were found for either $C_1$ or $C_2$ complexity (Tables 8 and 9).

Table 8. - Means and Standard Deviations for $C_1$ Complexity; French-102 Level.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>19.000</td>
<td>19.680</td>
</tr>
<tr>
<td></td>
<td>(6.771)</td>
<td>(9.259)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>19.615</td>
<td>16.125</td>
</tr>
<tr>
<td></td>
<td>(12.534)</td>
<td>(7.039)</td>
</tr>
</tbody>
</table>

Table 9. - Means and Standard Deviations for $C_2$ Complexity; French-102 Level.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>(1.649)</td>
<td>(0.913)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>1.077</td>
<td>1.875</td>
</tr>
<tr>
<td></td>
<td>(1.847)</td>
<td>(1.458)</td>
</tr>
</tbody>
</table>

1.038          1.437
Although statistically significant differences were found only for $C_3$ and $C_4$ sentences, these findings seem to suggest that remaining oneself in the task under completion affects the quality of sentences produced. A more detailed discussion concerning the kind of sentences students produced will follow in Chapter V.

Hypothesis II: There is no significant difference between types of personality on measures of Productivity and Complexity. This hypothesis must be retained for both productivity and complexity. An examination of multivariate and univariate analyses of variance revealed no significant F-ratios. Overall mean scores for productivity and complexity indicate only slight differences between personality types. When looking at $P_1$ productivity (Table 4), Extroverts have an overall mean of 27.077 as opposed to Introverts who have an overall mean of 26.280. With respect to $P_2$ productivity (Table 5), Extroverts have an overall mean of 26.590 as opposed to 25.817 for Introverts. Only slight differences between personality types were also noted in the complexity variables. Overall recorded mean scores for the four measures of complexity are respectively 19.307 ($C_1$), 1.038 ($C_2$), 2.057 ($C_3$), and 2.245 ($C_4$) for Extroverts as compared with 17.902 ($C_1$), 1.437 ($C_2$), 2.245 ($C_3$), and 4.212 ($C_4$) for Introverts. These findings seem to suggest that personality types have no effect on either the production of sentences or on the quality of those sentences.
Hypothesis III: There is no significant interaction between types of tasks and personality factors on measures of Productivity and Complexity. This hypothesis must also be retained for both productivity and complexity. Results of data analyses, both multivariate and univariate, reported in Tables 22 and 23 (Appendix D), revealed no significant interaction between task types and personality types on measures of productivity and complexity. The absence of interaction effects should not be surprising since tests for Hypothesis II revealed no significant differences between types of personality on measures of productivity and complexity. These findings seem to suggest that whether a learner be characterized as extroverted or introverted written performance is generally not affected by these traits.

Hypothesis IV: There is no significant difference between types of tasks on a measure of Sentence Length. This hypothesis must be rejected. Univariate tests of significance revealed that the amount of variance was significant at the .05 level. An inspection of the data showed that significance was due to task type. A strong significant F-ratio (8.286, p < .005) was found for the task type main effect (Appendix D, Table 24). A close examination of the data reported in Table 10 revealed that subjects in the Type I Simulation condition had a higher overall mean score (\( \bar{x} = 4.110 \)) than those in the Type II Simulation condition (\( \bar{x} = 3.583 \)). These findings seem to suggest that when students
are asked to complete tasks in which they are permitted to freely express their personal experiences without pretending to be another person performance is enhanced. Remaining oneself seems to encourage 102-level students to share more ideas and consequently write longer sentences.


<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Sim.</td>
<td>4.165</td>
<td>4.055</td>
</tr>
<tr>
<td></td>
<td>(0.744)</td>
<td>(0.727)</td>
</tr>
<tr>
<td>II Sim.</td>
<td>3.423</td>
<td>3.743</td>
</tr>
<tr>
<td></td>
<td>(0.570)</td>
<td>(0.541)</td>
</tr>
</tbody>
</table>

* p < .005

Hypothesis V: There is no significant difference between type of personality on a measure of Sentence Length. This hypothesis must be retained. Although univariate tests of significance revealed a total amount of variance explained at the .05 level, an examination of the data revealed that significance was not due to personality
effects ($F = 0.332$) but to effects of task types ($F = 8.286$).
(See Appendix D, Table 24.) A further investigation of the
data analyses revealed that subjects in the Type I Simulation
condition had a higher overall mean score ($\bar{x} = 4.110$) than
subjects in the Type II Simulation condition ($\bar{x} = 3.583$).
It is also interesting to note that within each task condition
mean scores for Extroverts and Introverts are almost equal. When
considering personality factors only, reported overall mean score
are 3.794 for Extroverts and 3.899 for Introverts. These findings
clearly indicate that personality is not a discriminating factor
in performance.

Hypothesis VI: There is no significant interaction between types
of tasks and personality factors on a measure of Sentence Length.
This hypothesis must also be retained. An examination of data
revealed no significant F-ratio for two-way interactions between
task types and personality factors. Again, these findings should
not be surprising since previously tested hypotheses revealed no
statistically significant differences attributable to the person-
ality variable.

In addition to looking at sentence length univariately,
this measure was also combined with the productivity and complexity
variables and subsequently tested multivariately. The results of
the two-way MANOVA are presented in Appendix D, Tables 19, 21,
and 22. As shown, the main effect for task type was found to be significant at the .005 level for both analyses. Univariate F-ratios revealed significance due to sentence length only when sentence length was considered with productivity. In combination with complexity, only the main effect for task type was significant; however, both sentence length (p < .005) and compound sentences (p < .001) and complex sentences (p < .05) were statistically significant when univariate follow-ups were performed.

EXPERIMENT II: French-103 Level

Experiment II was conducted under the same conditions as Experiment I. During their regularly scheduled classes, students were asked to complete a set of five activities, to fill out a personality questionnaire, and to indicate whether or not they had had any pre-college French. The same materials were used as at the French-102 Level. Discussion of the data analyses will be conducted with respect to the hypotheses made in Chapter III. Results of multivariate tests of significance and post hoc ANOVA follow-ups are listed in Appendix D.

Hypothesis I: There is no significant difference between types of tasks on measures of Productivity and Complexity. This hypothesis is tenable for measures of productivity but must be rejected for measures of complexity. Data reported in Tables 11 and 12 indicate
only slight differences between overall means. With respect to $P_1$ productivity, the reported overall mean score for Type I Simulation is 27.668 as compared with 26.663 for Type II Simulation.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>26.966</td>
<td>28.370</td>
</tr>
<tr>
<td></td>
<td>(5.766)</td>
<td>(7.028)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>26.966</td>
<td>26.360</td>
</tr>
<tr>
<td></td>
<td>(6.190)</td>
<td>(7.615)</td>
</tr>
</tbody>
</table>

With regard to $P_2$ productivity, the reported overall mean score for Type I Simulation is 27.218 as compared with 26.170 for Type II Simulation.
Table 12. - Means and Standard Deviations for P₂ Productivity: French-103 Level.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
<th>Type I Sim.</th>
<th></th>
<th>Type II Sim.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(5.821)</td>
<td>(7.011)</td>
<td>(6.417)</td>
<td>(7.613)</td>
<td></td>
<td>26.621</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26.218</td>
<td></td>
<td>26.170</td>
<td></td>
</tr>
</tbody>
</table>

Multivariate and univariate analyses of variance did not reveal, however, a significant F-ratio for either measure of productivity.

An F-ratio significant at the .001 level was obtained for complexity. *Post hoc* univariate analyses of variance indicate an F-ratio significant at the .001 level for sentences with a compound subject or compound predicate or both (C₂) and an F-ratio significant at the .01 level for compound sentences (C₃). (See Appendix D, Table 26.) These findings differ from those at the French-102 level in that students at the French-102 level scored significantly higher on compound (C₃, p < .001) and complex (C₄, p < .05) sentences in the Type I Simulation condition. An inspection of the data reported in Table 13 reveals that at the French-103 level subjects in the Type II Simulation condition had a higher overall mean score on
sentences with a compound subject or compound predicate or both \( (C^2) \) than subjects in the Type I Simulation condition. In the Type II Simulation condition the recorded overall mean score for \( C^2 \) complexity is 2.216 as opposed to 1.198 in the Type I Simulation condition.

Table 13. - Means and Standard Deviations for \( C^2 \) Complexity; French-103 Level.

<table>
<thead>
<tr>
<th></th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type I Sim.</strong></td>
<td>( 1.138 ) (1.552)</td>
<td>( 1.259 ) (1.259)</td>
</tr>
<tr>
<td><strong>Type II Sim.</strong></td>
<td>( 2.552 ) (1.975)</td>
<td>( 1.880 ) (1.236)</td>
</tr>
<tr>
<td></td>
<td>( 1.845 )</td>
<td>( 1.569 )</td>
</tr>
</tbody>
</table>

* \( p < .001 \)

With respect to compound sentences \( (C^3) \), subjects in the Type I Simulation condition performed better than those in the Type II Simulation condition. In the Type I Simulation condition, the recorded overall mean score for \( C^3 \) complexity is 3.955 as opposed to 2.637 in the Type II Simulation condition. (See Table 14.)

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>4.207</td>
<td>3.704</td>
</tr>
<tr>
<td></td>
<td>(2.691)</td>
<td>(2.853)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>3.034</td>
<td>2.240</td>
</tr>
<tr>
<td></td>
<td>(2.096)</td>
<td>(1.899)</td>
</tr>
</tbody>
</table>

* $p < .01$

While these findings diverge from those in Experiment I, it is interesting to note that significance was found in the compound element of generated sentences.

With respect to $C_1$ and $C_4$ complexity, an examination of the data reported in Tables 15 and 16 indicates that overall mean scores are almost equal. In the $C_1$ complexity measure, recorded means are 16.267 for Type I Simulation and 16.047 for Type II Simulation. In the $C_4$ complexity measure, recorded means are 5.797 for Type I Simulation and 5.070 for Type II Simulation.
Table 15. - Means and Standard Deviations for $C_1$ Complexity: French-103 Level.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>15.793</td>
<td>16.741</td>
</tr>
<tr>
<td></td>
<td>(6.201)</td>
<td>(6.174)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>15.603</td>
<td>16.710</td>
</tr>
<tr>
<td></td>
<td>(4.508)</td>
<td>(6.142)</td>
</tr>
</tbody>
</table>

Table 16. - Means and Standard Deviations for $C_4$ Complexity: French-103 Level.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>5.483</td>
<td>6.111</td>
</tr>
<tr>
<td></td>
<td>(3.481)</td>
<td>(3.630)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>5.552</td>
<td>5.315</td>
</tr>
<tr>
<td></td>
<td>(3.726)</td>
<td>(3.280)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16.267</td>
<td>5.797</td>
</tr>
<tr>
<td></td>
<td>16.047</td>
<td>5.070</td>
</tr>
</tbody>
</table>
Hypothesis II: There is no significant difference between types of personality on measures of Productivity and Complexity. This hypothesis must be retained for both productivity and complexity. Multivariate and univariate analyses of variance revealed no significant F-ratios. Overall mean scores for productivity and complexity indicate only very slight differences between personality types. With respect to $P_1$ productivity (Table 11), Extroverts have an overall mean of 26.966 as opposed to Introverts who have an overall mean of 27.365. With respect to $P_2$ productivity (Table 12), Extroverts have an overall mean of 26.621 as opposed to 26.767 for Introverts. Only very slight differences were also noted in the complexity variables (Tables 13-16). Overall recorded mean scores for the four measures of complexity are respectively 15.603 ($C_1$), 1.845 ($C_2$), 3.620 ($C_3$), and 5.552 ($C_4$) for Extroverts as compared with 16.710 ($C_1$), 1.569 ($C_2$), 2.972 ($C_3$), and 5.315 ($C_4$) for Introverts. As was found in Experiment I, personality types seem to have no effect on either the production of sentences or the quality of the sentences produced.

Hypothesis III: There is no significant interaction between types of tasks and personality factors on measures of Productivity and Complexity. This hypothesis must be retained for both productivity and complexity measures. Multivariate and univariate analyses of variance revealed no significant interaction between task types and personality types on measures of productivity and complexity (Appendix D, Tables
In this experiment as in Experiment I, the absence of interaction effect should not be surprising since no significant differences between types of personality on measures of productivity and complexity were found in the testing of Hypothesis II. It can be postulated, therefore, that written performance, specifically the quantity and the quality of sentences produced, is not influenced by either extroversion or introversion.

Hypothesis IV: There is no significant difference between types of tasks on a measure of Sentence Length. This hypothesis must be retained. A univariate analysis of variance revealed no significant differences between types of tasks on a measure of sentence length. (See Appendix D, Table 31.) Reported mean scores in Table 17 indicate almost equal overall means.

Table 17. - Means and Standard Deviations for Sentence Length: French-103 Level.

<table>
<thead>
<tr>
<th>Type</th>
<th>Extroverts</th>
<th>Introverts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I Sim.</td>
<td>4.152 (0.665)</td>
<td>4.279 (0.910)</td>
</tr>
<tr>
<td>Type II Sim.</td>
<td>4.200 (0.731)</td>
<td>3.901 (0.621)</td>
</tr>
<tr>
<td></td>
<td>4.176</td>
<td>4.090</td>
</tr>
</tbody>
</table>
While these findings do not parallel those observed at the French-102 level of proficiency (p < .005), a plausible explanation might be that a more extended lexical store permits students at the 103 level to make greater use of cognitive structures regardless of the type of involvement with the task.

Hypothesis V: There is no significant difference between types of personality on a measure of Sentence Length. This hypothesis must be retained. A univariate analysis of variance revealed no significant differences between types of personality on a measure of sentence length. (See Appendix D, Table 31.) An examination of the data reported in Table 17 reveals overall means of 4.176 for Extroverts and 4.090 for Introverts. When mean scores are considered, it is clear that extroversion and introversion are not influential factors on length of student-generated sentences.

Hypothesis VI: There is no significant interaction between types of tasks and personality factors on a measure of Sentence Length. This hypothesis must also be retained. An examination of data analyses revealed no significant F-ratio for two-way interactions between tasks types and personality factors. (See Appendix D, Table 31.) Because no previous analysis showed any effects attributable to extroversion or introversion, the absence of significant effects due to the personality variable should not be surprising.
As in Experiment I, in addition to looking at sentence length univariately, this measure was also combined with productivity and complexity and subsequently tested multivariately. The results of the two-way MANOVA are presented in Appendix D, Tables 25, 27 and 29. As shown, only the main effect for task type was found to be significant at the .001 level when sentence length was combined with complexity. Univariate F-ratios revealed significance due to sentences with a compound subject or compound predicate or both (p < .001) and compound sentences (p < .01). No significant F-ratio was found when sentence length was combined with productivity.
SUMMARY

This study was designed to examine the effects of two types of tasks on student performance at two levels of instruction. Tasks involved two kinds of simulations. (1) Type I Simulation required students to remain themselves while completing a set of activities. For example, students were asked how they would personally react in certain situations. (2) Type II Simulation, on the other hand, required students to react in the place of someone else or to play the role of another person. For example, students were asked how would people, Americans, or students generally react in certain given situations.

The theoretical bases for this study were elements of cognitive learning theories advanced principally by Ausubel et al. (1978), Smith (1975), and Craik and Lockhart (1972). Essentially, these theorists stressed the importance of prior knowledge, or experience, for the assimilation of new material. It was assumed that asking students to share experiences in which they were

66
personally and directly involved would have a more facilitative
effect on performance than asking students to retrieve information
acquired from mere observation or hearsay evidence.

Subjects for this study were taken from the population of
students enrolled in the French 102 and French 103 programs at The
Ohio State University. Within each level of proficiency, intact
classes were assigned at random to one of two treatment groups:

(1) Type I Simulation
(2) Type II Simulation

The criterion instruments in this study comprised the
following activities:

(1) Giving advice
(2) Completion of open-ended sentences
(3) Completion of a dialogue between two interlocutors
(4) Question-and-answers
(5) Description of a person in a picture and the feelings
    of that person

The same tasks were used across levels of instruction. All activ-
ities required free responses.

The criterion measures consisted of:

(1) Two measures of Productivity:  a. total number of
    sentences produced ($P_1$);  b. total number of comprehen-
    sible sentences only ($P_2$).

(2) Four measures of Complexity:  a. total number of simple
    sentences;  b. total number of sentences with compound
subject or predicate or both; c. total number of compound sentences; d. total number of complex sentences.

(3) One measure of Sentence Length. Sentence Length was an average per sentence of the total number of Idea Units. (The reader is referred to p. 13 for the operational definition of Idea Unit.)

A measure of personality (Extroversion versus Introversion) was used as a blocking variable to control for any effects of personality. The personality instrument used in this study was the Pittsburgh Extraversion/Introversion Test (Bendig, 1962). Although it is usually highly reliable (.88), it was submitted to a Cronbach Alpha to test its reliability for the population utilized in this study. A reliability of .90 was found for the total group (N = 182). A 2 x 2 factorial design was used for both levels of proficiency. All data were submitted to multivariate and univariate analyses of variance.

CONCLUSIONS

An overview of the findings revealed that students in the Type I Simulation groups generally outperformed students in the Type II Simulation treatment conditions. An inspection of the data indicated that even where no statistically significant differences were reported, student performance was slightly better in the Type I Simulation condition than in the Type II Simulation group. A
summary of the findings will be related to the questions posed in
Chapter I.

Question I: Does a Simulation in which the learner remains himself
or herself encourage the productivity of sentences
as opposed to a simulation in which the participant
plays the role of another person?

Although small mean differences in support of the Type I
Simulation tasks were found on the productivity measures, these
differences were clearly non-significant statistically. In spite
of the failure to support productivity as an effect of task type,
it appears however that students at the French-102 level were more
responsive when they did not pretend during the completion of a
particular learning task. Being able to share one's personal
experiences seemed to have a slightly facilitative effect on the
expression of ideas and the willingness to communicate. For
example, a noted answer to the open-ended sentence "Pendant le
weekend, les étudiants..." was "... lisent"; to the open-ended
sentence "Pendant le weekend, j(e)...," however, students might
write "Je lis. Quelquefois je travaille." Generally, one might
have expected students at a higher level of proficiency to have
higher productivity mean scores. The reverse occurred however.
As the data indicate, French-103 students wrote slightly longer
sentences than French-102 students, a plausible explanation for
the lower productivity mean scores.
Question II: **Is there a relationship between either type of simulation and the complexity of student-generated sentences?**

While the type of simulation did not seem to affect significantly productivity, statistically significant differences were found with respect to the complexity of sentences produced.

Multivariate analyses of variance indicated significant F-ratios in both Experiment I ($p < .005$) and Experiment II ($p < .001$).

Post hoc analyses of variance revealed that students at the French-102 level scored significantly higher on $C_3$ and $C_4$ sentences, while students at the French-103 level scored significantly higher on $C_2$ and $C_3$ sentences. A further inspection of the data showed that at the French-102 level significance was due to task type. Subjects completing tasks in the Type I Simulation condition scored significantly higher than those completing tasks in the Type II Simulation condition. At the French-103 level, however, significance did not seem attributable to type of simulation. Students completing Type II Simulation tasks scored significantly higher on $C_2$ sentences, while students completing Type I Simulation tasks scored significantly higher on $C_3$ sentences. An examination of the students' responses suggests that this lack of pattern among French-103 subjects might be due to the format of the tasks employed. The researcher observed, for example, a greater amount of response variability in Activity 4 (dialogue) and Activity 5 (picture) among students in the Type I Simulation condition. In the dialogue, for example,
students were to supply the name of a close friend. Instead, the vast majority of students supplied the names of several friends and inserted several verbal exchanges concerning the topic under discussion (e.g., Qu'est-ce que tu fais vendredi soir? Tu vas au cinéma?) before replying to the next question created in the dialogue by the researcher. Thus, the versatility of students' friends engendered a variability in responses. The resulting dialogues were spontaneous and flowing conversations between several members of a group, much like what might happen or be said in real life. To illustrate this naturalness of expression, a reply to the question "Are you going to the movies?" was, "Well, I'll have to wash my hair." In the Type II Simulation dialogues, verbal exchanges were usually contrived and brief responses.

Conversely, the researcher observed that in the Type II Simulation condition students said more and appeared more open in the completion of open-ended sentences (e.g., Les Américains détestent ...; En été, les gens ...). In the Type I Simulation condition, students appeared apprehensive about disclosing any personally revealing information. In the Type II Simulation condition, students did not hesitate to disclose all the things they considered Americans hate. They were willing to say "Americans hate Iranians" but reluctant to reveal "I hate Iranians." Answers were usually banal in the Type I Simulation tasks: I hate math, I hate to work, etc.
The researcher also observed that the question-and-answer format encouraged students to write complex sentences. Because the questions were themselves complex sentences, though in the interrogative form (e.g., Qu'est-ce que vous faites quand il pleut?), students not only used the subordinating clause in initial or final position but created their own. For example, students would write, "Quand il pleut, je dors" or "Je dors quand il pleut, mais quand il pleut et quand il fait froid, je travaille dans la cuisine." The extent to which task demands permit subjects to vary their responses needs further investigation.

Question III: Is there a relationship between either type of simulation and sentence length?

Data analyses revealed significant differences at the French-102 proficiency level but none at the French-103 level. Higher mean scores were reported for subjects in the Type I Simulation condition at the French-102 level, but almost equal mean scores were observed for subjects in both conditions at the French-103 level. In looking at the students' performance, one can only postulate that using the I (in reference to the true self) in an activity encourages students at a lower level of proficiency to be more elaborate in their responses. The researcher observed, for example, that students in the Type II Simulation would write "En été, les gens vont en vacances," but when referring directly to themselves, they would say "En été, je vais en vacances en Floride." At a higher level of proficiency, a broader language
base seems to permit students to generalize their own experiences to other domains.

Question IV: Is there a relationship between either type of simulation and personality factors?

Although it is generally postulated that students characterized as talkative, outgoing, sociable, or impulsive are more willing to share ideas or experiences, no statistically significant effects of personality were reported on either dependent variable. Personality was found in all instances to have no effect on either type of task, productivity, complexity, or sentence length. Because this experiment was limited to the writing skill, further empirical research is justified to find out the effects of personality traits on performance in speaking.

Question V: Is there a relationship between productivity, complexity, and length of sentences and years of study of French in high school?

Because pre-college French was eliminated from the final analysis, this question is no longer under consideration. Data showed that 85 percent of the students had had pre-college French. Furthermore, earlier analyses revealed that pre-college French was not an influential factor.
The following general conclusions can be drawn from this study: (1) When students are asked to complete activities in which they remain themselves, generated sentences are generally more complex than when students are asked to play the role of another person. (2) Remaining self or playing the role of another person during the completion of a task does not affect the number of sentences students are able to produce. (3) At the French-102 level, remaining self encourages students to write longer sentences. (4) Personality factors affect neither the productivity, complexity, or length of student-generated sentences.

LIMITATIONS OF THE STUDY

The following limitations should be taken into consideration: (1) The population of students used in these experiments is not necessarily representative of all students enrolled in beginning college French. Results can be generalized, therefore, only to populations having similar characteristics. (2) Whether these findings are applicable to languages other than French must also be questioned. Because student knowledge of a second language depends largely on classroom instruction, the kind of lexicon used in textbooks or other materials may or may not allow students to communicate their everyday experiences. (3) The instruments used in this study are only a sample of a variety of meaningful learning tasks used in the classroom.
(4) Of the two productive skills (Speaking and Writing), only written performance was tested. The results of this study are applicable, therefore, to the writing skill only.

**IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH**

Despite the necessary restrictions upon generalizations from these experiments, this study has implications for future research and practices in a variety of situations in the classroom as well. Because the goal of second-language programs is today communicative proficiency, the kind of tasks and activities that promote communication is of utmost importance to second-language educators. For this reason, the identification and analysis of tasks that enhance meaningful learning and language use will require additional research effort. Specific task characteristics that may be influencing communication will have to be identified. To what extent do interviews, for example, encourage the sharing of experience? To what extent should activities be structured to promote communication? Conversely, variables that inhibit communication will have to be identified as well.

While similar research is encouraged with another population and another language, experimental research is recommended to find out the effects of certain task demands on student responses. This study has suggested that certain tasks encourage response variability. Data should be examined, therefore,
to investigate the kind and the amount of response variability promoted by certain task conditions. This would further explain variability as a by-product of task format.

Stricter adherence to the definitions of Simulator and Simulation Game as proposed by Cruickshank (1977) is also suggested. Briefly, Cruickshank (1977) suggests that in a Simulator the participant is self and the situation is more lifelike; in a Simulation Game the participant plays the role of another person and the situation is less lifelike. In the present study, Type II Simulation was a variation of the Simulation Game in that the participant was asked to play a "general" role (e.g., Americans, People, Students, etc.). The kind of simulation most prevalent in the second-language classroom is the Simulation Game as defined by Cruickshank. Yet, placing the learner in the position of a particular person (e.g., Imagine that you are the salesperson...; Pretend you are Monsieur Dubois...) may however be more restrictive on performance than asking the student to retrieve information based on general knowledge. It is recommended, therefore, that empirical studies be conducted to find out the extent to which such activities impede or enhance meaningful language use.

Finally, further research is recommended to investigate the effects of simulations on measures of performance in speaking. The speaking skill is dramatically different from the writing skill. Once a sentence has been uttered and a mistake made, the speaker cannot go back to correct the mistake as he or she could in writing.
Moreover, a second-language learner will make mistakes in speaking that he or she would not make normally in writing. Because the pressure imposed on a speaker of a second language and the anxiety experienced by the learner are far greater than those placed on the writer, research in this domain is justified.
Appendix A. Pilot Study

1. Type I Simulation Activities
2. Type II Simulation Activities
3. Personality Questionnaire
4. Summary Table of Data Analysis
We are trying out different types of activities designed to develop your writing skills and give us information about the effectiveness of these activities. We would like you to complete, therefore, the following activities (5 in total). Although your paper will be collected, this is NOT a test, and it will NOT count as part of your course grade. If you would like to know how well you did, please see your instructor later in the quarter.

You may begin with any activity. There is no time limit for any of the tasks. When you feel you have said what you wanted to say, go to the next activity. You might need more time for some activities than for others. Try, however, to complete all the activities by the end of the period. If you do not have enough space to complete your answers, please use the back of your paper.

After completing the activities, please answer the attached questionnaire so that we can identify which activities are best suited for different personalities. Your participation and cooperation are appreciated.

***
Activity 1

Adults like to give advice especially to young people. There are times, however, when young people also feel the need to counsel their friends or those younger than they. What kind of advice will you give your friends? By combining elements from each column, create some sentences that will express your advice to them. The question marks have been provided if you want to add ideas of your own.

Write your answers in the space below and on the back of the page if you need.

Fais/Faites ton/votre travail
Sois/Soyez sérieux (-se)
Gagne/Gagnez de l'argent
Apprends/Apprenez un métier
Marie-toi/Mariez-vous
Aide/Aidez ta/votre mère
Ecoute/Ecoutez
Prépare/Préparez ton/votre avenir

? ?

sortir tous les soirs
regarder la télévision
parler tout le temps
te/vous reposer
aller au café
perdre ton/votre temps
t'/vous amuser
faire des reproches

? ?
Occasionally, we find ourselves in situations where we naturally share our likes, dislikes, interests, or simply things we like to do or would like to have. Complete the following sentences with one or more ideas as they apply to you personally.

1. Pendant le weekend, j(e) . . .

2. En été, j(e) . . .

3. Je voudrais . . .

4. Ma/Mon meilleur(e) ami(e) . . .

5. Je déteste . . .

6. Pendant les vacances de printemps, j(e) . . .
Activity 3

How do you react in the following situations? Please answer the following questions as they apply to you personally.

Qu'est-ce que vous faites . . .

1. . . . quand vous êtes seul(e) à la maison?

2. . . . quand il fait mauvais?

3. . . . quand vous regardez un match de football?

4. . . . quand vous êtes avec vos amis?

5. . . . quand vous voyez un accident?

6. . . . quand vous êtes en vacances?
Imagine that you are talking to a close friend. Supply the name of your friend in the space provided and answer questions to complete the following conversation.

_______: Qu'est-ce que tu fais vendredi soir? tu vas au cinéma?

MOI:

_______: Est-ce que tu aimes sortir ou est-ce que tu préfères rester à la maison après une semaine de classes? Si tu veux, viens chez moi. On pourra acheter une pizza, et ensuite, si tu veux, on pourra aller au cinéma.

MOI:

_______: Tu es une personne tranquille, romantique ou sportive?

MOI:

_______: Tu vas en vacances cette année? Qu'est-ce que tu as l'intention de faire?

MOI:

_______: Moi, je vais travailler. Je n'ai presque plus d'argent et je ne veux pas demander de l'argent à mes parents. Ils sont très gentils, mais j'ai honte de leur demander.

MOI:
All of us have had a touch of the "flu" or a severe cold at one time or another. Imagine you are ill, and the doctor has ordered you to stay in bed and get some rest. Describe your feelings and sentiments as you look out of the window and watch your friends enjoy the beautiful day.
We are trying out different types of activities designed to develop your writing skills and give us information about the effectiveness of these activities. We would like you to complete, therefore, the following activities (5 in total). Although your paper will be collected, this is NOT a test, and it will NOT count as part of your course grade. If you would like to know how well you did, please see your instructor later in the quarter.

You may begin with any activity. There is no time limit for any of the tasks. When you feel you have said what you wanted to say, go to the next activity. You might need more time for some activities than for others. Try, however, to complete all the activities by the end of the period. If you do not have enough space to complete your answers, please use the back of your paper.

After completing the activities, please answer the attached questionnaire so that we can identify which activities are best suited for different personalities. Your participation and cooperation are appreciated.

* * *
Activity 1

Adults like to give advice especially to young people. What kind of advice do they give? Create some sentences that reflect the kind of advice they give generally. The question marks have been provided if you want to add ideas of your own.

Please write your answers in the space below and on the back of the page if you need.

Fais/Faites ton/votre travail
Sois/Soyez sérieux (-se)
Gagne/Gagnez de l'argent
Apprends/Apprenez un métier
Marie-toi/Mariez-vous
Aide/Aidez ta/votre mère
Ecoute/écoutez
Prépare/Préparez ton/votre avenir

? ?

sortir tous les soirs
regarder la télévision
parler tout le temps
t/e vous reposer
aller au café
perdre ton/votre temps
t/e vous amuser
faire des reproches

? ?
Activity 2

Different people like to do different things. Complete the sentences below with one or more ideas.

1. Pendant le weekend, les étudiants . . .

2. En été, les gens . . .

3. Les Américains voudraient . . .

4. Les amis . . .

5. Les Américains détestent . . .

6. Pendant les vacances de printemps, les jeunes gens (young people) . . .
Activity 3

How do people generally react in the following situations? Please answer the following questions.

Qu'est-ce qu'ils font . . .

1. . . . quand ils sont seuls à la maison?

2. . . . quand il fait mauvais?

3. . . . quand ils regardent un match de football?

4. . . . quand ils sont avec leurs amis?

5. . . . quand ils voient un accident?

6. . . . quand ils sont en vacances?
Marie-Jeanne: Qu'est-ce que tu fais vendredi soir? Tu vas au cinéma?

Paul :

Marie-Jeanne: Est-ce que tu aimes sortir ou est-ce que tu préfères rester à la maison après une semaine de classes? Si tu veux, viens chez moi. On pourra acheter une pizza, et ensuite, si tu veux, on pourra aller au cinéma.

Paul :

Marie-Jeanne: Tu es une personne tranquille, romantique ou sportive?

Paul :

Marie-Jeanne: Tu vas en vacances cette année? Qu'est-ce que tu as l'intention de faire?

Paul :

Marie-Jeanne: Moi, je vais travailler. Je n'ai presque plus d'argent et je ne veux pas demander de l'argent à mes parents. Ils sont formidables, mais j'ai honte de leur demander.

Paul :
Nicole is ill, and the doctor has ordered her to stay in bed and get some rest. Describe her feelings and sentiments as she looks out of the window and watches her friends enjoy the beautiful day.
We are interested to find what activities are best suited for different personalities. Please respond to the items below by using the appropriate letter.

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<th>E</th>
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</table>

(1) I am happiest when I get involved in some project that calls for rapid action.
(2) I usually take the initiative in making new friends.
(3) I would rate myself as a lively individual.
(4) I would be very unhappy if I were prevented from making numerous social contacts.
(5) I am inclined to keep in the background on social occasions.
(6) I like to mix socially with people.
(7) I am inclined to limit my acquaintances to a select few.
(8) I like to have many social engagements.
(9) I generally prefer to take the lead in group activities.
(10) I nearly always have a "ready answer" for remarks directed at me.
(11) I would rate myself as a happy-go-lucky individual.
(12) I am inclined to keep quiet when out in a social group.
(13) I can usually let myself go and have a hilariously good time at a party.
(14) I would rate myself as a talkative individual.
(15) I am a good mixer.
(16) Other people regard me as a lively individual.
(17) I like to go to parties and other affairs where there is lots of loud fun.
(18) I like to flirt.
(19) I would like to belong to several clubs or lodges.
(20) At parties I am more likely to sit by myself or with just one other person than to join in with the crowd.
(21) I love to go to dances.
(22) I enjoy the excitement of a crowd.
(23) My worries seem to disappear when I get into a crowd of lively people.
(24) I enjoy social gatherings just to be with people.
(25) I like parties and socials.
(26) I am a carefree individual.
(27) I make decisions on the spur of the moment.
(28) I like wild enthusiasm, sometimes to a point bordering on rowdyism, at a football or baseball game.
(29) I generally feel as though I haven't a care in the world.
(30) I usually say what I feel like saying at the moment.

PLEASE CIRCLE ONE:

I had ample time to complete the activities and the questionnaire

YES NO

Comments (if any):
Table 18- Summary of Analyses of Variance: Pilot Study.

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**\( p < .005 \)  
* \( p < .05 \)
Appendix B. Main Study

1. Type I Simulation Activities

2. Type II Simulation Activities
[Type I Simulation]

We are trying out different types of activities designed to develop your writing skills and give us information about the effectiveness of these activities. We would like you to complete, therefore, the following activities (5 activities in total). Although your paper will be collected, this is NOT a test, and it will NOT count as part of your course grade. If you would like to know how well you did, please see your instructor later in the quarter.

You may begin with any activity. There is no time limit for any of the tasks. When you feel you have said what you wanted to say, go to the next activity. You might need more time for some activities than for others. Try, however, to complete all the activities by the end of the period. If you do not have enough space to complete your answers, please use the back of your paper.

After completing the activities, please answer the attached questionnaire so that we can identify which activities are best suited for different personalities.

Your participation and cooperation are appreciated.

* * *
Adults like to give advice especially to young people. There are times, however, when young people also feel the need to counsel their friends as well as those younger than they. What kind of advice will you give your friends? Create some sentences that reflect the kind of advice you will give them.

*For example:* Étudie et ne regarde pas la télévision. Apprends un métier. Ecoute au lieu de parler tout le temps!
Occasionally, we find ourselves in situations where we naturally share our likes, dislikes, interests, or simply things we like to do or would like to have. Complete the following sentences with one or more ideas as they apply to you personally.

1. Pendant le weekend, j(e) . . .

2. En été, j(e) . . .

3. Je voudrais . . .

4. Je déteste . . .

5. Pendant les vacances de printemps, j(e) . . .
Activity 3

How do you react in the following situations? Please answer the following questions as they apply to you personally.

Qu'est-ce que vous faites . . .

1. . . . quand vous êtes seul(e) à la maison?

2. . . . quand il fait mauvais?

3. . . . quand vous regardez un match de football?

4. . . . quand vous êtes avec vos amis?

5. . . . quand vous voyez un accident?
Imagine that you are talking with a close friend. Supply the name of your friend in the space provided; then supply your answers or questions to complete the following conversation.

MOI : Qu'est-ce que tu fais vendredi soir? Tu vas au cinéma?

MOI :

MOI : Est-ce que tu aimes sortir ou est-ce que tu préfères rester à la maison le vendredi soir? Si tu veux, viens chez moi. On va acheter une pizza, et ensuite, on pourra aller au cinéma, si tu veux.

MOI :

MOI : Tu as vu Star Trek?

MOI :

MOI : Tu vas en vacances cette année? Qu'est-ce que tu as l'intention de faire?

MOI :

MOI : Moi, je vais travailler. J'ai besoin d'argent et je ne veux pas demander de l'argent à mes parents. Ils sont formidables, mais j'ai honte de leur demander.

MOI :
Activity 5

All of us have had a touch of the "flu" or a severe cold at one time or another. Imagine you are ill, and the doctor has ordered you to stay in bed and get some rest. Describe your feelings as you look out of the window and watch your friends enjoy the beautiful day.
We are trying out different types of activities designed to develop your writing skills and give us information about the effectiveness of these activities. We would like you to complete, therefore, the following activities (5 activities in total). Although your paper will be collected, this is NOT a test, and it will NOT count as part of your course grade. If you would like to know how well you did, please see your instructor later in the quarter.

You may begin with any activity. There is no time limit for any of the tasks. When you feel you have said what you wanted to say, go to the next activity. You might need more time for some activities than for others. Try, however, to complete all the activities by the end of the period. If you do not have enough space to complete your answers, please use the back of your paper.

After completing the activities, please answer the attached questionnaire so that we can identify which activities are best suited for different personalities.

Your participation and cooperation are appreciated.

***
Activity 1

Adults like to give advice especially to young people. There are times when they feel the need to counsel those younger than they. What kind of advice do they give? Create some sentences that reflect the kind of advice they give generally.

For example: Étudie et ne regarde pas la télévision.
Apprenez un métier.
Écoute au lieu de parler tout le temps!
Occasionally, people find themselves in situations where they naturally share their likes, dislikes, interests, or simply things they like to do or would like to have. Complete the following sentences with one or more ideas.

1. Pendant le weekend, les étudiants . . .

2. En été, les gens (people) . . .

3. Les Américains voudraient . . .

4. Les professeurs détestent . . .

5. Pendant les vacances de printemps, les jeunes gens (young people) . .
How do people generally react in the following situations?  
Please answer the following questions.

Qu'est-ce qu'ils font . . .

1. . . . quand ils sont seuls à la maison?

2. . . . quand il fait mauvais?

3. . . . quand ils regardent un match de football?

4. . . . quand ils sont avec leurs amis?

5. . . . quand ils voient un accident?
Activity 4

The following is a dialogue between two friends, Paul and Marie-Jeanne. Supply appropriate questions or answers to create the following conversation.

Marie-Jeanne: Qu'est-ce que tu fais vendredi soir? Tu vas au cinéma?

Paul :

Marie-Jeanne: Est-ce que tu aimes sortir ou est-ce que tu préfères rester à la maison le vendredi soir? Si tu veux, viens chez moi. On va acheter une pizza, et ensuite, on pourra aller au cinéma, si tu veux.

Paul :

Marie-Jeanne: Tu as vu Star Trek?

Paul :

Marie-Jeanne: Tu vas en vacances cette année? Qu'est-ce que tu as l'intention de faire?

Paul :

Marie-Jeanne: Moi, je vais travailler. J'ai besoin d'argent et je ne veux pas demander de l'argent à mes parents. Ils sont formidables, mais j'ai honte de leur demander.

Paul :
Activity 5

All people have had a touch of the "flu" or a severe cold at one time or another. Imagine that this is Nicole. She is ill, and the doctor has ordered her to stay in bed and get some rest. Describe her feelings as she looks out of the window and watches her friends enjoy the beautiful day.
Appendix C

Personality Questionnaire
Questionnaire

Please respond to the items below by using the appropriate letter.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STRONGLY DISAGREE</td>
<td>SLIGHTLY DISAGREE</td>
<td>SLIGHTLY AGREE</td>
<td>AGREE</td>
<td>STRONGLY AGREE</td>
<td></td>
</tr>
</tbody>
</table>

1. I am happiest when I get involved in some project that calls for rapid action.
2. I usually take the initiative in making new friends.
3. I would rate myself as a lively individual.
4. I would be very unhappy if I were prevented from making numerous social contacts.
5. I am inclined to keep in the background on social occasions.
6. I like to mix socially with people.
7. I am inclined to limit my acquaintances to a select few.
8. I like to have many social engagements.
9. I generally prefer to take the lead in group activities.
10. I nearly always have a "ready answer" for remarks directed at me.
11. I would rate myself as a happy-go-lucky individual.
12. I am inclined to keep quiet when out in a social group.
13. I can usually let myself go and have a hilariously good time at a party.
14. Other people regard me as a lively individual.
15. I would rate myself as a talkative individual.
16. I am a good mixer.
17. I like to go to parties and other affairs where there is lots of loud fun.
18. I like to flirt.
(19) I would like to belong to several clubs or lodges.

(20) At parties I am more likely to sit by myself or with just one other person than to join in with the crowd.

(21) I love to go to dances.

(22) I enjoy social gatherings just to be with people.

(23) I enjoy the excitement of a crowd.

(24) My worries seem to disappear when I get into a crowd of lively friends.

(25) I like parties and socials.

(26) I am a carefree individual.

(27) I make decisions on the spur of the moment.

(28) I like wild enthusiasm, sometimes to a point bordering on rowdiness, at a football or baseball game.

(29) I generally feel as though I haven't a care in the world.

(30) I usually say what I feel like saying at the moment.

Please indicate ( ) any French you might have had even if you feel that it did not help you at all.

Elementary: _______

High School: 1 year __; 2 years __; 3 years __; 4 years __

None ______

PLEASE CIRCLE ONE:
I had ample time to complete the activities and the questionnaire YES NO

Comments (if any):
Appendix D

Summary Tables for Multivariate and Univariate Analyses of Variance for Main Study
Table 19. - Multivariate Tests of Significance for Productivity and Complexity by Task Type: French-102 Level.

<table>
<thead>
<tr>
<th>Task Type</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>1.539</td>
<td>0.222</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>4.291</td>
<td>0.004</td>
</tr>
<tr>
<td>Productivity-Sentence Length</td>
<td>3</td>
<td>4.982</td>
<td>0.004</td>
</tr>
<tr>
<td>Complexity-Sentence Length</td>
<td>5</td>
<td>4.462</td>
<td>0.002</td>
</tr>
</tbody>
</table>
Table 20. - Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type: French-102 Level.

<table>
<thead>
<tr>
<th>Task Type</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F₁</td>
<td>3.015</td>
<td>0.087</td>
</tr>
<tr>
<td>F₂</td>
<td>3.106</td>
<td>0.082</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C₁</td>
<td>0.204</td>
<td>0.653</td>
</tr>
<tr>
<td>C₂</td>
<td>1.021</td>
<td>0.316</td>
</tr>
<tr>
<td>C₃</td>
<td>14.270</td>
<td>0.001</td>
</tr>
<tr>
<td>C₄</td>
<td>4.016</td>
<td>0.049</td>
</tr>
</tbody>
</table>
Table 21. - Multivariate Tests of Significance for Productivity and Complexity by Personality; French-102 Level.

<table>
<thead>
<tr>
<th>Personality</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>0.379</td>
<td>0.686</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>1.146</td>
<td>0.964</td>
</tr>
<tr>
<td>Productivity - Sentence Length</td>
<td>3</td>
<td>0.255</td>
<td>0.857</td>
</tr>
<tr>
<td>Complexity - Sentence Length</td>
<td>5</td>
<td>0.125</td>
<td>0.986</td>
</tr>
</tbody>
</table>
Table 22. - Multivariate Tests of Significance for Productivity and Complexity by Task Type/Personality: French-102 Level.

<table>
<thead>
<tr>
<th>Task Type/Personality</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>0.862</td>
<td>0.427</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>0.454</td>
<td>0.769</td>
</tr>
<tr>
<td>Productivity-Sentence Length</td>
<td>2</td>
<td>1.059</td>
<td>0.372</td>
</tr>
<tr>
<td>Complexity-Sentence Length</td>
<td>5</td>
<td>0.434</td>
<td>0.823</td>
</tr>
</tbody>
</table>
Table 23. - Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type/Personality; French-102 Level.

<table>
<thead>
<tr>
<th>Task Type/Personality</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>0.130</td>
<td>0.719</td>
</tr>
<tr>
<td>P2</td>
<td>0.252</td>
<td>0.617</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>0.776</td>
<td>0.381</td>
</tr>
<tr>
<td>C2</td>
<td>1.074</td>
<td>0.304</td>
</tr>
<tr>
<td>C3</td>
<td>0.001</td>
<td>0.979</td>
</tr>
<tr>
<td>C4</td>
<td>0.275</td>
<td>0.601</td>
</tr>
</tbody>
</table>
### Table 24. Univariate Tests of Significance on Sentence Length: French-102 Level.

<table>
<thead>
<tr>
<th>(N = 72)</th>
<th>DF</th>
<th>F</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>2</td>
<td>4.714</td>
<td>0.012</td>
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<tr>
<td>Task Type</td>
<td>1</td>
<td>8.286</td>
<td>0.005</td>
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<tr>
<td>Personality</td>
<td>1</td>
<td>0.332</td>
<td>0.567</td>
</tr>
<tr>
<td>2-way Interactions (Task Type/Personality)</td>
<td>1</td>
<td>1.381</td>
<td>0.244</td>
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<tr>
<td>Variance Explained</td>
<td>3</td>
<td>3.786</td>
<td>0.014</td>
</tr>
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</table>
Table 25. - Multivariate Tests of Significance for Productivity and Complexity by Task Type: French-103 Level.

<table>
<thead>
<tr>
<th>Task Type</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>0.303</td>
<td>0.739</td>
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<tr>
<td>Complexity</td>
<td>4</td>
<td>5.400</td>
<td>0.001</td>
</tr>
<tr>
<td>Productivity-Sentence Length</td>
<td>3</td>
<td>0.540</td>
<td>0.656</td>
</tr>
<tr>
<td>Complexity-Sentence Length</td>
<td>5</td>
<td>4.416</td>
<td>0.001</td>
</tr>
</tbody>
</table>
Table 26. - Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type: French-103 Level.

<table>
<thead>
<tr>
<th>Task Type</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_1$</td>
<td>0.571</td>
<td>0.452</td>
</tr>
<tr>
<td>$P_2$</td>
<td>0.602</td>
<td>0.440</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$C_1$</td>
<td>0.051</td>
<td>0.821</td>
</tr>
<tr>
<td>$C_2$</td>
<td>12.490</td>
<td>0.001</td>
</tr>
<tr>
<td>$C_3$</td>
<td>7.864</td>
<td>0.006</td>
</tr>
<tr>
<td>$C_4$</td>
<td>0.998</td>
<td>0.320</td>
</tr>
</tbody>
</table>
Table 27. - Multivariate Tests of Significance for Productivity and Complexity by Personality: French-103 Level.

<table>
<thead>
<tr>
<th>Personality</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>1.152</td>
<td>0.320</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>0.740</td>
<td>0.567</td>
</tr>
<tr>
<td>Productivity—Sentence Length</td>
<td>3</td>
<td>0.794</td>
<td>0.500</td>
</tr>
<tr>
<td>Complexity—Sentence Length</td>
<td>5</td>
<td>0.687</td>
<td>0.634</td>
</tr>
</tbody>
</table>
Table 28. - Post Hoc ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Personality: French-103 Level.

<table>
<thead>
<tr>
<th>Personality</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_1$</td>
<td>0.110</td>
<td>0.741</td>
</tr>
<tr>
<td>$P_2$</td>
<td>0.017</td>
<td>0.896</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$C_1$</td>
<td>0.999</td>
<td>0.320</td>
</tr>
<tr>
<td>$C_2$</td>
<td>0.815</td>
<td>0.369</td>
</tr>
<tr>
<td>$C_3$</td>
<td>1.942</td>
<td>0.166</td>
</tr>
<tr>
<td>$C_4$</td>
<td>0.104</td>
<td>0.747</td>
</tr>
</tbody>
</table>
Table 29. - Multivariate Tests of Significance for Productivity and Complexity by Task Type/Personality: French-103 Level.

<table>
<thead>
<tr>
<th>Task Type/Personality</th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>2</td>
<td>0.340</td>
<td>0.712</td>
</tr>
<tr>
<td>Complexity</td>
<td>4</td>
<td>0.853</td>
<td>0.495</td>
</tr>
<tr>
<td>Productivity-Sentence Length</td>
<td>3</td>
<td>0.914</td>
<td>0.437</td>
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<tr>
<td>Complexity-Sentence Length</td>
<td>5</td>
<td>0.846</td>
<td>0.521</td>
</tr>
</tbody>
</table>
Table 30. - *Post Hoc* ANOVA Summary Table for Significant Multivariate Main Effects for Productivity and Complexity by Task Type/Personality: French-103 Level.

<table>
<thead>
<tr>
<th>Task Type/Personality</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$P_1$</td>
<td>0.627</td>
<td>0.430</td>
</tr>
<tr>
<td>$P_2$</td>
<td>0.668</td>
<td>0.416</td>
</tr>
<tr>
<td><strong>Complexity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$C_1$</td>
<td>0.021</td>
<td>0.886</td>
</tr>
<tr>
<td>$C_2$</td>
<td>1.795</td>
<td>0.183</td>
</tr>
<tr>
<td>$C_3$</td>
<td>0.099</td>
<td>0.754</td>
</tr>
<tr>
<td>$C_4$</td>
<td>1.633</td>
<td>0.294</td>
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</tbody>
</table>
Table 31. - Univariate Tests of Significance on Sentence Length: French-103 Level.

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Type</td>
<td>1</td>
<td>1.355</td>
<td>0.247</td>
</tr>
<tr>
<td>Personality</td>
<td>1</td>
<td>0.374</td>
<td>0.542</td>
</tr>
<tr>
<td><strong>2-way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Task Type/Personality)</td>
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<td>2.265</td>
<td>0.135</td>
</tr>
<tr>
<td><strong>Variance Explained</strong></td>
<td>3</td>
<td>1.250</td>
<td>0.295</td>
</tr>
</tbody>
</table>

( N = 110 )
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