THE DESIGN, DEVELOPMENT, AND VALIDATION OF A SECRETARIAL IN-BASKET TO EVALUATE DECISION MAKING IN THE SETTING OF WORK PRIORITIES

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ABSTRACT

THE DESIGN, DEVELOPMENT, AND VALIDATION OF A SECRETARIAL IN-BASKET TO EVALUATE DECISION MAKING IN THE SETTING OF WORK PRIORITIES

By

Betty Louise Schroeder

The Problem

The need exists for criterion instruments that represent situations in which the secretary is required to use the integrated tasks involved in the secretarial position to make decisions relevant to problems related to the position and to determine appropriate solutions to these problems. In evaluating the secretarial student's achievement in making specific types of decisions in specific situations, an evaluative instrument is needed that involves the student in a job situation and requires her to make appropriate decisions. This study was designed to accomplish these four objectives:

1. To design an evaluative instrument using the in-basket format based on representative problems requiring the decision-making ability of the secretary in setting work priorities.

2. To develop criterion answers for THE SECRETARIAL IN-BASKET based upon answers given by a panel of experts.

3. To determine whether the instrument does, in fact, distinguish between the performance of experienced secretaries and the performance of potential secretaries in terms of three types of decision making contained in the in-basket:

a. Quality of action responses to in-basket items
b. Quantity (number) of in-basket items attempted
c. The priority order of the in-basket items as indicated by the subjects

4. To develop a suggested measurement schema based on the results of field testing THE SECRETARIAL IN-BASKET with groups of experienced secretaries and groups of potential secretaries.

Methods and Procedures for the Study

One of the questions arising in this research study asked if in-basket simulation can be used to evaluate the ability of an individual to handle specific decision-making required in a particular position, that of secretary. The design and development of THE SECRETARIAL IN-BASKET into an instrument that could, in fact, evaluate an individual's ability to handle these kinds of decisions was dependent upon the following operational phases: (1) Preliminary planning; (2) review of related research and literature pertaining to design and developmental theories, historical development of in-basket simulation, analyses of the secretarial role, and research in curriculum development; (3) the critical incident study; (4) the development of THE SECRETARIAL IN-BASKET; (5) field testing THE SECRETARIAL IN-BASKET; and (6) analysis of the data.

Findings of the Study

Three general areas of concentration are represented in the findings that result from this in-basket study:

1. Findings that relate to the actual design and development of THE SECRETARIAL IN-BASKET.
2. Findings that relate to the validation of the in-basket simulation.
3. Findings that relate to the development of a measurement schema for the in-basket simulation.

Conclusions

The three basic conclusions drawn from the analyses of the data in this experimental study emphasize the theory of decision making as it must be combined with the career ladder concept, the importance of quality of performance, and the need for levels of secretarial education.

Implications for the Study

Implications resulting from this in-basket research are evident in the areas of curriculum development (both secondary and post-secondary), research, teacher education (pre-service and in-service), and training within industry. Instructional programs now being developed on the secondary and post-secondary levels will require a learning environment which teaches students how to make decisions and then provides opportunities to practice making decisions. Teachers must be acquainted with the career ladder concept and its relationship to the vocational curriculum and with appropriate instructional techniques and materials to enhance the instruction. There is also a need for a coordinated effort between education and business to provide a complete secretarial education for the secretary.

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Betty Louise Schroeder

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Secondary Education and Curriculum

1972

DEDICATION

To my father and the memory of my mother
who have always worked hard to give their
kids the opportunity to pursue their own
goals -- both in education and in chosen
occupations.

ACKNOWLEDGEMENTS

A study like this one needs people--those who assist with the developmental process, those who participate in the experimental phase, those who critique the progress of the study, and those who become associated with the success of the venture.

A very special tribute is hereby given to ...

.. the members of my doctoral committee--Dr. Elaine Uthe, Dr. Maryellen McSweeney, Dr. Mary Virginia Moore, and Dr. Robert Poland--for their interest and assistance in the study.

.. Dr. Maryellen McSweeney for her willingness and readiness at all times to share her expertise in research and in quantitative analysis.

.. Dr. Elaine Uthe, my chairman, for her enthusiasm for the study and her friendly encouragement.

.. Dr. Peter Haines who gave me the opportunity to pursue two goals, the doctoral program and my own professional development in business education.

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.. the many Certified Professional Secretaries and other members of the National Secretaries Association (International), and especially those members of the Lansing Teubor Chapter, who gave much time and energy to helping with the study.

.. the Michigan Bell Telephone Company who, through their Personnel Research Division, provided an opportunity to administer the in-basket to company secretaries.

.. James Huck, Betty Dain, Carol Ray, and Ruth Gustafson of Michigan Bell Telephone Company for their assistance in the experimental phase of the study.

.. the divisional secretaries of Michigan Bell Telephone Company who participated in the study.

.. the teachers who administered the in-baskets to their students: Marilyn Bowker, John Forte, Barbara Lanthorn, L. Ann Hansen, Loretta DeMino, June Brasier, Susan Maxam, Sandra Trombley, Virginia DeWitt, Miriam Elwell, Kay Sheedy, Jerry Ann Beaufore, Mary Frost, Donalda Warner, and Mary Wadsten.

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.. the National Science Foundation who support, in part, the research facilities at Michigan State University, thus providing doctoral candidates with computer assistance.

.. my three special friends--Rosemary Gunn, Lorraine Furtado, and Lynn Tillock--who have always provided me with the understanding and inspiration needed throughout the study.

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A. Introduction

The secretary in the business office is a file clerk .. a general office worker .. a receptionist .. a stenographer .. an administrative assistant .. all in one "package." At one time her job might have involved, for the most part, the taking and transcribing of dictation; and for this her achievement of typewriting and shorthand skills and her general understanding of office procedure may have been enough to prepare her for the tasks she handled in her position. However, today's business world in which automation is placing much more stress on the secretary requires her to be responsible for more creative work, to understand detailed instructions, and to handle more problem solving and decision making.[1] The Dictionary of Occupational Titles states in part that the secretary is a "Girl Friday ... who relieves officials of clerical work and minor administrative and business detail."[2] In our fast-growing economy the office has become known as the center of business activity and is known by many names and titles including

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[1] U. S. Department of Labor, Adjustments to the Introduction of Office Automation, Bulletin 1276 (Washington, D. C.: Government Printing Office).

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"communication center," "information center," "decision center," and "records center."[3] The secretary who holds a position in the modern office must be flexible enough to perform within this type of office environment.

Lehnert views her role as a secretary as one involving ever-changing responsibilities and adaptation to new dimensions of her employer's role:

> ... the secretary of today who only keeps records, files, takes notes and types won't be around--or at least not employed as a secretary--in the year 2000.[4]

She further implies that what will be essential is a secretary who can relate to the goals of management and "who thinks, sees relationships, and has enough practical knowledge to follow his thinking."[5]

While technological and scientific innovations have caused changes in the office, the basic instructional program intended to prepare individuals for office occupations has remained virtually unchanged.[6] In secretarial education much of the emphasis in the preparation of secretaries has been with the acquisition of typewriting, shorthand, and machines skills and knowledges, sometimes to the exclusion of

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[3]Norman F. Kallaus, "Hardware: A New Man-Machine Interface," A Taxonomy of Office Activities for Business and Office Education, Interim Report, Project No. 7-1223, Grant No. OEG-1-7-071223-5134, Research 12 (Columbus, Ohio: The Center for Vocational and Technical Education, July, 1968), p. 85.

[4]Marie Lehnert, CPS, "P. S. for Private Secretaries," Volume 14, Number 7 (Waterford, Connecticut: Bureau of Business Practice, Inc., April 15, 1971), p. 1.

[5]Ibid., p. 2.

[6]Harry Huffman et al, A Taxonomy of Office Activities for Business and Office Education, Interim Report, Project No. 7-1223, Grant No. OEG-1-7-071223-5134, Research 12 (Columbus, Ohio: The Center for Vocational and Technical Education, July, 1968), p. 3.

abilities in decision making that are equally important to the secretary's success in handling the demands of her position. The evaluative instruments used in secretarial education have reflected the skill-knowledge concentrations in the preparation of the secretary, with a need resulting for criterion instruments which provide the opportunity for terminal evaluation of the prospective secretary's ability to cope with specific occupational situations. For the secretarial student with a career goal in mind, the assessment of her capability to cope with all aspects of the secretarial position for which she is being trained (skill-knowledge acquisition as well as the interactive and decision-making aspects) is vital for reasons of employability. Therefore, the means whereby this assessment takes place must be as much as possible like the demands of the job as secretarial education can make possible.

B. The Problem

The need exists for criterion instruments that represent situations in which the secretary is required to use the integrated tasks involved in the secretarial position to make decisions relevant to problems related to the position and to find appropriate solutions to these problems.

The prospective secretary's ability to make appropriate decisions in setting work priorities is one area in which numerous learnings are integrated, learnings which involve skills previously acquired, business information knowledges, organizational information, affective qualities of the individual, to name only a few. In evaluating the secretarial student's achievement in making specific types of decisions

in specific situations, an evaluative instrument is needed that involves the student in a job situation and requires her to make appropriate decisions.

This research study is designed to accomplish the four fundamental objectives presented here:

1. To design an evaluative instrument using the in-basket format based on representative problems requiring the decision-making ability of the secretary in setting work priorities as determined by a critical incident analysis of problems submitted by randomly selected samples of experienced secretaries (Certified Professional Secretaries and secretaries who are members of the National Secretaries Association (International).

2. To develop criterion answers for THE SECRETARIAL IN-BASKET based upon answers given by a panel of experts, such answers validated during the first field testing tryout.

3. To determine whether the instrument does, in fact, distinguish between the performance of experienced secretaries (CPS, NSA, and Michigan Bell Telephone Company secretaries) and the performance of potential secretaries (students enrolled in office block programs or secretarial practice/ advanced shorthand classes in secondary schools in Michigan) in terms of three types of decision making contained in the in-basket:

   a. Quality of action responses to in-basket items
   b. Quantity (number) of in-basket items attempted
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4. To develop a <u>suggested</u> measurement schema based on the results of field testing THE SECRETARIAL IN-BASKET with groups of experienced secretaries (CPS, NSA, MBT secretaries) and groups of potential secretaries (students in office block programs or secretarial practice/advanced shorthand classes).

C. Methods and Procedures for the Study

This study will encompass six operational phases in the design, development, and validation of an in-basket simulation that will

measure the ability of the secretary to handle specific decision making required in the setting of work priorities required in her position. These operational phases and a description of the procedures to be utilized within each phase follow:

1. Preliminary Planning: Experts in the field of in-basket research will be contacted for information on the development of in-basket simulation. Preliminary investigation of the possibility of selecting samples of secretaries from the membership of the National Secretaries Association (International) and from the Institute for Certifying Secretaries will be made. Preliminary planning for the inclusion of high school students in the office block programs and in secretarial practice classes will be conducted and investigations made into the possibility of utilizing several high school programs or classes.

2. Review of Related Research and Literature: The review will focus on these four specific areas of study to determine relationships to the present study:
   a. Design and developmental theories
   b. The historical development of in-basket simulation
   c. Analyses of the secretarial role
   d. Research in curriculum development for secretarial education

3. The Critical Incident Study: A study will be made of the kinds of problems and decisions made by experienced secretaries in their jobs. Flanagan's critical incident technique will be modified for use in this study. Samples of secretaries will be selected from the membership rolls of the NSA and the Institute for Certifying Secretaries. A classification will be made of those problems and decisions to determine the most frequently occurring problems. These will be included in the in-basket simulation to be developed.

4. The Development of the In-Basket Simulation: Based upon the results of the critical incident study, an in-basket simulation will be developed with at least 20 of the most frequently occurring problem factors from the critical incident study. The in-basket simulation will be reviewed by experienced secretaries and business educators to check its content and face validity. A panel of experts (experienced secretaries and business educators) will be used to determine the response patterns for the scoring procedures for the in-basket. The in-basket will first be administered in a preliminary tryout with secretaries.

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3. The in-basket itself will be based upon a time limitation of 45 minutes. Therefore, the number of in-basket items will be limited to 40 items, two in-basket items for each of 20 problem categories.

4. The samples of secretaries contacted during the critical incident study will be drawn from the membership rolls of the Michigan Division of the National Secretaries Association (International) and the Institute for Certifying Secretaries. The samples of secretaries selected for field testing will include: (a) Certified Professional Secretaries residing in the State of Michigan, (b) secretaries who are members of the Michigan Division of the National Secretaries Association (International) and residing in the State of Michigan, and (c) secretaries to divisional managers of the Michigan Bell Telephone Company, Detroit, Michigan.

5. High school students participating in the field testing will be from selected high schools in the State of Michigan, selected on the basis of whether there are single-period secretarial practice and/or advanced shorthand classes or vocational office block programs.

6. The number of tryouts for the in-basket will be limited to two, the first tryout followed by a revision stage.

Definition of Terms

The following definitions will be used throughout the study to explain the given terms:

Certified Professional Secretary: an experienced secretary who has successfully completed the standard 12-hour examination administered by the Institute for Certifying Secretaries covering a wide variety of topics including human relations and personal adjustment, business law, secretarial accounting, economics, business organization, and management.[7]

[7]Ruth I. Anderson et al, The Administrative Secretary: Resource (New York: McGraw-Hill Book Company, 1970), p. 19.

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Critical Incidents: those incidents from actual cases of on-the-job behavior that determine either effective or ineffective on-the-job behavior; the difference between success and failure in carrying out the important components of the job.[8] The critical incident procedure developed by Flanagan consists of a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in solving practical problems.[9]

Decision: a choice between two or more plausible alternatives.

Decision Making (individual): a judgment to promote the welfare of one person, considered by himself.

Decision Making (institutional): a judgment leading to the greatest possible attainment of institutional goals.

Decision Making in Setting Work Priorities: judgments made by individuals in establishing the arrangement of individual tasks in the secretarial position leading to the attainment of institutional goals.

In-Basket Simulation: an experience involving the participant in a hypothetical work situation in which he must make decisions on a series of business papers deposited as incoming mail in his "in-basket" as well as a specified number of interruptions in the work day.

Michigan Bell Telephone Secretaries: secretaries to divisional managers of Michigan Bell Telephone Company, Detroit, Michigan, who are a part of a secretarial training program for divisional secretaries.

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[8]Edward J. Furst, Constructing Evaluation Instruments (New York: Longmans, Green and Company, 1958), p. 22.

[9]John C. Flanagan, "The Critical Incident Technique," Psychological Bulletin, Volume 51, Number 4 (July, 1954), p. 327.

NSA Secretaries: secretaries who are members of the Michigan Division of the National Secretaries Association (International).

Secretary: an occupation concerned with carrying out administrative and general office duties, taking and transcribing dictation, maintaining files, preparing reports, opening and routing mail, making appointments, originating memorandums and letters for her superior's signature, and related duties and responsibilities; an occupation which may be entry-level but may also lead to positions as social secretary, legal secretary, medical secretary, and executive secretary.[10]

Students in Office Block Program: high school students who are seniors and enrolled in a two-hour office block program.

Students in Single-Period Classes: high school students who are seniors and enrolled in a one-hour secretarial practice or advanced shorthand class.

Terminal Evaluation: measurement of an individual's ability to integrate learnings with application in a simulated but realistic on-the-job situation in order to make appropriate decisions relating to the position.

Work Priorities: the ranking of those tasks or responsibilities involved in the secretarial position in the order of their importance and/or in the order in which those tasks must be performed or responsibilities assumed by the secretary.

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[10] U. S. Office of Education, Vocational Education and Occupations (Washington, D. C.: U. S. Department of Health, Education and Welfare, 1969), pp. 78-79.

D. Rationale of the Problem

Fromm, in one of his recent philosophical essays, emphasizes that most intelligence tests measure not so much the capacity for reason and understanding as the capacity for quick mental adaptation to a given situation. His concern is that this type of assessment, requiring the application of categories of comparison and quantitative measurement, has become a common evaluative procedure rather than thorough analysis of each given phenomenon and its respective quality:

> We find today a tremendous enthusiasm for knowledge and education but at the same time a skeptical or contemptuous attitude toward the allegedly impractical and useless thinking which is concerned 'only' with the truth and which has no exchange value on the market.[11]

Ewing appears to be in agreement with Fromm in regard to intelligence and proficiency tests and their potentiality as evaluative tools:

> The questions normally included in an intelligence test usually involve vocabulary, sentence completion, analogies, reasoning problems, and others that emphasize academic know-how more than reality judgments. It is necessary to look more closely at the performance record and count more heavily on intuitive judgments when evaluating one's knowledge at this level.[12]

Goslin states that a "person's abilities may be assessed by various means, the most obvious of which is his performance in the position for which he is a candidate."[13] Because of the increased demand for office workers possessing quality levels of personal judgment and

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[11]Erich Fromm, "Personality and the Market Place," Man, Work, and Society, ed. Sigmund Nosow and William H. Form (New York: Basic Books, Inc., 1962), p. 451.

[12]David W. Ewing, The Managerial Mind (New York: The Free Press of Glencoe, 1964), p. 133.

[13]David A. Goslin, Teachers and Testing (New York: Russell Sage Foundation, 1967), p. 3.

responsibility, those individuals being trained and educated as secretaries should have the opportunity to experience situations prior to employment like those they will find in that initial secretarial position. Vocationally reimbursed programs funded as a result of the passage of the Vocational Education Act of 1963 and the Vocational Amendments of 1968 have enabled an increasing number of students to receive vocational education in preparation for future employment. Crawford indicates that urgency is required in directing some attention to the nature and demands of the offices in which future typists and secretaries may go.[14] Stierwalt indicates that mutual agreement seems to exist among both the businessmen and the secretaries:

> ... that superior secretaries not only need to be adept in the basic skills (typewriting, shorthand, business mathematics, filing, etc.), but they also need to be able to work things out for themselves. A secretary is given very few instructions, and then she works under very little supervision. Therefore, it would seem that our curriculum in business education should include some practice in decision making for the prospective secretary.[15]

Lanham et al noted the need for students preparing to enter office occupations to be acquainted with the demands of the position:

> Students have too often been last to be exposed to the specific expectations of employers for office performance. As an instructional innovation, we propose that students, those contemplating office employment or those committed to prepare for office work, have access to this set of office expectations.[16]

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[14] T. James Crawford, "Typewriting and the Vocational Education Act of 1963," Selected Readings in Business and Office Occupations, National Business Education Yearbook, No. 5 (1967), pp. 95-96.

[15] Irma Lee Stierwalt, "Help Prospective Secretaries Develop Decision-Making Ability," The Balance Sheet (May, 1969), p. 401.

[16] Frank W. Lanham et al, Development of Performance Goals for a New Office and Business Education Learnings System, Final Project Report, Project No. 8-0414, Grant No. OEG-0-0-080414-3733 (083) (Washington, D. C.: U. S. Office of Education, 1970), p. 54.

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Oliverio suggests that realistic office tasks give students experience in independent decision making.[17] Lanham, in summing up the qualities needed in the future office worker, stated that:

> The clerical workers of tomorrow must be able to solve problems, to think, to compute, to arrive at wise decisions, and to communicate thought.[18]

Evaluation of Student Progress

Evaluation of learning can be achieved in a variety of ways using published materials that are available in business education. The following brief review of several current practices will indicate those aspects of the evaluative process for which each testing device may be best suited.

Skill or Performance Tests. Timed writings in typewriting are an example of a skill or performance test used to judge the speed and/or accuracy of an individual's ability to typewrite. This particular type of test measures the ability of the typist to manipulate the mechanical parts of the typewriter, resulting in a words-per-minute rating. The dictation test in shorthand, another form of isolated performance test, measures the student's ability to take dictation at various speeds and is useful in the initial stages of shorthand skill development while forcing the student to strive for faster dictation speeds. However, the measurement or rating obtained in isolated skill tests like these

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[17] Mary Ellen Oliverio, "Teaching Clerical Practice Students How to Work," Selected Readings in Business and Office Occupations, National Business Education Yearbook, No. 5 (1967), pp. 77-78.

[18] Frank W. Lanham, "Electronics and the General Clerical Program," Business Education Forum, Volume 16 (February, 1962), p. 4.

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represents achievement at only certain levels of the learning process and gives little or no indication of the student's capability of transferring these skills into performance in an actual work setting.

Business Information and Related Knowledge Tests. Basic knowledge tests measure one thing in particular: the ability of the student to memorize the general business information needed in preparation for problem solving. Business terminology, organizational data, and information needed in order to understand specific aspects of the business world are included in business information tests. Such tests may be used as pretests to provide a check on information already attained by the student or perhaps as self-check activities whereby an individual student can check his competency in a given area of interest. Initial cognitive learning in skills and secretarial procedures may involve learning such fundamental knowledges as names of machine parts, procedures in determining vertical and horizontal measurements, and amount and/or type of spacing required for specific kinds of problems. Tests of this nature are strictly informational, and little or no immediate attempt is made in the test to apply these knowledges to an actual business situation.[19]

Self-Evaluative Instruments. Questionnaires, surveys, and checklists designed for self-evaluation by the students are helpful in determining personal qualities possessed by the students as well as their attitudes toward their occupational goals. However, the legitimacy of such measurements in the final analysis of the student's capability of handling the work load on the job is questionable.

[19]Mathilde Hardaway, Testing and Evaluation in Business Education, Third Edition (Cincinnati: South-Western Publishing Company, 1966), p. 301.

Production Tests. A series of problems pertaining to a specific unit of study and completed by the student under time pressure is known as a production test. These problems may also be integrated so that there is a variety in the types of problems involved in one such test, such as tabulation problems, business letters, memoranda, statistical problems, thus giving the students the opportunity to solve several kinds of problems in one testing situation. However, these production tests usually do not require decision making in the setting of work priorities. The problems may be completed in the same order in which they are presented on the test; no problem is any more important than any other problem in setting priorities. Another means for handling the problems is to "batch process" the tasks into groups of similar tasks to avoid several "setting-up" time losses. The students will be judged on how much production is completed in a given amount of time.

An added emphasis on production tests for prospective office workers has been noticeable in recent years, perhaps as a result of typewriting research which indicates increased transfer of learning when instruction stresses the production typewriting method rather than the straight-copy typewriting method.[20] Hardaway emphasizes that the production test may have the disadvantage of including only a restricted sampling of applications, thus making the test "unreliable from the standpoint of subject coverage and relative time devoted to nontyping vs. typing activities."[21]

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[20]T. James Crawford, Production Typewriting, Monograph 97 (Cincinnati: South-Western Publishing Company, 1960), p. 20.

[21]Hardaway, op. cit., p. 277.

Practice Sets. The practice set focuses on a series of problems related to a hypothetical work situation and incorporated into a particular unit of study. Problems included in the set are solved in the order in which they are presented, and there is seldom any time pressure as in the production test. The practice set may require several hours, days, or weeks to complete; and, therefore, terminal evaluation of the student's progress may depend upon what he has accomplished throughout the entire practice set. Witherow developed a practice set designed for secretarial students, The Secretary on the Job, which offers a variety of office tasks (taking dictation, transcribing, business letter writing, arranging reservations, handling the mail) in a 28-unit program.[22] Although production gives the student practice in solving problems, there is little or no need for the student to make any decisions in regard to work priorities.

Situation Tests. Fundamentally, the situation test evaluates typical performance on the job and is a standard work sample test.[23] The test is usually designed in such a way that the test items are situations based upon those typical job activities the student would face if he were involved in a particular job situation. The situation test permits evaluation of three aspects of typical performance:[24]

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[22]Mary Witherow, The Secretary on the Job (New York: McGraw-Hill Book Company, 1967).

[23]Robert L. Weislogal, "Development of Situational Tests for Military Personnel," Personnel Psychology, Volume 7 (1954), p. 493.

[24]Ibid., p. 494.

1. Possession of the necessary skills.
2. Recognition of the need to apply these skills at the appropriate time.
3. Motivation or willingness to apply the skills.

Situation tests have been used to a limited extent in office education, but with the need to measure more complex qualities of office employees this testing format may become more meaningful in diagnosing and evaluating the performance of an individual in an occupational setting.

Evaluation is a fundamental part of the learning process because it represents the means by which progress in learning is determined. The evaluative process, however, will be helpful only "if goals are realistic, if the evaluation tools used are appropriate, and if interpretation of the evidence is sound."[25]

The Application of Simulation in the Evaluative Process

One of the emerging strategies in education appropriate for applied research and development is simulation. Evaluation of learner behavior may be attained through (a) an observation of actual on-the-job performance or (b) an observation of simulated on-the-job performance. When the conditions of actual performance cannot be present, the technique of simulation may be used to create a representative situation. Researchers have found simulation a useful technique in studying behavior in a diversification of activities, such as:

1. Reactions to bureaucratic authority (Evan and Zelditch, 1961).
2. Performance of school administrators (Hemphill, Griffiths and Frederiksen, 1962).

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[25] National Education Association, Toward Better Evaluation of Learning (Washington, D. C.: Council on Instruction, National Education Association, 1962), p. 1.

3. Inter-nation relations (Guetzkow, 1959).
4. Business decision-making (Cohen, Cyert, Dill, Kuehn, Miller, Van Wormer and Winters, 1960).
5. Operation of an air defense direction center (Chapman, Kennedy, Newell and Biel, 1962).

When the "real-life" model is not available for representation, simulation provides the tool whereby the learner's potential for handling applied problems made up of many interacting variables may be measured. As a strategy in the development of particular applications of basic research, simulation permits the researcher to take into account intangibles of human motivation, decision making, and physical surroundings and stimuli. Here are but a few of the definitions applied to the word "simulation":

1. Simulation is a means of pooling many skills and information in an orderly way.[26]

2. Simulation is a representation of both the "real-life" qualities from the general setting and from the content.[27]

3. Simulation is actual performance of executive skills in a hypothetical situation.[28]

4. Simulation is a teaching process which uses the basic functions, equipment, and interactions which occur in a real office.[29]

5. Simulation is operationally defined as a dramatic activity, condition, or process that involves manipulative transaction

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[26]Nicholas A. Fattu and Stanley Elam, Simulation Models for Education (Bloomington: Phi Delta Kappa, 1965), p. 18.

[27]Donald W. Fiske, "Why Do We Use Situational Performance Tests?" Personnel Psychology, Volume 7 (1954), p. 465.

[28]Paul S. Greenlaw, "The In-Basket as a Training Instrument," Marketing Keys to Profits in the 1960's (Chicago: American Marketing Association, 1960), p. 452.

[29]Garth A. Hanson and H. Robert Stocker, "Mobile Simulation in Office Education," Business Education Forum (October, 1968), p. 18.

> or the interaction of abstracted elements of real-life with a motive to induce a phenomenal experience or state that replicates real-life.[30]

Because of innovations in the development of instructional systems in secretarial education, such as media development and utilization, block-time programming, and individualization of instruction, evaluative techniques utilizing simulated experiences are gaining prominence in secretarial education. Evaluation most often takes place in a classroom setting; therefore, students may be expected to perform tasks in simulated situations. Few evaluative instruments are available which correlate the utilization of instructional simulation with instruments to evaluate the student's attainment of the instructional objective. Instructional laboratory programs have been developed which present instructional sequences geared toward the career goal of the student. Every instructional sequence, whether simulated, individualized, or programmed through some other means, requires terminal evaluation by means of specific performance tests or situation tests appropriate to the instructional objectives.[31]

Instructional modules designed for student attainment of basic competencies needed for entry-level occupational requirements are based on a "pretest-instruction-posttest" approach wherein the statement of the instructional objectives for the module sets the pace for the learning sequence. The pretest evaluates the student's achievement

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[30]Omotosho Ogunniyi, "The Methodology of Educational Simulation and Design of a Simulated Instructional Model for Occupational Education." Unpublished Ph. D. dissertation, Michigan State University, 1969, p. 12.

[31]Ibid., p. 166.

prior to the module of instruction, and a criterion test is administered at the completion of the instructional sequence to measure acquisition of learnings during the module.

In the simulated office laboratory, students may spend full days completing the tasks that are deemed typical in the business office for a particular level of work.[32] Teachers involved in the preparation of secretaries realize that the standards for evaluating prospective stenographers and secretaries at or near the end of their training programs should be as much like the job situations in which they will be working as is possible to achieve in a classroom.[33] The simulated office experience may involve the simulation of tasks, positions, personnel, procedures, environment, or combinations of these. The result is a simulated "input-production-output" process keyed into the educational setting representing an interactive decision-making process among several participants. The decisions made by the participants become interrelated in order to accomplish the goal of the activity in the most rapid and accurate manner. The simulated office experience is perhaps as close to the actual office setting as an instruction or activity in an office education laboratory can be.

An evaluative instrument is merely a tool in the evaluative process; it is an aid to evaluation and possibly in observing students more efficiently in order to make more reliable comparisons. The

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[32] Mary Ellen Oliverio, "Projections for the Future," Business Education: An Evaluative Inventory, National Business Education Yearbook, No. 6 (1968), p. 126.

[33] Alfred Patrick, "Strengths of the Past and Present," Business Education: An Evaluative Inventory, National Business Education Yearbook, No. 6 (1968), p. 11.

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National Education Association emphasizes that tools of evaluation have become increasingly sensitive but that "there remain many intangible but highly important educational outcomes that are not 'measureable' or for which available tools are still imprecise."[34]

In-Basket Simulation as an Evaluative Tool

As a special form of simulation, the in-basket presents a technique for simulating a wide variety of real-life problems requiring decision making. Emphasis on a particular office position and level of responsibility enable the in-basket to be a test of analytical ability, knowledge of business principles, and decision-making skill for the employee who is solely responsible for the performance of specific job tasks as contrasted with interactive behaviors essential in other components of the job. The in-basket may usually be utilized within relatively short periods of time and has, as its main purposes, the following:[35]

1. To illustrate specific points covered in a presentation or lecture.
2. To enable the learner to test ideas and principles presented.
3. To help the learner gain insight through self-discovery into his way of handling administrative matters.
4. To arouse the learner's interest in a subject to be presented.
5. To reform the learner's ideas about the management function.
6. To be a test of what has been learned.

The merit of in-basket simulation is still being tested in industry as well as education in order that its usefulness as a tool for

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[34]National Education Association, op. cit., p. 4.

[35]Allen A. Zoll, III, The In-Basket Kit: Materials for the Creation and Use of In-Basket Materials (Reading: Addison-Wesley Publishing Company, 1971), pp. 3-4.

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36 Norman Frederiksen, O
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37 Lee S. Shulman, Micha
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p. 31.

research, training, and selection may more closely be delineated. Frederiksen, Jensen and Beaton[36] used an in-basket test as an elaborate realistic situational test in an attempt to simulate certain aspects of an administrator's paperwork. The subject was not asked to play the role of an administrator but instead to behave as though he were actually the incumbent of the new job. In-basket tests are well adapted to certain kinds of experimental applications, specifically those that can be manipulated by varying the background information presented before the test begins. The researcher can vary the organization experimentally in many ways, including changing the organizational structure of the company, changing personalities of the subject's superiors and peers, or changing the purposes of nature of the organization. Researchers view the following as possible merits of in-basket simulation:

1. The in-basket allows for potential problems to which some subjects react but others do not; the order in which the problems are handled is not specified by the developer.[37]

2. The in-basket provides for use of situational variety in the selection of items and in developing items with more than one facet.

3. The in-basket has the potential to measure recall and insight, not mere recognition of problems.

4. Because the in-basket provides the vehicle for individuality and originality, it requires analytical and critical thinking, logical reasoning, and problem solving by the subject.

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[36]Norman Frederiksen, Ollie Jensen, and Albert E. Beaton, Organizational Climates and Administrative Performance (Princeton: Educational Testing Service, 1968), p. 9.

[37]Lee S. Shulman, Michael J. Loupe, and Richard M. Piper, Studies of the Inquiry Process (East Lansing: Michigan State University, 1968), p. 31.

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[38] Allen A. Zoll, III,
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[39] Ibid.

[40] Frederiksen et al, 1

[41] Frederiksen et al, o

5. The in-basket tests the individual's ability to judge correctly a situation involving a selected range of problems.

6. The in-basket measures the individual's willingness to make decisions and the resultant ability to make actual decisions.

7. If the problems posed in the in-basket are realistic to the subject, the in-basket involves and interests learners in a situation resembling reality.[38]

8. Either during the in-basket or immediately following the exercise, feedback is provided explaining the consequences of action taken by the subject.[39]

9. The in-basket is capable of eliciting typical performance in a situation without the need to deceive the subjects.[40]

10. The in-basket permits the assignment of subjects to experimental treatments according to plan and the placement of all subjects in identical problem situations that are both complex and realistic.[41]

Selection of an appropriate design of an in-basket simulation involves determination of the degree to which interaction need be only with papers or recording tape, determination of the need to individualize the in-basket for a particular purpose, and the compression of time in putting the student into a reality situation. Basic in-basket design is derived from one of these three organizational alternatives:

1. The Solitaire Format: The subject is confronted with an imaginary environment by committing himself, individually and in writing, to specific courses of action without the interference or interaction of others.

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[38]Allen A. Zoll, III, Dynamic Management Education, Second Edition (Reading: Addison-Wesley Publishing Company, 1969), p. 133.

[39]Ibid.

[40]Frederiksen et al, loc. cit.

[41]Frederiksen et al, op. cit., p. 11.

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42Felix M. Lopez, Jr.,
The In-Basket Technique, AM
Association, Inc., 1966), p

2. The Small-Group Format: Interaction with other persons, usually two to five in number, is required with actions taken dependent on the actions taken by the others. This format is used primarily for the assessment of human relations skills.

3. The Group or Team Format: Each group of players is involved in team-like competition. If the team approach is used, each team may represent one company; and the actions taken are a venture of the team, not the individual player.

Lopez describes the in-basket as a "situational technique" used to simulate the tasks an office employee would be confronted with during a given time period.[42] Since the in-basket was first developed by the Educational Testing Service (ETS) in 1957, it has gained considerable popularity as a technique for research, training, and selection. The in-basket has been used by business, industry, and education in an effort to simulate the "real world" in hypothetical situations, perhaps in an attempt to educate an individual into the reality of the business world, to view an individual as a future employee, or to experiment with the technique in various research efforts.

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[42]Felix M. Lopez, Jr., Evaluating Executive Decision Making: The In-Basket Technique, AMA Research Study 75 (American Management Association, Inc., 1966), p. 17.

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CHAPTER II

DESIGN THEORY FOR IN-BASKET SIMULATION

A. Introduction to the Review

The foci of the review of related research and literature are related to four specific areas of study in order to adequately evaluate the information and data obtained with their degree of relationship to this study:

1. Design and Developmental Theories: Selected reviews of research and literature pertinent to the development of in-basket simulation; design and developmental theory from areas of education, tests and measurements, psychology, philosophy, and other areas of concentration.

2. The Historical Development of In-Basket Simulation: The use of in-basket simulation in research, management training, and secretarial education as an instructional, training, and/or testing procedure.

3. Analyses of the Secretarial Role: Research pertaining to the role of the secretary and delineation of personal traits, duties, responsibilities, behaviors, and/or tasks performed.

4. Research in Curriculum Development: Application of instructional models, implications for instructional materials and evaluative instruments in the development of secretarial training programs.

West's review of three general phenomena appearing in research and literature pertaining to the entire field of business education bears direct resemblance to the foregoing review phases:[1]

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[1]Leonard J. West, "Research on Teaching Business and Commercial Subjects," Research Report 71-1, Research and Evaluation Unit, Division of Teacher Education, The City University of New York (January, 1971), p. 3.

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1. The necessary sensitivity to occupational trends and forecasts and to the impact of technology on office occupations.

2. Concern with the development of character and personality traits thought to be associated with obtaining and retaining a job.

3. The development of instructional materials in programmed form.

Because of the particularistic nature of the related research and literature, three chapters will be devoted to the presentation. Part 1 in this chapter highlights the design and developmental theories pertinent to in-basket simulation. Chapter III highlights the historical development of in-basket simulation and presents the fundamental ways in which the in-basket has been used in research and training. Research on analyses of the secretarial role and implications for curriculum development in secretarial education is the focus of Chapter IV.

B. Design Theory for In-Basket Simulation

The soundness of methods and proposed techniques utilized in the development of evaluative instruments has not always been tested. However, special consideration for these and other theories for developing simulations must be in the forefront when planning the development of innovative and meaningful tests for eventual classroom use. Research related to the design of simulations reveals that propositions expounded by leading theorists in areas of education, psychology, philosophy, and other concentrations create a unique orientation for this study.

Little has been written on the methodology of designing in-basket simulation.[2] However, a number of proponents of educational simulation

[2]Ogunniyi, op. cit., p. 80.

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[1] Anne Anastasi, Psycho
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have devised theories which should be examined for their applicability to the development and design of in-basket simulation. These basic theories may be grouped within the following categories:

1. Basic approaches to test development
2. Developmental theories for in-basket simulation
3. Measurement of individual performance in in-basket simulation

Those aspects of in-basket design which reflect specific philosophical, psychological, or sociological premises are merely highlighted in this chapter because it is felt that, though a number of theories have degrees of relationship to the study, the isolation of only those elements of theoretical bases definitely pertaining to the study should be presented. Therefore, the incorporation of the fundamental bases for these theories are presented as documented in the literature.

Basic Approaches to Test Development

In developing testing devices to be used in evaluation of an individual subject's performance, one must consider the components of the basic approaches to test development. Evaluative instruments have been developed as a result of these two basic approaches:

1. The Classical Psychometrical Approach: Utilized in eliciting tests of maximum performance in specific skill-knowledge concentrations.

2. The Rational Hypothesis Approach: Utilized in producing tests of typical performance in situations representing real-life phenomena.

The Classical Psychometrical Approach. One of the characteristic features of the classical psychometrical approach is its measurement of the maximum performance of the subject in a specific skill or knowledge.[3]

[3]Anne Anastasi, Psychological Testing, Second Edition (New York: The Macmillan Company, 1961), p. 34.

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A testing device utilizing this approach will encourage the subject to earn the best score he possibly can. In evaluating the subject's attainment of a specific skill or knowledge, a criterion measure is used to represent a hypothetical true score, this measure derived from expert judgment of the test administrator or from a referrent source. No single external criterion is used as a guide to appropriate measurement of the subject's achievement. The approach, when used in the development of evaluative instruments, produces tests of aptitudes and abilities designed to determine whether the individual knows a particular bit of information or whether he can apply a specific skill.[4]

Test items for such measurement are usually derived from documented sources or expert judgment and culminate in a variety of formats (true-false, multiple-choice, fill-in-the-blanks, matching). Ebel indicates that most classroom tests must be prepared by the instructor since there may be few standardized tests of achievement available appropriate to specific content areas:[5]

> Some textbook publishers furnish tests to accompany their texts. These can be helpful, but too often the items included have not been carefully prepared or reviewed critically by other experts in educational measurement or in the subject field itself.

Ebel emphasizes that the combination of (a) experts in test construction working closely with (b) expert teachers of the subjects involved usually result in excellent evaluative instruments. Substantial costs in the development of external tests and the problems of matching the

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[4]J. C. Flanagan, "Some Considerations in the Development of Situation Tests," Personnel Psychology (1954), p. 461.

[5]Robert L. Ebel, Measuring Educational Achievement (Englewood Cliffs: Prentice-Hall, Inc., 1965), pp. 8-9.

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[6] Ibid., p. 9.

[7] Flanagan, "Some Cons
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[8] Fiske, loc. cit.

[9] Ibid., p. 467.

content of the test to the material emphasized in the classroom correlate to the necessity for teacher-made tests.[6] Test items prepared with specific skills and knowledges incorporated may have little or no interrelationship of content within the testing format. The classical psychometrical approach has been used extensively in designing and developing skill tests and specific informational tests in many subject areas. In testing formats where there is a right or wrong answer (true-false, multiple-choice) or where there is a style format to follow (problem solving), the classical psychometrical approach appears to offer a developmental design that will identify only specific skills and knowledges to be measured.

The Rational Hypothesis Approach. The principal aim of a testing device based upon the rational hypothesis approach is to identify specific behaviors relevant to the variables being measured before the problem situations are developed.[7] This approach evaluates total performance in a social situation and attributes the variance obtained to a number of traits, not just one pure trait.[8] The assumption is made that a given phenomenon or situation includes a complex variety of behaviors such as those involved in a real-life situation. The test seeks to compare the relative effectiveness of the subject's involvement in task and directionality of effort with an accepted contemporary external criterion.[9] This external criterion, gauged as the common

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[6] Ibid., p. 9.

[7] Flanagan, "Some Considerations in the Development of Situation Tests," p. 463.

[8] Fiske, loc. cit.

[9] Ibid., p. 467.

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10 Calfrey C. Calhoun
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11 Ibid., pp. 304-305.

12 Flanagan, "The Crit

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Scientific methods of data gathering for use in the development of instructional materials and correlated evaluative instruments may involve (a) observational techniques, (b) questioning techniques, and (c) measurement techniques.[10] Heimerl and Halldorson emphasize that observation is the most basic measuring device available to the experimenter, whether he himself is the observer-recorder or has another individual perform in this capacity. One of the problems existing with this type of observational analysis is possible distortion of the data influenced by the personal values of the observer. The halo effect and the generosity error are examples of such distortion.[11] Incidents from actual cases of on-the-job behavior may be obtained using Flanagan's critical incident technique[12] that determine either effective or ineffective on-the-job behavior. Such critical incidents identify the difference between success and failure in completing given aspects of the job. Flanagan's procedure for critical incidents consists of a set of techniques for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in solving practical problems. Because the critical incident technique utilizes observations recorded by the job incumbent, it has the advantage of

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[10]Calfrey C. Calhoun and Mildred Hillestad (ed.), Contributions of Research to Business Education, National Business Education Yearbook, No. 9 (1971), pp. 304-310.

[11]Ibid., pp. 304-305.

[12]Flanagan, "The Critical Incident Technique."

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[15] C. W. Taylor and R.
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[16] Calhoun and Hillest

impersonal interaction and allows the respondent to select incidents of significance. Other types of observational techniques involve patterns developed within the categories of these basic questions:[13]

1. Is the observation known or unknown to the subjects?
2. Is the observer a participant or a nonparticipant?
3. Is the view of the situation direct or indirect?

Interviews, questionnaires, or self-inventories are three ways of obtaining information from questioning. The basic design of the interview (structured, nonstructured, single, multiple) will reflect both verbal and nonverbal clarification of a situation. Oppenheim compares the interview technique with mailed and group administered questionnaires.[14] Questionnaires are particularly advantageous whenever the sample size is large enough to make it uneconomical for reasons of time or funds to observe or interview every subject. A self-inventory, sometimes referred to as a life history inventory, has been used frequently by the Armed Forces and the National Aeronautics and Space Administration to select individuals for flight training and scientists.[15]

Measurement techniques utilized in the affective domain are not as numerous. The Thurstone method of equal-appearing intervals, the Likert scale, and the Guttman Scale-Analysis are three techniques for attitudinal measurement.[16] Osgood's semantic differential scale is used to

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[13]Calhoun and Hillestad, loc. cit., p. 305.

[14]A. N. Oppenheim, Questionnaire Design and Attitude Measurement (New York: Basic Books, 1966), pp. 30-35.

[15]C. W. Taylor and R. L. Ellison, "Predicting Creative Performance from Multiple Measures," Widening Horizons in Creativity (New York: John Wiley & Sons, 1964).

[16]Calhoun and Hillestad, loc. cit., p. 308.

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17C. Osgood et al, The

f Illinois Press, 1957).

18W. Stephenson, The S

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19Flanagan, "Some Cons

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determine a semantic distance between groups and individuals and between attitudinal referents within groups and individuals.[17] Stephenson discusses the importance of the Q-technique in ordering items or concepts.[18]

Flanagan indicates that the subject's response in situational testing will demonstrate what he actually does (typical performance) or will do in future situations, not what he thinks might be done.[19] Such tests of typical performance may be work-sample tests, situation tests, or simulations representing phenomena found in the actual business world. A test based upon the rational hypothesis approach is dependent upon three criteria--its capacity to represent a situation, the involvement of the subject in the situation, and the directionality of effort--taken together to arrive at a relative effectiveness measure.

A summarization of the descriptive elements of these two approaches and the theoretical structure peculiar to each is shown in Illustration 1 on the following page.

Developmental Theories for In-Basket Simulation

An in-basket simulation is basically sociological in nature as it relates a subject's performance in a given situational role, a situation dependent upon interpersonal relationships and behaviors in a particular business setting. However, other disciplines may also be influential when the subject responds to certain stimuli presented in realistic

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[17] C. Osgood et al, The Measurement of Meaning (Urbana: University of Illinois Press, 1957).

[18] W. Stephenson, The Study of Behavior: Q-Technique and Its Methodology (Chicago: University of Chicago Press, 1953).

[19] Flanagan, "Some Considerations in the Development of Situation Tests," p. 462.

THE CLASSICAL PSYCHOMETRICAL APPROACH	THE RATIONAL EMPIRICAL APPROACH
1. Produces tests of aptitudes and abilities based upon an identification of specific skills and knowledges to be measured. (Flanagan, p. 461)	1. Produces tests of typical performance based upon an identification of specific behaviors relevant to the variables being measured. (Flanagan, p. 463)
2. Aims at promoting the subject's capacity to perform at maximum competency. (Flanagan, p. 462; Cronbach, p. 34)	2. Encourages the subject to perform as he would typically perform in a given situation; discovers what the subject actually does or will do in future situations. (Flanagan, p. 462)
3. Evaluates the subject's attainment of a specific skill or knowledge. (Flanagan, p. 461)	3. Evaluates total performance in a social situation; attributes the variance obtained to a

THE CLASSICAL PSYCHOMETRICAL APPROACH	THE RATIONAL HYPOTHESIS APPROACH
1. Produces tests of aptitudes and abilities based upon an identification of specific skills and knowledges to be measured. (Flanagan, p. 461)	1. Produces tests of typical performance based upon an identification of specific behaviors relevant to the variables being measured. (Flanagan, p. 463)
2. Aims at promoting the subject's capacity to perform at maximum competency. (Flanagan, p. 462; Cronbach, p. 34)	2. Encourages the subject to perform as he would typically perform in a given situation; discovers what the subject actually does or will do in future situations. (Flanagan, p. 462)
3. Evaluates the subject's attainment of a specific skill or knowledge. (Flanagan, p. 461)	3. Evaluates total performance in a social situation; attributes the variance obtained to a number of traits, not just one pure trait. (Fiske, p. 466) Aims at producing sound understandings of a given situation. (Mehrens and Ebel, p. 30)
4. Utilizes a standardized or objective criterion which represents the hypothetical "true score," there being no single external criterion. (Fiske, p. 465)	4. Incorporates external criterion behavior (capacity, involvement, directionality of effort) as the common standard for measurement of achievement. (Fiske, p. 467)
5. Seeks to maximize the correspondence between the obtained score and a hypothetical "true score." (Fiske, p. 465)	5. Seeks to compare relative effectiveness of subject's involvement in task and directionality of effort with an accepted contemporary external criterion. (Fiske, p. 468; Lindeman, p. 37)
6. Is attentive to uniformity among subjects in evaluation. (Anastasi, p. 6)	6. Anticipates large individual differences in relative effectiveness of subjects' performance. (Fiske, p. 469)
7. Meets the sole standard of being correlated with a specified variable. (Mehrens and Ebel, p. 29)	7. Validates the instrument developed by administering the test to selected criterion groups. (Mehrens, p. 30)

Illustration 1: Basic Approaches to Test Development

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20. Robert Glaser, Trai
(Wiley & Sons, Inc., 1962),

21. Edwin E. Ghiselli,
York: McGraw-Hill Book Co

22. Hanson and Stocker,

23. Robert Poland and P
in Teaching Vocational Of
Grant No. OEG-3-7-070211-2
1970), p. 12.

circumstances (psychology) or when the simulation must represent the "real" business world (philosophy). A brief review of philosophical, psychological, and sociological premises underlying the development of in-basket simulation will provide a basic understanding for the foundation upon which THE SECRETARIAL IN-BASKET was later developed.

A Philosophical Basis for In-Basket Simulation. Proponents of philosophically based theory believe that in-basket simulation must represent as closely as possible a situational excerpt from the real world. Gagné believes that

> .. the practice of essential motor skills, of procedures, of decisions that put 'knowledge' into practical action can be most effectively carried out in a situation which represents the real situation.[20]

Ghiselli emphasizes the quality of the theoretical model as a stand-in or representation of some phenomenon.[21] Because simulation requires actual performance of business skills incorporated into a hypothetical situation, it represents one means whereby "the gap between the conventional classroom and a real business office can be bridged."[22] Poland and Haines believe that in instructional applications

> .. a simulated office environment should enhance students' competencies to use knowledges and skills through application in a work situation closely resembling that which they will find in employment.[23]

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[20]Robert Glaser, Training Research and Education (New York: John Wiley & Sons, Inc., 1962), p. 241.

[21]Edwin E. Ghiselli, Theory of Psychological Measurement (New York: McGraw-Hill Book Company, 1964), p. 4.

[22]Hanson and Stocker, loc. cit.

[23]Robert Poland and Peter Haines, A Study of a Block Time Schedule for Teaching Vocational Office Practice, Final Report, Project No. 201, Grant No. OEG-3-7-070211-2679 (East Lansing: Michigan State University, 1969), p. 12.

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24. Pattu and Elam, loc

25. Lee F. Anderson et
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versity, 1964), p. 35.

26. Ogunniyi, op. cit.,

Simulation may be an effective vehicle whereby an individual practices a complete task instead of disconnected parts. Two elements of simulation, the degree of abstraction and the time element, show tendency of the presence of philosophical premises. Moss identifies five degrees of abstraction contained within each of four criteria of simulation (the number of elements reproduced, centrality of elements, fidelity of reproduction, replicability):[24]

1. The process, situation, or activity on which the model is based.
2. A replication of the initial process or situation.
3. A control laboratory type of model capable of being replicated.
4. A synthetic abstraction of essential elements.
5. A closed analytical model.

Moss suggests that two of these five degrees of abstraction (the process on which the model is based, a replication of the initial process or situation) have as their focal point the real world. The time element, usually compressed in in-basket simulation, is a factor which is manipulated in such a way that certain central features of the real world represented are simulated in less than real-world time.[25]

Ogunniyi theorizes that the main philosophical rationale of simulation for instruction seems to be based upon the premise that

> Educational simulation .. simultaneously links the student with the outside world through the realistic participatory learning experiences in the classroom.[26]

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[24]Fattu and Elam, loc. cit., p. 19.

[25]Lee F. Anderson et al, A Comparison of Simulation, Case Studies, and Problem Papers in Teaching Decision Making (Evanston: Northwestern University, 1964), p. 35.

[26]Ogunniyi, op. cit., p. 23.

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[27] George F. Kneller,
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[28] George D. Spindler
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[29] Ibid., p. 106.

Boas and Brameld both have depicted theories of culture that border on philosophical-anthropological approaches. A look at the cultural environment and the theory of cultural relativism formulated by Franz Boas[27] indicates that it is the individual who must seek change and who must not expect the culture to change. Man is the product of his culture, and no single education suitable to man per se is available. Only a range of educational systems would be appropriate to men of different cultures--individual differences, to put it another way. This theory is the basis for progressive education which centers on the "clusters" of problems confronting young people in periods of transition.[28] Flexibility and willingness to experiment are the basic necessities for the progressive educational system. Brameld's cultural integration theory harmonizes knowledge, values, practices, and beliefs into new designs for learning. New curricular designs depend upon the observable relations of real people living in real cultures.[29] These theories emphasize that a particular school subject is of worth to the student only if it will enhance that student's life. Time itself makes one subject particularly relevant or provides the circumstances to replace it with another.

Such theories of culture expressed by cultural relativists, cultural integrationists, and progressivists affect the student's opportunity to experience behavior required in specific occupations. If

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[27]George F. Kneller, Educational Anthropology: An Introduction (New York: John Wiley & Sons, Inc., 1965), p. 31.

[28]George D. Spindler, Education and Culture--Anthropological Approaches (New York: Holt, Rinehart and Winston, 1965), p. 105.

[29]Ibid., p. 106.

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[30] Virgil M. Howes, I
The Macmillan Company, 19

[31] Ogunniyi, op. cit.

[32] Lee F. Anderson et

[33] Ogunniyi, loc. cit

related vocational curricula involve learning activities which resemble and/or complement actual on-the-job experience, the student will make the transition into the business community as an employee in a much smoother way.

A Psychological Basis for In-Basket Simulation. Skinner's immediate reinforcement theory[30] is perhaps one of the most easily identifiable theories present in a simulated environment. When the subject is faced with a stimulus from the real-world situation, he will respond according to regulatory stimuli he has previously experienced. Twelker advocates a stimulus-response-feedback theory[31] which encourages appropriate and relative feedback to provide the subject with evaluation of responses. Simulations are largely student feedback rather than instructor feedback, especially when debriefing sessions are held immediately following the simulated experience. Anderson et al identify five criteria related to the stimulus-response theories: interest, feedback, explicitness, facts, and principles.[32] Two of these are clearly psychological in nature: feedback (appropriate and meaningful evaluation of performance) and explicitness (the capability of the subject in identifying problematic elements in an analytical or technical sense). Ogunniyi concludes that the stimulus-response theory is basic to all simulation designs with these five criteria illustrative of that design:[33]

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[30]Virgil M. Howes, Individualization of Instruction (New York: The Macmillan Company, 1970), p. 83.

[31]Ogunniyi, op. cit., p. 63.

[32]Lee F. Anderson et al, op. cit., p. 12.

[33]Ogunniyi, loc. cit., p. 66.

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34 H. J. Klausmeier,
Academic Press, 1963), p

35 Ibid., p. 353.

36 E. R. Hilgard and
Appleton-Century-Crofts,

37 Sarnoff A. Mednic
Inc., 1964), pp. 11-12.

1. A stimulus situation
2. A response situation
3. A consequence situation representing the interaction of the stimulus and response
4. A feedback sequence
5. A control and evaluation sequence

Thorndike's identical-elements theory signifies that those elements present in the original learning situation must also be present in the new learning if transfer is to occur:[34]

> .. for transfer of learning to take place from one situation to another, the organism must recognize something similar but not necessarily identical in the new situation that was also present in the original learning situation.[35]

Hilgard and Bower regard the subject's reaction to a new situation beneficial because of the identity of this new situation, in part, with an older situation previously experienced by the subject. The principle of analogy often described as assimilation is also applicable in this type of experience.[36] Kohler has suggested that, if the relevant objects were clearly presented, problem solving may be accomplished insightfully when the subject sees the relationships between the items.[37] In theorizing the value of transfer of training in simulation, Cronbach supports the theory that in applicational transfer of training the effect is more immediate than gains in aptitude as a result of the

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[34]H. J. Klausmeier, Learning and Human Abilities (New York: Academic Press, 1963), p. 361.

[35]Ibid., p. 353.

[36]E. R. Hilgard and G. H. Bower, Theories of Learning (New York: Appleton-Century-Crofts, 1966), pp. 44-45.

[37]Sarnoff A. Mednick, Learning (Englewood Cliffs: Prentice-Hall, Inc., 1964), pp. 11-12.

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[38] Lee J. Cronbach, "
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[39] Poland and Haines

[40] Fattu and Elam, lo

[41] Klausmeier, loc. c

[42] Robert M. Gagné,
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experience.[38] Positive transfer of training may also be enhanced when two factors are present in a simulation:[39]

1. Relevance of task to real office demands.
2. Situational equivalence (extent to which the simulation equivalence in the learning situation is or appears real to the learner).

Fattu and Elam propose a focus strategy of concept attainment they call "scanning strategy." This strategy presents the subject with a positive instance of the concept being studied. He then examines all of the attributes of this instance as well as a second instance to see if it is identical to the first. With additional instances, the subject gains additional understanding of the concept. This theory, if put into an appropriate application, may enhance a theory of transfer of training.[40]

Klausmeier summarily reports that the idea that an organism can learn to make any response of which it is capable to any stimuli which it is able to discriminate is central to explanations of acquisition and transfer in the learning theories of Skinner and Hull.[41] Gagné believes that each variety of learning begins with a different state (or condition) and this leads to a different capability for performance.[42] Therefore, one would expect two different subjects to perform differently

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[38]Lee J. Cronbach, "Evaluation for Course Improvement," Current Research on Instruction, ed. Richard C. Anderson et al (Englewood Cliffs: Prentice-Hall, Inc., 1969), p. 371.

[39]Poland and Haines, loc. cit., p. 13.

[40]Fattu and Elam, loc. cit., pp. 14-15.

[41]Klausmeier, loc. cit.

[42]Robert M. Gagné, The Conditions of Learning (New York: Holt, Rinehart and Winston, Inc., 1965), p. 59.

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[43] Jerome S. Bruner,
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[44] Ogunniyi, loc. ci

in a given situation. Bruner acknowledges the importance of knowledge acquisition in this way:

> Knowledge one has acquired without sufficient structure to tie it together is knowledge that is likely to be forgotten.[43]

Motivational theory, as it may be applied to simulation, provides the basis for applying whatever the subject learns, knows, practices, and executes in terms of an actual task situation.

Ogunniyi highlights three points he considers the pivot of simulations based on psychological rationale:[44]

1. A theory of learning for the design
2. Simulation representation
3. Adequacy of representation

As far as the theory of learning may be depicted, he states that simulations have been developed based on the principles of both the stimulus-response theories and cognitive theories. However, two major issues of psychological importance relate to the second point, simulation representation. Both the medium of representation and the objective of representation are of vital importance in the design of a simulation. The adequacy of representation refers to the degree to which the medium of representation guarantees the occurrence of the expected behavior.

A Sociological Basis for In-Basket Simulation. Sociological theories based upon group interaction have specific concern for the range of social groups and the effect of such interaction on group members. Some group interactions arise out of a work situation. Therefore, sociological theory involves a study of those social roles which

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[43]Jerome S. Bruner, The Process of Education (Cambridge: Harvard University Press, 1960), p. 31.

[44]Ogunniyi, loc. cit., pp. 57-58.

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[45]Theodore Caplow,
Book Company, 1964), p.

[46]Sigmund Nosow and
New York: Basic Books,

[47]Helen I. Snyder,
Sons: Wiley & Sons, Inc.,

arise from the classification of people by the work that they do. Work is likely to be measured in terms of the performer rather than of the performance. Human relations in the working situation have become a significant determinant of output ever since the Hawthorne study more than 20 years ago.[45] As a result, industrial sociologists are able to define with some degree of accuracy behavior in the work situation. Nosow and Form state that social and cultural climates create conditions which affect individuals in patterned ways:

> Theory holds that, given a certain social milieu, persons playing various culturally defined roles will take on certain personality attributes ... particular types of social climates found in occupational life contribute to certain behavioral outcomes both on the job and in the wider community.[46]

From the group interaction perspective, it is vital to examine the theory of social interaction in interpersonal relationships. Because individuals differ in the way they perceive events and rationalize them, any one person will show a consistent pattern of interpretation of a whole series of events. Heider in his theory of interperson perception[47] postulates that "people tend to personify effects of events." This means that people will judge the observed act according to their emotional feeling toward the origin of the act. The origin, in this explanation, is some person or personlike force.

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[45]Theodore Caplow, The Sociology of Work (New York: McGraw-Hill Book Company, 1964), p. 6.

[46]Sigmund Nosow and William H. Form, Man, Work, and Society (New York: Basic Books, Inc., 1962), p. 441.

[47]Helen I. Snyder, Contemporary Educational Psychology (New York: John Wiley & Sons, Inc., 1968), p. 206.

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[48] Ibid., p. 207.

This theory stems from gestalt psychology, which emphasizes that the response of an organism to a situation is a complete and unanalyzable whole rather than a sum of the responses to specific elements in the situation. The observer of the act, in Heider's theory, will always try to achieve a balanced perception; that is, if the perceiver likes the person and approves of his act, his perception is "balanced." It may also be balanced if he dislikes the person and disapproves the act, or vice versa.[48] In this theory, the person and his act are viewed as a whole unit by the perceiver and judged by the perceiver in terms of his own attitudes and feelings about the unit.

Three design components complement the sociological nature of in-basket simulation:

1. The situation exemplified in the simulation
2. The roles which are simulated within the situation
3. The environment consisting of other people and groups within the organization

Because there must be a model that epitomizes the roles simulated, a functional approach may be necessary so that the role elements included in the simulation design may be based on the functional requirements of the position. The situation may represent an identical one found in the everyday activity of the job that is being simulated. Another focus of the in-basket simulation is on the individual role when the response or planned action may be influenced by other individuals or groups of people in the organization or within the social environment. Those in research have been attempting to develop role competence through role simulation, with the major purpose one of assessing performance that is

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[48] Ibid., p. 207.

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[49] Charles G. Moore,
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[50] Howes, loc. cit.,

[51] Ogunniyi, op. cit

characteristic of the incumbent of a given occupational position. Moore suggests that the way to test the degree of realism of the environment is to use real-life practitioners as participants in the simulation.[49]

Combs[50] values recognition of the importance of developing independently strong people in a society that is rapidly becoming more complex and less absolute, more relative, more ambiguous, and less structured. Ever stronger people must develop if they are going to be able to function effectively in this type of society.

An Integrative Theory of Educational Simulation. Ogunniyi proposes the integration of four schools of simulation rationale (philosophical, psychological, sociological, and mechanistic) into a theoretical approach to educational simulation. Philosophical, psychological, and sociological bases have already been cited in the previous sections of this chapter. Ogunniyi's theoretical principles for the design of educational simulation[51] have merit in designing specific types of simulations such as in-basket simulation. The following summation of these six basic principles are proposed in the Ogunniyi study:

1. Nature of Simulation: There is general agreement that simulation is a model of reality and not reality itself.

2. Fidelity of Simulation Model: The simulation model may possess physical or psychological fidelity. Physical fidelity is the representation of essential elements of a real-life model accurately reflecting the important

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[49] Charles G. Moore, "Simulation of Organizational Decision-Making: A Survey," Simulation in the Study of Politics (Chicago: Markham Publishing Company, 1968), p. 195.

[50] Howes, loc. cit., p. 87.

[51] Ogunniyi, op. cit., pp. 91-98.

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[52] Ibid., pp. 100-10

characteristics of the real situation being simulated. Psychological fidelity is a mental process which leaves an individual with a feeling of "realness."

3. Simulation and Game: In simulation the actual presence of individuals other than the participant is not necessary. The behavior of the components is taken as given in the simulated situation. A game, however, is a means of providing clinical experience about a model's behavior and requires interaction between people, people and machines, or people and the environment.

4. Objectives of Educational Simulation: An important stage in the design of educational simulation is the specification of the learning objectives that the simulation will provide. In determining the parameters of the objectives of any simulation, attention needs to be given to specific aspects of the real-life model.

5. Representations in Simulation Designs: The nature of the model and the objectives of the simulation dictate the choice of symbolic representation of the model. The simulation design may integrate several media for purposes of a good design.

6. Steps in Designing Educational Simulation: There is no evidence in the literature to reflect the existence of any clear-cut systematic guidelines for designing and validating educational simulations.

Ogunniyi also proposed that all educational simulations answer the following six design questions and form the basis for simulation design evaluative criteria:[52]

1. Does the design represent a real-life model? What kind--special or general?
2. Does the design serve specified functions? Which?
3. Does the design employ suitable synthetic or animated media for representation and integration of selected operational situations that characterize the model? Which?
4. Does the design provide the sequential context of real-life active or interactive processes within the system model? In what way?
5. Does the design provide appropriate feedbacks to the learner in terms of stated learning experiences simulated? How?
6. Does the design provide for evaluation and control of learning that it offers in terms of the real-life model?

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[52] Ibid., pp. 100-101.

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[53] Ibid., p. 113.

[54] Bert Y. Kersh, Cl
Education, Project No. S
(Yonkers: Teaching Res
Education, June, 1963).

[55] Shulman, Loupe, a

A theoretical conclusion of primary significance to the present study relates simulation to the evaluative process:

> The evaluation of any simulated instruction needs to be a simulated evaluation. That is to say, the evaluation of the knowledge that has come out of the simulated learning must be realistically evaluated in terms of real-life standards. This is often overlooked in simulated instruction.[53]

Mechanistic theory is often seen by researchers as the "tie" necessary to draw aspects of philosophical, psychological, and sociological theories together in a common bond and explain the elements of control theory. With computers or less sophisticated mechanical devices to assist with control, the researcher has the opportunity to stage the simulation so that each of the following elements are present in the design:

1. Compression of time when only a single training objective is being evaluated.
2. Limitation of time in which a given individual or group of individuals is permitted to perform, thus encouraging prompt decision making.
3. Individualization of the experience for the participant by bringing him in contact with people, processes, or situations.

Kersh[54] and Shulman[55] used staging procedures involving mechanistic devices in their simulation research. Observation of behavior in real life does not permit the researcher to control conditions or events in such a way as to permit him to attribute variation in performance to

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[53] Ibid., p. 113.

[54] Bert Y. Kersh, Classroom Simulation: A New Dimension in Teacher Education, Project No. 886, U. S. Office of Education, NDEA Title VII (Monmouth: Teaching Research Division, Oregon State System of Higher Education, June, 1963).

[55] Shulman, Loupe, and Piper, op. cit.

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[56] Frederiksen, Jens

[57] Crombach, loc. ci

[58] Paul Horst, Psych
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[59] Richard H. Linde
Freeman and Company, 19

situational conditions. Utilization of the mechanistic theory gives him the ability to assign subjects to treatments according to a pre-arranged plan. Consequently, he can correlate behavior with situations to determine those factors attributable to situational changes.[56]

Measurement of Individual Performance in In-Basket Simulation

Evaluation is used in order to make decisions about an individual's performance:[57]

1. Identifying the needs of the individual in order to plan his instructional program.
2. Judging the merit of the individual for purposes of selection and grouping.
3. Acquainting the individual with his own progress and deficiencies.

Horst[58] indicates the achievement (proficiency) domain of the evaluative process dominates the measurement of what the individual has actually learned. He endorses the job sample test as a vehicle in the accurate measurement of achievement and proficiency in given vocational traits. Lindeman describes evaluation as more inclusive than measurement. When individual student scores are compared with other scores in the group and are judged to be satisfactory or unsatisfactory, then an evaluation has taken place.[59] Questions such as these arise during the evaluative process:

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[56]Frederiksen, Jensen, and Beaton, loc. cit.

[57]Cronbach, loc. cit., p. 362.

[58]Paul Horst, Psychological Measurement and Prediction (Belmont: Wadsworth Publishing Company, Inc., 1966), p. 29.

[59]Richard H. Lindeman, Educational Measurement (Glenview: Scott, Foresman and Company, 1967), p. 12.

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1. How does actual measurement occur?
2. How is a "score" obtained?
3. What meaning is attached to a "score"?

In a testing situation, the single independent variable is the individual being tested; and observations are made upon a small but carefully chosen sample of an individual's behavior. Hemphill et al[60] purport a theory which accounts for differences in administrative behavior in terms of variations in decision-making behavior utilizing a set of concepts which include decision making, organization, perception, communication, and processing. Zoll states that in training programs the most frequently used method of evaluation measures changes in skills (the ability to perform some act) and changes in specific knowledge (ideas about something). However, he feels that three other types of behavioral changes should also be measured as a part of the terminal evaluation plan:[61]

1. Changes in attitudes
2. Changes in awareness of self
3. Changes in motivation to perform

Factors in Measurement of Individual Differences

Standardization, test reliability, and test validity are three factors involved in the measurement of individual differences. Because of their importance in the development of all evaluative instruments, a

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[60]John K. Hemphill, Daniel E. Griffiths, and Norman Frederiksen, Administrative Performance and Personality: A Study of the Principal in a Simulated Elementary School (New York: Teachers College, Columbia University, 1962), p. 6.

[61]Zoll, Dynamic Management Education, p. 1.

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brief explanation is vital in delineating how each is involved in the design and development of in-basket simulations.

Standardization. In the development of evaluative instruments, exactness in research procedures will result in the establishment of a criterion. Every detail of the testing situation must be identical for all subjects tested if any form of standardization is to occur. Several rules of procedure have been adopted by researchers:[62]

1. Each subject will be given identical materials to those given to another subject.
2. Exact time limits must be established.
3. Instructions must be presented to subjects in identical fashion.
4. Preliminary information and demonstrations must be presented in exactly the same way to all subjects.
5. Methods for handling subjects' questions during the administration of the test must be identical.
6. Each subject's score is evaluated only by comparing it with the scores obtained by other subjects.

Standardization implies uniformity of procedure in test construction, test administration, and scoring procedures. Test construction must be in accord with detailed specifications and items selected on the basis of appropriateness of difficulty and discriminating power. Uniformity in test administration requires that all subjects confront identical materials, time elements, and evaluative techniques. With no predetermined "pass" or "fail" score, the individual subject's responses are compared only with others taking an identical test. The development of standard scoring procedures for in-basket simulation was a prime concern for Hemphill et al in their research of administrative decision-making.[63] Both the content of the performance (what is done) and the

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[62] Anastasi, op. cit., pp. 23-24.

[63] Hemphill et al, op. cit., pp. 86-87.

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[64] Ibid., p. 87.

[65] Weislogal, loc.

[66] F. Lowell Kelly,
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[67] Lindeman, op. ci

style of the performance (how it is done) are incorporated into the scoring categories for the Hemphill in-basket, indicating an analytical approach to the evaluation of responses.[64] Weislogal developed a set of guidelines for constructing and scoring situational tests in which the evaluation was observer-based:[65]

1. Problems should be structured so that each subject faces the same critical situation. The same need for action must be present for all participants.

2. Items within a problem should be arranged in the probable order of their occurrence.

3. The use of scoring techniques based upon objective criteria for checking specific behaviors should minimize the need for judgmental decisions on the part of the observers.

4. Scoring is perhaps easiest when behaviors can be identified on a continuum of effective performance vs. ineffective performance.

Standardization of an evaluative process enables the researcher to define behavioral change in terms of a norm-reference (the norm of a group as the standard of evaluation) or a criterion-reference (the accepted market-place standard of evaluation).[66]

Test Reliability. As one of three criteria found useful by Lindeman in judging the quality of a measurement device, reliability represents the consistency with which a test measures what it is intended to measure.[67] Will the same person under similar conditions obtain approximately the same score when taking the test at a different

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[64] Ibid., p. 87.

[65] Weislogal, loc. cit., pp. 496-497.

[66] E. Lowell Kelly, "The Place of Situation Tests in Evaluating Clinical Psychologists," Personnel Psychology, 1954, No. 7), p. 485.

[67] Lindeman, op. cit., p. 43.

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[68] Anastasi, op. ci

[69] Lee S. Shulman,
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[71] Hemphill, op. ci

time? Are the situations selected an appropriate representation of the "typical" situations for which the individual's performance is to be predicted? Item content, difficulty of items, and discriminatory power of items are factors used in determining the consistency of test measurement from one time to another. Test reliability refers to the extent to which individual differences in test scores are attributable to chance errors of measurement and the extent to which they are attributable to true differences in the characteristics under consideration.[68] Shulman identifies reliability and internal validity as synonymous terms: "When one is assessing a test's reliability, he is measuring its internal validity."[69]

Humphreys indicates that one of the steps in test construction is to write the most reliable items one possibly can for the function to be measured. A high degree of test reliability can be achieved by narrowing the focus of the test and attaining high homogeneity. Test reliability, then, is a function of both item reliability and homogeneity.[70] Hemphill et al concluded that the meaning of a category in-basket score would not change significantly with changes in the particular set of items from which it was obtained. However, reliability estimates in their study reflected three sources of unreliability:[71]

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[68] Anastasi, op. cit., p. 106.

[69] Lee S. Shulman, "Reconstruction of Educational Research," Review of Educational Research, Volume 40, Number 3 (June, 1970), p. 379.

[70] Lloyd G. Humphreys, "The Normal Curve and the Attenuation Paradox in Test Theory," Principles of Educational and Psychological Measurement: A Book of Selected Readings (Chicago: Rand McNally & Company, 1967), p. 37.

[71] Hemphill, op. cit., p. 125.

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[72] Flanagan, "Some
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[73] Ebel, op. cit.,

[74] Ibid., p. 336.

1. The reliability of the scorer would be attenuated by any lack of agreement among the eight scorers as to how the scoring categories applied to the responses of the principals.

2. The unreliability introduced by inconsistencies in the subjects' behaviors from item to item in the in-basket was noticeable.

3. Any general difference between the odd- and even-numbered sets of items would reduce the reliability of the category scores.

Flanagan characterizes one of the shortcomings of the situational testing approach to evaluation as time required to obtain a reliable score. The many chance factors that enter into behaviors represented in situational testing indicate that a relatively long period of time may be required to obtain reliability.[72] At least five methods have been used for obtaining the independent measures necessary for estimating test reliability. These methods yield reader reliability, test-retest, equivalent forms, split halves, Kuder-Richardson, or analysis of variance coefficients.[73] Typically, improved test reliability is obtained many times because of other test and group characteristics:[74]

1. A longer test may be more reliable than a shorter test.
2. A test composed of more homogeneous items may be more reliable than a more heterogeneous test.
3. A test composed of more discriminating items may be more reliable than a test composed of less discriminating items.
4. A test whose items are of middle difficulty may be more reliable than a test composed mainly of quite difficult or quite easy items.

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[72] Flanagan, "Some Considerations in the Development of Situation Tests," p. 463.

[73] Ebel, op. cit., p. 312.

[74] Ibid., p. 336.

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[3]Robert L. Ebel,
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5. A group having a wide range of ability may be more reliable than a group of more homogeneous ability.
6. A speeded test may be more reliable than one in which all subjects can complete the test in the time available.

Test reliability, then, is dependent upon the consistency with which a subject will respond to similar environmental situations in a similar manner. In checking for reliability, the researcher's concern is that the same individual under similar conditions would obtain approximately the same score when taking the test at a different time. In order for a test to be reliable, there must be consistency of measurement from one time to another.

Test Validity. What the test measures and how well it measures that content are the two aims of test validity. An evaluative instrument is designed to measure how well the subject has mastered a specific skill or knowledge (or accumulations of skills and knowledges). The existence of valid concepts within the testing structure is essential in order for understanding of the test results, analysis of data, or efforts to change behavior to take place. Ebel regards three elements in determining the quality of a measurement procedure:[75]

1. The importance of the inferences that can be made from the test scores.
2. The meaningfulness of the test scores.
3. The convenience of the test in use.

Four types of validity have operational value in the development of in-basket simulation: content validity, construct validity, concurrent validity, and predictive validity. One other type of validity,

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[75]Robert L. Ebel, "Must All Tests Be Valid?" Principles of Educational and Psychological Measurement: A Book of Selected Readings (Chicago: Rand McNally & Company, 1967), p. 230.

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[76]Anastasi, op. cit

[77]Ibid., p. 136.

[78]Lindeman, op. cit

[79]Anastasi, loc. ci

[80]Lindeman, op. cit

[81]Anastasi, loc. ci

[82]Ibid., p. 138.

[83]Lopez, loc. cit.

face validity, is really a part of content validity because it refers to what the test superficially measures.[76] The items appear "on their face" to bear a common-sense relationship to the total universe of appropriate items and to the objective of the test. Face validity indicates that there is obvious foundation in real-life situations. A brief explanation of the four basic types of validity will assist in relating their importance in the development of in-basket simulation:

1. Content Validity: The relevance of the individual's test responses to the behavior area under consideration rather than upon the apparent relevance of item content;[77] the expert review of the instrument by a subject-matter specialist with the expertise of the test-designer.

2. Construct Validity: The extent to which a test tells about the achievement of the individual;[78] the extent to which the test measures a theoretical construct or trait.[79]

3. Concurrent Validity: Relationship between test performance and an accepted contemporary criterion;[80] the relation between test scores and indices of criterion measure obtained at approximately the same time (validation by method of contrasted groups).[81]

4. Predictive Validity: The effectiveness of the test in predicting some future outcome;[82] the significance of the dimensions of in-basket performance compared with future job performance.[83]

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[76] Anastasi, op. cit., p. 138.

[77] Ibid., p. 136.

[78] Lindeman, op. cit., p. 137.

[79] Anastasi, loc. cit., p. 145.

[80] Lindeman, op. cit., p. 37.

[81] Anastasi, loc. cit., p. 141.

[82] Ibid., p. 138.

[83] Lopez, loc. cit.

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[15] Fiske, loc. cit.

The validity of situational tests is proportional to the correspondence between performance on the test and performance on the job. After an in-basket test has been validated, one may proceed to establish relationships between other variables and performance in a simulated situation without the necessity for costly procedures for measuring real on-the-job behavior.[84] Fiske believes that the low validities found in some past studies of situational testing may be the result of these two deficiencies:[85]

1. The pertinent trait may have been inaccurately identified.
2. A discrepancy existed between the relative effectiveness elicited first in the situational tests and later in the actual job.

In order for an in-basket simulation to be a valid representation, it must not only appear to measure the traits essential for adequate on-the-job performance but it must also prove that a relationship exists between these traits and on-the-job performance. The predictive ability of an in-basket simulation is one of the purposes in utilizing this form of testing in specific training programs. The establishment of validity measures requires the utilization of both criterion groups and experimental groups in order to establish appropriate relationships between performances, both on the test and on the job.

C. Summary

Basic theories relevant to the design and development of in-basket simulation require the integration of sound and innovative concepts from

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[84] W. Ray Cross, "Relationships Between Elementary School Principals' In-Basket Performance and Their On-the-Job Behavior," The Journal of Educational Research, Volume 63, Number 1 (September, 1969), p. 26.

[85] Fiske, loc. cit., p. 469.

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the real business world with meaningful and relevant methods of instruction in the classroom environment. The design theories presented in this chapter represent given aspects of philosophical, psychological, or sociological premises in their relationships to approaches to test development, development of actual in-basket simulation, and measurement of individual performance in such in-basket simulations. Those theoretical principles which provide a basis for the development of THE SECRETARIAL IN-BASKET in this study and which lead to the empirical methodology presented in the procedures for the study are summarized here to provide direct input for the design of the in-basket simulation:

1. Basic Approach to Test Development: The rational hypothesis approach provides the basic approach to the development of in-basket simulation because it produces tests of typical performance in real-life situations.

2. Philosophical Theory for In-Basket Development: In-basket simulation must represent as closely as possible a situational excerpt from the real world in its attempt to bridge the gap between the business world and the conventional classroom.

3. Psychological Theory for In-Basket Development: The stimulus-response-feedback theory and the identical elements theory are prominent in the development of in-basket simulation in order that transfer of training occurs and motivation for learning enhanced.

4. Sociological Theory for In-Basket Development: The development of an in-basket simulation authenticating a given occupational role requires a study of the social role arising from the job classification under study with specific relevance to the human relations required in the work to be performed on the job.

5. Integrated Theory for In-Basket Development: An integrated approach to in-basket simulation appears essential in order to tie the foregoing philosophical, psychological, and sociological elements to the mechanistic theory essential for control in design.

6. Measurement of Individual Performance: Accurate measurement of what the individual has learned (specific skills and knowledges, behavioral changes in attitude,

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7. Standardization of Testing Procedures: Every detail of the testing situation must be identical for all subjects tested if any form of standardization is to occur.

8. Maintenance of Test Reliability: Test reliability is the consistency with which the in-basket simulation measures what it is intended to measure from one time to another.

9. Establishment of Test Validity: The validity of in-basket simulation (content, construct, concurrent, and predictive) is proportional to the degree of correspondence between performance on the in-basket and performance on the job.

These theoretical principles form the basis for the methodology used in the development of THE SECRETARIAL IN-BASKET. There has been little published on the actual design of in-basket simulation; therefore, this summation provides a rather comprehensive analysis of those principles that are applicable to the development of in-basket simulation and should provide an informational base for the operational aspects of in-basket simulation for others.

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CHAPTER III

HISTORICAL DEVELOPMENT OF IN-BASKET SIMULATION

In-basket simulation has been used in research, management training, and secretarial education as an instructional, training, and/or testing procedure. A brief look at the historical development of in-basket simulation in these areas indicates the growing interest in the use of the in-basket technique, especially since the 1950's. The acceptance of the in-basket technique in such fields as teacher education, medical education, and management training and development has been dependent in a large part on the interest shown by researchers and developers in devising procedural designs for in-basket simulations.

A. The In-Basket in Research

Norman Frederiksen of the Educational Testing Service (ETS) is credited with being the originator of the in-basket test and its use in training evaluation. ETS has been involved in the development of in-baskets and research pertaining to the use of in-baskets since the Air Force in-baskets were developed in 1957. Subsequent research in executive behavior (Frederiksen, 1962); school administration (Hemphill, Griffiths and Frederiksen, 1962); and organizational climates (Frederiksen, Jensen and Beaton, 1968) have resulted in major ETS studies involving the in-basket as the research instrument for comparing simulated behavior with on-the-job behavior.

In-basket research conducted at Michigan State University has focused in the area of teacher education where the in-basket test was used in the study of teacher behavior (Shulman, Loupe and Piper, 1968) and in the study of student behavior (Poland and Haines, 1970). In medical education the in-basket technique has been used in the study of patient management (Rimoldi, 1963; Helfer and Slater; McGuire, 1967; Elstein, 1971). Brief reviews of these research investigations will emphasize the growing importance of the in-basket as a research tool.

The Air Force Study

The Officer Education Research Laboratory of the Air Force Personnel and Training Research Center contracted with ETS to study the desired outcomes of training in the Command and Staff School of the Air University in 1957.[1] A careful study of the curriculum of the Command and Staff School and of statements by instructors about changes in performance they hoped to produce in their students yielded a classification of six behaviors that were primarily individual (exhibited by a person working alone) and six behaviors primarily interactive (involved interrelationships with other people).[2] The prototype instrument had to be a test that would tend to elicit the relevant kinds of behavior in a situation that resembled as closely as possible the real job of an Air Force officer. Analysis of the tasks performed by an officer revealed that the majority of the desk work centered around the contents of one of

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[1]Norman Frederiksen, D. R. Saunders, and Barbara Wand, "The In-Basket Test," Psychological Monographs: General and Applied, Volume 71, Number 9 (1957), p. 1.

[2]Frederiksen, Jensen, and Beaton, op. cit., p. 30.

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[3] Ibid., p. 31.

[4] Ibid., p. 32.

the two baskets ("in" and "out" baskets) usually found on the desk of an Air Force officer. The format of the instrument involved a situational test that required the subject to deal with items in the in-basket.

Several criticisms resulted from the first in-basket used in the Air Force study.[3] Air Force officers stated that it was not reasonable to take actions on the items in the in-basket test because too little information was available to the subject. The "correct" action designated in the evaluation scheme for the in-basket depended upon a number of unknown situational factors. A compromise in the test structure resulted in the development of an in-basket that placed the subject in a new position because of an emergency and allowed a period of time prior to the start of the in-basket exercise during which the subject would study applicable background materials.

The in-basket tests that were prepared and tried out at Maxwell Air Force Base required the subject to play four roles in succession: Commanding Officer of a hypothetical 71st Composite Wing; Director of Materiel; Director of Personnel; and Director of Operations. In each role he was given an in-basket containing incoming letters, memoranda, staff studies, and other similar material.

Frederiksen et al report that the Air Force in-baskets were disappointing from the standpoint of their psychometric properties. In subsequent studies different methods of scoring were employed that yield quite satisfactory reliabilities for many scoring categories.[4]

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[3] Ibid., p. 31.

[4] Ibid., p. 32.

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[5]Norman Frederiks

Psychological Monograp

Whole No. 541 (1962),

[6]Ibid., p. 25

The Bureau of Business In-Basket Study

The Bureau of Business In-Basket Test consists of letters, memoranda, records of telephone calls, and other business papers from the in-basket of a newly-hired Executive Officer of the Northeastern Division of the Bureau of Business. The in-basket represents a simulation of some major aspects of an executive's job, and the subject is requested to actually perform the tasks contained in the in-basket simulation as he would if he were actually employed in the position. The letters, memoranda, and notes written by the subject in this complex simulation of an executive's position constitute a record of behavior which occurs spontaneously in a rather unstructured situation.

The purpose of the Bureau of Business In-Basket Study was to learn something about the major dimensions of behavior which occur in the simulated job.[5] These behavioral dimensions are of interest as well as intermediate criteria for studying a variety of potentially useful selection tests. The in-basket test was considered a performance test which would reflect personality of the individual subjects, and methods were developed for scoring 70 aspects of behavioral dimensions. The administration of the test to 335 people representing subgroups of undergraduates, graduate students of business, government administrators, business executives, and army officers resulted in a study of the major differences between these groups as revealed by mean scores on in-basket categories. A factor analysis of 40 of the most reliable in-basket category scores revealed eight primary factors:[6]

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[5]Norman Frederiksen, "Factors in In-Basket Performance," Psychological Monographs: General and Applied, Volume 76, Number 22, Whole No. 541 (1962), p. 24.

[6]Ibid., p. 25

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1. Acting in compliance with suggestions
2. Preparing for action by becoming informed
3. Concern with public relations
4. Procrastinating
5. Concern with superiors
6. Informality
7. Directing subordinates
8. Discussing

Three second-order factors were defined in terms of the administrative behavior represented by each:[7]

1. Preparing for action
2. Amount of work
3. Seeking guidance

The Hemphill study of school administration utilized the Bureau of Business In-Basket Test as one of four in-baskets administered to elementary school principals. One major difficulty facing personality research has been that of making suitable real-life observations because not every real-life situation will provide opportunities for the expression of any or all personality tendencies. Therefore, the behavioral dimensions obtained from these in-basket studies relate subject performance on a series of situational in-baskets.

The School Administration In-Basket Study

During the ten-year period from 1948 to 1958 the focus of theoretical discussions began to shift from emphasis on traits of administrators to emphasis on the behavior of administrators in school situations.[8] An interest also developed in an actual analysis of the administrative situation, and the Hemphill et al study had as its main

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[7] Ibid.

[8] Hemphill, Griffiths, and Frederiksen, op. cit., p. 3.

focus the investigation of major dimensions of administrative performance. Three major objectives of the study were identified:[9]

1. The Development of Concepts: To determine dimensions of performance in the elementary school principals and thus to develop a better understanding of the nature of the job of the school administrator.

2. The Determination of Measurable Dimensions of Performance: To provide information helpful in the solution of the problem of selecting school administrators.

3. The Development of Materials: To provide materials and instruments for the study and teaching of school administration.

The purpose of the Hemphill study was to try to identify some major dimensions of administrative performance and to investigate the relationships of these major dimensions to a variety of other measurable characteristics of people.[10] Subjects were 232 elementary school principals from a wide variety of elementary schools in the United States.

The background materials in the school administration in-baskets were much more elaborate than for the Air Force study. A day and a half of the five-day testing period was spent by subjects in learning about a simulated elementary school and the community in which it was located. Training materials included filmstrips, motion picture films, and tape recordings of several school events. At the end of the orientation period, the subjects had as much information as could reasonably be expected of a new principal in an actual situation. Four in-baskets were presented, one of which was the Bureau of Business In-Basket. The other three represented the paperwork of the principal on three specific days of the school year.

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[9] Ibid., p. 7.

[10] Ibid.

Scoring methods developed for scoring the school administration in-baskets and the Bureau of Business In-Basket were simpler and more direct than those employed in the Air Force study.[11] In general, the scores proved to be of satisfactory reliability. The Air Force study and the school administration study differed in another important way. The Air Force in-baskets were prepared specifically to elicit certain pre-selected kinds of behavior judged relevant to the purposes of a training program. The school administration study, on the other hand, began with the question of how to identify some important aspects of behavior in administration. This approach led to a quite different approach in the development of testing materials.

Eight primary factors resulting from a factor analysis accounted for most of the common variance in the scores obtained in the school administration study:[12]

1. Exchanging information
2. Discussing before acting
3. Complying with suggestions made by others
4. Analyzing the situation
5. Maintaining organizational relationships
6. Organizing work
7. Responding to outsiders
8. Directing the work of others

A second-order factor analysis of the intercorrelations of the eight primary factors yielded two factors:[13]

1. Amount of work done in handling items
2. Preparation for decision vs. taking final action

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[11] Frederiksen, Jensen, and Beaton, loc. cit., p. 34.

[12] Ibid., p. 36.

[13] Ibid., p. 37.

The Hemphill study also involved administering to the 232 elementary school principals a large battery of tests, inventories, and questionnaires in order to investigate the relationships of cognitive abilities, personality, and biographical information to the factors in school administration. A number of relationships were found that appeared to show some consistency in performance across a domain that includes ability tests, personality inventories, and ratings as well as performance in the simulated school.

The Organizational Climates Study

Frederiksen, Jensen, and Beaton conducted an experimental study which involved a simulated organization with specific modifications of the organizational climates.[14] These organizational climates were communicated in both subtle and overt ways, and the subject's perceptions of the climate were reinforced during the test by including suitable materials in the in-basket itself.[15] The two main purposes of this study were:

1. To investigate the effects of organizational climates on the means and on the factor structure of the dependent variables.

2. To investigate the effects of organizational climates on the correlations between predictor measures and the dependent variables .. the possible role of situational variables (the organizational climates) as moderators of relationships of predictors to measures of performance in an organization.[16]

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[14] Ibid.

[15] Ibid., p. 10.

[16] Ibid., p. 21.

Most of the experimental data were obtained at a two-day Research Institute in Sacramento, California, in April, 1965. The subjects in the experiment were 260 male executives employed by the State of California in a variety of positions ranging from forestry to prison service and from heads of departments to middle-management levels. The simulated job was that of Chief of the Field Service Division of the Department of Commerce for the State of California, a job that required little technical skill or information beyond that already known to all subjects because of their experience as state employees. The experimental treatments involved two dichotomies of organizational climate:[17]

1. A climate in which innovation and originality are encouraged vs. a climate that encourages following rules and standard procedures.

2. A climate in which a type of supervision was utilized wherein the supervisor was expected to monitor the details of the work of a subordinate vs. a global type of supervision in which the supervisor was mainly concerned with assigning work and evaluating the final products of the subordinate's work.

The perceptions of the organizational climates were enhanced throughout the experiment by the documents included in each subject's in-basket. One of the implications derived from the use of the in-basket in this research was that to some degree subjects perform differently in a situational test than they do in a real job, knowing as they do that decisions are not "real" and that no one's career would really be influenced by any action taken. Another observation, the researchers noted, concerned the degree of accuracy to which performance in a simulated job is representative of one's typical behavior.

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[17] Ibid., p. 336.

Ten factors accounted for 61 per cent of the total variance. Scores representing these ten performance factors served as dependent variables in the investigation of effects of organizational climates on performance. These performance factors are as follows:[18]

1. Productivity
2. Acts in compliance with suggestions
3. Interacts with superiors
4. Thoughtful analysis of problems
5. Plans and discusses
6. Defers judgment and action
7. Interacts with peers
8. Orderly work
9. Informality
10. Accepts administrative responsibility

An additional variable, the average of the in-basket scorers' rating of overall quality of performance, constitutes the eleventh criterion. The criteria of performance used in studying effects of organizational climates are the ten in-basket performance factor scores and the average rating of quality of performance by the in-basket scorers.

One further recommendation made by Frederiksen, Jensen, and Beaton involved the selection of a test battery for the selection of managers. These two considerations are of prime importance in selecting appropriate testing packages:[19]

1. What criteria of performance are considered important?
2. In what kind of situation or organization will the candidate work?

Frederiksen, Jensen, and Beaton indicate that the variations in settings, experimental treatments, and dependent variables that might be employed in such social-psychological experiments are limited only by the experimenter's imagination. The use of a complex situational test as a device

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[18] Ibid., pp. 338-339.

[19] Ibid., p. 352.

for performing experiments in the behavioral sciences provides advantages over field studies from the standpoint of experimental controls; and an implication derived from this study focuses on the feasibility of using the simulated technique more extensively as an investigative technique.[20]

The Shulman Study

Shulman et al developed the Teacher's In-Basket in an attempt to study individual inquiry behavior in a situation involving a female elementary school teacher-in-training as the principal subject.[21] The situation involved her in the role of a new sixth grade teacher hired in the middle of the semester with three kinds of materials available for her perusal:[22]

1. The contents of an in-basket.
2. Written materials, records, report cards, etc., concerning both the school and pupils in the teacher's class.
3. Human resources that are in the situation (a school secretary, a school principal, and a reference memory, all accessible by a telephone placed on the teacher's desk).

In addition to observation of the teacher's behavior in written communication, she was also viewed by means of a one-way viewing mirror with rooms connected through a two-way telephone exchange. A number of quantitative measures were derived from the in-basket situation:[23]

1. Problem Sensitivity: The number of potentially problematic elements reacted to as problems.

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[20] Ibid., p. 360.

[21] Shulman, Loupe, and Piper, op. cit.

[22] Ibid., pp. 5-6.

[23] Ibid., p. 8.

2. Time: The number of minutes the subject chooses to spend in the inquiry situation.

3. Materials Attended: A measure of input, the number of pieces of material to which the subject attends in the inquiry period.

4. Information Sources: A count of the number of categories of information brought to bear by the subject on ten selected problems in the in-basket.

5. Competence: A measure of problem resolution; how well each subject comes to understand the nature of the problem situation in the selected problems.

Shulman concluded that it is possible to conduct systematic studies of inquiry performance through the use of such an in-basket or other simulation of a complex problem situation. The 'thinking aloud' techniques used in the study aided the researchers in identifying actual behavior of the subjects. However, Shulman noted that the purpose of the research was not the development of a theory of teaching behavior and that in this particular study teaching was merely a specific exemplar of inquiry.[24] The use of simulation in similar research studies may prove to be an effective tool, he noted, in conducting descriptive studies of the behavior of criterial exemplars of such complex skills as teaching and medical diagnosis.[25]

The Vocational Office Block Project

Initiated in August, 1965, the Vocational Office Block Project (VOB) was one of several research efforts of the Research and Development Program in Vocational-Technical Education, Michigan State University. Clinical schools in five states (Arizona, Florida, Michigan, New Jersey,

[24] Ibid., p. 189.

[25] Ibid., p. 191.

and Washington) utilized a block-time approach in the implementation of the vocational office block concept. Planned outcomes of the project[26] resulted in a curriculum development effort with two basic goals:

1. To fuse the fundamental processes and skills into simulated job tasks.
2. To present learning situations when appropriate to the skills.

Special instructional materials were developed for the VOB project, including integrated exercises, case studies, and model office simulation. Evaluation was deemed a high priority by VOB personnel:

> It was felt that evaluation should consider the process of the project, the outcomes of student achievement, and the related aspects of local practice and adoption.[27]

One of the ten evaluative activities was an experimental situation test of student performance administered by research associates to 590 students in 1966-67. The VOB personnel concluded that the test needed substantial revision if it were to be a truly evaluative instrument. The situation in-basket was used again in 1967-68 only as an introduction to situation testing and not as an experimental vehicle.

A cutback in the availability of federal funds in the midst of the first 18-month contract necessitated a reduction in staff personnel and scope of work in such areas as evaluation, materials development, and teacher education.[28] As a result, a number of recommendations were made for subsequent research in these areas. One of the recommendations stemming from the VOB project emphasizes the need for continuing efforts

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[26]Poland and Haines, loc. cit., pp. 6-7.

[27]Ibid., p. 40.

[28]Ibid., p. 10.

to develop appropriate evaluative materials for use with a block-time approach.[29]

> Evaluative instruments must be developed which will support a research design comparing the program's effectiveness with the traditional one-hour classes taught in office education.

Rimoldi's Test of Diagnostic Skills

Within recent years medical educators have been experimenting with simulated means for evaluating and training medical students in certain facets of the profession. Specific inquiry regarding the process of reaching a clinical diagnosis was begun by Rimoldi who developed an instrument, the Test of Diagnostic Skills, for studying "high mental processes with special reference to the clinical diagnostic problem."[30] The test, an application of a technique developed at the Loyola Psychometric Laboratory for the study of problem solving in general, interested many medical educators because of its potential use as an instrument for evaluating and training medical students.[31] The primary purpose of the test is to estimate how a medical student proceeds when diagnosing a given case. Through a simulated approach, approximating an in-basket technique, the subject is requested to reach a diagnosis, given preliminary information about a specific case and the opportunity to ask pertinent questions and seek additional information concerning the case.

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[29] Ibid., p. 71.

[30] H. J. A. Rimoldi, "The Test of Diagnostic Skills," Journal of Medical Education, Volume 36, Number 1 (January, 1961), p. 73.

[31] H. J. A. Rimoldi, "Rationale and Applications of the Test of Diagnostic Skills," Journal of Medical Education, Volume 38, Number 5 (May, 1963), p. 364.

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[33] Ibid.

The format of the test itself consists of cards contained in flat pockets which partially overlap and are evenly arranged in a display folder. On the top edge of each of these cards a question that the subject may ask is indicated. By drawing a card and looking at the reverse side, the subject gets information that is given in the form of verbal reports, laboratory analyses, x-rays, etc. Rimoldi found three distinct advantages for use of this simulated technique in medical education:[32]

1. It is possible to study the process followed by a subject in diagnosing a case.
2. Aspects of the diagnostic process appear when using this technique that do not show up in true-false or other types of tests.
3. Subjects who reach the same diagnosis may do so by following different processes.

Five major scoring procedures involved the following categories:[33]

1. Number of Questions Asked: Two forms of the test (A and B) contain respectively 56 and 59 items, and it is possible to observe how many questions are asked until diagnosis of the case is reached.

2. The Utility Index of Each Card: The ratio between the number of times that a given question has been asked and the number of subjects in the group can be taken as an indication of the utility of the particular question.

3. The Utility Score: The average of the utility indices of the cards selected by the subject results in the utility score.

4. Diagnostic Accuracy: The accuracy of the final diagnosis is obtained for each case.

5. Sequential Relationships: Relationship between the sequences followed by different subjects and average intercorrelation between the sequences followed by all the subjects in a given group enable the researcher to obtain sequential relationships.

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[32] Rimoldi, "The Test of Diagnostic Skills," p. 74.

[33] Ibid., p. 75.

Rimoldi suggests that the evaluation of each subject's performance is not tied to norms based on average performance but becomes possible in terms of the "intrinsic" difficulty of each problem, the content used, and the group performance.[34] Weitman[35] also made use of Rimoldi's Test of Diagnostic Skills in a study of the factors which influence the training of medical students.

The Diagnostic Management Problem

Helfer and Slater[36] were concerned with the process of reaching a clinical diagnosis, the steps taken or sequence used by a medical student as he works through a clinical problem. In order to better prepare the future physicians to solve clinical problems, equal emphasis must be placed on (1) the quality of the diagnosis or end product and (2) the means or process used to reach this diagnosis.[37] The Diagnostic Management Problem was constructed from case material that appeared in either the in-patient or out-patient departments of the medical center. Information relating to a specific historical fact, a given physical finding, or a single laboratory study relating to that case was recorded on a separate card; and this card was added to the total deck of cards representing one Diagnostic Management Problem. The subject is given the setting in which he is working and provided with an index sheet

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[34] Rimoldi, "Rationale and Applications of the Test of Diagnostic Skills," p. 365.

[35] M. Weitman and F. Coisman, "Medical Student Pathways to Diagnosis," Journal of Medical Education, Volume 40 (1965), pp. 166-179.

[36] Ray E. Helfer and Carl H. Slater, "Assaying the Process of Reaching a Clinical Diagnosis," University of Colorado Medical Center, pp. 79-87.

[37] Ibid., p. 79.

which itemizes the type of information available on each of the numbered cards. He then proceeds to work through the problem by selecting cards in any order he chooses; he may select as many or as few cards as he desires and quit at any point in his evaluation of the clinical problem. On a separate answer sheet the number of each card selected and the order in which it was selected are recorded. His final diagnosis or differential is also recorded.

The evaluative instrument developed by Helfer and Slater provides a method for assaying the process a medical student uses to arrive at a clinical diagnosis. Its reliability and validity have shown that it has the capability of selecting out those students who may require special assistance in the development of the skills unique to the process of clinical problem solving. The researchers made the following observation in relating the importance of such a technique in medical education:

> Medical educators are continually confronted with the problem of recognizing a student's deficiencies in his problem solving skills very late in a student's clinical training. The Diagnostic Management Problems in addition to the contributions made by Rimoldi, Cowles and Weed now provide an answer to this dilemma. Those students who will require special assistance in the development of their problem solving skills can now be identified at a point in their clinical educational experience when constructive intervention may be both feasible and beneficial.[38]

McGuire's Process Approach to Medical Evaluation

Since its establishment in 1959, the Office of Research in Medical Education of the University of Illinois College of Medicine has completed

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[38] Ibid., p. 82.

a series of studies of learning climates at the University, the findings of which support the following view:

> The then current system of student examination, grading, and promotion not only failed to provide evidence regarding student achievement with respect to many of the most important goals of medical education ... it actually jeopardized their attainment by exacerbating tendencies toward fragmentation of learning, by focusing student attention on esoteric or trivial detail, and by intensifying unhealthy competition among students for grades and among departments for students' time and attention.[39]

As a result of these preliminary studies, a multi-disciplinary approach to evaluation[40] has been making a significant contribution to the systematic modification of medical education. Patient management problems have been developed based upon videotapes of patient interviews, movies of patient examinations or autopsies, audiotapes of heart, breath, lung, and abdominal sounds. These situational exercises require the medical student to demonstrate:

1. Accurate observation of data presented.
2. Knowledge of significance of data and possible interrelations.
3. Recognition of basic biochemical or patho-physiologic processes that would explain data.
4. Anticipation of other findings.[41]

A number of simulations were developed to test the complex skills of gathering data and making judgments. McGuire indicates that "these simulations ... constitute branched problems in patient management or

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[39]Christine H. McGuire, "An Evaluation Model for Professional Education--Medical Education," Proceedings of the 1967 Invitational Conference on Testing Problems (Princeton: Educational Testing Service, 1968), pp. 38-39.

[40]Ibid., p. 38.

[41]Ibid., p. 40.

in laboratory investigation that require sequential analysis and decision."[42]

The final developmental phase is the determination of minimum acceptable performance on the total comprehensive examination and on each subtest. Administration of the test itself yielded two sets of results:[43]

1. The performance of students at different levels of the curriculum on identical exercises ... in order to assess student progress toward goals.

2. Any unusual trends in numbers of students failing to meet the pre-established standards.

The climate in medical education, according to McGuire, is conducive to the kind of systematic evaluation process that encourages:

1. Empirical determination of essential components of professional competence.
2. Employment of simulation techniques to supplement more conventional methods of assessment.
3. Application of pre-established standards.
4. Utilization of numerous feedback mechanisms to assure fuller exploitation of evaluation data.[44]

The patient management problems[45] described by McGuire have been extensively used as part of the comprehensive examinations of third- and fourth-year medical students at the University of Illinois and also as a major portion of the examination for certification by various specialty boards such as that in orthopedic surgery. Scott reported that these same types of simulated exercises were used at Michigan

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[42] Ibid., p. 41.

[43] Ibid., p. 44.

[44] Ibid., p. 51.

[45] Center for Educational Development, Patient Management Problems (University of Illinois College of Medicine).

State University as part of the evaluation of the development of problem-solving skills for sixth-year medical students.[46]

The Medical Inquiry Project

Elstein et al conducted an investigation of the reasoning process of expert physicians, known as the Medical Inquiry Project, at Michigan State University. The basic objectives of these studies were:[47]

1. To identify the intellectual strategies and tactics characteristic of expert clinical reasoning.
2. To generate a psychological theory to explain these features.
3. To relate this theory to current theories of thinking, human information processing, decision-making and problem-solving.
4. To develop instructional methods and materials which will assist medical students to acquire and refine their problem-solving skills.

Actual strategies employed by physicians in the medical work-up elicited a methodology for inquiry or problem-solving which was utilized for data gathering in a setting closely resembling the one in which physicians work. It was felt that not only could there be an impact on medical education through the development of new instructional materials and methods for teaching clinical skills but that a complementary impact could be made on scientific psychology with actual medical problems as exemplars of the complex practical problems encountered regularly in the real world.[48]

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[46]Letter from Hugh M. Scott, M. D., Royal Victoria Hospital, Montreal 112, P. Q., March 3, 1970.

[47]Arthur S. Elstein et al, "Methods and Theory in the Study of Medical Inquiry," Office of Medical Education Research and Development, College of Human Medicine, Michigan State University (Summer, 1971), p. 1.

[48]Ibid., pp. 1-2.

The initial step in developing the methodology for the study was to observe the data-gathering and reasoning processes of physicians selected from three medical fields: private practice, salaried group practice, and academic medicine. A minimum of two days on the project was required with the majority of time allotted to working up and discussing three simulated medical problems. The planned research facility included a specially designed room resembling a physician's office and two television cameras mounted near the ceiling with subsequent videotaping of the doctor-"patient" sequence. A "data bank" technique was utilized to provide physical findings of the physical examination of the patient, but interpretations of this data depend upon each physician's judgment. The tentative formulation of a theory of medical inquiry resulted from this initial observation. This theory is stated as follows:

> Physicians generate specific diagnostic hypotheses early, well before they have gathered most of the data of a particular case.[49]

As a part of a long-term program of studies of the medical diagnostic process, three simulated cases were administered to 19 third-year medical students and 29 physicians, all members of the medical school faculty or physicians in the University Health Service. The results indicate that physicians and students do in fact differ in the way they think about medical problems. Physicians consistently offered more hypotheses (diseases) than students while no differences existed in the number of constraints sought (symptoms, signs, and laboratory findings). What accounted for these differences in hypotheses?

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[49] Ibid., p. 9.

1. Students are more cautious about inferring hypotheses from limited data.
2. Students know fewer hypotheses.
3. Students know an equal number of hypotheses but have weaker links between constraints and hypotheses.
4. The kinds of constraints sought are not the same; therefore, hypotheses are less strongly implied for students.[50]

The observable procedures and reasoning of the physician are efforts to test deductions derived from provisional hypotheses. The hypothetico-deductive strategy of systematic search, used primarily to confirm or reject provisional formulations, appears to contrast sharply with the progressive constraint-seeking inquiry strategy generally taught by medical schools and endorsed by many cognitive psychologists.[51]

Other Medical Evaluation In-Baskets

An elaborate in-basket has been used by the Canadian College of Family Practice in their certifying examinations.[52] The in-basket includes a mock-up of a doctor's office and materials ranging from actors who are trained to simulate different patient types for examiners and candidate, telephone interruptions, and correspondence in the doctor's "in-basket."

The "programmed patient"[53] is a similar form of simulation developed by Harold Barrows of the University of Southern California in

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[50]Arthur S. Elstein, Michael J. Loupe, and James B. Erdmann, "An Experimental Study of Medical Diagnostic Thinking," Journal of Structured Learning, Volume 2, Number 4 (1971), p. 51.

[51]Elstein et al, "Methods and Theory in the Study of Medical Inquiry," p. 16.

[52]Scott, op. cit.

[53]Ibid.

which he has trained actresses to simulate neurological patients. The candidate is required to find whatever problems the patient may have and select an appropriate solution.

B. The In-Basket in Management Training and Selection

Business and industry have utilized the in-basket primarily as a management training and selection device. The Bell System, Sears, General Electric, The Boeing Company, Port of New York Authority, Dayton Rubber Company, and Procter and Gamble are some of the commercial firms employing the in-basket in such a capacity. A brief review of the use of the in-basket in management training and selection will demonstrate the ways in which in-basket simulations have been designed to aid business in the quest for effective employees and managers.

The Bell System

The Personnel Assessment Program employed by the Bell System[54] dates back to 1956 when the Personnel Relations Department of the American Telephone and Telegraph Company began a long-range program to investigate factors which determine the progress of young people in management. This project, known as the Management Life Progress Study, called for the intensive investigation of career histories to uncover information about management selection and development in the Bell System. Michigan Bell Telephone Company put into operation the Bell System's first non-management Assessment Program in September, 1958, to be utilized in selecting first-line plant foremen from the non-management ranks. Four years later an Assessment Program for the

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[54] Personnel Assessment Program (Detroit: Michigan Bell Telephone Company), p. 4.

company's non-management women personnel was established. In 1964 the Personnel Relations Department combined both the men's and women's assessment activities into one program, the Michigan Bell Personnel Assessment Program.

Actual assessment of individuals is made by a professional staff using techniques such as personal interviews, in-baskets, pencil-and-paper tests, group problems, and individual work projects. The in-basket technique is employed as a part of the assessment cycle to measure two administrative skills required in management: (1) organizing and planning, and (2) decision making.[55] Personal qualities and interpersonal skills are measured by other types of evaluative instruments. Byham suggests that the in-basket portion of the assessment provides the individual with new understanding of the volume of paperwork involved in a manager's job.[56] The Assessment Center approach pioneered by the Bell System provides a qualitative approach to the analysis of on-the-job performance as determined by simulated approaches.

Sears, Roebuck and Company

Concern for the measurement of executive behavior has a relatively long history within Sears, Roebuck and Company. In 1942 the company sought the assistance of the late Dr. L. L. Thurstone in the establishment of a psychological testing program for executive personnel.[57]

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[55]Interview with James H. Huck, Personnel Assessment Center, Michigan Bell Telephone Company, September 29, 1971.

[56]William C. Byham, "Assessment Centers for Spotting Future Managers," Harvard Business Review (July-August, 1970), p. 155.

[57]V. Jon Bentz, The Sears Experience in the Investigation, Description and Prediction of Executive Behavior (Chicago: Sears, Roebuck and Co.), p. 59.

Bentz and his colleagues were instrumental in utilizing this test battery to investigate general executive competence in the ability to move effectively and flexibly through a range of different tasks and assignments. Growth and expansion of the company caused the demands made upon executive personnel to alter subtlely but significantly.[58] In the process of re-evaluating the Executive Test Battery used, Bentz et al found that abilities were needed in addition to those being measured, and the following categories were isolated:

1. The Use of Mental Ability: Measures of the use of intelligence without the binding influence of personality.

2. Qualities of Intelligence and Personality That Would Measure Openness of Change and Identify Those Individuals Having the Unique Capacity to Function as the Initiators of Change: Measures which would assess the permeability of personality which maintains an open mind to new things, the assessment of the tendency toward initiating change, creativity and flexibility in thinking and acting.

3. Factors Related to Administrative Skill and Decision Making: Measures of the ability to think through complex situations, both in isolation and in association with others.

4. Assessment of Emotional Strength as a Part of the Competitive Personality: Measures to assess the personality variables of emotional strength and/or control, personal aggressiveness and the desire to contribute.[59]

The Sears In-Basket, used as a tool in assessment of administrative judgment and decision-making skill of executive personnel, was developed in an attempt to measure an executive's ability to think through complex situations, both in isolation and in association with others. In an effort toward discovery of the underlying characteristics and abilities

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[58] Ibid., p. 82.

[59] Ibid., p. 83.

predictive of these two important facets of executive behavior, three simulated tasks were constructed which placed the executive subjects in a variety of decision-making situations. These were the Sears In-Basket Test and two Leaderless Group Problem-Solving Situations.[60] The Sears researchers found that the in-basket test, when in-basket scores were related to all measures of performance, appeared to be a reasonably good predictor of executive, managerial, and decision-making performance.

Bentz reports that further refinements of the in-basket will provide even more information on the nature of administrative skill, decision-making ability, and stylistic information concerning executive behavior that contribute to various kinds of executive effectiveness resulting from the Sears assessment program.[61] The Sears In-Basket appears to be a unique source of measurement, for when it has been included in factor analyses "it does not combine with other data but pulls out to stay by itself."[62]

General Electric

The General Electric Plant Manager In-Basket Test was developed in a 1961 Behavioral Research Service study as a possible measure of aptitude in the administrative aspects of managerial work. The subject was confronted with letters, reports, notes, and related items which presumably accumulated in the in-basket of a hypothetical manager. In assuming the role of that manager, the subject is asked to take any

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[60] Ibid., pp. 91-92.

[61] Ibid., p. 145.

[62] Ibid., p. 131.

actions he deems appropriate with the in-basket items within a limited time period.[63]

Administration of the in-basket to 81 unit managers in seven departments within the company resulted in the development of scoring procedures based on the results obtained with this group. The test scores of these 81 men were compared with ratings of on-the-job performance in different aspects of the unit manager job made by higher level managers. The results obtained for this group were cross-checked on another group of 45 unit managers in four additional departments to obtain a more thorough and accurate evaluation of the in-basket as a predictor of unit manager performance. The Plant Manager In-Basket Test developed by GE researchers simulated the position of Lamp Plant Manager within the organization with the following characteristics:[64]

1. The job should have some of the qualities of a General Manager type of position so that a variety of problems would be presented.
2. The job should be generally familiar to persons taking the test in General Electric.
3. The job should not be one that many candidates for managerial positions might have held in the past.
4. The job should not be so complex that the test might be unsuitable for candidates for managerial jobs at the unit level.

The in-basket materials were collected directly from managers of several such plants within General Electric prior to final development of the

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[63] Behavioral Research Service, The In-Basket Test as a Measure of Managerial Aptitude (New York: Relations Services, General Electric, 1961), p. 1.

[64] Ibid., p. 4.

in-basket to be used in the research. Two factor levels were used in analyzing the ratings of unit managers on the in-basket:[65]

1. The Supervision Factor: This element covered the human relations aspects of the job.

2. The Planning-Administrative Factor: This element covered the more intellectual aspects of the job.

Procedures for scoring the test were developed from the responses of the 81 unit managers to the in-basket items. These test scores were then compared with the ratings of the 81 unit managers in the two major aspects of job performance and with ratings of overall effectiveness as a unit manager. A cross-validation of results with an independent group of unit managers provided a more accurate picture of the effectiveness of the test as a predictor of job performance than could be ascertained only from the results obtained on the original group.[66]

The results of the General Electric in-basket research indicate that the in-basket test can serve as a valuable aid in the selection and development of managers. Subsequent in-basket research by the Behavioral Research Service has indicated that the in-basket test may have potential as an aid in the selection of supervisors or managers at other levels in a manufacturing organization or in other functions. Meyer reports that several departments use abbreviated versions of in-basket tests for training potential managers in particular aspects of managerial work, such as planning.[67] The Ordnance Department at

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[65] Ibid., p. 6.

[66] Ibid., p. 7.

[67] Letter from Herbert H. Meyer, Manager, Personnel Research, General Electric Company, December 2, 1969.

Pittsfield was particularly interested in the use of the in-basket not only in the selection but also in the development of first-line foremen. In the experiment 57 foremen in the Manufacturing Section of the Ordnance Department agreed to take the Plant Manager In-Basket Test that had been used in the prior research. Appraisals of the actual on-the-job performance of the 57 foremen were obtained from their managers. An analysis of these ratings indicated that foreman performance could be described as consisting of abilities in four general areas:[68]

1. Supervising the work of subordinates
2. Organizing personnel and facilities
3. Performing general administrative duties
4. Providing guidance on technical problems

Since technical competence is specific to the type of operations performed by the group supervised (and the in-basket test was not designed to measure technical knowledge), predictive ratings of on-the-job success were made only in the first three areas. An additional evaluative measure resulted from a comparison of the overall effectiveness rating of the individual as a foreman compared with in-basket performance. The study indicated that foremen ranked high in on-the-job performance also scored high on the in-basket categories. This result reflected:

1. A systematic, organized approach to problems.
2. Spending considerable time in analyzing problems, seeking more information, etc., rather than making many final decisions on the items.

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[68] Behavioral Research Service, The In-Basket Test as a Measure of Foreman Performance (Crotonville, New York: Management Development and Employee Relations Services, General Electric Company, 1963), p. 2.

3. Involving subordinates in decisions, seeking their opinions on problems, etc.
4. A considerable amount of communicating with others in handling the in-basket items.[69]

In those departments where the test was administered to candidates as a part of these studies, it appeared to provide valuable information regarding (1) the present levels of administrative skill of the men and (2) the management development needs of the participants. In general, the test results tended to corroborate other sources of evidence regarding the abilities and work habits of the men. Follow-up conferences with the participants also showed that the actual involvement in a "work sample," which the in-basket test required, tended to make this approach more valuable as a development aid than merely discussing hypothetical case problems. Long-range plans of General Electric call for additional studies to determine the value of the in-basket as a tool for appraising candidates for a variety of managerial positions.[70]

The Boeing Company

Zoll, presently a principal in the consulting firm of Management Education Associates, was formerly an educational psychologist on the Boeing staff who served as the Corporate Management Education Advisor. Zoll and his associates are responsible for the development of in-baskets used in the management training programs of several divisions within the company, including the Pilotless Aircraft Division and the

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[69] Ibid., p. 6.

[70] Behavioral Research Service, The In-Basket Test as a Measure of Managerial Aptitude, p. 65.

Vertol Division.[71] The Boeing Company utilizes in-basket simulation primarily as a training tool in the management education program. Four of the in-baskets currently being used at The Boeing Company and a fifth in-basket, with detailed comments on its construction, have been released for recent publication.[72]

Related In-Basket Development

Several models for in-basket simulation have been developed by business and industry and are included here as referrent sources for in-basket utilization. IBM Corporation first used the in-basket technique in August, 1957, in conjunction with a training program for the managers of 200 branch sales offices varying in size from 215 to several hundred people.[73] The in-basket is used primarily as a training tool in IBM's management training program.

Greenlaw, now Professor of Management at Pennsylvania State University, developed an in-basket designed for a specific industry, the Dayco Corporation, about eleven years ago.[74] The Port of New York Authority utilized the in-basket technique in development of training programs in both management and non-management aspects of their organization. John Little developed an 80-minute in-basket known as the Port Authority's Maintenance Foreman Game which was used in the Personnel

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[71] Zoll, The In-Basket Kit: Materials for the Creation and Use of In-Basket Materials.

[72] Letter from Allen A. Zoll, Management Education Advisor, The Boeing Company, November 24, 1969.

[73] Lopez, loc. cit., p. 49.

[74] Letter from Paul S. Greenlaw, Professor of Management, The Pennsylvania State University, November 21, 1969.

and Training Division.[75] Procter and Gamble's "Matrix" and "Management Trial Exercise" combined the business-case method, the in-basket technique, and a system of sequential decision making in a single business exercise in order to simulate the administrative aspects of marketing soaps and detergents.[76] Another management in-basket was developed by Montgomery Ward and used in the management training of store managers.[77]

In 1962 the American Management Association designed an in-basket exercise for use in its management program for top management executives.[78] The AMA had previously been involved in the use of other types of business games and simulations in its management training program, and subsequent use of the in-basket has gained popularity in its seminars and training sessions. Since that time the AMA has also expressed interest in the development of in-baskets for use in other areas of business training, including the training of secretaries.

The University of Michigan Bureau of Industrial Relations has developed a series of 22 standardized in-baskets for use in specialized training programs. Each in-basket contains at least 15 in-basket problems with accompanying sets of background materials and instructor's guides.[79]

C. The In-Basket in Secretarial Training and Development

The influence of in-basket simulation for the training and selection of prospective managerial personnel has expanded to include the

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[75] Lopez, loc. cit., p. 51.

[76] Ibid.

[77] Ibid., p. 50.

[78] Ibid., p. 23.

[79] Ibid.

training of non-management personnel, especially those in the secretarial levels. Prior to 1962, the only secretarial in-basket reported in the literature was administered by the Port Authority of New York as a selection device for promoting secretarial employees to higher-level positions.[80] Since that time secretarial in-baskets have been developed for secretarial seminars and workshops sponsored by professional associations (Popham) and by business and industry (Port Authority of New York, Montgomery Ward's, National Newark and Essex Bank). In the field of business education the in-basket technique has been utilized primarily as an instructional device in conjunction with three texts (Popham; Place and Hicks; Anderson et al). Most recently, the National Secretaries Association (International) and the Institute for Certifying Secretaries have adopted the in-basket technique for use in the annual CPS certification examination. However, the acceptance of the in-basket technique has not been readily forthcoming, perhaps because of its limited use in the development of instructional materials and evaluative instruments for secretarial programs.

The Popham In-Baskets

In 1962 Estelle Popham designed an in-basket for use in the First Executive Secretarial Seminar of the American Management Association, a three-day seminar entitled "Self-Improvement and Skills Development for Executive Secretaries."[81] The annual AMA seminar series is now scheduled in various locations throughout the United States, Canada,

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[80] Ibid., p. 24.

[81] Ruth I. Anderson et al, loc. cit., p. 20.

and Mexico. Popham has developed several in-baskets now published in secretarial texts and has used these materials in AMA workshops, in secretarial workshops, and in workshops sponsored by the Commerce and Industry Association of New York City.[82] Popham credits a management workshop at the Cornell School of Labor Relations with affording her an insight into the adaptability of the in-basket technique to secretarial training.[83] Iannizzi developed an in-basket for use in a workshop for secretaries at the City University of New York patterned after the Popham secretarial in-basket.[84]

The Port of New York Authority

The in-baskets devised by the Port Authority were primarily used as a selection device in secretarial training. Lopez, while manager of the Manpower Planning and Research Division, compiled an informational source on the in-basket and the basic theory on which the technique is based. DeSanto, manager of the Training Services Division, has also been involved in management games as a part of the training program.[85]

The Montgomery Ward Secretarial Seminar

In-basket simulation was first introduced as a part of the Montgomery Ward secretarial training program by Ann Miller of the Administrative Personnel staff of the Chicago office.

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[82]Letter from Estelle L. Popham, Chairman, Department of Business Education, Hunter College of the City University of New York, December 18, 1969.

[83]Ibid.

[84]Ibid.

[85]Letter from Roscoe W. Wisner, Supervisor, Personnel Testing, The Port of New York Authority, December --, 1969.

> The main purpose of the in-basket exercise [according to Breen] is to develop the secretaries' ability to appropriately handle the assignments, indicate what action should be taken and by whom in each case, and list in sequence the priority in which to handle the items.[86]

The Miller in-basket has been administered during two-day secretarial seminars held in both the Chicago and New York offices. The typical seminar format reserves approximately two hours for the in-basket plus a group discussion session immediately following.

The National Newark and Essex Bank

A secretarial in-basket has been used by the National Newark and Essex Bank as a selection device. Bruce Dunnan, Personnel Director, was instrumental in its development.[87]

The Secretarial Practicum

In one of its most recent applications, the in-basket has been used as a project method for training prospective high-level secretaries. A series of long-range assignments have been developed by Anderson et al patterned closely to actual business problems facing administrative secretaries in a variety of offices.[88] Projects in these six categories

1. Relocating the Office
2. Handling Administrative Finances
3. Assisting the Security Manager
4. Planning In-Service Seminars
5. Organizing the Stockholders' Meeting
6. Finding a Secretarial Replacement

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[86]Letter from C. P. Breen, Training Services Manager, Montgomery Ward, November 25, 1969.

[87]Lopez, op. cit., p. 83.

[88]Ruth I. Anderson et al, op. cit.

provide appropriate stimuli for secretarial students to think, analyze, research, and set priorities and schedules, thus requiring them to make decisions and implement them. Each project includes 20 to 30 related jobs, similar to those encountered in specific secretarial positions.[89]

The CPS In-Basket

As an initial trial in 1970, the Institute for Certifying Secretaries, a department of the National Secretaries Association (International), incorporated a secretarial in-basket into the "Communications and Decision Making" section of the Certified Professional Secretary Examination.[90] The in-basket, as it has been used in both the 1970 and 1971 CPS Examinations, is a performance test in which the candidate is required to make judgments about how to handle various situations. Specific aspects of the in-basket involve editing, abstracting verbal and quantitative data, composing, transcribing verbatim dictation, and judging the acceptability of the work of subordinates. Three basic response patterns are sought for each item in the CPS In-Basket:[91]

1. What action will be taken?
2. How should concerned persons be informed of the action taken by the examinee?
3. What follow-up procedure should be employed?

"All in a Day's Work" and "The Secretary's In-Basket" are two in-baskets published by the NSA in The Secretary, its monthly publication. These in-baskets were based respectively upon the 1970 and 1971 CPS

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[89] Ibid.

[90] "You Too Can Be a Certified Professional Secretary," The Secretary (October, 1970), p. 39.

[91] Leonard Robertson, "Everything You Always Wanted to Know About Preparing for Part V," The Secretary (March, 1971), p. 13.

examinations.[92] Place and Hicks have developed several secretarial in-baskets which have also appeared in The Secretary and in their secretarial office practice text materials.

D. Summary

The historical development of the use of in-basket simulation in research, management training and development, and secretarial training and development indicates that there has been growing interest in the use of the in-basket technique since the 1950's. Frederiksen, though credited with being the originator of the in-basket test and a leading researcher in in-basket simulation, has emphasized that there are numerous fields of concentration in which in-baskets may be developed and utilized to improve training that is now going on in those areas. Procedural design for in-basket simulation has, however, remained somewhat experimental in nature; and such aspects of in-basket simulation as scoring and evaluation are still being questioned.

An examination of simulation techniques resembling the in-basket technique being utilized in medical education demonstrates that Rimoldi, Helfer and Slater, McGuire, and others are utilizing the simulation approach in the training of medical personnel. In management training and development the initial use of the in-basket was in the evaluation of management personnel, but the emphasis is changing to include non-management personnel, including the secretarial ranks of employees. Such businesses as The Bell System, Sears, General Electric, The Boeing Company, and IBM Corporation have laid the groundwork for the use of

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[92] "All in a Day's Work," The Secretary (October, 1970), pp. 26-29; "The Secretary's In-Basket," The Secretary (June-July, 1971), pp. 28-31.

the in-basket in the training of management personnel. The use of the in-basket in secretarial training and development has been rather late in starting. However, the American Management Association, the National Secretaries Association (International), the Port of New York Authority, and Montgomery Ward's are among the professional and business organizations that have become more interested in recent years in the promotion of in-basket and other simulation techniques in the training of secretaries. Popham, Place and Hicks, and Anderson et al have developed secretarial in-baskets used in secretarial workshops and training programs. The acceptance of the in-basket technique as a tool for training secretaries is just beginning to be noticeable in the development of instructional materials for secretarial programs.

CHAPTER IV

RESEARCH IN THE SECRETARIAL ROLE AND CURRICULUM DEVELOPMENT WITH IMPLICATIONS FOR SECRETARIAL EDUCATION

The secretary, though her job classification in one business firm may be somewhat different from that in another, is described and classified in the Dictionary of Occupational Titles as a "girl friday; a secretarial stenographer" who performs the following tasks on the job:

> Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and minor administrative and business detail: Reads and routes incoming mail. Locates and attaches appropriate file to correspondence to be answered by employer. Takes dictation in shorthand or on Stenotype machine and transcribes notes on typewriter, or transcribes from voice recordings. Composes and types routine correspondence. Files correspondence and other records. Answers telephone and gives information to callers or routes calls to appropriate official and places outgoing calls. Schedules appointments for employer. Greets visitors, ascertains nature of business, and conducts visitors to employer or appropriate person. May not take dictation. May arrange travel schedule and reservations. May compile and type statistical reports. May supervise clerical workers. May keep personnel records. May record minutes of staff meetings.[1]

Research on the role of the secretary in business has been conducted periodically from 1924 to the present. Responsibilities and duties on the job, personal qualities and traits desirable for adequate job performance, tasks to be performed on the job, and the secretary's

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[1] U. S. Department of Labor, Dictionary of Occupational Titles, loc. cit.

adaptation to the job and fellow employees constitute some of the kinds of information and data which have been collected and analyzed. Charters and Whitley (1924) conducted what is considered the classic study of the role of the secretary, and subsequent investigations (Nichols, 1934; Place, 1945; Kosy, 1958; Noyes, 1960; Paddock, 1967; Wagoner, 1967; Cook, 1968) utilized findings from the earlier study on which to base some of the research operations. Analyses of the secretarial role indicate two distinct phases of development:

1. The Task-Trait Analysis: Primary attention is given to the individual and personal characteristics of the secretary and her ability to perform those responsibilities of her job (Charters-Whitley, 1924; Nichols, 1934; Place, 1945; Young, 1954; Meyer, 1954; Wink, 1956; Mickelson, 1957; Welling, 1957; Noyes, 1960; Wagoner, 1967; Paddock, 1967; Perkins-Byrd, 1968).

2. The Situational Analysis: In addition to the delineation of tasks and responsibilities of the secretarial position, the importance of the work group and the work situation is considered in establishing the adequacy of the secretary's performance on the job (Casebier, 1957; Kosy, 1958; Cook, 1968; Lanham et al, 1970).

Oftentimes it is difficult to separate studies into one of these two categories since some of the studies used a form of situational analysis to arrive at a list of effective task performances. However, the above categorizations are based upon the resultant outcomes of each study.

A. The Task-Trait Analyses

Twelve research studies conducted within the period from 1924 through 1968 delineate the tasks and/or traits required of the secretary in her position. Of the 12 studies, only three concentrate on the secretary in her general capacity. A review of selected studies is included here to provide a brief resume of the important findings,

conclusions, and/or recommendations which have particular significance to the present study.

The Charters-Whitley Study

The classic study of the role of the secretary was conducted by Charters and Whitley (1924) and involved the delineation of duties performed on the job as well as the determination of personal qualities evident in successful secretaries.[2] An initial interview with 125 secretaries resulted in a list of 871 duties, and this list was then submitted to 715 secretaries in the field testing phase of the study. A second compilation of 47 traits present in successful secretaries was obtained through employer interviews. Those duties receiving the highest number of tallies were recategorized into the following functional areas within 15 occupations:[3]

1. Mailing duties
2. Taking dictation
3. Transcription
4. Typewriting
5. Filing
6. Duties connected with filing, indexing, etc.
7. Telephones, etc.
8. Editorial duties
9. Duties involved in meeting and handling people
10. Financial and bookkeeping duties
11. Clerical duties
12. Miscellaneous duties and personal services for employer

Personal traits and qualities of the secretary as rated by the 28 employers interviewed in the study were tabulated so that "trait-actions" could be formulated for each of the traits. Not only was the trait

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[2] W. W. Charters and Isadore B. Whitley, Analysis of Secretarial Duties and Traits (Baltimore: Williams & Wilkins Company, 1924), p. 11.

[3] Ibid., pp. 97-121.

"accuracy" itemized, but also actions which indicated that accuracy was taking place. Those traits receiving the highest ratings in the 28 interviews were: accuracy, responsibleness, dependability, intelligence, courtesy, initiative, judgment, tact, personal pleasantness, and personal appearance.[4]

Charters and Whitley attempted to provide a research base for the development of the content of commercial courses for prospective secretarial employees:

> Heads of commercial departments, by checking the content of commercial courses against the duty list, will be able to see the extent to which training is given in those duties which are most frequent and which can be most satisfactorily taught in school. In the office practice course, as well as in dictation, transcription, and typing, the materials most frequently handled in the business office should be generally used as the practice medium.[5]

The Nichols Study

A study conducted by Frederick G. Nichols in cooperation with the American Institute of Secretaries of Boston, Massachusetts, resulted in the identification of 21 major secretarial duties based upon the combined judgment of secretaries and employers. The Nichols study (1934) had as one of its main purposes the identification of duties which distinguished private secretaries from other office workers.[6]

From available research and literature, a list of 35 duties of the secretary was constructed and sent to 692 private secretaries and their

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[4] Ibid., p. 174.

[5] Ibid., p. 13.

[6] Frederick G. Nichols, The Personal Secretary (Cambridge: Harvard University Press, 1934), p. 44.

employers who were asked to indicate the rank order of these duties by assigning to each a number according to its importance to the private secretary. Usable replies were received from 237 secretaries and 86 employers. The major secretarial duties derived from this study include the following:[7]

1. Take dictation
2. Transcribe shorthand notes
3. Handle callers
4. Write original letters
5. Organize facts
6. Answer letters
7. Organize office routine
8. Note information on letters
9. Handle incoming mail
10. Read and release letters for mailing
11. Organize files and filing systems
12. Take care of personal accounts
13. Consult reference books
14. Make appointments
15. Do banking for employer

Because the secretaries and executives were asked to base their replies upon the importance of a given duty to most private secretarial positions, the replies were in the form of opinion concerning most secretarial positions.

The Place Study

With the Charters-Whitley and the Nichols studies as initial guides, Place accumulated a list of duties for secretaries and/or executive aides. Questions were developed to cover every secretarial aspect of each duty, and respondents were asked to indicate frequency of performance. The data emanating from the study, based upon usable responses from 226 secretaries and 237 employers, provided a frequency

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[7] Ibid., p. 64.

ranking of secretarial duties.[8] The more frequently occurring duties included the following:

1. Take dictation and transcribe
2. General filing
3. Make appointments
4. Alphabetical filing
5. Answer the telephone and route callers
6. Read and sort mail
7. Place and make long-distance calls
8. Operate an adding or calculating machine
9. Keep a record of appointments
10. Assist with the preparation of written reports of a general, financial, government, or research nature

One of the significant contributions of the Place study (1945) was its attempt to delineate not only the duties that were performed by secretaries but also the frequency with which specific duties were performed.

The Young Study

The primary purpose of the Young study (1954) was to determine those duties of a bookkeeping or accounting nature performed by the secretary as well as the nature of other duties performed. Data were collected by personal interview of 100 secretaries who were asked to place duties performed on one of five categories of importance.[9] Rankings were obtained of the 71 duties appearing in the questionnaire, and frequencies resulted showing the most important duties of the secretary.

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[8] Irene Place, "A Study of Personal Secretaries in Sixteen Communities in the State of Michigan." Unpublished Ed. D. dissertation, New York University, 1945, p. 122.

[9] John R. Young, "A Study of Secretarial Duties with Special Attention to Those Duties which Emphasize Bookkeeping or Accounting Functions." Unpublished Ph. D. dissertation, State University of Iowa, 1954, p. 276.

The ten most important duties of secretaries, according to Young, are presented here:[10]

1. Take dictation and transcribe notes
2. Prepare reports for employers
3. Obtain and organize information
4. Answer phone and make calls
5. File for employer
6. Typewriting from drafts
7. Making appointments
8. Read and classify mail
9. Prepare customer statements
10. Receive callers

The Noyes Study

The position of the woman executive secretary was the focus of the Noyes study (1960). The primary purpose of the study was to determine the responsibilities of the woman executive secretary, who was defined as a secretary to a member of top management, as differentiated from those of the woman non-executive secretary and to determine her place in office management.[11] Data were obtained by personal interview and mail questionnaire from 236 secretaries (133 executive secretaries and 103 non-executive secretaries).

A listing of 32 management functions performed by executive secretaries emanated from the Noyes study. The top ten functions, listed in order of performance frequency, are included here:[12]

1. Keeping and filing confidential papers
2. Composing non-routine letters
3. Superiors ask opinions and advice
4. Secretaries make unsolicited suggestions to superiors

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[10] Ibid.

[11] Honora M. Noyes, "The Role of the Executive Secretary as a Member of Management." Unpublished Ed. D. dissertation, University of Maryland, 1960.

[12] Ibid., p. 349.

5. Superiors adopt ideas
6. Interviewing and relaying stories
7. Required to type and file confidential papers
8. Explaining superior's viewpoint to others
9. Making decisions on handling exceptions to ordinary office problems
10. Handling superior's personal banking

A comparison of the job activities of the executive secretaries with those of the non-executive secretaries did not show any activities which belonged particularly to either group of secretaries.

The Paddock Study

Paddock (1967) attempted to determine a more accurate definition of the high-level secretarial position than had previously been available. The study was limited to secretarial positions for business executives or professional people who make executive decisions and to 50 selected secretarial-executive teams in the Indianapolis area. Findings resulting from the study were categorized in the following areas:[13]

1. Responsibilities of the secretary
2. Qualifications needed to fill the position
3. Patterns followed by secretaries in preparation for the position and for growth within the position
4. Patterns of development available to secretaries and to potential secretaries
5. Conditions influencing the job satisfaction of secretaries

Paddock found that the assignments of the high-level secretary were in communications, office management, and performance of personal duties. The activities common to all assignment classifications for secretaries included planning and scheduling the work of the office:

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[13]Harriet L. Paddock, "Personnel Needs for High-Level Secretarial Positions," Delta Pi Epsilon Journal, Volume XI, Number 2 (February, 1969), p. 17.

> ... representing the executive, usually as an intermediary in the handling of telephone calls and in receiving office visitors, as liaison between the executives and others, as coordinator of office activities, and as the medium through whom important papers were transferred and information transmitted.[14]

Because of the nature of secretarial activities in the office, the executive was assisted in making decisions, conserving time, and expediting the work of the office. However, the executives were explicit in delimiting the secretary's authority to executive wishes or firm policy. The majority of the executives surveyed believed that the secretary's authority was limited to her own work or to delegated work. The Paddock study indicates varying emphases in secretarial work: (1) duties and activities of a secretarial nature and (2) the degree of responsibility.

> Secretaries need an educational background which will prepare them for the responsibilities of top level positions. Technical education alone will not be adequate for the demands imposed upon secretaries in executive offices today.
>
> Experience, other than secretarial, such as managing an office may be of value to those in the high-level secretarial position.[15]

Paddock also concluded that further attention needs to be focused upon proper work attitudes and the development of desirable personal traits needed for continued employment.

The Wagoner Study

Wagoner (1967)[16] conducted a survey of executives and secretaries in order to clarify the functions and duties performed by the secretary

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[14] Ibid., p. 19.

[15] Ibid., p. 22.

[16] Kathleen P. Wagoner, "The Role of the Secretary in a Changing World: An Analysis of the Duties and Functions Performed by and Understandings Required of the Secretary." Ph. D. thesis, University of Iowa, 1967.

in today's changing world and to determine if, in effect, the secretary's role is changing. To ascertain the degree of change, a list of 162 duties compiled by Wagoner in a survey of executives and secretaries was compared with those composite lists of duties in previous studies (Charters-Whitley, 1924; Nichols, 1934; Place, 1945; Young, 1954; Noyes, 1960). The functions and duties used in the survey and selected from previous research served as the basis for evaluation of change. Those duties identified as new duties occurred as a result of recent developments in business. Change in the role of the secretary was measured by determining change in the degree of responsibility assumed by a secretary when performing a given duty and change in the method of performing a function. Respondents were asked to indicate the importance of 13 functions of the secretary in the total consideration of the secretarial role and to indicate the frequency of performance of 162 duties according to level or degree of responsibility assumed by the secretary and methods or equipment used by the secretary in performing the duties and tasks that make up her role.

Data collection was accomplished through a proportionally stratified random sample of 250 business organizations in the State of Indiana, representing the four Standard Industrial Classifications (SIC) in which a majority of secretaries were employed according to 1960 census information. Usable responses were received from 145 pairs of executives and secretaries from the areas of transportation, communications, and utilities; wholesale and retail trade; finance; and manufacturing.[17]

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[17] Ibid., p. 245.

Wagoner found that the role of the secretary is changing especially with regard to written communication and assistance to employer. Today's secretary performs two basic types of duties:[18]

1. Those which are clerical or general in nature but are performed by the secretary in the capacity of assisting the executive.

2. Those which are more narrowly defined as secretarial duties for which the secretary is primarily and usually responsible and which require a knowledge and understanding possible only through close contact with the situation.

Functions and duties related to office management and accounting are of lesser importance than formerly and appear to have been delegated to others to perform because of increased specialization in these areas. New kinds of knowledge and new types of duties affect the secretary's role:[19]

1. More use of various techniques involving composition of business correspondence
2. Collection of background research and information for preparation of reports and presentations
3. Organization of new filing systems
4. Maintenance of confidential records
5. Increased use of copying machines and other specialized production units

Both executives and secretaries agreed that three other directions of change are affecting the secretarial role:[20]

1. The secretary is performing many more duties formerly performed by the executive.
2. The pace of the business office is increasing, and greater emphasis is being placed on speed of operation.
3. A number of duties formerly performed by the secretary are now assigned to specialized departments.

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[18] Ibid., p. 253.

[19] Ibid., pp. 239-243.

[20] Ibid., p. 243.

The importance of the Wagoner study in analysis of the secretarial role is its contribution in relating the changing role of the secretary to the pace of the business world.

The Perkins-Byrd Study

The model developed during the first phase of the Perkins-Byrd study (1968) provided the basis for the identification of clusters of tasks performed by a comprehensive sample of office workers employed in six office job classifications.[21] For each of the classifications sampled (supervisory workers, secretarial-stenographic workers, clerical workers, bookkeeping-accounting workers, business machine operators, data processing workers), tasks performed were grouped or "clustered" within these 13 major categories:[22]

1. Performing typewriting tasks
2. Operating office machines and equipment
3. Taking dictation and transcribing
4. Performing mailing tasks
5. Performing filing tasks
6. Performing telephoning and communicating tasks
7. Performing clerical tasks
8. Securing data
9. Using mathematics
10. Performing financial and recordkeeping tasks
11. Performing editorial tasks
12. Meeting and working with people
13. Performing miscellaneous tasks

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[21]Edward A. Perkins, Jr., and F. Ross Byrd, A Research Model for Identification of Task and Knowledge Clusters Associated with Performance of Major Types of Office Employees' Work, Final Report Number 5, Project No. ERD-257-65, Contract No. OE-5-85-109 (Pullman: Washington State University, December, 1966), p. 4.

[22]Edward A. Perkins, Jr., F. Ross Byrd, and Dennis E. Roley, Clusters of Tasks Associated with Performance of Major Types of Office Work, Final Report, Project No. 7-0031, Grant No. OEG-4-7-070031-1626 (Pullman: Washington State University, January, 1968), pp. 20-52.

In addition, composite clusters of tasks performed by office employees in general resulted from the classification.

Prior to this time, no research had been conducted (that was known to the researchers) which specifically related to the development of a task-knowledge research prototype designed to encompass the entire spectrum of office work.[23] No studies could be located which related specifically to the consideration of tasks performed by all types of office workers in all types of businesses.[24]

The first phase (Perkins-Boys, 1966) resulted in a model for collecting up-to-date information on office tasks as well as task data needed in the evaluation of present curricula and in the design of new curricula. The second phase of the study (Perkins-Byrd, 1968) involved the identification of clusters of tasks performed by a comprehensive sample of office employees working in offices of varying sizes in the 12 Standard Industrial Classifications (SIC). Extrapolation of those findings pertinent to the role of the secretary indicate that the majority of the secretary's time involves the following duties and tasks:[25]

1. Typewriting
2. Operating office machines and equipment
3. Taking dictation and transcribing
4. Handling mail
5. Filing
6. Telephoning and communicating

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[23] Perkins and Byrd, loc. cit.

[24] Ibid., p. 19.

[25] Edward A. Perkins, Jr., and F. Ross Byrd, "Identifying Office ctivities by Clusters of Tasks," The Emerging Content and Structure of usiness Education, National Business Education Yearbook, No. 8 (1970), p. 107-109.

7. Performing clerical duties
8. Securing data
9. Using mathematics
10. Meeting and working with people

The secretary, however, is not generally involved with financial and recordkeeping tasks or editorial tasks. Of the 599 tasks, 417 tasks were significant at the .05 level or higher.[26] Therefore, the hypothesis that there was a significant difference in the tasks performed by office employees in the various SIC categories was accepted. Another hypothesis accepted as a result of the research indicated that there was a significant difference in the tasks performed by office employees working in small or large offices.[27] Perkins and Byrd indicate that the analysis of the task data suggests that the acquisition of performance skills represents only a portion of the office worker's function. Two conclusions of the study have particular importance to the present study:

1. Teaching objectives, learning experiences, and evaluation can profitably be organized within the framework of the cognitive, affective, and psychomotor domains.[28]

2. Self-paced learning packages [should] be developed and field tested and that the design of these instructional systems be based on the [general and specific statements of instructional] objectives identified.[29]

The task data collected and analyzed in the Perkins-Byrd study represent duties performed by major office occupational groups. Curriculum specialists may find these data useful in the development of

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[26]Perkins, Byrd, and Roley, op. cit., p. 14.

[27]Ibid.

[28]Ibid., p. 167.

[29]Ibid., p. 168.

more specialized high school and post-high school office education programs. Lanham[30] observed that the Perkins' study sought relevance for job preparation from current jobs. However, a weakness of the Perkins-Byrd task clusters is a lack of definition of task, thus making the transference of the base data to learning programs a grave problem.

Other Task-Trait Analyses

Welling (1957), Mickelson (1957), Wink (1956), and Meyer (1954) conducted further analyses of the duties and responsibilities of secretaries in specialized areas of employment.

B. The Situational Analyses

Four research studies conducted within the period from 1957 to 1970 emphasize the importance of the work group and the work situation in which the secretary is placed. Of these four studies, one relates to several office job classifications (Lanham, 1970). Casebier (1957) analyzed the duties and responsibilities of the general secretary, while Kosy (1958) and Cook (1968) researched the private secretary and secretary/stenographer classifications respectively.

The Casebier Study

Casebier (1957) used the time study technique to gather data to be used in the analysis of the secretary's daily activities. Secretaries representing 24 different firms in the Chicago area participated in the study, and activities related to their positions were recorded on time-study charts in order to make an accurate analysis.

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[30]Lanham et al, op. cit., p. 6.

Findings of the Casebier study pertinent to the present study include:[31]

1. The typical day for a secretary lasts eight hours. One hour is required for lunch and one hour is lost in taking breaks and in doing nothing. Six hours are devoted to completing work assignments.

2. During the time that the secretaries were on the job, they were engaged in 47 different activities in the fifty days timed. Ten of these activities required three per cent or more total time.

3. The secretary spends 72 per cent of her time in the performance of the ten major activities and their applications. She spends one-third of her time at the typewriter.

4. The time study identifies two new major activities of secretaries. These are: conferring with the supervisor and preparing for the day's work and for closing.

5. There is no uniform pattern of work procedure according to time; the sequence of activities of the secretary's day is determined by the nature of the particular day's work.

6. The main factors that cause problems and anxieties for secretaries are: (1) the supervisor, (2) working conditions, and (3) interruptions.

The Kosy Study

Kosy (1959) derived a compilation of critical requirements for effective on-the-job performance of the private secretary. A critical incident analysis, including self-analysis and self-reporting by secretaries as well as employer observations, was used in determining effective and ineffective behavior of these secretaries. Interviews of 50 executive-private secretary pairs from 50 manufacturing firms in Seattle, Washington, produced 352 usable incidents which were analyzed

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[31]Virginia Casebier, "A Time Study of Activities and Responsibilities of Secretaries with Implications for the Training of Prospective Secretaries," Dissertation Abstracts (Ann Arbor: University Microfilms, 1957), pp. 2875-2876.

into the duties and responsibilities of secretaries.[32] These critical incidents produced over 400 individual or grouped behaviors.[33] After the incidents were analyzed, four broad areas were developed so that the incidents could be classified:[34]

1. Relationships with individuals and firms outside of the business establishment
2. Relationships with employees
3. Relationships with the executive
4. The secretary as an individual

The critical requirements for the successful private secretary, according to Kosy, are presented here in total as they are listed in the study. Because no particular order of importance was indicated, one could be excluded.[35]

1. Composes and types various kinds of business letters and presents them to the executive for his signature.

2. Applies her knowledge of the rudiments of grammar, punctuation, and the vocabulary of business to the composition, transcription, and editing of the executive's written communications without changing the desired meaning.

3. Proofreads, checks, verifies, and has all errors corrected.

4. Spells accurately.

5. Displays a knowledge of and skill in arithmetic in the performance of her duties which involve mathematics.

6. Takes dictation, transcribes, and types in a manner that brings credit to her and her employer.

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[32]Eugene J. Kosy, "The Critical Requirements for Private Secretaries Based upon an Analysis of Critical Incidents." Doctoral dissertation, University of Wisconsin, 1958, p. 155.

[33]Ibid.

[34]Ibid., pp. 155-156.

[35]Ibid., pp. 146-148.

7. Records telephone messages completely, accurately, and systematically.

8. Projects an interest in the caller through a pleasing telephone personality.

9. Receives telephone calls, establishes the purpose of the call, finds a solution to the problem presented, and when appropriate notifies the caller of the solution.

10. Obtains maximum productivity from the employees under her supervision.

11. Assists other employees during over-load periods.

12. Keeps her personal affairs and private life out of the business office.

13. Maintains respect for authority and conforms to the same office policies as other workers.

14. Establishes and maintains good working relationships with employees throughout the firm by expressing an interest in them and respecting their position.

15. Greets callers pleasantly, determines the purpose of their call, and assists them when she is able to do so.

16. Makes decisions as to who will be permitted to see the executive.

17. Answers routine questions concerning the business without disturbing the executive.

18. Associates names and voices with individuals.

19. Establishes a system and codes, files, and locates information in the files.

20. Keeps her employer informed of all items requiring his attention.

21. Insures that the employer's records, reports, and bids are complete, accurate, and submitted on time.

22. Assumes responsibility for routine business activity as an "agent" of the executive.

23. Maintains a work schedule without directions from the executive.

24. Knows where the executive is at all times and is able to locate him if necessary.

25. Identifies and retains confidential information.

26. Adopts a routine which offers maximum support to the executive in the fulfillment of his duties.

27. Endeavors to promote the welfare of the firm and the executive in the eyes of the public and his superiors.

28. Volunteers suggestions which increase the efficiency and productivity of the firm.

29. Reports to work daily and arrives on time.

Many of the foregoing critical requirements reflect decision-making capacities required in the on-the-job performance of the private secretary. One of the noticeable limitations of the study, as it relates to the present study, is the inability to delineate the order of importance of the critical requirements as they were derived from the Kosy study.

The Cook Study

Attention to the work group and the work situation was the target of the Cook study (1965-1968). The four major objectives of the study, sponsored by Delta Pi Epsilon, were:[36]

1. To identify successful secretaries.
2. To analyze which variables contributed to or were associated with secretarial success.
3. To identify factors relevant for the education and training of secretaries.
4. To develop possible variables and research designs that might be utilized in subsequent studies in this subject area.

A single public utility was selected as the only practical source available for data collection because of the total number of secretaries needed to acquire pertinent data. Primary data were secured from the

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[36]Fred S. Cook and Edward Gary Shapiro, "Factors Affecting Secretarial Success," Business Education Forum, Volume 24 (February, 1970), p. 33.

employees of 67 work groups, a total of 326 employees. In the Cook study, a "work group" is defined as three individuals: a secretary/stenographer, a supervisor, and a peer.[37]

The Cook study was a pilot study based upon an interactionistic point of view, resulting in a general overview of the successful adaptation of the secretary/stenographer to her role in business. The study, divided into ten major areas, resulted in a total of 70 findings discussed in detail in the complete report. These ten major areas are:[38]

1. Beliefs about secretaries
2. Social characteristics
3. Education of secretaries
4. Occupational history
5. Secretarial skills (objective and subjective ratings)
6. Job characteristics of secretary
7. Personality characteristics
8. Job satisfaction
9. Characteristics of the work group
10. Supervision

Cook found that there is little indication that high skill levels, when measured objectively, are significantly related to secretarial success. Successful secretaries are considered more a part of the total work group than less successful secretaries. A particularly interesting finding relates to the degree of decision-making required of secretaries on the job:[39]

> Successful secretaries were more likely to make minor decisions on the job than were less successful secretaries. In terms of major decisions made on the job, however, the hypothesis of a

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[37] Ibid.

[38] Ibid.

[39] Fred S. Cook and Edward Gary Shapiro, Factors Associated with Successful Adaptation to the Secretarial/Stenographic Role, Project No. 6-1281, Grant No. OEG-3-6-062181-2079 (Detroit: Wayne State University, 1968), p. 126.

> significant difference existing between the successful groups and less successful groups of secretaries could not be supported.

The researcher's intent in conducting such an analysis of the secretarial role was to focus attention upon the work setting and the various situational variables which contribute to secretarial/stenographic success or failure. He also felt that the analysis could serve as a basis for revision and updating of current secretarial and stenographic curricula in the secondary and post-secondary programs.[40] Three conclusions of the study bear particular significance to the present study:[41]

1. Tests of secretarial skills and general intelligence, given as prerequisites to hiring, are not significantly related to secretarial success.

2. Successful secretaries were those whose contribution was rated as vital to the organization, who performed more job duties or made minor, as compared to major, decisions.

3. The work situation, rather than the emphasis upon development of one's personality traits, is a major determiner of the degree of success. It does not always appear that emphasis upon personality development is the most effective method of preparing young people to perform adequately in job situations. Generalized attitudes and traits, such as energetic, decisive, flexible, initiating, confident, organized, and accurate are the traits of the highly successful secretary.

Cook's identification of the role of the secretary was enhanced by the perspective obtained from the work-group situational approach that was used in the data gathering. Perhaps the most profound limitation of the entire study was the fact that only one type of business was represented in the study.

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[40] Cook and Shapiro, "Factors Affecting Secretarial Success," p. 33.

[41] Cook and Shapiro, Factors Associated with Successful Adaptation to the Secretarial/Stenographic Role, p. 198.

The Lanham Study

One of the sub-studies conducted as a part of the research associated with the development of the New Office and Business Education Learnings System (NOBELS) was a study of the characteristics, attitudes, and traits of workers in terms of the social context of office work. The research was not limited to one particular job classification within the office cluster of occupations. Instead, each office task was analyzed in relation to its performance in the office situation. Because the job classifications from which the incidents were collected are closely related within the office cluster, Lanham and his colleagues chose to expand the study horizontally rather than in depth.[42] Four basic steps were involved in this phase of the NOBELS study:[43]

1. A decision had to be made as to what social roles the various office employees are expected to perform on the job.

2. These roles were then observed in life situations in order to determine the essential skills, attitudes, and rules which are necessary for successful performance.

3. Wherever possible, the skills, attitudes, and rules were quantified (enumerations, scores, physical measurements, and to a limited extent, rankings).

4. These skills, attitudes, and rules became the foundation for the development of social-role performance goals of the educational program and its evaluation design.

To accomplish these four goals, Flanagan's critical-incident technique was adapted and modified for the interview process in which office supervisors were asked to describe four observed events. The collection of 780 critical incidents during the pilot phase of the sub-study yielded

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[42] Lanham et al, op. cit., p. 34.

[43] Ibid., p. 17.

a classification based on the worker in relation to the occurrence of the incident in the system. In order to conduct a systematic inventory of office tasks as performed in current and emerging office occupations, Lanham et al conducted a personal interview of 1,253 office workers and their respective supervisors yielding 1,232 usable cases.[44] The total number of basic tasks performed was 4,548; and these tasks were later identified, classified, and analyzed. The basic task data produced 374 performance goals. Calhoun was instrumental in the categorization of those performance goals developed from the 829 incidents in the NOBELS study that involve social interaction situations.[45] Wilms analyzed 326 critical incidents collected as a part of this study and grouped them into four major categories:[46]

1. Knowledges necessary to job performance
2. Skills necessary to job performance
3. Personal characteristics necessary to job performance
4. Necessary personal relationships with other individuals

The critical behaviors within each incident were grouped according to basic similarities, and critical requirements were written for each group of similar behaviors.

This NOBELS sub-study concluded with a specification of three fundamentals of office task performance:[47]

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[44] Ibid., pp. 22-23.

[45] Calfrey C. Calhoun et al, Development of Performance Goals for a New Office and Business Education Learnings System, Final Report, Project 91E, Grant No. OEG-8-08414 (Washington, D. C.: U. S. Department of Health, Education and Welfare, 1970).

[46] Lynda Britt Wilms, "Critical Requirements for Beginning Office Workers Based upon an Analysis of Critical Incidents." Unpublished M. A. thesis, The University of Georgia, 1969.

[47] Lanham et al, op. cit., p. 291.

1. Accuracy as a desired generalized behavior of office workers is a function of checking for potential error and of correcting error.

2. Inadequate communication skills, both oral and written, are a frequent source of unsuccessful office performance.

3. Organizing and classifying of both numerical and verbal data (all symbolic data) are even more necessary behaviors in our emerging electronic technology than ever before.

As a result of the Lanham study, design criteria were developed for the analysis of office occupations and the establishment of critical requirements for specific job classifications for later use in the development of performance goals for instructional programs.

C. Research in Curriculum Development

Analyses of the role of the secretary (and other office workers) have led to research in the development of curricula for the training of people for office occupations. No attempt is being made here to review all research that has been done nationwide in curriculum development for office occupations. Instead, a brief look at three research efforts within the State of Michigan, all of which have received nationwide recognition, will support the need for the development of the secretarial curriculum (units of instruction, evaluative instruments, and supportive materials) based upon actual requirements of the secretarial position.

The Senior Intensified Program

Two major studies contributed findings used in developing Wayne State University's Senior Intensified Programs (SIP) in office and retail occupations. The first study delineated the absence of accurate information on entry level jobs and the need for a comprehensive study

of entry jobs in office and retail occupations.[48] The second study was developed to fill this informational gap in the Detroit area.[49] The findings resulting from the second study (OREOS) led to two conclusions which influenced the pattern for the development of the clerk-typist and clerk-stenographer SIP programs, two of the four programs developed:[50]

1. Few business "skills" are demanded as prerequisite for employment in office and retail jobs.

2. Typewriting is the one single business skill most often required in an entry office and retail job.

The SIP programs developed to meet the entry-level requirements for the clerk-typist and clerk-stenographer positions have been used in twelve Detroit high schools during a two-year demonstration project in order to test their effectiveness in preparing youngsters for entry-level positions in office occupations.[51] The early identification of minimal skills essential for these entry jobs (typewriting, shorthand, transcription, and related job tasks) led to the preparation of relevant materials to teach these skills. Once the minimal time necessary to teach these skills was delineated, the program was ready for the actual instructional phase at the 12th grade level. Three of the

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[48]Fred S. Cook, Detroit Study for the Effectiveness of High School Education for Entrance into the World of Work, Report to the Michigan Department of Education, Division of Vocational Education (June, 1963).

[49]Fred S. Cook and Frank W. Lanham, Opportunities and Requirements for Initial Employment of School Leavers with Emphasis on Office and Retail Jobs, Project No. 2378 (Detroit: Wayne State University, June, 1966).

[50]Fred S. Cook, Francis J. Brown, and Frank W. Lanham, Senior Year Intensified Demonstration Curriculum Program, Final Report, Project No. 6-1968, Grant No. OEG-061968-1993 (Detroit: Wayne State University, April, 1970), p. 4.

[51]Ibid., p. 75.

recommendations stemming from the study have particular significance to the methodology of the present study:[52]

1. Emphasis should be given to the use of DOT (Dictionary of Occupational Titles) descriptions in describing specific job opportunities, and not to DOT classifications, nor to SIC (Standard Industrial Classifications) codes.

2. Task analyses should be made for specific entry occupations in order to develop a series of performance goals based upon common tasks. These tasks should be analyzed and specific training materials should be developed to facilitate the learner's acquiring those skills needed for a cluster of entry occupations.

3. Since relatively few skills are demanded, it is recommended that depth interviews be conducted on a systematic basis with immediate supervisors to determine the extent to which those skills demanded are utilized on the job.

Perhaps the most important outcome of the SIP programs (aside from the instructional materials which were developed) is the emphasis placed on acquiring data on the requirements of the office employee in the actual job classification and translating this information into instruction to be used in the actual training program.

The Vocational Office Block Program

The impact of the nationally recognized Vocational Office Block Program[53] developed in the Research and Development Program in Vocational-Technical Education of Michigan State University increased as the need for continued development of career-oriented programs (high school and post-secondary) became the focus for providing individuals with better preparation for office occupations. The block-time program in vocational

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[52] Ibid., p. 78.

[53] Poland and Haines, op. cit.

office education is a system of developing office competencies under simulated office conditions. In order to be employable, students must have an awareness of how they will be expected to perform in the world of work.

The instructional materials development phase of the VOB project began in the spring of 1966.[54] A skeleton curriculum guide and sample instructional materials were developed for use during the national workshop in the summer of 1966; and Research and Development staff, research associates, and contract consultants were involved in the further refinement and development of these materials for use in block programs during the 1966-1967 school year. Five states were involved in the consortium (Arizona, Florida, Michigan, New Jersey, and Washington); and 39 schools within these five states were designated pilot schools for the project.

Special instructional materials developed for use in the program included:[55]

1. Curriculum Guide: Integrated exercises, classroom battery experiences, realistic laboratory experiences, individual and classroom problem-solving experiences, weekly evaluation guide.

2. Integrated Exercises: Practice in those office tasks which compose a stenographic or clerical job.

3. Model Office: Functions of various work stations of a total office system.

4. Case Studies: Case problems (108) for transfer of learning to the office situation.

5. Handbook for Organizing and Operating an Office Block-Time Program: Principles, practices, and procedures for the administration of a block-time program.

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[54] Ibid., p. 22.

[55] Ibid., pp. 23-29.

Additional materials were developed by research associates for use their schools. Many of the materials utilized in the project, includ- the curriculum guide, the integrated exercises, the model office, l the case studies, were developed by research associates and later seminated among other project personnel.

The following conclusions, based upon the results of the three- r study, are pertinent to the present study:[56]

1. Block-time allows teachers more adequately to meet individual differences by varying amounts of practice, assigning advanced projects, providing remedial learning when appropriate, counseling and guiding students, and knowing and understanding each student.

2. Clinical schools can be a valuable training site for the experienced office teacher.

3. The project demonstrated the value of the clinical site as a way of inducing creative materials from the research associates (the model office, integrated exercises, methods of instruction utilized).

4. Teachers related that students grasped problem-solving situations more quickly than in traditional organizational patterns.

5. Teachers believed that students made decisions on how and in what order they would do the work in simulation exercises.

6. The Vocational Office Block resulted in a questioning attitude on the effectiveness of present-day office education on the part of the profession.

Some of the recommendations resulting from these research efforts size the need for efforts to develop instructional and evaluative ials for use with such a block-time approach:[57]

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[56] Ibid., pp. 68-69.

[57] Ibid., p. 71.

1. Evaluative instruments must be developed which will support a research design comparing the program's effectiveness with the traditional one-hour classes taught in office education.

2. Comprehensive research into the theory of simulation as an instructional vehicle in office education is needed.

3. Intensive effort should be given to producing an employability measurement program for use in office education.

Evaluation was deemed a high priority by VOB project personnel. One of the kinds of evaluative means considered for use in the project was a situational test of office behavior. One recommendation from the study indicates how such a test could be used to determine program effectiveness:[58]

> If a test of behavior in an office situation could be prepared, it would be a breakthrough in the type of test normally given in "traditional classrooms." Further, it would provide qualitative information as to whether or not the vocational office block concept is doing as effective or more effective job of training office workers than in the "traditional" single-hour classes.

One final note emphasized the importance of further research in the development of an employability measurement program.[59]

The NOBELS Study

Perhaps the most detailed study in recent years in the translation of occupational data and information into instructional components for office occupations programs is the New Office and Business Education Learnings System (NOBELS) Study.[60] The overall purpose of the study was "to assess and modify learning programs in which purposes are

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[58] Ibid., p. 50.

[59] Ibid.

[60] Lanham et al, op. cit.

preparation for office jobs."[61] The first two operational phases of the NOBELS study are now complete: (1) the development of design criteria and (2) performance goals for learning programs for learners being trained for office employment. A situational analysis was conducted by Lanham et al[62] using a modification of Flanagan's critical-incident technique to collect actual samples of on-the-job behavior evidenced in specific office activities. Huffman and Brady[63] developed a framework for the analysis of these critical incidents based upon a preliminary analysis of office tasks. Huffman also isolated traits and concepts from emerging office occupations and converted these to performance goals. Forthcoming phases of NOBELS curriculum development include these five sub-studies:[64]

1. The selection from the inventory of educational performance goals those that are relevant to the preparation of students.
2. The preparation of learning experiences for target students.
3. The application of the learnings in a classroom.
4. The systematic assessment of the learning results.
5. The modification of the specifications or their application based on the assessment.

D. Summary

Analysis of the role of the secretary is necessary in order to make adequate adjustments in the secretarial curriculum, whether it be at the high school or post-high school level. Two distinct phases of

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[61] Ibid., p. 1.

[62] Ibid.

[63] Huffman et al, op. cit.

[64] Lanham et al, loc. cit., p. 2.

development are evident in research that has been done on the role of the secretary: (1) Task-trait analyses wherein primary attention is given to the individual and personal characteristics of the secretary and her ability to perform those responsibilities of her job, and (2) situational analyses wherein the importance of the work group and the work situation is considered in establishing the adequacy of the secretary's performance on the job. Although several of the studies reviewed in this chapter alluded to a basic recommendation that the results of the research be utilized in revising and updating curricula, none of the studies have actually been used as the bases for further curriculum development.

The Lanham sub-study of the NOBELS project, however, is the basis for the development of performance goals for office tasks and appears to be a preliminary measure for the use of these performance goals in further developmental phases. Two other curriculum development projects in the State of Michigan, Wayne State University's Senior Intensified Program and Michigan State University's Vocational Office Block Program, have gained nationwide recognition as block programs designed for the student with a career goal in one of the office occupations.

CHAPTER V

THE DESIGN AND DEVELOPMENT OF THE SECRETARIAL IN-BASKET

One of the fundamental questions that arises in in-basket research asks if in-basket simulation can be used to evaluate the ability of an individual to handle specific decision-making required in a particular occupation. One of the main purposes for developing THE SECRETARIAL IN-BASKET is to determine whether or not secretarial decision-making in the setting of work priorities can be evaluated by means of such an evaluative instrument.

The design and development of THE SECRETARIAL IN-BASKET was dependent upon six basic phases of operation which characterize the methods and procedures for this research study:

1. Preliminary Planning: Contacting experts in the field of in-basket research; conducting preliminary investigation of secretarial samples and student samples for purposes of the study.

2. Review of Related Research and Literature: The review of design and developmental theories; the historical development of in-basket simulation; analyses of the secretarial role; and research in curriculum development for secretarial education.

3. The Critical Incident Study: The derivation of a classification of problems requiring decision-making in the setting of work priorities in the secretarial position.

4. The Development of THE SECRETARIAL IN-BASKET: Planning, writing, and refining an in-basket simulation based upon the problems and decisions obtained in the critical incident study.

5. Field Testing THE SECRETARIAL IN-BASKET: Conducting two tryouts with selected secretaries and students, with a revision stage following the first tryout.

6. An Analysis of the Experimental Results: Analyzing the results of the tryouts and presenting the data with an analysis of the findings, conclusions, and implications stemming from the study.

This chapter summarizes the procedures utilized in the first four phases, and the following chapter summarizes the field testing and the analysis of the data. The methodology for the study was dependent upon both a theoretical approach and an operational approach to the design and development of THE SECRETARIAL IN-BASKET. The combination of these two approaches was essential in, first of all, developing a theoretical base of understanding resulting from a thorough review of related research and literature and, secondly, developing an operational understanding as contributed by experienced secretaries during the critical incident study and subsequent reviews. Each phase of the study is summarized here with specific data pertinent to the study.

A. Preliminary Planning

Preliminary preparation for the in-basket research involved two basic operational stages: the establishment of initial contact with developers of in-basket simulations and the establishment of initial contact with the National Secretaries Association (International) and the Institute for Certifying Secretaries. A number of experts in the areas of personnel management, management training and development, testing and evaluation, manpower planning and research, and teacher education were contacted because of their work in the development of in-basket simulations for various selection, training, and evaluative

purposes (see Appendix A). Responses from these individuals included helpful information pertaining to their own research efforts as well as further "leads" to other in-basket developers. Several of the in-basket developers provided additional research materials for perusal and possible adaptation to the study and enhanced research review conducted in subsequent developmental phases.

Personal contact with the National Secretaries Association (International) and with the Institute for Certifying Secretaries was essential in discovering if samples of secretaries to be used in the study could be selected from those secretaries who were members of NSA and/or who were Certified Professional Secretaries (CPS). The Michigan Division of the National Secretaries Association (International) is composed of 19 NSA chapters, and random samples were selected from this population. The Institute for Certifying Secretaries has one general file listing all CPS's in the State of Michigan, and CPS samples were randomly selected from this population. As a result of the initial contact with the President and the Executive Board of the National Secretaries Association (International) and the Dean of the Institute for Certifying Secretaries, arrangements were made whereby samples of secretaries who were NSA members in the State of Michigan were contacted by mail through the Michigan Division and samples of Certified Professional Secretaries who reside in the State of Michigan were contacted by mail through the Institute for Certifying Secretaries. The three purposes for contacting NSA and the Institute were:

1. To request permission to contact secretaries who live in Michigan and belong to NSA and/or secretaries who live in Michigan and are CPS's.

2. To inquire about the in-basket utilized in the Certified Professional Secretary (CPS) Examination.

3. To inquire about the in-baskets published in The Secretary, the monthly publication of NSA.

Tentative arrangements were also made for the possible participation of secretaries from these two groups in the final in-basket tryout phases.

B. Review of Related Research and Literature

The foci of the review of related research and literature related to four specific areas of study in order to adequately evaluate the information and data obtained with its degree of relationship to this study:

1. Design and Developmental Theories: Selected reviews of research and literature pertinent to the development of in-basket simulation; design and developmental theory from areas of education, tests and measurements, psychology, philosophy, and other areas of concentration.

2. The Historical Development of In-Basket Simulation: The use of in-basket simulation in research, management training, and secretarial education as an instructional, training, and/or testing procedure.

3. Analyses of the Secretarial Role: Research pertaining to the role of the secretary and delineation of personal traits, duties, responsibilities, behaviors, and/or tasks performed.

4. Research in Curriculum Development: Application of instructional models, implications for instructional materials and evaluative instruments in the development of secretarial training programs.

Such a review of research and literature provided an understanding of all elements involved in the development of in-basket simulation and in the validation procedures involved in the experimental phases. The review also provided the vehicle for relating the historical use of in-basket simulation in fields other than secretarial training in an

attempt to evaluate its adequacy in future applications in the design and development of instructional and testing "packages" for secretarial education.

C. The Critical Incident Study

Flanagan's critical incident technique[1] was modified for use in the preliminary search for the kinds of typical but significant decisions the secretary faces in setting work priorities during the routine business day. Several operations were necessary in conducting this preliminary study in a research-wise manner and may be summarized in this way:

1. Preparing the letter-decision card format.
2. Selecting the samples of secretaries to be used in the study.
3. Cataloging and classifying the critical incident responses.
4. Conducting a preliminary review of selected incidents.
5. Selecting the problem categories for THE SECRETARIAL IN-BASKET.

The critical incident study was conducted during the period from February through May, 1970, in the hope that a sufficient number of incidents would be collected through this procedure to incorporate up to 20 problem categories in the final version of the in-basket.

Preparing the Letter-Decision Card Format

The packet of materials prepared especially for the collection of critical incidents from secretaries included:

1. A letter addressed to the secretary explaining the research study and the need for critical incidents on decision making.
2. Decision cards (20) for the secretary to complete and return.
3. A complete set of directions for completing the decision cards and for their return.

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[1] Flanagan, "The Critical Incident Technique," pp. 327-358.

4. A letter addressed to the secretary's employer explaining the purpose of the study and requesting the secretary's help in securing data.
5. A return envelope for the return of the decision cards.

The decision card was the central focus for the collection of critical incident data. The sample decision card shown here indicates that the kinds of information requested included the day of the week on which the incident occurred, the time of the day, a brief statement of the problem, the secretary's decision (if any) for the problem, and the frequency with which the secretary would anticipate the critical incident recurring.

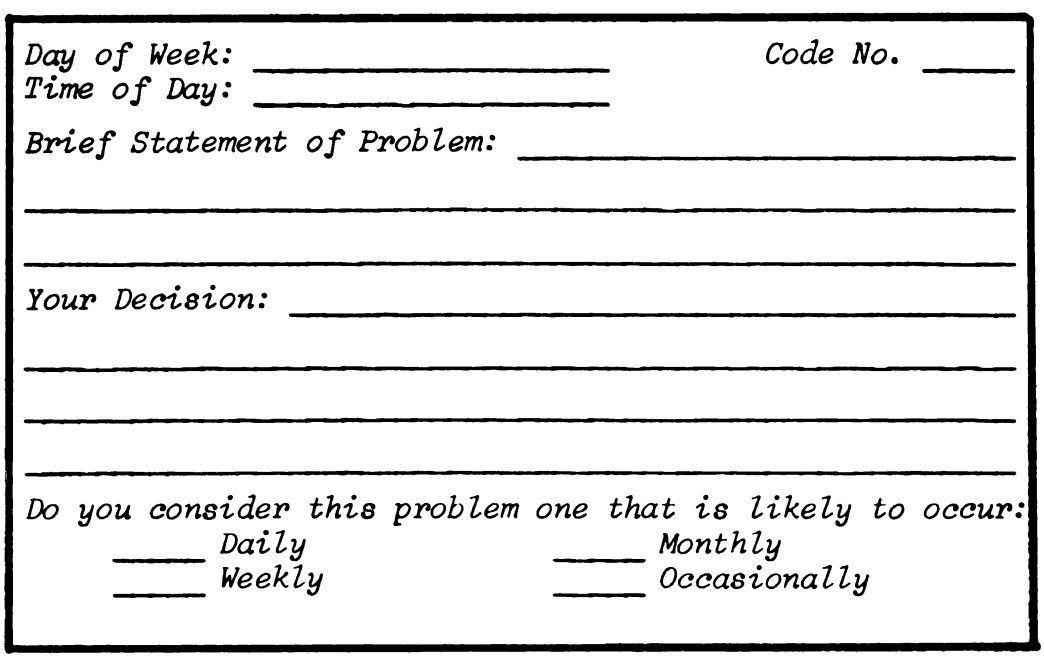
Day of Week: _____ *Code No.* _____
Time of Day: _____
Brief Statement of Problem: _____
_____
_____
Your Decision: _____
_____
_____
_____
Do you consider this problem one that is likely to occur:
_____ *Daily* _____ *Monthly*
_____ *Weekly* _____ *Occasionally*

Illustration 2: The Decision Card for Recording a Critical Incident

The purpose of the letter addressed to the employer was basically to increase the chance of a returned response since both the secretary and her employer would receive information pertaining to the study. In several cases the secretary was permitted to spend working hours on completing the decision cards as indicated in letters received.

Selecting the Samples of Secretaries

From the membership roll of the Michigan Division of the National Secretaries Association (International), a sample of 50 secretaries were selected by means of a stratified random sampling procedure initiated by the president of the Michigan Division. The secretary to the Dean of the Institute for Certifying Secretaries initiated a mailing from the Kansas City office to a randomly chosen sample of 50 secretaries who are Certified Professional Secretaries. The number of usable responses from the first mailing was 11, seven groups of decision cards received from NSA secretaries and four groups of decision cards received from CPS's. A follow-up mailing was initiated to an additional sample of 50 secretaries who were members of the Michigan Division of NSA and an additional sample of 50 CPS's. In addition, there was one follow-up mailing to each secretary not responding to the initial contact within one month of the first mailing. The total number of responses was 68, and 20 of these responses were usable. Among the reasons given for non-participation in the critical incident study were the following:

> ... I am involved in too many other commitments at the present time to do justice to your project.
>
> ... I am no longer employed as a secretary.
>
> ... Since I have been functioning in a supervisory capacity for the past several years, I feel that it would be inappropriate for me to participate.
>
> ... My present job responsibilities are such that I am sure they would be of no value in your survey.

The total number of critical incidents collected through this procedure was 181, and the total number of secretaries participating in the critical incident study was 20 (11 CPS's and 9 NSA secretaries).

Cataloging and Classifying Critical Incidents

Each critical incident was examined and classified according to the specific problem and decision factors inherent in the incident. The secretary's statement of the problem was analyzed for problem factors which constituted components of the problem. In some incidents there was only one problem factor; in others, there were several. The secretary's decision in handling the given problem resulted in one or more responses which are termed decision factors for purposes of this study. The specific problem factors obtained through the analysis of each critical incident led to the formulation of the system for problem identification, whereas the specific factors contained in the secretary's decision indicated response patterns leading to the formulation of a problem-solving technique or answer. The illustration on the following page (Illustration 3) shows the progression from decision card to subsequent analysis of problem and decision factors with ultimate problem identification (input, processing, and output orientations) and determination of response patterns. As indicated in the tabulation of all problem factors identified through this analytical process (Table 1), the input-processing-output pattern resulted in a classification of the problem factors in three divisions: incoming communication, processing, and outgoing communication. The 181 critical incidents classified according to this scheme yielded 415 problem factors, and those problem factors receiving the largest number of tallies were utilized later in the development of the actual in-basket items.

The classification of decision factors resulting from analysis of each secretary's decision(s) concerning a specific incident was based

Day of Week: Wednesday
Time of Day: 2:30 p.m.
Code No. S-18-1

Brief Statement of Problem: Employee has large mailing to get out in order to get in mail before quitting time.

Your Decision: Help girl get out mail by typing labels and inserting enclosures in envelopes, etc., in order to get in night's mail.

Do you consider this problem one that is likely to occur:

[X] *Daily* [ ] *Monthly*
[ ] *Weekly* [ ] *Occasionally*

PROBLEM FACTORS	DECISION FACTORS[a]
1. Preparing Business Papers--Typewriting	1. To type labels.
2. Outgoing Written Communication--Mail	2. To stuff enclosures in envelopes.
	3. To send mail.

INCOMING COMMUNICATION	PROCESSING	OUTGOING COMMUNICATION
	1. Preparing Business Papers--Typewriting	2. Outgoing Written Communication--Mail

DEVELOPMENT OF RESPONSE PATTERNS

Illustration 3: Analysis of Decision Card for Problem Identification and Determination of Response Patterns

[a]The verbs used by secretaries in submitting critical incidents were modified in order to have continuity with the Huffman et al taxonomy of office activities.

upon the Huffman et al taxonomical framework for analyzing office activities[2] into those actions required in the operating, interacting, and managing domains. Action verbs contained in the taxonomy were used in analyzing each response factor. The total number of response factors recorded was 685. The reason for this large number of responses, compared with the total number of critical incidents collected (181) and the total number of problems within those critical incidents (415), is that for each problem factor identified there may have been no immediate response by the secretary, one response only, or a series of responses that were readily recordable. The main purposes for such an extensive analysis of decision factors within each incident were two-fold: to find out exactly what kinds of decisions secretaries make to solve given problem situations and to see if there appeared to be any basic pattern to the responses for given types of problems. This categorization of responses was later used to formulate a five-point scale of quality responses for each of the items developed for the in-basket.

Conducting a Preliminary Review of Selected Incidents

Two types of review procedures were established for a complete review of the critical incidents and the analysis of these incidents into problem and decision factors:

1. The random selection of 15 critical incidents for review: The incidents were duplicated for transmittal to four secretaries for review (two CPS's and two NSA secretaries) to determine if the reviewers' responses to the problem situations would be somewhat identical to those given by the secretary submitting the critical incident.

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[2]Huffman et al, op. cit.

2. A review of the final classification of problem factors: With the assistance of one CPS, one NSA secretary, and one business educator, the classification system utilized for determining the problem and decision factors was reviewed.

This review served as an intermediate step in the analytical process and as an additional source of information relating to the adequacy of the system by which the critical incidents were analyzed. The judgmental answers of the two CPS's reviewing the 15 selected incidents agreed with those of the secretaries who submitted the incidents in 11 of the 15 incidents. The judgmental answers of the two NSA secretaries reviewing the 15 selected incidents agreed with those of the secretaries who submitted the incidents respectively in 14 of the 15 incidents (the first reviewer) and 10 of the 15 incidents (the second reviewer).

In the review of the final classification of problem factors, the three reviewers agreed that the classification system had been satisfactorily utilized in the study and that the 20 problem categories with the largest number of tallies should be utilized in the development of the in-basket items.

Selecting the Problem Categories for THE SECRETARIAL IN-BASKET

The classification of the secretarial problems into specific problem categories yielded a total of 415 problems (Table 1). The three main problem groupings were: incoming communication, processing responsibilities, and outgoing communication.

Incoming Communication. Those problems classified as incoming communication constituted 20.5 per cent of the total number of problems, or 85 problems. Those problems classified as verbal incoming communication

TABLE 1

CLASSIFICATION OF SECRETARIAL PROBLEMS

Problem Categories	Number of Problems	Percentage Within	Percentage of Total
I. INCOMING COMMUNICATION			
A. INCOMING COMMUNICATION -- VERBAL	48	56.5	11.6
1. With Employer	10	11.8	2.4
2. With Others in Firm	6	7.1	1.4
3. With People Outside Firm	4	4.7	1.0
4. Telephoning	28	32.9	6.8
B. INCOMING COMMUNICATION--RECORDED	30	35.3	7.2
1. Mail	22	25.9	5.3
2. Telegram-Teletype	4	4.7	1.0
3. Messages	1	1.2	.2
4. Dictation	3	3.5	.7
C. MISCELLANEOUS INCOMING COMMUNICATION	7	8.2	1.7
		100.0	
TOTAL INCOMING COMMUNICATION	85		20.5

TABLE 1 (Continued)

Problem Categories	Number of Problems	Percentage Within	Percentage of total
II. PROCESSING RESPONSIBILITIES			
A. PREPARING BUSINESS DOCUMENTS AND PAPERS	85	39.5	20.5
1. Composing	6	2.8	1.4
2. Copying and Duplicating	11	5.1	2.7
3. Editing and Revising	6	2.8	1.4
4. Taking Dictation	2	.9	.5
5. Transcribing	12	5.6	2.9
6. Typewriting	32	14.9	7.7
7. Miscellaneous Problems	16	7.4	3.9
B. MAINTAINING AND CONTROLLING RECORDS	13	6.1	3.1
1. Filing and Storage of Business Papers	6	2.8	1.4
2. Maintaining Records of Financial Data	7	3.3	1.7
C. SECURING INFORMATION AND DATA	33	15.3	8.0
D. HANDLING BUSINESS ARRANGEMENTS	22	10.2	5.3
1. Scheduling Business Appointments	12	5.6	2.9
2. Arranging Conferences and Meetings	10	4.6	2.4
E. SUPERVISING OFFICE OPERATIONS	48	22.3	11.6
1. Directing Paper Flow	27	12.6	6.5
2. Assigning Personnel to Tasks	10	4.6	2.4
3. Controlling Information Flow	11	5.1	2.7

TABLE 1 (Continued)

Problem Categories	Number of Problems	Percentage Within	Percentage of Total
II. PROCESSING RESPONSIBILITIES (Continued)			
F. SUPERVISING ADMINISTRATIVE PROBLEMS	14	6.5	3.3
1. Analyzing Administrative Problems	8	3.7	1.9
2. Offering Recommendations or Suggestions	3	1.4	.7
3. Approving Problem Solution	1	.5	.2
4. Referring Problem to Other Personnel	2	.9	.5
		100.00	
TOTAL PROCESSING RESPONSIBILITIES	215		51.8

TABLE 1 (Continued)

Problem Categories	Number of Problems	Percentage Within	Percentage of Total
III. OUTGOING COMMUNICATION			
A. OUTGOING COMMUNICATION--VERBAL	68	59.1	16.4
1. With Employer	15	13.0	3.6
2. With Others in Firm	2	1.7	.5
3. With Others Outside Firm	1	.9	.2
4. Telephoning	50	43.5	12.1
B. OUTGOING COMMUNICATION--RECORDED	39	33.9	9.4
1. Mail	15	13.0	3.6
2. Telegram-Teletype	7	6.1	1.7
3. Messages	4	3.5	1.0
4. Personal Delivery	13	11.3	3.1
C. MISCELLANEOUS OUTGOING COMMUNICATION	8	7.0	1.9
		100.0	
TOTAL OUTGOING COMMUNICATION	115		27.7

represented 11.6 per cent of the total number of problems, or 48 problems. Those problems classified as recorded incoming communication represented 7.2 per cent of the total number of problems, or 30 problems. Seven problems (1.7 per cent) were identified as miscellaneous incoming communication.

Processing Responsibilities. The second group category for problem identification was processing. Within this broad category six sub-categories were evident: (1) preparing business documents and papers, (2) maintaining and controlling records, (3) securing information and data, (4) handling business arrangements, (5) supervising office operations, and (6) supervising administrative problems. The total number of problems within the processing category were 215, representing 51.8 per cent of the total number of problems identified in the study. Those problems dealing with the preparation of business documents and papers numbered 85 and represented 20.5 per cent of the total number of problems. Those problems related to the supervision of office operations were the next largest sub-category with 48 problems identified representing 11.6 per cent of the total number of problems. The complete categorization of all problems identified with processing responsibilities are given in Table 1.

Outgoing Communication. The third group category for problem identification was outgoing communication. Those problems identified that pertained to verbal outgoing communication numbered 68 and represented 16.4 per cent of the total number of problems. Problems categorized within recorded outgoing communication totaled 39 and represented 9.4 per cent of the total number of problems identified in the study.

Eight problems were identified as miscellaneous outgoing communication and represented 1.9 per cent of the total number of problems. The complete categorization of all problems identified as outgoing communication is given in Table 1.

Table 2 presents a summary of the 20 problem categories selected for THE SECRETARIAL IN-BASKET. The number of responses and their respective percentages obtained in the critical incident study are also summarized and the two in-basket items developed for each category identified.

Additional Analyses of the Data. Subsequent analyses of the problem incidents were conducted with special regard to four additional data sources:

1. A Monday-Friday Analysis: To determine the day of the week on which the critical incident occurred.

2. A Frequency Analysis: To determine whether the critical incident was likely to occur daily, weekly, monthly, or occasionally.

3. An Analysis of the Secretary's Experience: To determine if there was a relationship between the secretary's years of experience as a secretary and the occurrence of given problem incidents.

4. A Time-of-Day Analysis: To determine if given problems occurred at specific times during the business day.

In the Monday-Friday analysis most of the 415 problem incidents occurred during the latter part of the week (Thursday and Friday). Incoming communication (85 problem incidents) increased from seven on Monday to 26 on Friday. Problems dealing with processing responsibilities (215 problem incidents) ranged from 22 on Monday to 48 on Wednesday to 60 on Friday, indicating an increase in the amount of actual written or processed tasks throughout the week. Outgoing communication (115

TABLE 2

CLASSIFICATION OF PROBLEM FACTORS BY PROBLEM SUB-CATEGORIES

Problem Categories	Number of Responses	Percentage of Responses	In-Basket Items
1. OUTGOING COMMUNICATION, VERBAL: Telephoning	50	12.1	1-A, 1-B
2. SECURING INFORMATION AND DATA	33	8.0	2-A, 2-B
3. PREPARING BUSINESS DOCUMENTS AND PAPERS: Typewriting	32	7.7	3-A, 3-B
4. INCOMING COMMUNICATION, VERBAL: Telephoning	28	6.8	4-A, 4-B
5. SUPERVISING OFFICE OPERATIONS: Directing Paper Flow	27	6.5	5-A, 5-B
6. INCOMING COMMUNICATION, RECORDED: Mail	22	5.3	6-A, 6-B
7. OUTGOING COMMUNICATION, VERBAL: With Employer	15	3.6	7-A, 7-B
8. OUTGOING COMMUNICATION, RECORDED: Mail	15	3.6	8-A, 8-B
9. OUTGOING COMMUNICATION, RECORDED: Personal Delivery	13	3.1	9-A, 9-B
10. HANDLING BUSINESS ARRANGEMENTS: Scheduling Business Appointments	12	2.9	10-A, 10-B
11. PREPARING BUSINESS DOCUMENTS AND PAPERS: Transcribing	12	2.9	11-A, 11-B

TABLE 2 (Continued)

Problem Categories	Number of Responses	Percentage of Responses	In-Basket Items
12. PREPARING BUSINESS DOCUMENTS AND PAPERS: Copying and Duplicating	11	2.7	12-A, 12-B
13. SUPERVISING OFFICE OPERATIONS: Controlling Information Flow	11	2.7	13-A, 13-B
14. HANDLING BUSINESS ARRANGEMENTS: Arranging Conferences and Meetings	10	2.4	14-A, 14-B
15. SUPERVISING OFFICE OPERATIONS: Assigning Personnel to Tasks	10	2.4	15-A, 15-B
16. INCOMING COMMUNICATION, VERBAL: With Employer	10	2.4	16-A, 16-B
17. SUPERVISING ADMINISTRATIVE PROBLEMS: Analyzing Administrative Problems	8	1.9	17-A, 17-B
18. OUTGOING COMMUNICATION, RECORDED: Telegram-Teletype	7	1.7	18-A, 18-B
19. MAINTAINING AND CONTROLLING RECORDS: Maintaining Records of Financial Data	7	1.7	19-A, 19-B
20. INCOMING COMMUNICATION, VERBAL: With Others in Firm	6	1.4	20-A, 20-B

problem incidents) also showed a daily increase with 11 problem incidents occurring on Monday, 27 problem incidents on Wednesday, and 40 on Friday.

The frequency analysis showed that 98 of the 415 problem incidents were likely to occur daily and 69 problem incidents weekly. Those problems likely to occur monthly totaled 60. The largest number of frequency tallies was 188, those problem incidents likely to occur occasionally. This particular analysis demonstrated the difficulty a secretary has in pinpointing the frequency with which she does a specific task.

The 20 secretaries who participated in the critical incident study possessed a wide range of years of experience (from 5 years of experience to 37 years of experience). This analysis demonstrated that each participating secretary, no matter how many years of experience she had, was involved in tasks within the three problem categories identified: incoming communication, processing responsibilities, and outgoing communication.

The classification of problem incidents occurring during the morning (8 a.m. to noon) shows that incoming communication, especially telephoning and mail, occur most often during this period of time. Problems concerned with copying and duplicating, typewriting, securing information and data, handling business arrangements, and supervising office operations also occur with more frequency during the morning hours. Outgoing communication occurred throughout both the morning and afternoon hours, with a heavy concentration of outgoing telephone communication between 8 and 10 a.m.

Tables 1, 2, 3, and 4 in Appendix B show the complete summary of these four analyses of the problem incidents.

D. The Development of THE SECRETARIAL IN-BASKET

The actual development of the in-basket simulation involved a number of operations from the initial planning of the in-basket items to the development of scoring and administration procedures applicable to the in-basket research. The operations involved in the development of THE SECRETARIAL IN-BASKET were:

1. The planning, writing, and sequencing of the in-basket items in the in-basket simulation.
2. Reviewing the in-basket items as a reality measure.
3. Developing the procedures to be used in administration of the in-basket to individuals and/or to groups.
4. Administering THE SECRETARIAL IN-BASKET to a panel of experts to determine the experts' responses to the items.
5. Developing the scoring procedure to be used in the evaluation of individual performance.

Each of these operations, essential to the complete development of the in-basket simulation, is explained in further detail in this section. The in-basket is based upon the critical incident study and is the result of critical review by business educators, secretaries, and the developer throughout all of the developmental stages.

Planning, Writing, and Sequencing the In-Basket

Two in-basket items were developed for each of the 20 problem categories summarized in Table 2. The planning and writing of the 40 in-basket items required that items be written for two media:

1. The Written Medium: Business papers in written form exemplifying the papers found on the secretary's desk.
2. The Tape Medium: Taped interruptions of telephone calls, visitors coming into the office, and arrival of mail.

The in-basket emphasized the responsibilities of an entry-level secretary in a general office situation, that of a public relations firm.

The format involved a single form of the in-basket and required each subject to make decisions while confronted with these pressures:

1. Pressure of Time: The total time allotted to the participant for working on the in-basket items is 45 minutes.

2. Pressure of Impact: The items in the in-basket have basically four impact emphases: high priority (item requires immediate attention); medium-high priority (item requires attention sometime during this business day); medium-low priority (item requires attention sometime during this business week); and low priority (item requires attention sometime following this business week.

3. Pressure of Search: Several items (business papers and planned interruptions) require the participant to locate additional information in the files or to consult with other people in the firm before decisions can be made.

The sequencing of all 40 items (both in-basket items and planned interruptions) was done in an arbitrary manner, depending upon the nature of the problem to be represented, e.g., a telephone call may require the form of a taped interruption. The following parts of the in-basket were planned, developed, and sequenced (where applicable):

1. Background Information: Information on the organization of the company, its importance in the business community, and personnel required for its entire operation was developed for the participant's perusal prior to the actual in-basket administration.

2. The Situation: Specific information relating to the office situation in which the participant finds herself in the role of a secretary was also written in such a way that it is available for preview prior to the actual in-basket administration.

3. Basic Directions: Two sets of directions were developed which are basic to the in-basket administration: one set of directions for the participant and one set of directions for the test administrator.

4. The In-Basket Items: The business forms developed for the in-basket items are identical to those found in an actual

business situation. These forms were specially designed for THE SECRETARIAL IN-BASKET. The script for the items representing the planned interruptions was prepared in conjunction with the other in-basket items in order to provide some semblance of continuity throughout the in-basket materials.

5. The Audio Control Tape: The cassette tape was recorded in order to present the planned interruptions at specified intervals on the tape and at the same time to control the 45-minute time allotment for each participant on the in-basket.

6. The Answer Sheet: The answer sheet was designed using a paper-and-pencil format so that three types of information would be obtained from each participant: the order in which the subject decides to work on the in-basket items; her opinion as to the importance of each in-basket item; and her immediate action response to each item.

7. Auxiliary Needs: Information sheets are on file from each secretary or student who completed the in-basket. A 10-minute feedback tape was developed to be used when the participant requested immediate feedback as to the priority decisions made by the criterion group.

THE SECRETARIAL IN-BASKET was prepared in such a way that the 40 items were included either in the form of business papers or in the form of taped interruptions. The business papers were organized in a portfolio, and the audio tape of planned interruptions was included as a part of the administrative set of materials. A brief description of the 40 in-basket items is presented in Table 3.

Reviewing the In-Basket Items as a Reality Measure

Immediately following the development of the in-basket items and preliminary sequencing of these items into the actual in-basket experience, THE SECRETARIAL IN-BASKET was administered to three CPS's and six NSA secretaries in a preliminary review tryout. It was found that several revisions were needed prior to the administration of THE IN-BASKET to the panel of experts or the test groups. This preliminary review

TABLE 3

IN-BASKET ITEMS DEVELOPED FOR THE SECRETARIAL IN-BASKET[a]

Problem Categories	Description of In-Basket Items
Category 1: OUTGOING COMMUNICATION, VERBAL (Telephoning) Tasks which involve the placement of outgoing telephone calls, both local and long-distance.	Item 1-A: Memo from Paul Raymond to Nancy Clarkson: To contact president of a local women's organization concerning Mr. Raymond's inability to speak at next luncheon. Item 1-B: Telephone Message for Mr. Raymond: To telephone the area representative and request him to reply to a phone message received by Mr. Raymond from a client.
Category 2: SECURING INFORMATION AND DATA Tasks which require the secretary to locate information and data in the files, make inquiries to other people within the firm, or examine the company policies.	Item 2-A: Incoming Telephone Call from a Business: To request information from the appropriate office or person who can answer an inquiry on promotions. Item 2-B: Memo from Mary Brown to Nancy Clarkson: To proofread a letter that was prepared on Friday; to look up the address and other pertinent information needed in order to send an identical letter to another firm.

TABLE 3 (Continued)

Problem Categories	Description of In-Basket Items
Category 3: PREPARING BUSINESS DOCUMENTS AND PAPERS (Typewriting) Tasks which require the secretary to prepare business documents in typewritten form acceptable to employer.	Item 3-A: Handwritten Letter from Paul Raymond to Area Consultant: To type and send the business letter to area consultant. Item 3-B: Memo from Paul Raymond to Nancy Clarkson: To type copy of speech for luncheon.
Category 4: INCOMING COMMUNICATION, VERBAL (Telephoning) Tasks which require the secretary to answer incoming telephone calls and to give the required information relative to each call.	Item 4-A: Incoming Telephone Call from Paul Raymond: To give the secretary information on some specific tasks to do before he comes into the office. Item 4-B: Telephone Message for Paul Raymond: To give the message to Mr. Raymond when he comes in.
Category 5: SUPERVISING OFFICE OPERATIONS (Directing Paper Flow) Tasks which require the secretary to direct the flow of business papers to appropriate offices and/or persons.	Item 5-A: Memorandum from Howard Riggs to All Secretaries: To notify all secretaries of procedures in handling phone calls; to notify them of in-service meetings. Item 5-B: Memorandum from Paul Raymond to Department Heads: To prepare report for annual budget requirements.

TABLE 3 (Continued)

Problem Categories	Description of In-Basket Items
Category 6: INCOMING COMMUNICATION, RECORDED (Mail) Tasks which require the secretary to handle mail distribution.	Item 6-A: Morning Mail: To sort, distribute, and handle pieces of mail that have just arrived. Item 6-B: Special Delivery Mail: To handle a Special Delivery letter when it arrives.
Category 7: OUTGOING COMMUNICATION, VERBAL (With Employer) Responses of the secretary to tasks involving verbal communication with the employer.	Item 7-A: Memo from Paul Raymond to Nancy Clarkson: To make a list of appointments for week. Item 7-B: Additional Items from Paul Raymond: To handle additional business papers and other items given to Nancy Clarkson by Mr. Raymond during the course of the day.
Category 8: OUTGOING COMMUNICATION, RECORDED (Mail) Tasks which require the secretary to prepare mail for delivery.	Item 8-A: Bulk Mailing to Stockholders: To assist Polly Perkins, one of the other secretaries, in getting a bulk mailing to the stockholders out in the afternoon mail. Item 8-B: Business Letter to Marvin B. Zerington: To fold and stuff letter signed by Mr. Raymond for appropriate envelope so that it may be mailed today.

TABLE 3 (Continued)

Problem Categories	Description of In-Basket Items
Category 9: OUTGOING COMMUNICATION, RECORDED (Personal Delivery) Tasks which require the secretary to deliver personally an item to the recipient (inside or outside firm).	Item 9-A: Memorandum from Paul Raymond to Howard Riggs: To deliver confidential memorandum. Item 9-B: Memorandum from Paul Raymond to Nancy Clarkson: To deliver plaque to engraver.
Category 10: HANDLING BUSINESS ARRANGEMENTS (Scheduling Business Appointments) Tasks which require the secretary to schedule business appointments for her employer.	Item 10-A: Request for Appointment with Paul Raymond: To schedule a business appointment for David Joseph, one of John D. Moore's associates. Item 10-B: Letter from Research Associates, Inc., Requesting Appointment: To give letter to Mr. Raymond; to schedule appointment tentatively.
Category 11: PREPARING BUSINESS DOCUMENTS AND PAPERS (Transcribing) Tasks which require the secretary to transcribe shorthand notes, to transcribe a dictation tape, or to check transcripts for accuracy.	Item 11-A: Memorandum from Mary Brown to Nancy Clarkson: To proofread letter typed on Friday before having Mr. Raymond sign it. Item 11-B: Memorandum from Mary Brown to Nancy Clarkson: To transcribe shorthand notes Mary Brown did not complete on Friday.

TABLE 3 (Continued)

Problem Categories	Description of In-Basket Items
Category 12: PREPARING BUSINESS DOCUMENTS AND PAPERS (Copying and Duplicating) Tasks which require the secretary to prepare copies of business documents by various photocopying, duplicating, or reproducing processes.	Item 12-A: Memorandum from Paul Raymond Attached to Flyer: To prepare the necessary copies of flyer. Item 12-B: Receipt of Letter of Application: To follow stated company policy for letters of application addressed to firm.
Category 13: SUPERVISING OFFICE OPERATIONS (Controlling Information Flow) Tasks which require the secretary to control the amount and kind of information she is permitted to give out to a visitor or caller regarding her employer's business.	Item 13-A: Telephone Call from Accounting Department: To give information on Mr. Raymond's business trip to Grand Rapids today. Item 13-B: Office Visitor: To greet Stephen Gray when he enters the office; to decide how to answer his request for help.
Category 14: HANDLING BUSINESS ARRANGEMENTS (Arranging Conferences and Meetings) Tasks which require the secretary to make appropriate arrangements for conferences and meetings.	Item 14-A: Note Attached to Telephone Message: To schedule meeting as requested by Paul Raymond. Item 14-B: Memorandum from Paul Raymond to Department Heads: To make arrangements for special staff meeting.

Problem Categories	Description of In-Basket Items
Category 15: SUPERVISING OFFICE OPERATIONS (Assigning Personnel to Tasks) Tasks which require the secretary to assign other stenographic personnel to complete tasks.	Item 15-A: Memorandum to Mary Brown Concerning Petition: To petition employer to change dress code for office. Item 15-B: Note from Paul Raymond Attached to Memorandum: To assign another stenographer to prepare form letter to be sent out to new clients.
Category 16: INCOMING COMMUNICATION, VERBAL (With Employer) Direct communication with employer in regard to tasks which need to be performed.	Item 16-A: Note from Paul Raymond to Nancy Clarkson: To sort items on desk and proceed to handle as many as possible. Item 16-B: Interruption by Paul Raymond: To hand Nancy Clarkson (the secretary) several tasks to be completed.
Category 17: SUPERVISING ADMINISTRATIVE PROBLEMS (Analyzing Administrative Problems) Tasks which require the secretary to analyze specific administrative problems in order to assist her employer.	Item 17-A: Note from Paul Raymond: To prepare budget figures on office supplies and secretarial help. Item 17-B: Note from Paul Raymond to Nancy Clarkson: To read the "confidential" memorandum and decide if it is properly worded.

TABLE 3 (Continued)

Problem Categories	Description of In-Basket Items
Category 18: OUTGOING COMMUNICATION, RECORDED (Telegram-Teletype) Tasks which require the secretary to compose and send telegrams/teletype messages per instructions.	Item 18-A: Receipt of Telegram: To wire reply to telegram received the previous Friday. Item 18-B: Memorandum from Michael Troy to Paul Raymond re Miami Trip: To wire reservations per Mr. Raymond's request.
Category 19: MAINTAINING AND CONTROLLING RECORDS (Maintaining Records of Financial Data) Tasks which require the secretary to record financial information in order to keep accurate records of transactions.	Item 19-A: Receipt for Office Supplies Purchased: To record the office supplies purchased by another secretary. Item 19-B: Memorandum from Paul Raymond to Accounting Department Returned: To locate appropriate receipts for travel expense incurred on recent trip.
Category 20: INCOMING COMMUNICATION, VERBAL (With Others in Firm) Tasks which involve communication between the secretary and others in firm.	Item 20-A: Memorandum from Mary Brown to Nancy Clarkson: To read the memo left by Mr. Raymond's secretary in order to familiarize herself with office routine. Item 20-B: Office Visitor: To greet John Hopkins, the vice president of the firm, and to respond to his request.

[a]Additional information on the contents of THE SECRETARIAL IN-BASKET and/or on specific items or auxiliary materials may be obtained from the author.

phase provided a reality measure of the content and face validity of the instrument.

Developing the Procedures for Administration of THE IN-BASKET

Standardized procedures for administering THE SECRETARIAL IN-BASKET were essential because of the control factor inherent in experimental design. THE IN-BASKET had to have the capacity for either individual or group administration. Therefore, both the directions for administering THE IN-BASKET (used by the test administrator) and the directions for taking THE IN-BASKET (used by the subject) had to be written in such a way that they were explicit to those people involved in taking THE IN-BASKET. Primarily three procedures were used in introducing the directions to the test administrator:

1. Delivering the In-Baskets to Test Administrator: Prior to the administration of the in-basket, the researcher delivered all of the test packets and directions to the test administrator (the teacher in the case of a class taking the in-basket; the subject herself in the case of a secretary taking the in-basket).

2. Reviewing the Directions: At this time all of the directions were reviewed with either the test administrator or the subject to be sure all were understood and clear. All materials were explained, and the media were checked for working order.

3. Explaining the Pattern of Test Administration: One of the important purposes for meeting with the test administrator or the subject was to explain the pattern of taking the in-basket that was acceptable to the experimental design set up for the study. In this way there was little or no deviation from the procedures outlined in the directions.

Several additional procedures were used in establishing the standardized method in which THE SECRETARIAL IN-BASKET was administered:

1. The arrangement of specific in-basket items within the three envelopes in the in-basket was purely random.

However, a check was made prior to each administration to be sure that every subject faced the items in exactly the same order.

2. The time limit for the actual in-basket administration was set at 45 minutes and was controlled by the audio tape. Additional time was allotted prior to the in-basket administration for the reading of the preliminary information.

3. A special pamphlet with the directions for the subject to follow was given to each subject to read prior to the in-basket administration. Each subject received the same directions.

4. The reading of the preliminary information was not timed so that the subjects had ample time to become familiar with the situation presented in the in-basket.

5. Questions were answered only prior to the in-basket administration. No questions were answered during the in-basket.

6. The scoring was done only by the researcher, with no deviation from the predetermined priorities set by the panel of experts or the pattern for scoring the quality responses.

The test packets were returned to the researcher as soon as possible after the administration of the in-basket(s) was completed.

Administering THE SECRETARIAL IN-BASKET to a Panel of Experts

THE SECRETARIAL IN-BASKET was administered to a panel of experts (two Certified Professional Secretaries, two NSA secretaries, and two business educators) in the identical way it was to be administered during the field testing. The purpose was to determine agreement in the priority order of the in-basket items and to detect any flaws in the procedures for administration of THE IN-BASKET.

The four secretaries were in agreement as to the priority order of the items. The priority order set by the secretaries was compared with that set by the two business educators, and it was found that the

business educators differed in their judgment from the secretaries as to the priority order of the in-basket items. The percentages of inversions were calculated for the business educators' responses and may be summarized as follows:

1. Priority Order in the In-Basket Envelope: Using the priority order agreed upon by the secretaries, one business educator had .2762 as the percentage of inversions in the in-basket envelope; and the second business educator had .1714 as the percentage of inversions in the same envelope.

2. Priority Order in Envelope A: Using the priority order agreed upon by the secretaries, one business educator had .5333 as the percentage of inversions in Envelope A; and the second business educator had .6667 as the percentage of inversions in the same envelope.

3. Priority Order in Envelope C: Using the priority order agreed upon by the secretaries, one business educator had .2500 as the percentage of inversions in Envelope C; and the second business educator had .3929 as the percentage of inversions in the same envelope.

Since the four secretaries are practitioners in the field and face similar decisions in their work, the decision was made to use the priority order agreed upon by the secretaries in determining the scoring order of the items.

Two basic scoring procedures were developed for THE SECRETARIAL IN-BASKET following its scrutinization by the panel of experts:

1. The Priority Order of the In-Basket Items: A listing was made of the order of priority decided by the experts within each of the three envelopes of written in-basket items in the in-basket.

2. The Point Scale for Scoring Quality Responses: A five-point scale of quality responses was developed, with the responses given to the problems collected in the critical incident study as a guide and the responses given to the problems in the in-basket by the experts in order to measure the quality of each action taken by a subject.

Immediately following the development and preliminary sequencing of the in-basket items, THE IN-BASKET was also administered to three Certified Professional Secretaries and six NSA secretaries in a preliminary tryout. Several revisions were made prior to the administration to the panel of experts.

Developing the Scoring Procedure to be Used in Evaluation

Each subject completed an answer sheet as she "worked on" the in-basket items. As she made decisions on priority, action, and the importance of each item, she completed one line on the answer sheet:

No.	*Importance of Item (Circle One)*	*Business Paper #*	*What immediate action would you take at this time?*
1	(1) 2 3 4	15-A	Read letter and put it on boss' desk.

1. Importance of Item
2. Business Paper Number (from upper left corner of each paper)
3. Immediate Action (what action, if any, would you take at this time?)

These three types of information [importance of item, priority order, and action (quality) response] were subsequently recorded on code sheets specially designed to facilitate the computerization of the experimental data. Scoring was completed for each of the following categories:

1. Percentage of Inversions: The order of priority as written on the answer sheet by the subject was compared with the experts' order of priority, and the percentage of inversions was calculated for each subject on each of the three envelopes of written in-basket items. These percentages were then recorded on the code sheet.

2. Scoring of Points for Action Responses: The written response to each in-basket item was compared with the five-point scale developed for that item and the appropriate number of points assigned to establish the quality of the response. Each point total was then transferred to the appropriate code sheet.

3. The Importance of the Item: The number assigned by each subject pertaining to the importance of the item was also listed on the code sheet.

It appeared that the evaluation of the "importance of the item" required a personal opinion on the part of each subject, and these opinions for each group of subjects could only be judged according to those of a criterion group, the panel of experts. The magnitude of the differences of the groups on the importance of the items were also compared for those groups completing the in-basket during the in-basket tryouts.

CHAPTER VI

FIELD TESTING THE SECRETARIAL IN-BASKET AND ANALYSIS OF DATA

The field testing of THE SECRETARIAL IN-BASKET involved a five-stage operation. The framework developed for the field testing required the participation of both experienced secretaries and high school students in the tryouts so that appropriate testing of the in-basket simulation under controlled conditions could be accomplished and comparisons made between and among groups. These five stages may be summarized in this way:

1. Tryout 1: Conducting the initial tryout with four basic groups of subjects: Certified Professional Secretaries, experienced secretaries who are members of the National Secretaries Association, high school students who are enrolled in office block programs, and high school students who are enrolled in single-period secretarial practice or shorthand classes.

2. Analysis of Tryout 1 Data: Analyzing the priority order of the items completed by each subject, the quality of responses to the in-basket items, and the subject's opinion as to the importance of the item; analyzing those items and/or procedures that needed revision prior to a second tryout.

3. Revision: Reviewing the data from Tryout 1; revising in-basket items and/or procedures based upon data.

4. Tryout 2: Conducting the second tryout with five basic groups of subjects: Certified Professional Secretaries, experienced secretaries who are members of the National Secretaries Association, secretaries to divisional managers of Michigan Bell Telephone Company, high school students who are enrolled in office block programs and high school students who are enrolled in single-period secretarial practice or advanced shorthand classes.

TABLE 4

TRYOUT 1: SECRETARIES AND STUDENTS PARTICIPATING IN THE TRYOUT

Secretaries:			Number
Group 1	Certified Professional Secretaries		5
Group 2	Secretaries--Members of National Secretaries Association (International)		21
High School Students:			
Group 3	Students--Block Programs: Educational Park Grand Rapids, Michigan		25
Group 4	Students--Single-Period Classes:		
	Grand Ledge, Michigan, High School	16	
	Okemos, Michigan, High School	8	
	Waverly High School, Lansing, Michigan	16	40

5. Analysis of Tryout 2 Data: Analyzing the priority order of the items completed by each subject, the quality of responses to the in-basket items, and the subject's opinion as to the importance of the item; analyzing Tryout 2 data in relationship to Tryout 1 data so that appropriate conclusions and recommendations may be made regarding the experiment that has been conducted.

The ultimate goal of the entire field testing phase of the research was to collect data to compare the performance of experienced secretaries who actually took THE SECRETARIAL IN-BASKET with the performance of high school students who are preparing to be secretaries and are enrolled in secondary education programs.

A. Tryout 1

The first tryout of THE SECRETARIAL IN-BASKET occurred in January and February, 1971, with four groups of subjects participating in the program: two groups of experienced secretaries and two groups of high

school students enrolled in office block and single-period programs in office education. Table 4 gives a complete summary of the subjects who participated in Tryout 1.

The secretaries participating in the first tryout were volunteers from the Lansing Teubor Chapter of the Michigan Division of the National Secretaries Association (International) and/or preparing to pass the Certified Professional Secretary (CPS) Examination. None of the secretaries in these two samples were included in any of the previous secretarial samples in the review processes or in the critical incident study. The high school students were seniors enrolled in the office block program, secretarial practice classes, or advanced shorthand classes.

The test packets were delivered prior to the administration of THE SECRETARIAL IN-BASKET, and complete arrangements for the administration of the in-baskets were made with employers and secretaries (business) and school administrators and teachers (education). All test packets were returned immediately following the administration of the in-baskets.

The scoring of the in-baskets was conducted immediately with code sheets prepared for each of the following categories:

1. Total Number of Problems Attempted: The total number of problems attempted by the subject was recorded on the code sheet.

2. Percentage of Inversions: The order of priority as written on the answer sheet by the subject was compared with the judges' order of priority, and the percentage of inversions was calculated for each subject on each of the three envelopes of written in-basket items.

3. Scoring of Points for Quality Responses: The written response to each in-basket item was compared with the five-point scale developed for that item and the appropriate number of points assigned to establish the quality of the response. Each point total was then transferred to the appropriate code sheet.

4. The Importance of the Item: The number assigned by each subject to the importance of the item based on her own opinion was also recorded on the code sheet.

When the experimental data were recorded on the code sheets, the fields in which the data would be keypunched were also determined. Once the data processing cards were keypunched and the appropriate programs obtained, the data were ready to be fed into the computer.

B. Analysis of Tryout 1 Data

A multivariate analysis of variance was used to compare the total number of problems attempted, the total quality response scores, and the mean scores for the quality responses for all subjects within each of the four groups. A multivariate analysis of variance was also used in testing the data for the following comparisons among means:

1. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in the in-basket envelope.
   b. The percentage of inversions for each group on the items in the in-basket envelope.

2. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in Envelope A (the incoming mail).
   b. The percentage of inversions for each group on the items in Envelope A (the incoming mail).

3. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in Envelope C (items given to secretary by employer).
   b. The percentage of inversions for each group on the items in Envelope C (items given to secretary by employer).

The Scheffé method for post hoc comparisons was used to evaluate differences between means, mainly because of its effectiveness in making comparisons of two groups as well as multiple numbers of groups.

The importance of the items, as summarized from the opinions of all subjects in all groups, were examined for similarities among the groups;

and a technique for reporting percentages for each of the four degrees of importance was implemented.

In addition, a comparison of each group's quality responses to each of the 40 items in THE SECRETARIAL IN-BASKET was used to determine the need for refining and/or revising any specific items within the in-basket prior to the second tryout. Items were examined individually, and those items that did not discriminate between secretaries and students were rejected or refined. A careful scrutiny of the procedures involved in the administration of the in-basket during the first tryout was also made in order to correct any inequities that resulted during the controlled experiment.

Analysis of Total Scores on THE SECRETARIAL IN-BASKET

The group means for total response score, total problems attempted, and mean response scores were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total quality response score, the total number of problems attempted, and the mean response score do not differ significantly." This hypothesis may be represented in this way:

(1) H_o: $CPS = NSA = ST_{BL} = ST_{CL}$

The alternate hypothesis was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total quality response score, the total number of problems attempted, and the mean response score are not all identical." This hypothesis may be represented in this way:

(1a) H_1: H_o is false.

TABLE 5

TRYOUT 1: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL RESPONSE SCORES, TOTAL PROBLEMS ATTEMPTED, AND MEAN RESPONSE SCORES

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Response Score	5484.6947	366.5947	14.9612	.0001*
Total Problems	164.1801	39.6732	4.1383	.0086*
Mean Response Score	5.2004	0.1694	30.7063	.0001*

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 87
Overall Significance = .0001*

*P is significant. See Scheffé comparisons which follow.

Testing of Hypotheses for Total Scores. Table 5 shows that an overall significance of .0001 was evident in the multivariate analysis of variance for total response scores, total problems attempted, and mean response scores for the four groups. The univariate analysis of variance for each of the total scores indicated a .0001 level of significance for total response score, a .0086 level of significance for total problems attempted, and a .0001 level of significance for the mean response score. A more detailed description of the univariate analyses of variance, the means, and the Scheffé post hoc comparisons of means follows.

The Univariate ANOVA for Total Response Score. The total response score was significant at the .0001 level of significance, which indicated that there was a significant difference among the four groups on the means for the total response scores. Therefore, the null hypothesis (1) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the

TABLE 6

TRYOUT 1: GROUP MEANS FOR TOTAL RESPONSE SCORE

Group	N	Total Response Score
Secretaries:		
Certified Professional Secretaries	5	103.20
NSA Secretaries	21	70.00
Students:		
Office Block Program	25	45.72
Single-Period Classes	40	60.45

total quality response score do not differ significantly is rejected, and the alternate hypothesis (1a) that the means for the four groups on the total quality response score are not all identical is accepted.

Table 6 itemizes the group means for the total response score. The CPS's (N=5) obtained the highest mean quality response score (103.20). The NSA secretaries (N=21) obtained a mean of 70.00. The students in single-period classes obtained a higher mean (60.45) than the students in the office block program (45.72). This means that the CPS's obtained higher total response scores than all three of the other groups and that the secretaries (CPS's and NSA secretaries) obtained higher total response scores than the students (office block program and single-period classes). The students in the single-period classes obtained higher scores than the students in the office block program. Comparisons between the groups using the Scheffé method for post hoc comparisons[1] were made to determine which of the four groups contributed most to the variance.

[1]William L. Hays, Statistics for Psychologists (New York: Holt, Rinehart and Winston, 1963), p. 484.

The Scheffé technique has three advantages applicable to this study: simplicity, applicability to groups of unequal size, and suitability for any comparison. The formula and the post hoc comparisons of the means for the groups on the total response score are presented in Table 7. Table 8 summarizes the .05 confidence limits and indicates the decision of "significant" or "not significant" for each post hoc comparison made.

The Scheffé post hoc comparisons for the total response score showed that the following comparisons were significant at the .05 level of significance:

1. The CPS's scored significantly higher than the NSA secretaries on the total response score.
2. The CPS's scored significantly higher than the students in the office block program on the total response score.
3. The CPS's scored significantly higher than the students in the single-period classes on the total response score.
4. The NSA secretaries scored significantly higher than the students in the office block program on the total response score.
5. The students in the single-period classes scored significantly higher than the students in the office block program on the total response score.
6. The secretaries (CPS and NSA) scored significantly higher than the students (both office block program and single-period classes) on the total response score when the groups were combined.

There is no reason to believe that there is a significant difference at the .05 level between the NSA secretaries and the students in the single-period classes on the total quality response scores.

The Univariate ANOVA for Total Problems Attempted. The number of total problems attempted in the entire in-basket was significant at the

TABLE 7

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS
FOR TOTAL RESPONSE SCORE[a]

FORMULA: Ψ is probably between $\Psi_{\cdot} \pm \sqrt{(J-1)\, F_{3,87}} \sqrt{MS_e \sum \frac{c_j^2}{n_j}}$

$J = 4$

$F_{3,87(.05)} = 2.72$

$MS_e = 366.59$

Comparison 1: CPS = NSA

Ψ is probably between $(103.20 - 70.00) \pm \sqrt{(4-1)\ 2.72} \sqrt{366.59\ (\frac{1}{5} + \frac{1}{21})}$

Ψ is probably between + 5.9854 and + 60.4146

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the CPS's and the NSA secretaries on the total response scores.

Comparison 2: CPS = ST_{BL}

Ψ is probably between $(103.20 - 45.72) \pm \sqrt{(4-1)\ 2.72} \sqrt{366.59\ (\frac{1}{5} + \frac{1}{25})}$

Ψ is probably between + 30.6538 and + 84.3062

TABLE 7 (Continued)

Comparison 2: CPS = ST_{BL} (Continued)

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the CPS's and the students in the office block program on the total response scores.

Comparison 3: CPS = ST_{CL}

Ψ is probably between $(103.20 - 60.45) \pm \sqrt{(4-1)\ 2.72}\sqrt{366.59\ (\frac{1}{5} + \frac{1}{40})}$

Ψ is probably between + 16.7758 and + 68.7242

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the CPS's and the students in single-period classes on the total response scores.

Comparison 4: NSA = ST_{BL}

Ψ is probably between $(70.00 - 45.72) \pm \sqrt{(4-1)\ 2.72}\sqrt{366.59\ (\frac{1}{21} + \frac{1}{25})}$

Ψ is probably between + 8.1285 and + 40.4315

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the NSA secretaries and the students in the office block program on the total response scores.

TABLE 7 (Continued)

Comparison 5: $NSA = ST_{CL}$

Ψ is probably between $(70.00 - 60.45) \pm \sqrt{(4-1)\ 2.72}\sqrt{366.59\ (\frac{1}{21} + \frac{1}{40})}$

Ψ is probably between -5.1432 and $+24.2432$

Finding: The confidence interval crossed 0. Therefore, there is no significant difference at the .05 level between the NSA secretaries and the students in the single-period classes on the total response score.

Comparison 6: $ST_{BL} = ST_{CL}$

Ψ is probably between $(45.72 - 60.45) \pm \sqrt{(4-1)\ 2.72}\sqrt{366.59\ (\frac{1}{25} + \frac{1}{40})}$

Ψ is probably between -28.6908 and $-.7692$

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the students in the office block program and the students in the single-period classes on the total response score.

Comparison 7: $CPS + NSA = ST_{BL} + ST_{CL}$

Ψ is probably between $[(\frac{103.20-70.00}{2}) - (\frac{45.72+60.45}{2})] \pm \sqrt{(4-1)\ 2.72}\sqrt{366.59\ [(\frac{1}{5} + \frac{1}{21}) + (\frac{1}{25} + \frac{1}{40})]}$

Ψ is probably between $+2.9285$ and $+64.1115$

TABLE 7 (Continued)

Comparison 7: CPS + NSA = ST_{BL} + ST_{CL} (Continued)

Finding: The confidence interval failed to cross 0. Therefore, there is a significant difference at the .05 level between the students in the office block program and the students in the single-period classes (combined) and the CPS's and the NSA secretaries (combined) on the total response score.

[a]The formula for computing Scheffé post hoc comparisons and the method used for doing the comparisons and determining the confidence limits is presented only for this first group of comparisons so that the reader will be able to see the process involved. In subsequent comparisons only the summary table will be presented.

TABLE 8

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS FOR TOTAL RESPONSE SCORE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	+ 5.9854	+60.4146	S
CPS = ST_{BL}	+30.6538	+84.3062	S
CPS = ST_{CL}	+16.7758	+68.7242	S
NSA = ST_{BL}	+ 8.1285	+40.4315	S
NSA = ST_{CL}	- 5.1432	+24.2432	NS
ST_{BL} = ST_{CL}	-28.6908	- .7692	S
CPS + NSA = ST_{BL} + ST_{CL}	+ 2.9285	+64.1115	S

*S = Significant
NS = Not Significant

.0086 level of significance, which indicated that there was a significant difference among the four groups on the means for the total number of problems attempted. Therefore, the null hypothesis (1) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted do not differ significantly is rejected, and the alternate hypothesis (1a) that the means for the four groups on the total problems attempted are not all identical is accepted.

Table 9 itemizes the group means for total problems attempted. The CPS's attempted 35.80 problems on the average whereas the NSA secretaries had a mean of 27.90. The students in the single-period classes (N=40) attempted a mean of 32.50 problems, and the students in the office block program attempted a mean of 29.04 problems. These data

TABLE 9

TRYOUT 1: GROUP MEANS FOR TOTAL PROBLEMS ATTEMPTED

Group	N	Total Problems Attempted
Secretaries:		
Certified Professional Secretaries	5	35.80
NSA Secretaries	21	27.90
Students:		
Office Block Program	25	29.04
Single-Period Classes	40	32.50

indicate that the CPS's had the highest mean number of problems attempted of all four groups and that the students in the single-period classes had the highest mean number of problems attempted within the student groups. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which groups contributed most to the variance. Table 10 summarizes the .05 confidence limits and indicates the decision for each comparison made.

The univariate analysis of variance did indicate that there was a .0086 level of significance among the groups on the number of problems attempted in the entire in-basket. When numerous Scheffé post hoc comparisons were made among the groups, however, it was found that all comparisons of interest were not significant at the .05 level. There may be other comparisons, besides the ten shown in Table 10, that might be made that will yield a significant difference among some of the groups. However, any such comparisons would have little value in this study if they combined the secretarial groups with the student groups.

TABLE 10

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS FOR TOTAL PROBLEMS ATTEMPTED

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- 1.0417	+16.8417	NS
CPS = ST_{BL}	- 2.0540	+15.5740	NS
CPS = ST_{CL}	- 5.2343	+11.8343	NS
NSA = ST_{BL}	- 6.4468	+ 4.1668	NS
NSA = ST_{CL}	- 9.4274	+ .2274	NS
ST_{BL} = ST_{CL}	- 8.0469	+ 1.1269	NS
CPS + NSA = ST_{BL} + ST_{CL}	- 8.9697	+11.1297	NS
NSA = CPS + ST_{BL}	-15.8886	+ 3.3886	NS
NSA = ST_{BL} + ST_{CL}	- 8.8912	+ 3.1512	NS
CPS = NSA + ST_{BL} + ST_{CL}	- 4.0597	+16.0397	NS

*S = Significant
NS = Not Significant

Therefore, the finding that would pertain to the relationship of the groups on the total number of problems attempted would be that, although a level of significance less than .05 did appear in the univariate analysis of variance, none of the Scheffé post hoc comparisons of interest indicated a significant difference among the groups with the ten particular comparisons made.

The Univariate ANOVA for Mean Response Score. The mean response score was significant at the .0001 level of significance, which indicated that there was a significant difference among the four groups on the means for the mean response scores. Therefore, the null hypothesis

TABLE 11

TRYOUT 1: GROUP MEANS FOR MEAN RESPONSE SCORE

Group	N	Mean Response Score
Secretaries:		
Certified Professional Secretaries	5	2.90
NSA Secretaries	21	2.51
Students:		
Office Block Program	25	1.55
Single-Period Classes	40	1.85

(1) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the mean response score do not differ significantly is rejected, and the alternate hypothesis (1a) that the means for the four groups on the mean response score are not all identical is accepted.

Table 11 summarizes the group means for the mean response score. The CPS's (N=5) obtained the highest mean response score of 2.90, and the NSA secretaries obtained a group mean of 2.51 on the mean response score. The students in the single-period classes obtained a 1.85 group mean on the mean response score, and the students in the office block program obtained a 1.55 group mean on the mean response score. This means that the CPS's obtained a higher group mean on the mean response score than all other groups and that the students in single-period classes obtained a higher group mean than the students in the office block program. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the four groups contributed most to the variance. Table 12 summarizes the .05 confidence limits and indicates the decision made for each post hoc comparison.

TABLE 12

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS
FOR MEAN RESPONSE SCORE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- .1945	+ .9745	NS
CPS = ST_{BL}	+ .7748	+ 1.9252	S
CPS = ST_{CL}	+ .4927	+ 1.6073	S
NSA = ST_{BL}	+ .6138	+ 1.3062	S
NSA = ST_{CL}	+ .3458	+ .9742	S
ST_{BL} = ST_{CL}	- .0070	- .5993	S
CPS + NSA = ST_{BL} + ST_{CL}	+ .3489	+ 1.6611	S

*S = Significant
NS = Not Significant

The Scheffé post hoc comparisons for the mean response score showed that the following comparisons were significant at the .05 level of significance:

1. The CPS's scored significantly higher than the students in the office block program on the mean response score.
2. The CPS's scored significantly higher than the students in the single-period classes on the mean response score.
3. The NSA secretaries scored significantly higher than the students in the office block program on the mean response score.
4. The NSA secretaries scored significantly higher than the students in the single-period classes on the mean response score.
5. The students in the single-period classes scored significantly higher than the students in the office block program on the mean response score.

6. The secretaries (CPS and NSA secretaries) scored significantly higher than the students (the office block program and the single-period classes) on the mean response score.

There is no reason to believe that there is a significant difference at the .05 level of significance between the CPS's and the NSA secretaries on the mean response score.

Analysis of Total Scores on the In-Basket Envelope

The in-basket envelope is one of three envelopes in THE SECRETARIAL IN-BASKET that contains items for the subject to make decisions on during the simulation. The envelope contains 15 in-basket items. The group means for the total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope and the percentage of inversions in the in-basket envelope do not differ significantly." This hypothesis may be represented in this way:

(2) H_o: CPS = NSA = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope and the percentage of inversions in the in-basket envelope are not all identical." This alternate hypothesis may be represented in this way:

(2a) H_1: H_o is false.

Testing of Hypotheses for the In-Basket Envelope. Table 13 shows that an overall significance of .0003 was evident in the multivariate

TABLE 13

TRYOUT 1: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN THE IN-BASKET ENVELOPE

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	48.8581	6.8313	7.1521	.0003*
Percentage of Inversions	0.0401	0.0248	1.6215	.1903

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 87
Overall Significance = .0003*

*P is significant. See Scheffé comparisons which follow.

analysis of variance for the total number of problems attempted and percentages of inversions in the in-basket envelope for the four groups. The univariate analysis of variance for the total problems attempted indicated a .0003 level of significance and a .1903 level of significance for percentages of inversions. A more detailed description of the univariate analyses of variance, the means, and the Scheffé post hoc comparisons of means follows.

The Univariate ANOVA for Total Problems Attempted in In-Basket Envelope. The total problems attempted in the in-basket envelope was significant at the .0003 level of significance, which indicates that there was a significant difference among the four groups on the means for the total number of problems attempted. Therefore, the null hypothesis (2) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope do not differ significantly is rejected, and the alternate hypothesis (2a)

TABLE 14

TRYOUT 1: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED IN THE IN-BASKET ENVELOPE

Group	N	Total Problems Attempted
Secretaries:		
Certified Professional Secretaries	5	14.00
NSA Secretaries	21	10.67
Students:		
Office Block Program	25	13.44
Single-Period Classes	40	13.75

that the means for the four groups on the total number of problems attempted in the in-basket envelope are not all identical is accepted.

Table 14 itemizes the group means for the total number of problems attempted in the in-basket envelope. The CPS's attempted the largest number of in-basket items with a mean of 14.00. The students in the single-period classes had a mean number of problems attempted of 13.75, and the students in the office block program had a mean number of problems attempted of 13.44. The NSA secretaries had the lowest mean of the groups with 10.67. This means that the CPS's attempted a greater number of problems than the other three groups and that the students in the single-period classes attempted a greater number of problems than either students in the office block program or NSA secretaries. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the four groups contributed most to the variance. Table 15 summarizes the .05 confidence limits and indicates the decision of "significant" or "not significant" for each post hoc comparison made.

TABLE 15

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS
FOR TOTAL PROBLEMS ATTEMPTED IN IN-BASKET ENVELOPE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- .3803	+ 7.0403	NS
CPS = ST_{BL}	- 3.0974	+ 4.2174	NS
CPS = ST_{CL}	- 3.2912	+ 3.7912	NS
NSA = ST_{BL}	- 4.9720	- .5680	S
NSA = ST_{CL}	- 5.0829	- 1.0771	S
ST_{BL} = ST_{CL}	- 2.2132	+ 1.5932	NS
CPS + NSA = ST_{BL} + ST_{CL}	- 5.4299	+ 2.9099	NS

*S = Significant
NS = Not Significant

The Scheffé post hoc comparisons for the total problems attempted in the in-basket envelope showed that the following comparisons were significant at the .05 level of significance:

1. The students in the single-period classes attempted a significantly greater number of problems in the in-basket envelope than the NSA secretaries.

2. The students in the office block program attempted a significantly greater number of problems in the in-basket envelope than the NSA secretaries.

There is no significant difference at the .05 level of significance for comparisons of the CPS's with the other three groups, comparisons of the students in the office block program with students in the single-period classes, or comparisons of the secretaries combined with the students combined.

TABLE 16

TRYOUT 1: GROUP MEANS FOR PERCENTAGES OF INVERSIONS IN THE IN-BASKET ENVELOPE

Group	N	Mean Percentage of Inversions
Secretaries:		
Certified Professional Secretaries	5	.2724
NSA Secretaries	21	.3587
Students:		
Office Block Program	25	.4235
Single-Period Classes	40	.3657

The Univariate ANOVA for Percentages of Inversions in In-Basket Envelope. Table 13 shows the mean percentages of inversions in the in-basket envelope were not significant. The probability was .1903 (or 19 chances out of 100) that the means of samples, one drawn from each of these populations, would differ as much as they do in this study if the population means were identical. With these data there is no reason to believe that the four groups are different. Therefore, the null hypothesis that the means of the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the percentages of inversions in the in-basket envelope do not differ significantly is not rejected. No further comparisons with these data were necessary.

Table 16 summarizes the group means for the percentages of inversions in the in-basket envelope. Even though further post hoc comparisons do not need to be made, a numerical analysis of the mean percentages of inversions may be interesting. The group with the smallest mean percentage of inversions (which represents the best score) is the CPS's

with a mean of .2724. The NSA secretaries have the second lowest percentage of inversions with a mean of .3587. The students in the office block program have the highest percentage of inversions with a mean of .4235, and the students in the single-period classes have a mean percentage of inversions of .3657. Since there is not a significant difference among the four groups of .05 or less, no further comparison of the means is necessary.

Analysis of Total Scores on Envelope A (Incoming Mail)

Envelope A is one of three envelopes in THE SECRETARIAL IN-BASKET that contains items for the subject to make decisions on during the simulation. The envelope contains six in-basket items which represent the morning mail. The group means for the total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A do not differ significantly." This hypothesis may be represented in this way:

(3) H_o: CPS = NSA = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A are not all identical." This alternate hypothesis may be represented in this way:

(3a) H_1: H_o is false.

TABLE 17

TRYOUT 1: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE A

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	2.2684	1.5560	1.4579	.2338
Percentage of Inversions	0.0413	0.1003	0.4116	.7452

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 68

Overall Significance = .4452

Testing of Hypotheses for Envelope A (Incoming Mail). Table 17 shows that an overall significance of .4452 was evident in the multivariate analysis of variance for the total number of problems attempted and percentages of inversions in Envelope A for the four groups. The univariate analysis of variance for the total problems attempted indicated a .2338 level of significance and a .7452 level of significance for percentage of inversions. Therefore, no significant differences exist among the groups. The null hypothesis (3) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A do not differ significantly is not rejected. Because no differences were found, no further description of the univariate ANOVA is needed. For the same reason, no further Scheffé post hoc comparisons were necessary.

Table 18 presents the group means for the total number of problems attempted and the group means for the percentages of inversions in

TABLE 18

TRYOUT 1: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE A

Group	N	Total Problems Attempted	Mean Percentage of Inversions
Secretaries:			
Certified Professional Secretaries	5	5.60	.4267
NSA Secretaries	17	4.82	.2902
Students:			
Office Block Program	11	5.36	.4030
Single-Period Classes	39	5.56	.3359

Envelope A as an illustration of each group's performance on the envelope. Even though further post hoc comparisons need not be made, a look at the group means for the total number of problems attempted and the percentages of inversions may be interesting. Table 18 shows that the CPS's had a group mean for the total number of problems attempted of 5.60, that the students in single-period classes had a group mean of 5.56, that the students in the office block program had a group mean of 5.36, and that the NSA secretaries had a group mean of 4.82.

Table 18 also summarizes the group means for the percentages of inversions in Envelope A. Even though further post hoc comparisons need not be made, the group means may provide some insight into the relationship of the groups. The group with the lowest percentage of inversions (highest score) is the NSA secretaries with a group mean of .2902. The students in single-period classes are second with a group mean of .3359. The students in the office block program had a group mean of .4030, and the CPS's had a group mean of .4267.

Analysis of Total Scores on Envelope C (Additional In-Basket Items)

Envelope C is one of three envelopes in THE SECRETARIAL IN-BASKET that contain items for the subject to make decisions on during the simulation. The envelope contains eight in-basket items which represent items handed to the secretary in the middle of the day by her employer. The group means for the total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C and the percentages of inversions in Envelope C do not differ significantly." This hypothesis may be represented in this way:

(4) H_o: CPS = NSA = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C and the percentages of inversions in Envelope C are not all identical." This alternate hypothesis may be represented in this way:

(4a) H_1: H_o is false.

Testing of Hypotheses for Envelope C (Additional In-Basket Items). Table 19 shows that an overall significance of .0001 was evident in the multivariate analysis of variance for the total number of problems attempted and percentages of inversions in Envelope C for the four groups. The univariate analysis of variance for the total problems attempted indicated a .0002 level of significance and a .0223 level of significance for percentage of inversions. A more detailed description

TABLE 19

TRYOUT 1: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE C

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	27.4145	3.5034	7.8251	.0002*
Percentage of Inversions	0.1321	0.0388	3.4013	.0223*

Degrees of Freedom for Hypothesis = 3
Degrees of Freedom for Error = 71

Overall Significance = .0001*

*P is significant. See Scheffé comparisons that follow.

of the univariate analyses of variance, the means, and further post hoc comparisons follows.

The Univariate ANOVA for Total Problems Attempted in Envelope C. The total problems attempted in Envelope C were found to be significant at the .0002 level of significance, which indicated that there was a significant difference among the four groups on the means for the total number of problems attempted. Therefore, the null hypothesis (4) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C do not differ significantly is rejected, and the alternate hypothesis (4a) that the means for the four groups are not all identical is accepted.

Table 20 itemizes the group means for the total number of problems attempted in Envelope C. The CPS's attempted more problems than the other three groups with a group mean of 7.00. The students in single-period classes had a group mean of 6.88, only .12 less than the CPS's.

TABLE 20

TRYOUT 1: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED IN ENVELOPE C

Group	N	Total Problems Attempted
Secretaries:		
Certified Professional Secretaries	5	7.00
NSA Secretaries	17	4.29
Students:		
Office Block Program	19	5.74
Single-Period Classes	34	6.88

The students in the office block program had a group mean of 5.74, which was higher than the group mean for the NSA secretaries who had a mean of 4.29. The CPS's attempted more problems within Envelope C than the other three groups, and the students in the single-period classes attempted more problems within Envelope C than the students in the office block program. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the four groups contributed most to the variance. Table 21 summarizes the .05 confidence limits and indicates the decision of "significant" or "not significant" for each post hoc comparison made.

Table 19 indicates that the degrees of freedom for the multivariate analysis of variance are 3 degrees of freedom for the hypothesis (four groups) and 71 degrees of freedom for the error (based upon the number of subjects who actually attempted the in-basket items contained in Envelope C). $F_{3,71(.05)}$ used in making the Scheffé post hoc comparisons was 2.71. Those subjects who did not attempt any in-basket items in Envelope C were not included in the N for these tests.

TABLE 21

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS FOR TOTAL PROBLEMS ATTEMPTED IN ENVELOPE C

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	+ .4350	+ 4.9850	S
CPS = ST_{BL}	- .9875	+ 3.5075	NS
CPS = ST_{CL}	- 2.0219	+ 2.2619	NS
NSA = ST_{BL}	- 2.9424	+ .0424	NS
NSA = ST_{CL}	- 3.9178	- 1.2622	S
ST_{BL} = ST_{CL}	- 2.4205	+ .1405	NS
CPS + NSA = ST_{BL} + ST_{CL}	- 3.2757	+ 1.9457	NS

*S = Significant
NS = Not Significant

The Scheffé post hoc comparisons for the total number of problems attempted in Envelope C showed that the following comparisons were significant at the .05 level of significance:

1. The CPS's attempted a significantly greater number of problems in Envelope C than the NSA secretaries.

2. The students in single-period classes attempted a significantly greater number of problems in Envelope C than the NSA secretaries.

There is no significant difference at the .05 level of significance for comparisons of the CPS's with the students in the office block program or the students in single-period classes. There is no significant difference at the .05 level of significance for comparisons of the NSA secretaries with the students in the office block program. There is no significant difference at the .05 level of significance for comparisons

TABLE 22

TRYOUT 1: GROUP MEANS FOR PERCENTAGES OF INVERSIONS IN ENVELOPE C

Group	N	Mean Percentage of Inversions
Secretaries:		
Certified Professional Secretaries	5	.2643
NSA Secretaries	17	.3954
Students:		
Office Block Program	19	.4910
Single-Period Classes	34	.5192

of the students in the office block program with the students in single-period classes in the total number of problems attempted in Envelope C. There is also no significant difference at the .05 level of significance when the secretaries (CPS's and NSA secretaries combined) and the students (office block program and single-period classes combined) are compared through the use of the Scheffé technique.

The Univariate ANOVA for Percentages of Inversions in Envelope C. The test of the group means for percentages of inversions in Envelope C showed that there is a significant difference among the four groups. Table 19 indicates that percentages of inversions in Envelope C were found to be significant at the .0223 level of significance. Therefore, the null hypothesis (4) that the means for the four groups (CPS, NSA, ST_{BL}, ST_{CL}) on the percentages of inversions in Envelope C do not differ significantly is rejected, and the alternate hypothesis (4a) that the means for the four groups are not all identical is accepted.

Table 22 summarizes the group means for the four groups. The means are based upon only those secretaries and/or students who actually

TABLE 23

TRYOUT 1: SCHEFFÉ POST HOC COMPARISONS FOR PERCENTAGES OF INVERSIONS IN ENVELOPE C

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- .3700	+ .1078	NS
CPS = ST_{BL}	- .4630	+ .0096	NS
CPS = ST_{CL}	- .4802	- .0296	S
NSA = ST_{BL}	- .2521	+ .0609	NS
NSA = ST_{CL}	- .2631	+ .0155	NS
ST_{BL} = ST_{CL}	- .1610	+ .1046	NS
CPS + NSA = ST_{BL} + ST_{CL}	- .4496	+ .0990	NS

*S = Significant
NS = Not Significant

attempted items in Envelope C. The CPS's had the lowest percentage of inversions (the highest score) with a group mean of .2643. The NSA secretaries had a group mean of .3954, which was the next highest score. The students in the office block program had a group mean of .4910, and the students in single-period classes had a group mean of .5192. This means that the CPS's had the best group mean for percentages of inversions of all four groups. The students in the office block program had a better group mean than the students in single-period classes. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the four groups contributed most to the variance. Table 23 summarizes the .05 confidence limits and indicates the decision of "significant" or "not significant" for each post hoc comparison made.

In these Scheffé comparisons, as in the comparisons made for the total number of problems attempted in Envelope C, the $F_{3,71(.05)}$ used in the formula was 2.71. Those subjects who did not attempt any in-basket items in Envelope C were not included in the N for these Scheffé comparisons.

The Scheffé post hoc comparisons for the percentages of inversions in Envelope C showed only one comparison at the .05 level of significance to be significant:

> The CPS's scored significantly better on arranging the in-basket items in Envelope C in order of priority than the students in the single-period classes.

Table 23 summarizes all of the Scheffé comparisons for the group means for the percentages of inversions in Envelope C.

The Importance of the In-Basket Items

The secretaries and the students who participated in the in-basket study were asked to give their opinions as to how important they felt each in-basket item was and to indicate the degree of importance on the answer sheet. If a subject ranked an in-basket item as (1), this indicated that she felt that the item should be done immediately. A ranking of (2) indicated that the item should be completed by the end of the day, a ranking of (3) that the item should be completed by the end of the week, and a ranking of (4) that the item could be delayed longer than one week. Tables 24, 25, and 26 summarize the percentage of responses within each of the four "importance" categories as well as the non-responses to the items. No formal item analysis of the importance of the in-basket items, based upon the opinions of the subjects participating in the study, was planned for this in-basket study. However, the data obtained indicate

TABLE 24

TRYOUT 1: THE IMPORTANCE OF THE IN-BASKET ITEMS IN THE OPINION OF THE SECRETARIES

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.420	.310	.040	.040	.000	.190	
1-B	.230	.350	.150	.080	.040	.150	
2-A	.190	.690	.080	.000	.000	.040	
2-B	.110	.380	.110	.000	.040	.350	
3-A	.080	.420	.230	.000	.000	.270	
3-B	.150	.580	.040	.000	.000	.230	
4-A	.080	.230	.150	.190	.040	.310	
4-B	.080	.110	.080	.150	.040	.540	
5-A	.690	.080	.080	.000	.110	.040	
5-B	.350	.420	.000	.040	.080	.110	
6-A	.380	.000	.000	.000	.190	.420	
6-B	.810	.080	.040	.000	.080	.000	
7-A	.230	.270	.040	.000	.040	.420	
7-B	.350	.000	.000	.000	.310	.350	
8-A	.460	.080	.000	.040	.380	.040	
8-B	.190	.420	.000	.080	.000	.310	
9-A	.110	.270	.040	.080	.040	.460	
9-B	.620	.190	.000	.000	.040	.150	
10-A	.690	.040	.000	.000	.230	.040	
10-B	.230	.350	.080	.000	.040	.310	
11-A	.150	.500	.040	.080	.000	.230	
11-B	.080	.380	.080	.040	.040	.380	
12-A	.350	.000	.000	.000	.040	.620	
12-B	.080	.350	.110	.150	.040	.270	
13-A	.580	.110	.040	.040	.190	.040	
13-B	.350	.350	.000	.040	.190	.080	
14-A	.310	.500	.040	.000	.040	.110	
14-B	.540	.190	.000	.000	.040	.230	
15-A	.110	.230	.230	.110	.000	.310	
15-B	.000	.110	.150	.270	.040	.420	
16-A	.310	.080	.040	.040	.040	.500	
16-B	.540	.000	.000	.000	.310	.150	
17-A	.000	.000	.080	.380	.040	.500	
17-B	.080	.190	.040	.000	.000	.690	
18-A	.650	.080	.040	.040	.040	.150	
18-B	.310	.350	.110	.000	.000	.230	
19-A	.150	.310	.110	.110	.000	.310	
19-B	.460	.080	.040	.080	.040	.310	
20-A	.460	.080	.040	.080	.040	.310	
20-B	.770	.000	.000	.000	.190	.040	
							100.00

*Four Importance Ratings Described in Text

TABLE 25

TRYOUT 1: THE IMPORTANCE OF THE IN-BASKET ITEMS IN THE OPINION OF THE OFFICE BLOCK STUDENTS

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.360	.480	.120	.000	.000	.040	
1-B	.360	.440	.080	.040	.000	.080	
2-A	.640	.080	.000	.040	.160	.080	
2-B	.240	.560	.120	.040	.000	.040	
3-A	.000	.360	.360	.080	.000	.200	
3-B	.240	.680	.040	.000	.000	.040	
4-A	.120	.080	.120	.120	.000	.560	
4-B	.040	.000	.120	.200	.000	.640	
5-A	.640	.080	.000	.000	.080	.200	
5-B	.520	.400	.040	.000	.000	.040	
6-A	.520	.080	.000	.000	.160	.240	
6-B	.760	.120	.000	.000	.000	.120	
7-A	.240	.480	.000	.040	.000	.240	
7-B	.360	.040	.000	.000	.120	.480	
8-A	.480	.160	.040	.040	.120	.160	
8-B	.320	.400	.160	.040	.040	.040	
9-A	.120	.280	.040	.040	.000	.520	
9-B	.840	.080	.000	.000	.040	.040	
10-A	.720	.040	.000	.000	.120	.120	
10-B	.120	.040	.200	.040	.000	.600	
11-A	.400	.320	.120	.040	.000	.120	
11-B	.120	.520	.320	.000	.000	.040	
12-A	.600	.040	.040	.000	.000	.320	
12-B	.040	.040	.160	.120	.000	.640	
13-A	.680	.040	.000	.000	.160	.120	
13-B	.360	.360	.000	.000	.080	.200	
14-A	.280	.560	.000	.040	.040	.080	
14-B	.720	.040	.000	.000	.000	.240	
15-A	.040	.160	.120	.080	.000	.600	
15-B	.000	.160	.280	.080	.000	.480	
16-A	.320	.120	.040	.040	.040	.440	
16-B	.640	.000	.000	.000	.200	.160	
17-A	.000	.000	.120	.280	.000	.600	
17-B	.040	.280	.040	.000	.000	.640	
18-A	.600	.280	.040	.000	.000	.080	
18-B	.160	.240	.480	.000	.040	.080	
19-A	.160	.080	.080	.040	.000	.640	
19-B	.080	.240	.080	.000	.000	.600	
20-A	.320	.280	.080	.120	.000	.200	
20-B	.680	.000	.000	.000	.120	.200	
							100.00

*Four Importance Ratings Described in Text

TABLE 26

TRYOUT 1: THE IMPORTANCE OF THE IN-BASKET ITEMS IN THE OPINION OF THE STUDENTS IN SINGLE-PERIOD CLASSES

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.275	.475	.175	.025	.025	.025	
1-B	.225	.400	.150	.075	.025	.125	
2-A	.550	.075	.100	.075	.050	.150	
2-B	.150	.375	.250	.100	.000	.125	
3-A	.025	.425	.300	.175	.000	.075	
3-B	.250	.725	.025	.000	.000	.000	
4-A	.300	.075	.175	.300	.000	.150	
4-B	.100	.050	.200	.375	.000	.275	
5-A	.375	.150	.225	.000	.050	.200	
5-B	.350	.400	.125	.025	.000	.100	
6-A	.200	.025	.000	.000	.000	.775	
6-B	.825	.175	.000	.000	.000	.000	
7-A	.275	.475	.000	.025	.025	.200	
7-B	.175	.075	.050	.000	.025	.675	
8-A	.350	.275	.025	.075	.100	.175	
8-B	.125	.400	.150	.175	.025	.125	
9-A	.125	.300	.225	.100	.000	.250	
9-B	.875	.100	.025	.000	.000	.000	
10-A	.650	.050	.025	.000	.100	.175	
10-B	.200	.150	.400	.175	.000	.075	
11-A	.100	.550	.125	.125	.000	.100	
11-B	.050	.400	.275	.200	.000	.075	
12-A	.525	.075	.000	.000	.000	.400	
12-B	.125	.175	.375	.250	.000	.075	
13-A	.625	.050	.000	.000	.075	.250	
13-B	.250	.275	.025	.000	.050	.400	
14-A	.375	.500	.050	.050	.025	.000	
14-B	.725	.125	.000	.000	.000	.150	
15-A	.025	.150	.475	.275	.000	.075	
15-B	.050	.275	.350	.075	.025	.225	
16-A	.575	.025	.000	.075	.025	.300	
16-B	.425	.025	.000	.000	.075	.475	
17-A	.000	.050	.150	.550	.000	.250	
17-B	.075	.250	.175	.075	.025	.400	
18-A	.425	.375	.075	.075	.000	.050	
18-B	.175	.350	.375	.050	.000	.050	
19-A	.175	.300	.150	.250	.000	.125	
19-B	.225	.375	.225	.100	.000	.075	
20-A	.450	.100	.125	.200	.025	.100	
20-B	.675	.000	.000	.025	.050	.250	
							100.00

*Four Importance Ratings Described in Text

that possibly judgments made as to the importance of items affect the priority order in which in-basket items are attempted and may thus affect the percentage of inversions (another evaluation factor).

Three sample comparisons presented here may demonstrate how the opinions obtained may be analyzed. A majority of the secretaries (54 per cent) felt that Item 14-B (a memo regarding a special staff meeting) was a high priority item and that this item should be taken care of immediately. Table 25 indicates that 72 per cent of the office block students also felt that the item should be done immediately. Students in the single-period classes (72.5 per cent) also indicated that the item should be done immediately.

Item 1-A (a memo from the president regarding a luncheon cancellation) was thought by 42 per cent of the secretaries to be an item of immediate importance, while 31 per cent of the secretaries felt that this item was actually second in importance and should be completed by the end of the day. The students in the office block program did not completely agree with the foregoing opinions. The largest percentage (48 per cent) felt that it was a priority (2) item, and 36 per cent agreed that it was a priority (1) item. The single-period students agreed closely with the office block students: 27.5 per cent felt that it was a priority (1) item and 47.5 per cent felt that it was of (2) priority.

Item 15-B (a memo asking that a form letter be mailed to clients) brought a response of 27 per cent as priority (4) importance and 15 per cent as priority (3) importance by the secretaries. The office block students and the students in single-period classes agreed that the item may be priority (3) importance.

Further analysis of the importance placed on individual in-basket items by the subjects would provide new insight into patterns for analyzing problems inherent in office work and making appropriate decisions.

Item Analysis Based on Mean Scores on Quality Responses

No statistical item analysis was designed as a part of this study. However, an "eyeball" method of analyzing the group means for each in-basket item was used in order to make appropriate justification for keeping an item in THE SECRETARIAL IN-BASKET or to modify an in-basket item prior to Tryout 2. Any revision based upon the results of this analysis had to be made prior to the second tryout. The group means for the quality response scores for each in-basket item were analyzed to determine if there were differences among the groups on the in-basket items. These group means included each item in THE IN-BASKET (each planned interruption and each business paper). Table 27 presents a summary of the group means on each item. Because of the time element (45 minutes) required in the actual taking of THE IN-BASKET by a subject, the subjects completed a varying number of in-basket items. The N shown for each of the items (for example, Item Number 1-A has an N of 21 while Item Number 1-B has an N of 22) is based upon the number of subjects who attempted that particular item. Part of the decision-making involved in THE SECRETARIAL IN-BASKET requires the "secretary" to decide what business papers she will work on next. For ease of grouping as well as combining all the secretaries into one group, the CPS's and the NSA secretaries were grouped together for purposes of this analysis.

TABLE 27

TRYOUT 1: MEAN SCORES ON ACTION RESPONSES TO IN-BASKET PROBLEMS

Item Number	CPS and NSA Secretaries N	$\bar{X}$	Students in Block Programs N	$\bar{X}$	Students in Single-Period Classes N	$\bar{X}$	Highest Group
1-A	21	2.57	24	1.88	39	1.72	S
1-B	22	2.86	23	1.87	35	2.26	S
2-A	25	2.96	23	0.39	34	1.38	S
2-B	17	3.12	24	2.71	35	2.49	S
3-A	19	2.89	20	2.30	37	2.51	S
3-B	20	2.50	24	2.00	40	2.08	S
4-A	18	2.39	11	2.00	34	1.68	S
4-B	12	3.67	9	1.67	29	1.48	S
5-A	25	2.04	20	1.30	32	1.56	S
5-B	23	2.96	24	1.21	36	1.56	S
6-A	15	1.33	19	1.32	9	0.89	S+
6-B	26	3.23	22	1.91	40	2.67	S
7-A	15	2.60	19	2.42	32	1.78	S
7-B	17	1.06	13	0.23	13	0.46	S
8-A	25	2.68	21	0.62	33	1.88	S
8-B	18	2.89	24	2.29	35	2.29	S
9-A	14	3.07	12	1.08	30	1.63	S
9-B	22	3.36	24	1.13	40	1.57	S
10-A	25	2.48	22	0.73	33	1.55	S
10-B	18	2.61	10	2.20	37	2.38	S
11-A	20	2.70	22	1.95	36	1.86	S
11-B	16	3.50	24	3.67	37	3.35	B-
12-A	10	2.20	17	1.53	24	1.67	S
12-B	19	2.21	9	0.56	37	0.78	S
13-A	25	2.68	22	0.73	30	1.57	S
13-B	24	2.92	20	0.90	24	1.88	S
14-A	23	3.87	23	2.74	40	3.53	S
14-B	20	3.90	19	3.16	34	3.35	S
15-A	18	1.94	10	1.30	37	1.89	S+
15-B	15	1.87	13	0.92	31	1.32	S
16-A	13	1.46	14	0.79	28	1.29	S
16-B	22	1.68	21	1.19	21	1.43	S
17-A	13	2.69	10	0.50	30	1.17	S
17-B	8	2.50	9	2.56	24	1.71	B-
18-A	22	2.77	23	2.57	38	2.24	S
18-B	20	2.10	23	0.96	38	0.89	S
19-A	18	2.78	9	0.89	35	1.09	S
19-B	19	2.42	10	0.90	37	1.59	S
20-A	18	1.61	20	1.00	36	1.14	S
20-B	25	1.80	20	0.35	30	2.27	C-
Grand Mean		2.60		1.57		1.36	

Of the 40 in-basket items, 35 items had higher group means for the secretaries than for the students in the office block program and the students in the single-period classes. In each of these 35 instances, the secretaries rated considerably higher than the other two groups. Two items (noted by S+ on Table 27) had a higher response by secretaries than the other two groups, but the difference was slight, .01 in one case and .05 in the other. The students in the office block program had a higher group mean on two items (Items 11-B and 17-B) than either of the two other groups. The students in the single-period classes obtained a higher group mean on one item (Item 20-B) than either the secretaries or the students in the office block program. The technique used in analyzing each item assisted in determining, on the average, how individuals react in a given situation.

Item 2-B, for example, is a memorandum from the president's secretary to her temporary replacement indicating that a letter needs to be proofread and that a similar letter needs to be typed. The secretaries had a group mean of 3.12 on this item. When compared with the five-point scale of quality responses, a score of 3.12 indicates that the secretary checks to see what "changes" in the letter are needed for the second letter (after proofreading the first letter) and then types the second letter. On the same item students in the office block program had a group mean of 2.71. This score indicates that the office block students would proofread the first letter and then search the files for information for the second letter. The students in the single-period classes have a group mean of 2.49 on Item 2-B and would perform basically the same as the students in the office block program.

One could surmise from the above example that the experienced secretary is more action-oriented than the student in the classroom laboratory in processing business papers. Further item analysis of performance on specific items would enhance the understanding of what is involved in the decision-making process as it relates to office tasks.

C. Revision

The revisions in THE SECRETARIAL IN-BASKET following the initial tryout were limited, possibly because of the significance of the mean scores obtained on the quality responses. Any item revision was based upon the mean quality response scores per item per group (secretaries, students in office block program, students in single-period classes). Table 28 summarizes the decisions made on revisions needed prior to Tryout 2. These decisions affect only the five in-basket items coded in Table 27.

The directions presented to the individual who is taking THE IN-BASKET were reviewed to be sure they were complete, and the directions given to the test administrator (instructor) were also reviewed. When the test packets were delivered for Tryout 2, the directions were reviewed with the test administrator. The audio control tape was re-recorded prior to Tryout 2 so that the tape was clear, understandable, and complete whether an individual or a group of people were administered THE IN-BASKET.

With the significant differences occurring on the total response scores, the total number of problems attempted, and the mean response scores in Tryout 1 of THE SECRETARIAL IN-BASKET, there appeared to be no further revision necessary prior to Tryout 2.

TABLE 28

TRYOUT 1: ITEMS IN THE SECRETARIAL IN-BASKET REQUIRING REVISION PRIOR TO TRYOUT 2

Description of Item	:	Decision on Revision
Item 6-A A planned interruption involving the morning mail. The "secretary" must decide how to handle it.		The method of recording every planned interruption and every business paper needed to be emphasized. Therefore, the directions were revised and the audio control tape re-recorded prior to Tryout 2 to be certain that one individual or a group of people could participate at one time.
Item 11-B Dictation notes to be transcribed. The "secretary" must decide how these should be transcribed.		All three groups (secretaries, block students, and single-period students) averaged approximately the same. The block students were .17 higher than the secretaries. The shorthand notes were left in the in-basket because they do require shorthand ability. An examination of the responses given by secretaries indicated that often they put the notes aside in order to further read and analyze the importance of them (from their comments), while students made the "quick" decision to transcribe them right away.
Item 15-A A memorandum and petition that require a signature.		The secretaries rated higher (.05) than the students in single-period classes and the office block students (.64). However, the N in the secretary group was less than the single-period students.

TABLE 28 (Continued)

Description of Item	Decision on Revision
Item 15-A (Continued)	The item (located in the morning mail) was located in Envelope A which could permit a subject to give the item lower priority than other items. The decision was made to leave the item and not to revise it further since the secretaries had rated higher than the other two groups.
Item 17-B Confidential letter that needs to be read and delivered.	The N was small in both the secretary and block groups. If more subjects had gotten to the item (location of the item in Envelope C), perhaps the means would have been more discriminative. Item 17-B is located in the third envelope, and some subjects did not have time to get to it. Therefore, the decision was made to leave the item and not to revise it further.
Item 20-B A planned interruption with an office visitor in time for his appointment.	The directions needed to be revised so that the method of recording every interruption and every business paper is emphasized. The audio control tape with all interruptions on it was also re-recorded so that it is absolutely clear of background noise, etc., that would impair one person or a group of people from being able to hear every word.

D. Tryout 2

The second tryout of THE SECRETARIAL IN-BASKET occurred in May, 1971, (the student groups) and September through December, 1971, (the secretary groups). Five groups of subjects participated in the tryout: three groups of experienced secretaries and two groups of high school students enrolled in office block and single-period programs in office education. Table 29 presents a complete summary of the subjects who participated in Tryout 2.

The secretaries who participated in Tryout 2 represented three populations: Certified Professional Secretaries residing in the State of Michigan, experienced secretaries who are members of the Michigan Division of the National Secretaries Association (International), and secretaries to divisional managers of Michigan Bell Telephone Company. None of the secretaries in these three samples were included in any of the previous secretarial samples in the review processes, in the critical incident study, or in the first tryout. The high school students were seniors enrolled in the office block program or single-period secretarial practice or advanced shorthand classes in selected high schools within the State of Michigan.

The test packets were delivered prior to the administration of THE SECRETARIAL IN-BASKET, and complete arrangements for the administration of the in-baskets were made with employers and secretaries (business) and school administrators and teachers (education). All test packets were returned immediately following the administration of the in-baskets.

The scoring of the in-baskets was conducted immediately with code sheets prepared for each of the following categories:

TABLE 29

TRYOUT 2: SECRETARIES AND STUDENTS PARTICIPATING IN THE TRYOUT

			Number
Secretaries:			
Group 1	Certified Professional Secretaries		10
Group 2	Secretaries--Members of the National Secretaries Association (International)		11
Group 3	Secretaries to Divisional Managers--Michigan Bell Telephone Company		30
High School Students:			
Group 4	Students--Office Block Programs:		
	Avondale High School, Auburn Heights, Michigan	9	
	Fenton High School, Fenton, Michigan	5	
	Shelby High School, Shelby, Michigan	5	
	South Lyon High School, South Lyon, Michigan	11	
	Holland High School, Holland, Michigan	10	
	Grand Haven High School, Grand Haven, Michigan	10	
	Grosse Pointe South High School, Grosse Pointe, Michigan	4	54
Group 5	Students--Single-Period Classes:		
	St. Johns High School, St. Johns, Michigan	14	
	John Glenn High School, Bay City, Michigan	14	
	Everett High School, Lansing, Michigan	15	
	Cody High School, Detroit, Michigan	22	65

1. Total Number of Problems Attempted: The total number of problems attempted by the subject was recorded on the code sheet.

2. Percentage of Inversions: The order of priority as written on the answer sheet by the subject was compared with the judges' order of priority, and the percentage of inversions was calculated for each subject on each of the three envelopes of written in-basket items.

3. Scoring of Points for Quality Responses: The written response to each in-basket item was compared with the five-point scale developed for that item and the appropriate number of points assigned to establish the quality of the response. Each point total was then transferred to the appropriate code sheet.

4. The Importance of the Item: The number assigned by each subject to the importance of the item based on her own opinion was also recorded on the code sheet.

When the experimental data was recorded on the code sheets, the fields in which the data would be keypunched were also determined. Once the data processing cards were keypunched and the programs written, the data was ready to be fed into the computer. Exactly the same procedures were used during Tryout 2 as were used during Tryout 1.

E. Analysis of Tryout 2 Data

A multivariate analysis of variance was used to compare the total number of problems attempted, the total quality response scores, and the mean scores for the quality responses for all subjects within each of the five groups. A multivariate analysis of variance was also used in testing the data for the following comparisons among means:

1. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in the in-basket envelope.
   b. The percentage of inversions for each group on the items in the in-basket envelope.

2. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in Envelope A (the incoming mail).

b. The percentage of inversions for each group on the items in Envelope A (the incoming mail).

3. A multivariate ANOVA to test:
   a. The total number of problems completed by each group in Envelope C (items given to secretary by employer).
   b. The percentage of inversions for each group on the items in Envelope C (items given to secretary by employer).

The Scheffé method for post hoc comparisons was used to evaluate differences between means, mainly because of its effectiveness in making comparisons of two groups as well as multiple numbers of groups.

The importance of the items, as summarized from the opinions of the subjects in all five groups, were examined for similarities among the groups; and a technique for reporting percentages for each of the four degrees of importance was implemented. No formal analysis of the importance of the items was planned as a part of this in-basket study. However, each group's opinions were compared with the opinions of the panel of experts as to the importance of each item; and a one-sample *t* test was performed on the difference scores.

In addition, a comparison of each group's quality responses to each of the 40 in-basket items was used merely as an informational reference. No formal analysis of the individual in-basket items was undertaken as a part of this study, with the exception of the analysis during the first tryout prior to the revision of THE SECRETARIAL IN-BASKET.

Analysis of Total Scores on THE SECRETARIAL IN-BASKET

The group means for total response score, total problems attempted, and mean response scores were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated:

"The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total quality response score, the total number of problems attempted, and the mean response score do not differ significantly." This hypothesis may be represented in this way:

(5) H_o: CPS = NSA = MBT = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total quality response score, the total number of problems attempted, and the mean response score are not all identical." This hypothesis may be represented in this way:

(5a) H_1: H_o is false.

Testing of Hypotheses for Total Scores. Table 30 shows that an overall significance of .0000 was evident in the multivariate analysis of variance for total response scores, total problems attempted, and mean response scores for the five groups. The univariate analysis of variance for each of the total scores indicated a .0000 level of significance for total response score, a .2621 level of significance for total problems attempted, and a .0000 level of significance for the mean response score. A more detailed description of the univariate analyses of variance, the means, and the Scheffé post hoc comparisons of means follows.

The Univariate ANOVA for Total Response Score. The test of the group means for the total response score was significant at the .0000 level of significance, which indicated that there was a significant difference among the five groups on the means for the total response scores. Therefore, the null hypothesis (5) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total quality response score

TABLE 30

TRYOUT 2: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL RESPONSE SCORES, TOTAL PROBLEMS ATTEMPTED, AND MEAN RESPONSE SCORES

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Response Score	6334.7046	272.1850	23.2735	.0000*
Total Problems	33.0328	24.8956	1.3269	.2621
Mean Response Score	5.0692	0.1949	26.0058	.0000*

Degrees of Freedom for Hypothesis = 4
Degrees of Freedom for Error = 165
Overall Significance = .0000*

*P is significant. See Scheffé comparisons that follow.

do not differ significantly is rejected, and the alternate hypothesis (5a) that the means for the five groups on the total quality response score are not all identical is accepted.

Table 31 summarizes the group means for the total response score. The NSA secretaries obtained the highest group mean of all five groups with a total response score of 87.64. The CPS's had the second highest group mean of 87.60, and the MBT secretaries had a group mean of 75.60. The students in the office block program had a higher group mean (58.91) than the students in the single-period classes (52.31). All three of the groups of secretaries scored higher than the two groups of students. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the four groups contributed most to the variance. The formula for the Scheffé comparisons was presented in Table 7. Table 32 summarizes the .05 confidence limits for the comparisons of interest and indicates the decision of "significant"

TABLE 31

TRYOUT 2: GROUP MEANS FOR TOTAL RESPONSE SCORE

Group	N	Total Response Score
Secretaries:		
Certified Professional Secretaries	10	86.60
NSA Secretaries	11	87.64
Michigan Bell Secretaries	30	75.60
Students:		
Office Block Program	54	58.91
Single-Period Classes	65	52.31

or "not significant" for each post hoc comparison made. The Scheffé post hoc comparisons for the total response score showed that the following comparisons were significant at the .05 level of significance:

1. The CPS's scored significantly higher than the students in the office block program on the total response score.

2. The CPS's scored significantly higher than the students in the single-period classes on the total response score.

3. The NSA secretaries scored significantly higher than the students in the office block program on the total response score.

4. The NSA secretaries scored significantly higher than the students in the single-period classes on the total response score.

5. The MBT secretaries scored significantly higher than the students in the office block program on the total response score.

6. The MBT secretaries scored significantly higher than the students in the single-period classes on the total response score.

7. The secretaries (CPS, NSA, MBT) scored significantly higher than the students (the office block program and the single-period classes) on the total response score.

TABLE 32

TRYOUT 2: SCHEFFÉ POST HOC COMPARISONS FOR TOTAL RESPONSE SCORE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	-23.2336	+21.1536	NS
CPS = MBT	- 7.5454	+29.5454	NS
CPS = ST_{BL}	+10.2044	+45.1756	S
CPS = ST_{CL}	+17.0421	+51.5379	S
NSA = MBT	- 5.8613	+29.9413	NS
NSA = ST_{BL}	+11.9291	+45.5309	S
NSA = ST_{CL}	+18.7767	+51.8833	S
MBT = ST_{BL}	+ 5.1294	+28.2506	S
MBT = ST_{CL}	+12.0921	+34.4879	S
ST_{BL} = ST_{CL}	- 2.7386	+15.9386	NS
CPS + NSA + MBT = ST_{BL} + ST_{CL}	+ 1.8692	+53.4708	S

*S = Significant
NS = Not Significant

There is no reason to believe that there is a significant difference at the .05 level between the three groups of secretaries (CPS, NSA, and MBT) on the total quality response scores since the comparisons between any two groups of secretaries were "not significant." There is also no reason to believe that there is a significant difference at the .05 level between the students in the office block program and the students in the single-period classes.

The Univariate ANOVA for Total Problems Attempted. Table 30 shows that the test of the group means for the total number of problems attempted in the entire in-basket simulation was not significant (.2621).

TABLE 33

TRYOUT 2: GROUP MEANS FOR
TOTAL PROBLEMS ATTEMPTED

Group	N	Total Problems Attempted
Secretaries:		
Certified Professional Secretaries	10	31.00
NSA Secretaries	11	33.00
Michigan Bell Secretaries	30	32.87
Students:		
Office Block Program	54	31.13
Single-Period Classes	65	30.68

The probability was .2621 (or 26 chances out of 100) that the means of samples, one drawn from each of these populations, would differ as much as they do in this study if the population means were identical. With these data there is no reason to believe that the five groups are different. Therefore, the null hypothesis (5) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted do not differ significantly is not rejected. No further comparisons with these data were necessary.

Table 33 summarizes the group means for the total problems attempted in THE SECRETARIAL IN-BASKET. The NSA secretaries attempted a group mean of 33.00 problems, and the MBT secretaries were second with a group mean of 32.87. Of the three groups of secretaries, the CPS's had the lowest mean with 31.00. The students in the office block program attempted a group mean of 31.13 problems in the entire in-basket simulation while the students in the single-period classes attempted 30.68 problems on the average. With the closeness of this range of group means among the

TABLE 34

TRYOUT 2: GROUP MEANS FOR MEAN RESPONSE SCORE

Group	N	Mean Response Score
Secretaries:		
Certified Professional Secretaries	10	2.82
NSA Secretaries	11	2.66
Michigan Bell Secretaries	30	2.29
Students:		
Office Block Program	54	1.90
Single-Period Classes	65	1.71

five groups, one can surmise that it is very difficult to generalize beyond the point of stating that the groups do not differ significantly.

The Univariate ANOVA for Mean Response Score. The test of the group means for the mean response score was significant at the .0000 level of significance, which indicated that there was a significant difference among the five groups on the means for the mean response scores. This was shown in Table 30. Therefore, the null hypothesis (5) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the mean response score do not differ significantly is rejected, and the alternate hypothesis (5a) that the means for the five groups on the mean response score are not all identical is accepted.

Table 34 summarizes the group means for the mean response score. The means for the three groups of secretaries were 2.82 for the CPS's, 2.66 for the NSA secretaries, and 2.29 for the MBT secretaries. The students in the office block program (N=54) had a group mean of 1.90, which was .19 higher than the students in the single-period classes.

TABLE 35

TRYOUT 2: SCHEFFÉ POST HOC COMPARISONS
FOR MEAN RESPONSE SCORE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- .4336	+ .7536	NS
CPS = MBT	+ .0347	+ 1.0253	S
CPS = ST_{BL}	+ .4533	+ 1.3867	S
CPS = ST_{CL}	+ .6494	+ 1.5706	S
NSA = MBT	- .1087	+ .8487	NS
NSA = ST_{BL}	+ .3108	+ 1.2092	S
NSA = ST_{CL}	+ .5082	+ 1.3918	S
MBT = ST_{BL}	+ .0822	+ .6978	S
MBT = ST_{CL}	+ .2817	+ .8783	S
ST_{BL} = ST_{CL}	- .0581	+ .4381	NS
CPS + NSA + MBT = ST_{BL} + ST_{CL}	+ .0954	+ 1.4746	S

*S = Significant
NS = Not Significant

These data indicate that the three groups of secretaries were, as a group, higher than the two groups of students on the mean quality response score for all in-basket items attempted in THE SECRETARIAL IN-BASKET. Comparisons between the groups using the Scheffé method for post hoc comparisons were made to determine which of the five groups contributed most to the variance. Table 35 summarizes the .05 confidence limits for these comparisons and indicates the decision of "significant" or "not significant" for each post hoc comparison made.

The Scheffé post hoc comparisons for the mean response score showed the following comparisons were significant at the .05 level of significance:

1. The CPS's scored significantly higher than the Michigan Bell secretaries on the mean response score.

2. The CPS's scored significantly higher than the students in the office block program on the mean response score.

3. The CPS's scored significantly higher than the students in the single-period classes on the mean response score.

4. The NSA secretaries scored significantly higher than the students in the office block program on the mean response score.

5. The NSA secretaries scored significantly higher than the students in the single-period classes on the mean response score.

6. The Michigan Bell secretaries scored significantly higher than the students in the office block program on the mean response score.

7. The Michigan Bell secretaries scored significantly higher than the students in the single-period classes on the mean response score.

8. The secretaries combined (CPS's, NSA secretaries, and Michigan Bell secretaries) scored significantly higher than the students combined (office block program and single-period classes) on the mean response score.

The comparisons show that there is no reason to believe that there is a significant difference between CPS's and NSA secretaries on the mean response score. There is also no significant difference between NSA secretaries and MBT secretaries. When the students in the office block program were compared with the students in the single-period classes, no significant difference was evident.

Analysis of Total Scores on the In-Basket Envelope

The in-basket envelope is one of three envelopes in THE SECRETARIAL IN-BASKET that contains items for the subject to examine and make decisions about during the time she is working on the simulation. The in-basket envelope contains 15 in-basket items. The group means for the

total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope and the percentage of inversions in the in-basket envelope do not differ significantly." This hypothesis may be represented in this way:

(6) H_o: CPS = NSA = MBT = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope and the percentage of inversions in the in-basket envelope are not all identical." This alternate hypothesis may be represented in this way:

(6a) H_1: H_o is false.

Testing of Hypotheses for the In-Basket Envelope. Table 36 shows that an overall significance of .0261 was evident in the multivariate analysis of variance for the total number of problems attempted and percentages of inversions in the in-basket envelope for the five groups. The univariate analysis of variance for the total problems attempted indicated a .4352 level of significance and a .0082 level of significance for percentage of inversions. A more detailed description of the univariate analyses of variance, the means, and the Scheffé post hoc comparisons of means follows.

The Univariate ANOVA for Total Problems Attempted in the In-Basket Envelope. The test for the total problems attempted in the in-basket

TABLE 36

TRYOUT 2: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN THE IN-BASKET ENVELOPE

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	8.4395	8.8594	0.9526	.4352
Percentage of Inversions	0.0697	0.0196	3.5629	.0082*

Degrees of Freedom for Hypothesis = 4
Degrees of Freedom for Error = 165

Overall Significance = .0261*

*P is significant. See Scheffé comparisons that follow.

envelope was significant at the .4352 level, which indicated that there was no significant difference at the .05 level among the five groups on the means for the total number of problems attempted. Therefore, the null hypothesis (6) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in the in-basket envelope do not differ significantly is not rejected. No further post hoc comparisons with these data were necessary.

Table 37 summarizes the group means for the total number of problems attempted in the in-basket envelope. Even though further post hoc comparisons need not be made, the group means may provide some insight into the relationship of the groups. The group with the highest mean of problems attempted is the NSA secretaries with a mean of 14.27. However, the Michigan Bell secretaries had a group mean of 12.37, which represented the lowest of the five group means. The students in the office block program had a group mean of 12.87, which is .33 higher than

TABLE 37

TRYOUT 2: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED IN THE IN-BASKET ENVELOPE

Group	N	Total Problems Attempted
Secretaries:		
Certified Professional Secretaries	10	12.60
NSA Secretaries	11	14.27
Michigan Bell Secretaries	30	12.37
Students:		
Office Block Program	54	12.87
Single-Period Classes	65	12.54

the group mean for the students in the single-period classes (12.54). The group means for the five groups were within such a close range that no significant difference among the groups could be determined.

The Univariate ANOVA for Percentages of Inversions in the In-Basket Envelope. Table 36 shows that the test of the group means for the percentage of inversions in the in-basket envelope was significant at the .0082 level of significance. This indicates that there was a significant difference among the five groups on the means for the percentages of inversions in the in-basket envelope. Therefore, the null hypothesis (6) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the percentage of inversions in the in-basket envelope do not differ significantly is rejected, and the alternate hypothesis (6a) that the means for the five groups on the percentage of inversions in the in-basket envelope are not all identical is accepted.

Table 38 summarizes the group means for the percentages of inversions in the in-basket envelope. The lower the percentage of inversion,

TABLE 38

TRYOUT 2: GROUP MEANS FOR PERCENTAGES OF INVERSIONS IN THE IN-BASKET ENVELOPE

Group	N	Mean Percentage of Inversions
Secretaries:		
Certified Professional Secretaries	10	.3707
NSA Secretaries	11	.3030
Michigan Bell Secretaries	30	.2865
Students:		
Office Block Program	54	.3757
Single-Period Classes	65	.3921

the better the score is. Therefore, the group with the lowest percentage of inversions (Michigan Bell secretaries, .2865) had the best group mean of the five groups. The NSA secretaries had the second highest score with a group mean of .3030, and the CPS's had a group mean of .3707. The latter was only .50 under the group mean for the students in the office block program who had a group mean of .3757. The students in the single-period classes had a group mean of .3921, which represented the lowest of the five group means. Comparisons between the groups using the Scheffé method for post hoc comparisons, shown in Table 39, were made to determine which of the five groups contributed most to the variance. Of the 11 comparisons of interest conducted, only one was significant at the .05 level of significance and may be stated in this way:

> The Michigan Bell secretaries scored significantly higher than the students in the single-period classes on the percentage of inversions in the in-basket envelope.

TABLE 39

TRYOUT 2: SCHEFFÉ POST HOC COMPARISONS
FOR PERCENTAGES OF INVERSIONS IN THE IN-BASKET ENVELOPE

Comparison	.05 Confidence Limits Lower	Upper	Decision* .05
CPS = NSA	- .1194	+ .2548	NS
CPS = MBT	- .0725	+ .2409	NS
CPS = ST_{BL}	- .1524	+ .1424	NS
CPS = ST_{CL}	- .1658	+ .1230	NS
NSA = MBT	- .1340	+ .1670	NS
NSA = ST_{BL}	- .2137	+ .0683	NS
NSA = ST_{CL}	- .2267	+ .0485	NS
MBT = ST_{BL}	- .1864	+ .0080	NS
MBT = ST_{CL}	- .1979	- .0133	S
ST_{BL} = ST_{CL}	- .0915	+ .0587	NS
CPS + NSA + MBT = ST_{BL} + ST_{CL}	- .2815	+ .1537	NS

*S = Significant
NS = Not Significant

As a result of these post hoc comparisons, one can say that there is no significant difference among the three groups of secretaries (CPS, NSA, and MBT), that there is no significant difference at the .05 level of significance between the two groups of students (office block program and single-period classes), and that there is no significant difference between the group of secretaries combined and the group of students combined.

Analysis of Total Scores on Envelope A (Incoming Mail)

Envelope A is one of the three envelopes in THE SECRETARIAL IN-BASKET that contains items for the subject to examine and make decisions on

TABLE 40

TRYOUT 2: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE A

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	3.9151	2.5276	1.5490	.1909
Percentage of Inversions	0.0561	0.1043	0.5372	.7086

Degrees of Freedom for Hypothesis = 4
Degrees of Freedom for Error = 153

Overall Significance = .4039

during the simulation. The envelope contains six in-basket items which represent the morning mail. The group means for the total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the five groups. The null hypothesis for each of these tests was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A do not differ significantly." This hypothesis may be represented in this way:

(7) H_o: CPS = NSA = MBT = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A are not all identical." This alternate hypothesis may be represented in this way:

(7a) H_1: H_o is false.

TABLE 41

TRYOUT 2: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE A

Group	N	Total Problems Attempted	Mean Percentage of Inversions
Secretaries:			
Certified Professional Secretaries	10	4.70	.3333
NSA Secretaries	10	5.10	.3500
Michigan Bell Secretaries	30	5.50	.3956
Students:			
Office Block Program	49	4.84	.2871
Single-Period Classes	59	4.64	.3362

Testing of Hypotheses for Envelope A (Incoming Mail). Table 40 shows that an overall significance of .4039 was evident in the multivariate analysis of variance for the total number of problems attempted and the percentages of inversions in Envelope A for the five groups. The univariate analysis of variance for the total problems attempted yielded a .1909 level of significance, and the univariate analysis of variance for the percentages of inversions in Envelope A yielded a .7086 level of significance. No significant differences exist among the groups. Therefore, the null hypothesis (7) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope A and the percentage of inversions in Envelope A do not differ significantly is not rejected. Table 41 presents the group means as an illustration of each group's performance on the items in Envelope A. Because no significant differences were found, no further description of the univariate ANOVA was needed. For the same reason, no

further Scheffé post hoc comparisons were necessary. Even though no further comparisons need be made, a look at the group means for the total number of problems attempted and the percentages of inversions may be interesting. Table 41 shows that the NSA secretaries, with a group mean of 5.10, and the MBT secretaries, with a group mean of 5.50, had the highest group means of the five groups in the total number of problems attempted in Envelope A. The students in the office block program had a group mean of 4.84, which is .20 higher than the students in the single-period classes. The N given for each of the five groups represents only those subjects who actually attempted problems in Envelope A.

Table 41 also summarizes the group means for the percentages of inversions in Envelope A. The students in the office block program had a .2871 percentage of inversions, which represents the best group mean of the five groups. The CPS's were second with a group mean of .3333, while the NSA secretaries (.3500) and the Michigan Bell secretaries (.3956) had the largest group means of the five groups. The students in the single-period classes had a group mean of .3362, which is .0491 greater than the students in the office block program. The N included in the table represents only those subjects who actually attempted problems in Envelope A. Because of the time limit (45 minutes) imposed on the actual taking of the in-basket subjects completed a varying number of problems throughout the simulation.

Analysis of Total Scores on Envelope C (Additional In-Basket Items)

Envelope C is one of three envelopes in THE SECRETARIAL IN-BASKET that contains items for the subject to read, examine, and make decisions

TABLE 42

TRYOUT 2: MULTIVARIATE ANALYSIS OF VARIANCE OF TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE C

Variable	Between Mean Square	Within Mean Square	Univariate F	P Less Than
Total Problems	3.8954	4.8172	0.8086	.5215
Percentage of Inversions	0.1708	0.0820	2.0821	.0860

Degrees of Freedom for Hypothesis = 4
Degrees of Freedom for Error = 150

Overall Significance = .1875

on during the in-basket. The envelope contains eight in-basket items which represent items handed to the secretary in the middle of the day by her employer. The group means for the total number of problems attempted and the percentage of inversions were tested, through a multivariate analysis of variance procedure, to see if significant differences did occur among the groups. The null hypothesis for each of these tests was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C and the percentages of inversions in Envelope C do not differ significantly." This hypothesis may be represented in this way:

(8) H_o: CPS = NSA = MBT = ST_{BL} = ST_{CL}

The alternate hypothesis was stated: "The means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C and the percentages of inversions in Envelope C are not all identical." This alternate hypothesis may be represented in this way:

(8a) H_1: H_o is false.

TABLE 43

TRYOUT 2: GROUP MEANS FOR TOTAL NUMBER OF PROBLEMS ATTEMPTED AND PERCENTAGES OF INVERSIONS IN ENVELOPE C

Group	N	Total Problems Attempted	Mean Percentage of Inversions
Secretaries:			
Certified Professional Secretaries	8	5.63	.4467
NSA Secretaries	11	4.73	.2963
Michigan Bell Secretaries	30	4.77	.4218
Students:			
Office Block Program	44	4.22	.4771
Single-Period Classes	62	4.53	.5373

Testing of Hypotheses for Envelope C (Additional In-Basket Items). Table 42 shows that an overall significance of .1875 was evident in the multivariate analysis of variance for the total number of problems attempted and percentages of inversions in Envelope C for the five groups. The univariate analysis of variance for the total problems attempted indicated a .5215 level of significance, and the univariate analysis of variance for the percentages of inversions indicated a .0860 level of significance. Therefore, no significant differences exist among the groups. Therefore, the null hypothesis (8) that the means for the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) on the total number of problems attempted in Envelope C and the percentages of inversions in Envelope C do not differ significantly is not rejected. Because no differences were found, no further description of the univariate ANOVA was necessary. For the same reason, no further comparisons using the Scheffé method for post hoc comparisons was necessary.

Table 43 summarizes the group means for the total number of problems attempted in Envelope C and the group means for the percentages of inversions in Envelope C. The CPS's had the highest group mean of 5.63 on the total problems attempted. The Michigan Bell secretaries were second with a group mean of 4.77, and the NSA secretaries were third with a group mean of 4.73. This means that the three groups of secretaries had higher group means than the two groups of students. The students in the office block program had a mean of 4.22. However, the students in the single-period classes had a group mean of 4.53. The N given for each of the five groups in Table 43 is the N that was used to determine the group mean and represents the actual number of subjects who attempted problems in Envelope C.

Table 43 also summarizes the group means for the percentages of inversions in Envelope C. Even though further post hoc comparisons need not be made, the group means do provide some insight into the relationships among the groups. The NSA secretaries had the lowest group mean on the percentage of inversions of .2963. This represents the best score of the five groups. The Michigan Bell secretaries had a group mean of .4218, and the CPS's had a group mean of .4467. The students in the office block program, with a mean of .4771, had a better mean than the students in the single-period classes (.5373). This means that, in setting the work priorities, the secretaries' responses agreed most with the experts' scoring pattern whereas the students in the office block program agreed more readily with the experts' scoring pattern than the students in the single-period classes. The N given for each of the five groups in Table 43 is the N that was

used to determine the group mean and represents the actual number of subjects who attempted problems in Envelope C.

The Importance of the In-Basket Items

Each of the subjects within the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) was asked to respond to the question of the importance of each in-basket item and to include this information on the answer sheet as she made decisions on the in-basket item. If she ranked an item as (1), this indicated that she would give the highest priority to this item and that it should be done immediately. If she ranked an item as (2), she felt that the item should be completed by the end of the day. An importance rating of (3) indicated that the item should be completed by the end of the week, and an importance rating of (4) indicated that the item could be delayed longer than one week.

The percentages of responses within each of these four categories, along with percentages of "no response to importance" or "no response to item" are included in Tables 44, 45, 46, 47, and 48. No formal item analysis of the importance of the in-basket items, based upon the opinions of the subjects participating in the study, was planned for this in-basket study. However, the data indicate that opinions as to the importance of items may affect the priority order in which in-basket items are attempted and may thus affect the percentage of inversions (another variable). Therefore, an informal analysis of the opinions expressed by the groups as well as the testing of hypotheses concerned with the comparison of each group with the panel of experts serve to further clarify the effect of the importance ratings on the setting of work priorities.

Informal Analysis of the Importance of the Items. A demonstration of one means for analyzing the opinions of the five groups is presented here, using three of the in-basket items as examples. Item 10-A is a planned interruption in which an individual from one of the other offices in the firm comes into the office to make an appointment. The CPS's (Table 44) generally felt that this item required immediate attention. Fifty per cent indicated (1) as the importance of this item, and 10.0 per cent indicated (2) as the importance. Of the NSA secretaries, 45.5 per cent indicated (1) as the importance of Item 10-A, and the remainder of those responding did not give a preference as to the importance. The Michigan Bell secretaries (Table 46) indicated 80.0 per cent for a rating of (1) importance, 6.7 per cent for (2) importance, 3.3 per cent for (4) importance, and 10.0 per cent gave no response to the importance. The three groups of secretaries are in general agreement that an interruption of this nature should be taken care of immediately. The opinion of the students in the office block program was not too different from that of the secretaries; 75.9 per cent felt that this item required (1) importance, and 16.7 per cent felt that the item had (2) importance (Table 47). The students in the single-period classes felt that the item required (1) importance (89.2 per cent). Only 4.6 per cent of the students in the single-period classes felt that the item was of (2) importance. In general, all five groups felt that an office interruption of this particular nature should be handled immediately.

Item 17-A is a note from the president of the company indicating that the secretary is to prepare some budget figures by the first of

TABLE 44

TRYOUT 2: THE IMPORTANCE OF THE IN-BASKET ITEMS
IN THE OPINION OF THE CERTIFIED PROFESSIONAL SECRETARIES (CPS)

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.400	.300	.000	.000	.200	.100	
1-B	.200	.600	.000	.000	.100	.100	
2-A	.600	.000	.000	.000	.300	.100	
2-B	.300	.300	.100	.000	.200	.100	
3-A	.000	.600	.000	.000	.100	.300	
3-B	.000	.700	.000	.000	.100	.200	
4-A	.000	.100	.400	.200	.100	.200	
4-B	.100	.000	.200	.300	.000	.400	
5-A	.800	.000	.000	.000	.100	.100	
5-B	.600	.200	.000	.000	.100	.100	
6-A	.500	.000	.000	.000	.000	.500	
6-B	.600	.300	.000	.000	.100	.000	
7-A	.100	.400	.000	.000	.100	.400	
7-B	.400	.100	.000	.000	.200	.300	
8-A	.600	.100	.000	.000	.200	.100	
8-B	.400	.400	.000	.000	.200	.000	
9-A	.000	.100	.100	.000	.200	.600	
9-B	.800	.100	.000	.000	.100	.000	
10-A	.500	.100	.000	.000	.300	.100	
10-B	.200	.300	.300	.000	.100	.100	
11-A	.300	.400	.000	.000	.200	.100	
11-B	.100	.200	.100	.000	.100	.500	
12-A	.400	.100	.000	.000	.100	.400	
12-B	.200	.300	.100	.100	.100	.200	
13-A	.600	.100	.000	.000	.200	.100	
13-B	.400	.300	.000	.000	.100	.200	
14-A	.300	.500	.000	.000	.100	.100	
14-B	.600	.100	.000	.000	.100	.200	
15-A	.100	.100	.400	.000	.100	.300	
15-B	.000	.000	.300	.100	.000	.600	
16-A	.500	.100	.000	.100	.000	.300	
16-B	.500	.000	.000	.000	.300	.200	
17-A	.000	.000	.200	.300	.000	.500	
17-B	.000	.200	.200	.000	.200	.400	
18-A	.600	.200	.000	.000	.100	.100	
18-B	.000	.700	.100	.000	.100	.100	
19-A	.100	.300	.100	.100	.100	.300	
19-B	.100	.200	.400	.000	.100	.200	
20-A	.400	.000	.000	.100	.200	.300	
20-B	.700	.000	.000	.000	.200	.100	
							100.00

*The ratings (1, 2, 3, 4) are explained on page 225.

TABLE 45

TRYOUT 2: THE IMPORTANCE OF THE IN-BASKET ITEMS IN THE OPINION OF THE NSA SECRETARIES

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.273	.636	.000	.000	.091	.000	
1-B	.273	.455	.182	.000	.091	.000	
2-A	.455	.000	.000	.000	.455	.091	
2-B	.091	.636	.091	.000	.091	.091	
3-A	.000	.727	.091	.091	.091	.000	
3-B	.182	.636	.000	.000	.182	.000	
4-A	.182	.000	.182	.364	.091	.182	
4-B	.000	.273	.091	.091	.000	.545	
5-A	.364	.273	.000	.000	.273	.091	
5-B	.727	.182	.000	.000	.091	.000	
6-A	.364	.000	.000	.000	.273	.364	
6-B	.727	.182	.000	.000	.091	.000	
7-A	.182	.364	.000	.000	.091	.364	
7-B	.273	.000	.000	.000	.273	.455	
8-A	.273	.273	.000	.000	.364	.091	
8-B	.182	.545	.091	.091	.091	.000	
9-A	.000	.182	.091	.091	.091	.545	
9-B	.727	.091	.000	.000	.091	.091	
10-A	.455	.000	.000	.000	.455	.091	
10-B	.182	.364	.091	.000	.091	.273	
11-A	.182	.545	.182	.000	.091	.000	
11-B	.000	.636	.000	.182	.091	.091	
12-A	.545	.091	.000	.000	.091	.273	
12-B	.091	.273	.364	.000	.000	.273	
13-A	.364	.273	.091	.000	.182	.091	
13-B	.455	.091	.000	.000	.364	.091	
14-A	.273	.636	.000	.000	.091	.000	
14-B	.636	.273	.000	.000	.091	.000	
15-A	.091	.364	.182	.091	.091	.182	
15-B	.000	.091	.091	.273	.455	.091	
16-A	.636	.000	.000	.091	.091	.182	
16-B	.545	.000	.000	.000	.273	.182	
17-A	.000	.000	.091	.364	.000	.545	
17-B	.000	.182	.182	.000	.091	.545	
18-A	.636	.273	.000	.000	.091	.000	
18-B	.182	.636	.091	.000	.091	.000	
19-A	.091	.273	.364	.000	.091	.182	
19-B	.273	.091	.273	.000	.091	.273	
20-A	.455	.091	.000	.091	.091	.273	
20-B	.636	.000	.000	.000	.273	.091	
							100.00

*The ratings (1, 2, 3, 4) are explained on page 225.

TABLE 46

TRYOUT 2: THE IMPORTANCE OF THE IN-BASKET ITEMS
IN THE OPINION OF THE MICHIGAN BELL TELEPHONE COMPANY SECRETARIES (MBT)

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.333	.433	.100	.000	.000	.133	
1-B	.367	.500	.000	.000	.000	.133	
2-A	.600	.200	.100	.000	.100	.000	
2-B	.100	.467	.100	.033	.000	.300	
3-A	.133	.600	.100	.000	.000	.167	
3-B	.300	.600	.000	.000	.000	.100	
4-A	.200	.233	.200	.267	.000	.100	
4-B	.033	.033	.133	.133	.000	.667	
5-A	.633	.200	.067	.000	.100	.000	
5-B	.633	.233	.000	.000	.033	.100	
6-A	.300	.000	.000	.000	.167	.533	
6-B	.633	.300	.000	.000	.067	.000	
7-A	.100	.600	.033	.000	.033	.233	
7-B	.567	.000	.000	.000	.333	.100	
8-A	.233	.533	.033	.067	.133	.000	
8-B	.533	.267	.000	.000	.000	.200	
9-A	.233	.467	.067	.000	.000	.233	
9-B	.667	.233	.000	.000	.000	.100	
10-A	.800	.067	.000	.033	.100	.000	
10-B	.233	.400	.233	.067	.000	.067	
11-A	.167	.533	.067	.000	.000	.233	
11-B	.067	.433	.233	.000	.000	.267	
12-A	.400	.033	.000	.033	.000	.533	
12-B	.067	.333	.367	.167	.033	.033	
13-A	.667	.167	.000	.000	.167	.000	
13-B	.400	.367	.033	.033	.167	.000	
14-A	.500	.433	.000	.000	.000	.067	
14-B	.833	.067	.000	.000	.000	.100	
15-A	.000	.167	.433	.233	.033	.133	
15-B	.000	.233	.233	.133	.000	.400	
16-A	.533	.067	.000	.067	.100	.233	
16-B	.700	.033	.000	.000	.133	.133	
17-A	.000	.133	.033	.400	.000	.433	
17-B	.033	.267	.033	.000	.033	.633	
18-A	.733	.100	.000	.000	.000	.167	
18-B	.333	.200	.200	.000	.033	.233	
19-A	.100	.233	.267	.267	.033	.100	
19-B	.167	.367	.233	.133	.033	.067	
20-A	.633	.067	.000	.000	.100	.200	
20-B	.800	.000	.000	.000	.200	.000	
							100.00

*The ratings (1, 2, 3, 4) are explained on page 225.

TABLE 47

TRYOUT 2: THE IMPORTANCE OF THE IN-BASKET ITEMS IN THE OPINION OF STUDENTS IN THE OFFICE BLOCK PROGRAM

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.407	.407	.093	.019	.019	.056	
1-B	.278	.556	.056	.000	.037	.074	
2-A	.481	.352	.074	.019	.037	.037	
2-B	.296	.389	.111	.074	.019	.111	
3-A	.185	.389	.204	.056	.000	.167	
3-B	.167	.704	.056	.000	.000	.074	
4-A	.296	.370	.111	.019	.037	.167	
4-B	.130	.093	.148	.037	.019	.574	
5-A	.444	.148	.111	.019	.019	.259	
5-B	.407	.370	.056	.000	.037	.130	
6-A	.463	.185	.000	.000	.111	.241	
6-B	.741	.074	.037	.000	.093	.056	
7-A	.315	.315	.019	.000	.019	.333	
7-B	.370	.093	.019	.000	.185	.333	
8-A	.407	.278	.037	.019	.167	.093	
8-B	.370	.389	.000	.056	.019	.167	
9-A	.222	.222	.000	.019	.019	.519	
9-B	.574	.093	.037	.056	.019	.222	
10-A	.759	.167	.000	.000	.037	.037	
10-B	.407	.148	.167	.056	.019	.204	
11-A	.185	.407	.111	.093	.056	.148	
11-B	.167	.500	.148	.019	.019	.148	
12-A	.463	.204	.019	.000	.000	.315	
12-B	.222	.167	.167	.037	.037	.370	
13-A	.630	.074	.111	.000	.056	.130	
13-B	.500	.352	.000	.000	.130	.019	
14-A	.278	.500	.056	.000	.111	.056	
14-B	.537	.167	.037	.000	.056	.204	
15-A	.185	.259	.259	.056	.000	.241	
15-B	.056	.222	.204	.074	.000	.444	
16-A	.444	.130	.037	.019	.037	.333	
16-B	.648	.056	.000	.000	.111	.185	
17-A	.204	.019	.037	.148	.037	.556	
17-B	.056	.185	.000	.056	.000	.704	
18-A	.593	.148	.019	.000	.000	.241	
18-B	.352	.352	.185	.019	.000	.093	
19-A	.130	.315	.130	.037	.037	.352	
19-B	.222	.333	.130	.056	.037	.222	
20-A	.463	.167	.037	.056	.056	.222	
20-B	.833	.019	.000	.000	.093	.056	
							100.00

*The ratings (1, 2, 3, 4) are explained on page 225.

TABLE 48

TRYOUT 2: THE IMPORTANCE OF THE IN-BASKET ITEMS
IN THE OPINION OF STUDENTS IN SINGLE-PERIOD CLASSES

Item Number	Importance of Item* 1	2	3	4	No Response to Importance	No Response to Item	Total %
1-A	.431	.369	.062	.015	.015	.108	
1-B	.446	.415	.015	.000	.015	.108	
2-A	.708	.169	.046	.000	.015	.062	
2-B	.462	.292	.077	.015	.015	.138	
3-A	.108	.462	.185	.031	.000	.215	
3-B	.200	.538	.108	.031	.000	.123	
4-A	.323	.277	.138	.046	.015	.200	
4-B	.123	.123	.154	.077	.000	.523	
5-A	.492	.138	.031	.031	.000	.308	
5-B	.769	.138	.046	.000	.000	.046	
6-A	.600	.123	.031	.000	.092	.154	
6-B	.708	.123	.015	.000	.046	.108	
7-A	.523	.292	.015	.000	.015	.154	
7-B	.538	.154	.015	.000	.062	.231	
8-A	.662	.200	.000	.015	.077	.046	
8-B	.508	.262	.062	.015	.046	.108	
9-A	.246	.277	.077	.015	.015	.369	
9-B	.631	.077	.000	.000	.000	.292	
10-A	.892	.046	.015	.000	.031	.015	
10-B	.477	.138	.108	.031	.031	.215	
11-A	.277	.323	.185	.000	.000	.215	
11-B	.215	.385	.215	.000	.000	.185	
12-A	.354	.200	.077	.000	.000	.369	
12-B	.292	.123	.154	.062	.015	.354	
13-A	.600	.123	.077	.015	.015	.169	
13-B	.708	.231	.015	.000	.046	.000	
14-A	.600	.323	.015	.000	.015	.046	
14-B	.708	.154	.000	.000	.000	.138	
15-A	.339	.108	.154	.015	.015	.369	
15-B	.092	.185	.154	.031	.000	.538	
16-A	.338	.077	.062	.031	.000	.492	
16-B	.754	.015	.000	.015	.046	.169	
17-A	.338	.000	.077	.138	.015	.431	
17-B	.062	.123	.062	.062	.000	.692	
18-A	.415	.185	.015	.000	.000	.385	
18-B	.385	.323	.123	.000	.000	.169	
19-A	.200	.292	.154	.000	.015	.308	
19-B	.246	.262	.092	.015	.046	.338	
20-A	.292	.185	.092	.046	.031	.354	
20-B	.692	.062	.015	.062	.015	.154	
							100.00

*The ratings (1, 2, 3, 4) are explained on page 225.

the year. The CPS's who responded to the importance of this item indicated 20.0 per cent for a rating of (3) importance, which means that the item must be done by the end of the week, and 30.0 per cent for (4) importance, which means that the item may be delayed longer than this week. The NSA secretaries (Table 45) who responded to the importance of Item 17-A concurred with the CPS's with 9.1 per cent responding to (3) importance and 36.4 per cent responding to (4) importance. The Michigan Bell secretaries, however, added another dimension, with 13.3 per cent responding to (2) importance, 3.3 per cent responding to (3) importance, and 40.0 per cent responding to (4) importance. The majority of responses, however, for all three groups of secretaries was (4) importance. The students in the office block program felt that this item required more immediate attention. The largest percentage (20.4 per cent) felt that this item was of (1) importance; 1.9 per cent that this item was of (2) importance; 3.7 per cent that this item was of (3) importance; and 14.8 per cent that this item was of (4) importance. The students in the single-period classes concurred with the students in the office block program that the item was of (1) importance with 33.8 per cent indicating (1) importance; 7.7 per cent indicated (3) importance, and 13.8 per cent indicated (4) importance. Perhaps this is an indication of the effect in judgments and decision making that years of experience in the secretarial field may have.

Item 18-B is a memorandum about an upcoming business trip; the secretary is given directions for handling the reservations. The CPS's were of the opinion that the item should be handled by the end of the day (70.0 per cent) and thus indicated (2) importance. Of the NSA

secretaries responding to the importance of this item, 63.6 per cent felt that the item was of (2) importance. This was in agreement with the CPS's opinion. The Michigan Bell secretaries, however, did not appear to agree with the other two groups of secretaries; 33.3 per cent of those responding to the item felt that the item should be handled immediately and rated the item with (1) importance. Those who felt the importance was (2) totaled 20.0 per cent. The students in the office block program were undecided as to whether the importance should be (1) or (2), with 35.2 per cent indicating (1) and 35.2 per cent indicating (2). The students in the single-period classes (38.5 per cent) were of the opinion that the item should be handled immediately. However, 32.3 per cent were of the opinion that the item was (2) importance and should be handled by the end of the day. With this particular item, the three groups of secretaries were not in complete agreement as to the importance of the item. The students as well waivered between (1) and (2) importance on the item.

Further analysis of the judgments of individual subjects on specific in-basket items would provide a more analytical insight into the nature of the decision-making process involved and its effect on the setting of work priorities in handling specific kinds of office tasks.

Testing Hypotheses in Comparing Each Group with the Panel of Experts. The opinions of each of the five groups on the importance of each of the 40 in-basket items were compared with the opinions of the panel of experts, and the one-sample *t* test was used to test the differences between each group and the panel of experts. One of the assumptions made in using the one-sample *t* test is independence of

the differences. Independence, as it relates to the in-basket items, means that one in-basket item would have nothing to do with another in-basket item; the occurrence of one in-basket item would not affect another in-basket item. However, because of the physical arrangement of the items within THE SECRETARIAL IN-BASKET, it is reasonable to expect that the in-basket items are associated with each other. This means simply that the items are not independent and that a certain degree of correspondence does exist among the items. It is important to emphasize that one in-basket item does not cause something to happen in another in-basket item; no causation exists. Since the in-basket items are the basis for generating the differences and since the items are associated with each other in the larger framework of THE SECRETARIAL IN-BASKET, there is reason to question the validity of the assumption of the independence of the differences for these data.

The mean differences between the opinions of the CPS's and the panel of experts on the importance of the in-basket items were tested by means of a one-sample t test to see if a significant difference did occur between the two groups. The null hypothesis for this test was stated: "The CPS's and the panel of experts do not differ significantly in their opinions as to the importance of the in-basket items." This null hypothesis may be represented in this way:

(9) H_o: CPS = PANEL OF EXPERTS

The alternate hypothesis was stated: "The CPS's and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items." This alternate hypothesis may be represented in this way:

(9a) H_1: CPS $\neq$ PANEL OF EXPERTS

Table 49 shows the experts' opinions of each in-basket item as compared with the CPS's opinions of the importance of each in-basket item. The differences between the two groups on each item were calculated and the one-sample t test completed. The value of t as computed in the test was -.7022. The decision rule indicates that H_o will be rejected if t is less than or equal to -2.02. Therefore, the decision was made not to reject the null hypothesis; and the conclusion is that there is no significant difference between the opinions of the panel of experts and the opinions of the CPS's on the importance of the in-basket items.

The mean differences between the opinions of the NSA secretaries and the panel of experts on the importance of the in-basket items were also tested by means of a one-sample t test to see if a significant difference occurs between the two groups. The null hypothesis for this test was stated: "The NSA secretaries and the panel of experts do not differ significantly in their opinions as to the importance of the in-basket items." This null hypothesis may be represented in this way:

(10) H_o: NSA Secretaries = PANEL OF EXPERTS

The alternate hypothesis was stated: "The NSA secretaries and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items." This alternate hypothesis may be represented in this way:

(10a) H_1: NSA Secretaries $\neq$ PANEL OF EXPERTS

The opinions of the panel of experts as compared with the opinions of the NSA secretaries are shown in Table 50. The differences between the two groups on each in-basket item were calculated, and the one-sample

TABLE 49

A ONE-SAMPLE T TEST OF THE DIFFERENCES IN OPINIONS ON THE IMPORTANCE OF THE IN-BASKET ITEMS AS SHOWN BY ANALYZING RESPONSES OF CPS'S AND THE PANEL OF EXPERTS

In-Basket Item	Experts' Opinion	CPS's Opinion	d	d^2
1-A	1	1	0	0
1-B	2	2	0	0
2-A	1	1	0	0
2-B	2	1	+1	1
3-A	2	2	0	0
3-B	2	2	0	0
4-A	3	3	0	0
4-B	2	4	-2	4
5-A	1	1	0	0
5-B	1	1	0	0
6-A	1	1	0	0
6-B	1	1	0	0
7-A	2	2	0	0
7-B	1	1	0	0
8-A	1	1	0	0
8-B	1	1	0	0
9-A	2	2	0	0
9-B	1	1	0	0
10-A	1	1	0	0
10-B	2	2	0	0
11-A	2	2	0	0
11-B	3	2	+1	1
12-A	1	1	0	0
12-B	2	2	0	0
13-A	1	1	0	0
13-B	1	1	0	0
14-A	2	2	0	0
14-B	1	1	0	0
15-A	2	3	-1	1
15-B	3	3	0	0
16-A	1	1	0	0
16-B	1	1	0	0
17-A	4	4	0	0
17-B	2	2	0	0
18-A	1	1	0	0
18-B	2	2	0	0
19-A	2	2	0	0
19-B	2	3	-1	1
20-A	1	1	0	0
20-B	1	1	0	0
			Σd -2	Σd^2 8

Hypothesis Testing

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

Assumptions:

a. Random sample of differences
b. Normality of the differences

Test Statistic:

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} \qquad s_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

Decision Rule: $\alpha = .05$
Reject H_o if $t \leq -2.02$ or if $t \geq +2.02$.

Compute the Value of the Statistic:

$$\hat{s}_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

$$\hat{s}_d^2 = \frac{40(8) - (-2)^2}{40(39)}$$

$\hat{s}_d^2 = .2025$ $\qquad \hat{s}_d = .45$

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} = \frac{-.05 - 0}{\frac{.45}{\sqrt{40}}} = -.7022$$

Decision: Fail to reject H_o.

Conclude: $\mu_1 = \mu_2$

There is no significant difference between the opinions of the experts and the opinions of the CPS's on the importance of the in-basket items.

TABLE 50

A ONE-SAMPLE T TEST OF THE DIFFERENCES IN OPINIONS ON THE IMPORTANCE OF THE IN-BASKET ITEMS AS SHOWN BY ANALYZING RESPONSES OF NSA SECRETARIES AND THE PANEL OF EXPERTS

In-Basket Item	Experts' Opinion	NSA's Opinion	d	d^2
1-A	1	2	-1	1
1-B	2	2	0	0
2-A	1	1	0	0
2-B	2	2	0	0
3-A	2	2	0	0
3-B	2	2	0	0
4-A	3	4	-1	1
4-B	2	2	0	0
5-A	1	1	0	0
5-B	1	1	0	0
6-A	1	1	0	0
6-B	1	1	0	0
7-A	2	2	0	0
7-B	1	1	0	0
8-A	1	1	0	0
8-B	1	2	-1	1
9-A	2	2	0	0
9-B	1	1	0	0
10-A	1	1	0	0
10-B	2	2	0	0
11-A	2	2	0	0
11-B	2	2	+1	1
12-A	1	1	0	0
12-B	2	3	-1	1
13-A	1	1	0	0
13-B	1	1	0	0
14-A	2	2	0	0
14-B	1	1	0	0
15-A	2	2	0	0
15-B	3	4	-1	1
16-A	1	1	0	0
16-B	1	1	0	0
17-A	4	4	0	0
17-B	2	2	0	0
18-A	1	1	0	0
18-B	2	2	0	0
19-A	2	3	-1	1
19-B	2	1	+1	1
20-A	1	1	0	0
20-B	1	1	0	0
			$\sum d_i = -4$	$\sum d_i^2 = 8$

Hypothesis Testing

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

Assumptions:

a. Random sample of differences

b. Normality of the differences

Test Statistic:

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} \qquad \hat{s}_d^2 = \frac{n\sum d_i^2 - (\sum d_i)^2}{n(n-1)}$$

Decision Rule: $\alpha = .05$

Reject H_o if $t \leq -2.02$ or if $t \geq +2.02$.

Compute the Value of the Statistic:

$$\hat{s}_d^2 = \frac{n\sum d_i^2 - (\sum d_i)^2}{n(n-1)}$$

$$\hat{s}_d^2 = \frac{40(8) - (-4)^2}{40(39)}$$

$\hat{s}_d^2 = .1948 \qquad \hat{s}_d = .4413$

$$t = \frac{\bar{d} - \mu_d}{\frac{s_d}{\sqrt{n}}} = \frac{-.1 - 0}{\frac{.4413}{\sqrt{40}}} = 1.4326$$

Decision: Fail to reject H_o.

Conclude: $\mu_1 = \mu_2$

There is no significant difference between the opinions of the experts and the opinions of the NSA secretaries on the importance of the in-basket items.

t test shows that the value of *t* was computed at +1.4326. The decision rule at the .05 level of significance stated that the null hypothesis would be rejected if the value of *t* were equal to or greater than +2.02. Therefore, the decision was made not to reject the null hypothesis; and the conclusion resulted that there is no significant difference between the opinions of the panel of experts and the opinions of the NSA secretaries on the importance of the in-basket items.

The mean differences between the opinions of the Michigan Bell secretaries and the panel of experts on the importance of the in-basket items were tested by means of a one-sample *t* test to see if a significant difference occurs between these two groups. The null hypothesis for this test was stated: "The MBT secretaries and the panel of experts do not differ significantly in their opinions as to the importance of the in-basket items." This null hypothesis may be represented in this way:

(11) H_o: MBT Secretaries = PANEL OF EXPERTS

The alternate hypothesis was stated: "The MBT secretaries and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items." This alternate hypothesis may be represented in this way:

(11a) H_1: MBT Secretaries $\neq$ PANEL OF EXPERTS

Table 51 shows the comparison of the opinions of the panel of experts on each of the in-basket items and the opinions of the Michigan Bell secretaries on the same in-basket items. A one-sample *t* test of the differences between the two groups shows that the value of the *t* statistic is -.9025. The decision rule stated that H_o will be rejected

TABLE 51

A ONE-SAMPLE T TEST OF THE DIFFERENCES IN OPINIONS ON THE IMPORTANCE OF THE IN-BASKET ITEMS AS SHOWN BY ANALYZING RESPONSES OF MICHIGAN BELL SECRETARIES AND THE PANEL OF EXPERTS

In-Basket Item	Experts' Opinion	MBT's Opinion	d	d^2
1-A	1	2	-1	1
1-B	2	2	0	0
2-A	1	1	0	0
2-B	2	2	0	0
3-A	2	2	0	0
3-B	2	2	0	0
4-A	3	4	-1	1
4-B	2	3	-1	1
5-A	1	1	0	0
5-B	1	1	0	0
6-A	1	1	0	0
6-B	1	1	0	0
7-A	2	2	0	0
7-B	1	1	0	0
8-A	1	2	-1	1
8-B	1	1	0	0
9-A	2	2	0	0
9-B	1	1	0	0
10-A	1	1	0	0
10-B	2	2	0	0
11-A	2	2	0	0
11-B	3	2	+1	1
12-A	1	1	0	0
12-B	2	3	-1	1
13-A	1	1	0	0
13-B	1	1	0	0
14-A	2	1	+1	1
14-B	1	1	0	0
15-A	2	3	-1	1
15-B	3	2	+1	1
16-A	1	1	0	0
16-B	1	1	0	0
17-A	4	4	0	0
17-B	2	2	0	0
18-A	1	1	0	0
18-B	2	1	+1	1
19-A	2	3	-1	1
19-B	2	2	0	0
20-A	1	1	0	0
20-B	1	1	0	0
			$\sum d = -3$	$\sum d^2 = 11$

Hypothesis Testing

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

Assumptions:

a. Random sample of differences
b. Normality of the differences

Test Statistic:

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} \qquad \hat{s}_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

Decision Rule: $\alpha = .05$

Reject H_o if $t \leq -2.02$ or if $t \geq +2.02$.

Compute the Value of the Statistic:

$$\hat{s}_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

$$\hat{s}_d^2 = \frac{40(11) - (-3)^2}{40(39)}$$

$$\hat{s}_d^2 = .2762 \qquad \hat{s}_d = .5255$$

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} = \frac{-.075 - 0}{\frac{.5255}{\sqrt{40}}} = -.9025$$

Decision: Fail to reject H_o.

Conclude: $\mu_1 = \mu_2$

There is no significant difference between the opinions of the experts and the opinions of the MBT secretaries on the importance of the in-basket items.

if t is less than or equal to -2.02. Therefore, the decision was made not to reject the null hypothesis; and the conclusion is made that there is no significant difference between the opinions of the panel of experts and the opinions of the Michigan Bell secretaries on the importance of the in-basket items.

The mean differences between the opinions of the students in the office block program and the panel of experts on the importance of the in-basket items were also tested by means of a one-sample t test to see if a significant difference occurs between these two groups. The null hypothesis for this test was stated: "The students in the office block program and the panel of experts do not differ significantly in their opinions as to the importance of the in-basket items." This null hypothesis may be represented in this way:

(12) H_o: $STUDENTS_{Block} = PANEL\ OF\ EXPERTS$

The alternate hypothesis was stated: "The students in the office block program and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items." This alternate hypothesis may be represented in this way:

(12a) H_1: $STUDENTS_{Block} \neq PANEL\ OF\ EXPERTS$

Table 52 illustrates the experts' opinions as to the importance of each in-basket item as compared with the opinions of students in the office block program and shows the differences per item. The one-sample t test of the differences shows a computed t statistic of +2.1572. The decision rule at the .05 level of significance shows that the null hypothesis will be rejected if t is equal to or greater than +2.02. The computed t statistic is greater than +2.02. Therefore, the null hypothesis

TABLE 52

A ONE-SAMPLE T TEST OF THE DIFFERENCES IN OPINIONS ON THE IMPORTANCE OF THE IN-BASKET ITEMS AS SHOWN BY ANALYZING RESPONSES OF STUDENTS IN BLOCK PROGRAMS AND THE PANEL OF EXPERTS

In-Basket Item	Experts' Opinion	Students' Opinion	d	d^2
1-A	1	1	0	0
1-B	2	2	0	0
2-A	1	1	0	0
2-B	2	2	0	0
3-A	2	2	0	0
3-B	2	2	0	0
4-A	3	2	+1	1
4-B	2	3	-1	1
5-A	1	1	0	0
5-B	1	1	0	0
6-A	1	1	0	0
6-B	1	1	0	0
7-A	2	1	+1	1
7-B	1	1	0	0
8-A	1	1	0	0
8-B	1	2	-1	1
9-A	2	1	+1	1
9-B	1	1	0	0
10-A	1	1	0	0
10-B	2	1	+1	1
11-A	2	2	0	0
11-B	3	2	+1	1
12-A	1	1	0	0
12-B	2	1	+1	1
13-A	1	1	0	0
13-B	1	1	0	0
14-A	2	2	0	0
14-B	1	1	0	0
15-A	2	2	0	0
15-B	3	2	+1	1
16-A	1	1	0	0
16-B	1	1	0	0
17-A	4	1	+3	9
17-B	2	2	0	0
18-A	1	1	0	0
18-B	2	1	+1	1
19-A	2	2	0	0
19-B	2	2	0	0
20-A	1	1	0	0
20-B	1	1	0	0
			$\Sigma d_i = 9$	$\Sigma d_i^2 = 19$

Hypothesis Testing

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

Assumptions:

a. Random sample of differences
b. Normality of the differences

Test Statistic:

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} \qquad \hat{s}_d^2 = \frac{n\Sigma d^2 - (\Sigma d_i)^2}{n(n-1)}$$

Decision Rule: $\alpha = .05$

Reject H_o if $t \leq -2.02$ or if $t \geq +2.02$.

Compute the Value of the Statistic:

$$\hat{s}_d^2 = \frac{n\Sigma d^2 - (\Sigma d_i)^2}{n(n-1)}$$

$$\hat{s}_d^2 = \frac{40(19) - (9)^2}{40(39)}$$

$\hat{s}_d^2 = .4352 \qquad \hat{s}_d = .6596$

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} = \frac{.225 - 0}{\frac{.6596}{\sqrt{40}}} = +2.1572$$

Decision: Reject H_o.

Conclude: $\mu_1 \neq \mu_2$

There is a significant difference between the opinions of the experts and the opinions of the students in the office block program on the importance of the in-basket items.

is rejected; and the alternate hypothesis that the students in the office block program and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items is accepted. The conclusion is reached that there is a significant difference between the opinions of the experts and the opinions of the students in the office block program. By taking a look at the specific differences existing within specific item comparisons on Table 52, one can state that the students were systematically overrating the experts on the importance of the items; that is, the students tended to give a greater degree of importance to specific items than the panel of experts.

The mean differences between the opinions of the students in the single-period classes and the panel of experts on the importance of the in-basket items were also tested by means of a one-sample t test to see if a significant difference occurs between these two groups. The null hypothesis for this test was stated: "The students in the single-period classes and the panel of experts do not differ significantly in their opinions as to the importance of the in-basket items." The null hypothesis may be represented in this way:

(13) H_o: $STUDENTS_{Classes} = PANEL\ OF\ EXPERTS$

The alternate hypothesis was stated: "The students in the single-period classes and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items." This alternate hypothesis may be represented in this way:

(13a) H_1: $STUDENTS_{Classes} \neq PANEL\ OF\ EXPERTS$

Table 53 compares the experts' opinions on each in-basket item to the students' opinions, and the differences between the two groups on

TABLE 53

A ONE-SAMPLE T TEST OF THE DIFFERENCES IN OPINIONS ON THE IMPORTANCE OF THE IN-BASKET ITEMS AS SHOWN BY ANALYZING RESPONSES OF STUDENTS IN SINGLE-PERIOD CLASSES AND THE PANEL OF EXPERTS

In-Basket Item	Experts' Opinion	Students' Opinion	d	d^2
1-A	1	1	0	0
1-B	2	1	+1	1
2-A	1	1	0	0
2-B	2	1	+1	1
3-A	2	2	0	0
3-B	2	2	0	0
4-A	3	1	+2	4
4-B	2	3	-1	1
5-A	1	1	0	0
5-B	1	1	0	0
6-A	1	1	0	0
6-B	1	1	0	0
7-A	2	1	+1	1
7-B	1	1	0	0
8-A	1	1	0	0
8-B	1	1	0	0
9-A	2	2	0	0
9-B	1	1	0	0
10-A	1	1	0	0
10-B	2	1	+1	1
11-A	2	2	0	0
11-B	3	2	+1	1
12-A	1	1	0	0
12-B	2	1	+1	1
13-A	1	1	0	0
13-B	1	1	0	0
14-A	2	1	+1	1
14-B	1	1	0	0
15-A	2	1	+1	1
15-B	3	2	+1	1
16-A	1	1	0	0
16-B	1	1	0	0
17-A	4	1	+3	9
17-B	2	2	0	0
18-A	1	1	0	0
18-B	2	1	+1	1
19-A	2	2	0	0
19-B	2	2	0	0
20-A	1	1	0	0
20-B	1	1	0	0
			$\sum d = +14$	$\sum d^2 = 24$

Hypothesis Testing

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

Assumptions:

a. Random sample of differences
b. Normality of the differences

Test Statistic:

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} \qquad \hat{s}_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

Decision Rule: $\alpha = .05$
Reject H_o if $t \leq -2.02$ or if $t \geq +2.02$.

Compute the Value of the Statistic:

$$\hat{s}_d^2 = \frac{n\sum d^2 - (\sum d_i)^2}{n(n-1)}$$

$$\hat{s}_d^2 = \frac{40(24) - (14)^2}{40(39)}$$

$$\hat{s}_d^2 = .4897 \qquad \hat{s}_d = .6997$$

$$t = \frac{\bar{d} - \mu_d}{\frac{\hat{s}_d}{\sqrt{n}}} = \frac{.35 - 0}{\frac{.6997}{\sqrt{40}}} = +3.1616$$

Decision: Reject H_o.

Conclude: $\mu_1 \neq \mu_2$

There is a significant difference between the opinions of the experts and the opinions of the students in the single-period classes on the importance of the in-basket items.

each item were calculated. The computed t statistic was +3.1616. The decision rule at the .05 level of significance stated that the null hypothesis will be rejected if the t statistic is equal to or greater than +2.02. Therefore, the decision was made to reject the null hypothesis and to accept the alternate hypothesis that the students in the single-period classes and the panel of experts do differ significantly in their opinions as to the importance of the in-basket items. The conclusion reached in this one-sample t test was that there is a significant difference between the opinions of the panel of experts and the opinions of the students in the single-period classes on the importance of the in-basket items. A look at the differences between the two groups shows that all but one of the differences are positive. This indicates that the students were systematically overrating the importance of the in-basket items as compared with the opinion of the panel of experts on the same items.

The magnitude of the differences among all five groups was also examined by means of a two-way analysis of variance to determine if the magnitude of the differences among the groups on the importance of the in-basket items were about the same when compared with the panel of experts. Table 54 charts the obtained differences when each of the five groups was compared with the panel of experts (data from Tables 49, 50, 51, 52, and 53). The plus and minus signs were disregarded in this analysis so that the question could be investigated as to the degree of agreement among the groups with respect to each group's difference with the panel of experts. Table 55 presents the summary table for the two-way analysis of variance.

TABLE 54

THE MAGNITUDE OF THE DIFFERENCES AMONG THE GROUPS ON THE IMPORTANCE OF THE IN-BASKET ITEMS

In-Basket Item	CPS's	Students (Class)	NSA Secy	Students (Block)	MBT Secy	Row Totals
1-A	0	0	1	0	1	2
1-B	0	1	0	0	0	1
2-A	0	0	0	0	0	0
2-B	1	1	0	0	0	2
3-A	0	0	0	0	0	0
3-B	0	0	0	0	0	0
4-A	0	2	1	1	1	5
4-B	2	1	0	1	1	5
5-A	0	0	0	0	0	0
5-B	0	0	0	0	0	0
6-A	0	0	0	0	0	0
6-B	0	0	0	0	0	0
7-A	0	1	0	1	0	2
7-B	0	0	0	0	0	0
8-A	0	0	0	0	1	1
8-B	0	0	1	1	0	2
9-A	0	0	0	1	0	1
9-B	0	0	0	0	0	0
10-A	0	0	0	0	0	0
10-B	0	1	0	1	0	2
11-A	0	0	0	0	0	0
11-B	1	1	1	1	1	5
12-A	0	0	0	0	0	0
12-B	0	1	1	1	1	4
13-A	0	0	0	0	0	0
13-B	0	0	0	0	0	0
14-A	0	1	0	0	1	2
14-B	0	0	0	0	0	0
15-A	1	1	0	0	1	3
15-B	0	1	1	1	1	4
16-A	0	0	0	0	0	0
16-B	0	0	0	0	0	0
17-A	0	3	0	3	0	6
17-B	0	0	0	0	0	0
18-A	0	0	0	0	0	0
18-B	0	1	0	1	1	3
19-A	0	0	1	0	1	2
19-B	1	0	1	0	0	2
20-A	0	0	0	0	0	0
20-B	0	0	0	0	0	0
Column Totals	6	16	8	13	11	54

TABLE 55

SUMMARY TABLE FOR A TWO-WAY ANOVA OF THE MAGNITUDE OF THE DIFFERENCES AMONG THE GROUPS ON THE IMPORTANCE OF THE IN-BASKET ITEMS WHEN COMPARED WITH THE EXPERTS

Source	Sum of Squares (SS)			Degrees of Freedom	Mean Square	F
Columns	$\frac{\sum_{j}^{C}\left(\sum_{k}^{R}\sum_{i}^{n} Y_{ijk}\right)^2}{Rn}$	$-\frac{\left(\sum_{j}^{C}\sum_{k}^{R}\sum_{i}^{n} Y_{ijk}\right)^2}{N}$				$\frac{MS_{columns}}{MS_{interaction}}$ =
	16.15	- 14.58	= 1.57	4	.3925	+2.10
Rows	$\frac{\sum_{k}^{R}\left(\sum_{j}^{C}\sum_{i}^{n} Y_{ijk}\right)^2}{Cn}$	$-\frac{\left(\sum_{j}^{C}\sum_{k}^{R}\sum_{i}^{n} Y_{ijk}\right)^2}{N}$				
	39.20	- 14.58	= 24.62	39	.6312	
Interaction	$\sum_{j}^{C}\sum_{k}^{R}\frac{\left(\sum_{i}^{n} Y_{ijk}\right)^2}{n}$	$-\frac{\sum_{j}^{C}\left(\sum_{k}^{R}\sum_{i}^{n} Y_{ijk}\right)^2}{Rn}$				
	$-\frac{\sum_{k}^{R}\left(\sum_{j}^{C}\sum_{i}^{n} Y_{ijk}\right)^2}{Cn}$	$+\frac{\left(\sum_{j}^{C}\sum_{k}^{R}\sum_{i}^{n} Y_{ijk}\right)^2}{N}$				
	70.00 - 16.15 - 39.20 + 14.58		= 29.23	156	.1873	

TABLE 55 (Continued

Hypothesis:

$H_o: \mu_{d_1} = \mu_{d_2} = \mu_{d_3} = \mu_{d_4} = \mu_{d_5}$

H_1: The magnitude of the differences for the groups are not all identical.

Decision Rule:

Reject H_o if $F = \frac{MS_{columns}}{MS_{int.}} > F_{4,\ 156\ (.95)}$

$(F_{4,\infty} = +2.37)$

Decision:

$\frac{MS_{columns}}{MS_{interaction}} = +2.10$. Fail to reject H_o.

Conclude:

The magnitude of the differences of the groups when compared with the experts is about the same. There is no significant difference in the magnitude among the five groups. We cannot say that one group is contributing more than another group to the magnitude of the differences.

The null hypothesis that the mean differences among the five groups (CPS, NSA, MBT, ST_{BL}, ST_{CL}) do not differ significantly on the degree to which they differ from the opinions of the panel of experts on the importance of the in-basket items was tested by means of a two-way analysis of variance. The null hypothesis may be represented in this way:

(14) $H_o: \mu_{d_1} = \mu_{d_2} = \mu_{d_3} = \mu_{d_4} = \mu_{d_5}$

The alternate hypothesis may be stated in this way: "The magnitude of the differences for the five groups are not all identical."

Table 55 presents the summary table for the two-way ANOVA of the magnitude of the differences among the groups on the importance of the in-basket items. The computed F statistic was +2.10. The decision rule for the testing of the hypothesis stated that the null hypothesis will be rejected if $F_{4,\ 156\ (.95)}$ is more than or equal to +2.37. Therefore, the decision is not to reject the null hypothesis and to conclude that the magnitude of the differences of the groups when compared with the experts is about the same. We cannot say that one group is contributing more than another group to the magnitude of the differences.

Item Analysis Based on Mean Scores on Quality Responses

No statistical item analysis was designed into this in-basket study. However, a simplified method was used to analyze the group means for each in-basket item on the quality responses (action responses) given to each in-basket item attempted to see if, in fact, the means for the groups appear to differ on the quality response scores. The number of subjects responding to specific items varies because of the nature of the in-basket itself. Some subjects completed all of the items; others completed as many as possible in the time limit.

Table 56 shows that one of the three secretary groups had the highest group mean on 39 of the items. The students in the office block program had the highest group mean on one item, Item 17-B, with a group mean of 3.56. Using the five-point scale of quality responses as a guide, one can determine what the general response was to the item. The office block students responded to Item 17-B (a confidential letter to the personnel director is being sent and the secretary is asked her opinion of the letter) by indicating to the president that the letter needed few or no revisions. The Michigan Bell secretaries had a group mean of 3.00, which indicated that they felt no revisions were necessary. The CPS's (2.67) and the NSA secretaries (2.40) felt that they would read the letter and perhaps ask another secretary for her opinion on the letter and its contents. The students in the single-period classes (1.77) would read the letter before sending it. Perhaps there is an indication with this particular item of carefulness on the part of experienced secretaries to make a conclusion about a situation they may not be familiar with. Since this is the first day on the job, the secretaries may feel that there are some judgments that should remain with the employer.

By examining the number of secretaries and students who attempted Item 17-B (which was located in the last envelope of THE IN-BASKET), one may notice that a total of 22 out of 51 secretaries attempted the item while 16 out of 54 students in the office block program and 22 out of 65 students in the single-period classes attempted the item. The question may be raised as to the possibility of a selection bias with regard to this item: Do the better students get to this item since

TABLE 56

TRYOUT 2: MEAN SCORES ON QUALITY RESPONSES TO IN-BASKET PROBLEMS

Item Number	Secretaries (CPS)		Secretaries (NSA)		Secretaries (MBT)		Students in Block Program		Students in Single-Period Classes		Highest Group
	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	
1-A	9	3.56	11	3.27	26	2.58	51	2.08	58	1.81	CPS
1-B	9	3.22	11	3.00	26	2.77	47	1.83	55	2.16	CPS
2-A	9	3.22	10	3.70	30	1.57	53	1.09	65	1.29	NSA
2-B	9	2.22	10	3.20	21	2.67	47	2.19	51	2.57	NSA
3-A	7	2.71	11	3.18	25	3.08	45	2.40	56	2.36	NSA
3-B	8	2.75	11	2.55	27	2.56	53	1.94	62	2.18	CPS
4-A	8	2.13	9	1.78	27	1.63	42	1.67	46	1.91	CPS
4-B	6	1.50	5	2.00	10	2.80	15	1.40	24	1.67	MBT
5-A	9	2.56	10	2.50	30	1.77	52	1.42	65	1.17	CPS
5-B	9	3.67	11	3.09	27	2.59	42	1.64	59	1.75	CPS
6-A	5	3.60	7	2.43	14	1.86	35	1.60	50	1.22	CPS
6-B	10	3.70	11	3.64	30	3.30	53	2.89	65	3.28	CPS
7-A	6	1.50	7	1.86	23	2.39	27	1.33	46	1.70	MBT
7-B	7	2.14	6	1.67	27	1.04	41	1.27	57	.81	CPS
8-A	9	2.44	10	3.60	30	2.60	52	1.85	65	1.52	NSA
8-B	10	3.90	11	3.09	24	2.96	43	2.63	53	2.30	CPS
9-A	4	.75	5	1.80	23	1.74	22	.91	40	.83	NSA
9-B	10	4.00	10	3.00	27	2.93	48	3.08	58	1.26	CPS
10-A	9	4.00	10	2.50	30	1.90	52	2.37	65	1.09	CPS
10-B	9	3.00	8	2.63	28	2.32	40	2.18	45	2.22	CPS

TABLE 56 (Continued)

Item Number	Secretaries (CPS)		Secretaries (NSA)		Secretaries (MBT)		Students in Block Program		Students in Single-Period Classes		Highest Group
	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	
11-A	9	2.44	11	2.00	23	2.09	47	1.55	59	1.92	CPS
11-B	5	3.20	10	3.40	22	3.05	45	3.09	49	3.22	NSA
12-A	6	2.00	8	2.25	14	1.71	31	1.52	35	.77	NSA
12-B	8	2.50	8	2.63	29	2.00	36	1.06	47	.87	NSA
13-A	9	3.56	10	3.10	30	2.47	50	2.24	65	1.40	CPS
13-B	8	3.25	10	2.80	30	2.67	53	2.26	65	1.28	CPS
14-A	9	4.22	11	3.91	28	3.86	48	3.15	60	2.68	CPS
14-B	8	4.25	11	4.18	27	4.07	38	3.47	54	3.39	CPS
15-A	7	2.29	9	2.44	26	1.08	43	1.56	44	1.25	NSA
15-B	4	1.75	6	1.83	18	1.67	24	.58	33	.97	NSA
16-A	7	1.57	9	1.22	23	1.39	42	.81	42	.93	CPS
16-B	8	2.63	9	1.78	26	2.62	44	2.09	63	1.10	CPS
17-A	5	2.80	5	.80	17	1.94	13	1.31	27	.30	CPS
17-B	6	2.67	5	2.40	11	3.00	16	3.56	22	1.77	ST-BL
18-A	9	3.00	11	2.73	25	2.72	50	2.42	51	2.14	CPS
18-B	9	2.33	11	1.91	23	1.30	47	.77	56	1.04	CPS
19-A	7	2.14	9	2.67	27	2.26	31	.58	42	1.48	NSA
19-B	8	2.00	8	1.75	28	1.79	57	1.27	50	1.02	CPS
20-A	7	1.86	8	2.13	24	1.71	41	.98	45	1.16	NSA
20-B	9	1.11	10	1.80	30	1.47	52	1.31	65	.88	NSA
Grand Means		2.79		2.66		2.30		1.88		1.65	

it is located in the last group of in-basket items attempted in THE IN-BASKET?

The grand means indicate a progression among the five groups with the CPS's having a mean response score of 2.79 on all items attempted, the NSA secretaries with a 2.66 mean response score, the MBT secretaries with a 2.30 mean response score, the students in the office block program with a mean response score of 1.88, and the students in the single-period classes with a mean response score of 1.65. This indicates that the secretaries who participated in the study did respond at a higher level than the students to the in-basket items and the action required.

One could surmise from the foregoing data that the experienced secretary is able to make higher quality action responses than the student in the office block program or in secretarial practice or advanced shorthand classes. Further item analysis of individual performance on specific in-basket items would enhance the basic understanding of what is involved in the decision-making process as it relates to specific processes and tasks in the office.

A Measurement Schema for THE SECRETARIAL IN-BASKET

One question which ultimately results when a testing instrument like THE SECRETARIAL IN-BASKET is developed and field tested relates to the use of those results in future testing situations. Both the researcher and the classroom teacher want to know:

> "How can I use the results from the field testing in this study if I were to administer THE SECRETARIAL IN-BASKET to another subject (secretary or student)?"

Three basic ways of evaluating the subject's performance on the in-basket are outlined here with special emphases on the use of

percentile ranks for total quality responses (Table 57), percentile ranks for total number of problems attempted (Table 58), and frequencies for secretaries and students on the percentages of inversions within the three in-basket envelopes (Tables 59, 60, and 61).

Comparing the Percentile Rank of Total Quality Responses. Using the five-point scale which includes five levels of quality (action) responses to each in-basket item, one can determine the number of quality response points for each in-basket item. These points may be totalled across all items attempted in the entire in-basket. Table 57 may then be used as a guide for determining where the subject "fits" on the point scale of quality responses and how his particular score compares with the percentile ranks of all secretaries and students previously taking THE SECRETARIAL IN-BASKET.

For example, if a subject obtains 68 total quality response points on THE SECRETARIAL IN-BASKET, this score may be compared with those obtained from the secretaries and the students who took the in-basket previously. From Table 57 one may determine that 68 total points falls within the point range of 66-70 points, and by following the line to the right one may compare the 68 with the percentile rank of all students (84.87 per cent) taking the in-basket who had a quality response score in the 66-70 point range or less. This means that a score of 68 quality response points would indicate that 84.87 per cent of all students had this score or less in the field testing of the in-basket. In comparing the subject with the performance of secretaries, one would find by following the line to the left that a quality response score of 68 had a percentile rank of 29.41 per cent. This means that only 29.41

TABLE 57

PERCENTILE RANK OF TOTAL QUALITY RESPONSES
BY SECRETARIES AND STUDENTS

SECRETARIES			Quality Responses	STUDENTS		
Percentile Rank	cf	f		f	cf	Percentile Rank
100.00	51	4	106+			
92.15	47	2	101-105			
88.23	45	5	96-100			
78.43	40	8	91-95	1	119	100.00
62.74	32	3	86-90	2	118	99.15
56.86	29	7	81-85	2	116	97.47
43.13	22	6	76-80	2	114	95.79
31.37	16	1	71-75	11	112	94.11
29.41	15	3	66-70	13	101	84.87
23.52	12	2	61-65	13	88	73.94
19.60	10	5	56-60	27	75	63.02
9.80	5	1	51-55	10	48	40.33
7.84	4	2	46-50	3	38	31.93
3.92	2	1	41-45	7	35	29.41
			36-40	11	28	23.52
1.96	1	1	31-35	11	17	14.28
			26-30	3	6	5.04
			Less than 25	3	3	2.52

per cent of all secretaries who took the in-basket during the field testing had a quality response score of 68 points or less.

By using the percentile ranks presented in Table 57, a subject's performance on THE SECRETARIAL IN-BASKET may be compared with all secretaries and all students who have previously taken THE SECRETARIAL IN-BASKET.

Comparing the Percentile Rank of Total Number of Problems Attempted. The total number of problems attempted by each subject on THE SECRETARIAL IN-BASKET may be tallied to determine how many problems were attempted. This measure is separated from any other consideration for the quality responses at this time. Table 58 indicates the percentile ranks for all secretaries and students who have previously taken THE SECRETARIAL IN-BASKET during the field testing phase. This table may be used as a guide to determine how a subject compares in total number of problems attempted with all other subjects who have already taken the instrument. One caution in using this particular table, however, reflects the limited size of the samples. The sample size of the secretarial group was 51 which is relatively small; therefore, the values shown in Table 58 may be unstable. A change in the number of people in any one category within these groupings may have a substantial effect on the percentile rank. The total number of students participating in the study was 119 which is a much larger group than the secretarial group. However, a similar caution is in effect for this group as well. The data contained in Table 58, however, will provide a meaningful guide in comparing how a new subject compares with all others who have attempted problems in the in-basket.

TABLE 58

PERCENTILE RANK OF TOTAL NUMBER OF PROBLEMS ATTEMPTED BY SECRETARIES AND STUDENTS

SECRETARIES			Number of Problems	STUDENTS		
Percentile Rank	cf	f		f	cf	Percentile Rank
			40	3	119	100.00
100.00	51	2	39	5	116	97.47
96.07	49	8	38	5	111	93.27
80.39	41	4	37	3	106	89.07
72.54	37	7	36	7	103	86.55
58.82	30	2	35	2	96	80.67
54.90	28	2	34	12	94	78.99
50.98	26	1	33	8	82	68.90
49.01	25	4	32	5	74	62.18
41.17	21	4	31	18	69	57.98
33.33	17	4	30	14	51	42.85
25.49	13	1	29	6	37	31.09
			28	4	31	26.05
23.52	12	4	27	3	27	22.68
15.68	8	4	26	4	24	20.16
7.84	4	2	25	6	20	16.80
			24	4	14	11.76
			23			
3.92	2	1	22	8	10	8.40
1.96	1	1	21			
			20			
			19			
			18			
			17	2	2	1.68
			16			
			15			
			14			
			13			
			12			
			11			
			10			
			9			
			8			
			7			
			6			
			5			
			4			
			3			
			2			
			1			

For example, if a subject attempts a total of 38 problems in the in-basket, this compares with a percentile rank of 93.27 per cent for the students and a percentile rank of 96.07 per cent for the secretaries. This means that a subject who attempts 38 problems is at the 93.27 percentile of all students who attempted problems in the in-basket. Of all students participating, 93.27 per cent of them attempted the same number of problems or fewer on the entire in-basket. By the same token, 96.07 per cent of all secretaries participating attempted the same number of problems or fewer on the in-basket. A second example, however, will indicate the caution that must be used in using this particular table because of the small numbers of subjects involved. If a subject had completed 36 problems in the in-basket, he would find by using this chart that 86.55 per cent of all of the students taking the in-basket attempted the same number of problems or fewer while only 72.54 per cent of the secretaries attempted the same number of problems or fewer problems.

By using the percentile ranks shown in Table 58, a subject's performance as it relates to the total number of problems attempted may be compared with all secretaries and all students who have previously taken THE SECRETARIAL IN-BASKET. This will give the subject an indication of the quantity of his responses as compared with other subjects.

Comparing the Percentages of Inversions within THE SECRETARIAL IN-BASKET. Each of the three envelopes within THE SECRETARIAL IN-BASKET requires the subject to arrange the in-basket items in order of priority. These priorities as determined by the subject may be compared with those established by the panel of experts and a percentage of inversions

determined for each subject on the in-basket items contained within each of the three envelopes.

Table 59 may serve as a guide in estimating the performance of a subject on the arranging of papers within priority limits. However, caution must be used in relating the subject's performance on percentage of inversions. The results for each separate envelope must be taken separately. Therefore, Table 59 refers only to the in-basket envelope (one of the three envelopes). By looking at the table and at the problem sections within the contents, one may determine where the highest number of frequencies occurred among the subjects who have already taken THE SECRETARIAL IN-BASKET. For example, in the 12-15 problem range a majority of the secretaries who took the in-basket completed 12-15 problems with a percentage of inversions of .00 to .49 (34 out of 51 secretaries). Those students who completed 12-15 problems with a percentage of inversions of .00 to .49 totaled 67 (67 out of 119 students). It appears that with any new sample of subjects the distribution of the frequencies may change.

Table 60 shows the frequencies of the secretaries and the students on the percentages of inversions within Envelope A. This envelope contained six problems that represented the morning mail. By grouping the total number of problems into two categories, one can compare the percentages of inversions with the number of subjects who obtained the percentages. For example, if a subject completed five problems with a percentage of inversions of .23, he would compare with 37 of the students who completed problems in Envelope A and 12 of the secretaries who completed problems in Envelope A. Because of the time element (45

TABLE 59

FREQUENCIES OF SECRETARIES AND STUDENTS ON PERCENTAGES OF INVERSIONS WITHIN THE IN-BASKET ENVELOPE

SECRETARIES Frequency	Percentage of Inversions	STUDENTS Frequency
	12-15 Problems	
17	.00 - .24	14
17	.25 - .49	53
4	.50 - .74	21
0	.75-1.00	0
	9-11 Problems	
1	.00 - .24	4
3	.25 - .49	13
1	.50 - .74	2
0	.75-1.00	0
	6-8 Problems	
1	.00 - .24	1
4	.25 - .49	3
3	.50 - .74	3
0	.75-1.00	0
	3-5 Problems	
0	.00 - .24	1
0	.25 - .49	1
0	.50 - .74	3
0	.75-1.00	0
51		119

TABLE 60

FREQUENCIES OF SECRETARIES AND STUDENTS ON PERCENTAGES OF INVERSIONS WITHIN ENVELOPE A

SECRETARIES Frequency	Percentage of Inversions	STUDENTS Frequency
	4-6 Problems	
12	.00 - .24	37
14	.25 - .49	15
14	.50 - .74	26
3	.75-1.00	3
	1-3 Problems	
5	.00 - .24	15
0	.25 - .49	1
0	.50 - .74	5
2	.75-1.00	6
50*		108*

*Because of the time element in THE SECRETARIAL IN-BASKET, all subjects did not complete all problems. Therefore, the N for secretaries who attempted problems in Envelope A is 50 instead of 51; and the N for students who attempted problems in Envelope A is 108 instead of 119.

TABLE 61

FREQUENCIES OF SECRETARIES AND STUDENTS ON PERCENTAGES OF INVERSIONS WITHIN ENVELOPE C

SECRETARIES Frequency	Percentage of Inversions	STUDENTS Frequency
	6-8 Problems	
6	.00 - .24	2
5	.25 - .49	12
7	.50 - .74	18
0	.75-1.00	0
	4-5 Problems	
4	.00 - .24	3
6	.25 - .49	6
7	.50 - .74	21
0	.75-1.00	0
	1-3 Problems	
4	.00 - .24	13
3	.25 - .49	9
5	.50 - .74	2
2	.75-1.00	20
49*		106*

*Because of the time element in THE SECRETARIAL IN-BASKET, all subjects did not complete all problems. Therefore, the N for secretaries who attempted problems in Envelope C is 49 instead of 51; and the N for students who attempted problems in Envelope C is 106 instead of 119.

minutes) in THE SECRETARIAL IN-BASKET, all subjects did not complete all problems. Therefore, the number of secretaries who attempted problems in Envelope A was 50 instead of 51; and the number of students who attempted problems in Envelope A was 108 instead of 119.

Table 61 illustrates the frequencies of secretaries and students on percentages of inversions within Envelope C. Envelope C contained eight problems and represented items handed to the secretary by her boss in the middle of the day. Again, the time element did not permit all subjects to complete all of the problems. Therefore, the number of secretaries who attempted problems in this envelope totaled 49 instead of 51; and the number of students who attempted problems in this envelope totaled 106 instead of 119.

The performance of a subject, not a part of these two field testing groups, may be compared with that of secretaries and students using Table 61. For example, if the subject attempted 5 problems and obtained a percentage of inversions of .29, he would compare with six students and six secretaries who had scores in the identical range. However, it should be noted that 35 students scored better (as far as number of problems within the envelope is concerned) and that 14 students out of those 35 students had a percentage of inversions equal to or better than the new subject. A similar comparison may be made with the secretaries who participated in the field testing. The subject who attempted five problems with a percentage of inversions of .29 compares with six of the secretaries who were in the same range. However, 22 secretaries scored better (as far as number of problems within the envelope is concerned); and it should be noted that 15 of those secretaries had a

percentage of inversions equal to or better than the new subject. Percentile ranks were not computed for percentages of inversions within the envelopes of THE SECRETARIAL IN-BASKET because the small sample sizes reflect instability of the results.

The measurement schema for THE SECRETARIAL IN-BASKET provided here is an attempt to relate the field testing that has been done in this study to the reality of using the same in-basket in additional research and classroom settings. It also provides the opportunity for supplementing the statistical data derived from the study with the practicality of implementation by the practitioner.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

The design, development, and validation of THE SECRETARIAL IN-BASKET necessitated the development of a comprehensive methodology in order that all elements that come into play in the design of in-basket simulation (basic theoretical approaches, research design, implementation, analysis of results) would be utilized to make the simulation a complete "package." The summation which follows provides a summary of the methods and procedures for the study, the outcomes of the study, and the general findings of the study; conclusions derived from the study; and implications for curriculum development, research, teacher education (pre-service and in-service), and training within industry.

A. Summary

The problem pursued in the study and the methods and procedures utilized in the design and development of THE SECRETARIAL IN-BASKET are summarized in this section to provide an overview of the study.

The Problem

The need exists for criterion instruments that represent situations in which the secretary is required to use the integrated tasks involved in the secretarial position to make decisions relevant to problems related to the position and to determine appropriate solutions to these problems. In evaluating the secretarial student's achievement in making

specific types of decisions in specific situations, an evaluative instrument is needed that involves the student in a job situation and requires her to make appropriate decisions.

This study was designed to accomplish four objectives:

1. To design an evaluative instrument using the in-basket format based on representative problems requiring the decision-making ability of the secretary in setting work priorities as determined by a critical incident analysis of problems submitted by randomly selected samples of experienced secretaries (CPS's and NSA secretaries).

2. To develop criterion answers for THE SECRETARIAL IN-BASKET based upon answers given by a panel of experts, such answers validated during the first field testing tryout.

3. To determine whether the instrument does, in fact, distinguish between the performance of experienced secretaries (CPS, NSA, and Michigan Bell Telephone secretaries) and the performance of potential secretaries (students enrolled in office block programs or secretarial practice/advanced shorthand classes in secondary schools in Michigan) in terms of three types of decision making contained in the in-basket:

   a. Quality of action responses to in-basket items
   b. Quantity (number) of in-basket items attempted
   c. The priority order of the in-basket items as indicated by the subjects

4. To develop a suggested measurement schema based on the results of field testing THE SECRETARIAL IN-BASKET with groups of experienced secretaries (CPS, NSA, MBT secretaries) and groups of potential secretaries (students in office block programs or secretarial practice/advanced shorthand classes).

Methods and Procedures for the Study

The study encompassed six operational phases in the design, development, and validation of THE SECRETARIAL IN-BASKET:

1. Preliminary planning
2. Review of related research and literature
3. The critical incident study
4. The development of the in-basket simulation
5. Field testing the in-basket simulation
6. Analysis of the data

Two basic assumptions were made in designing and implementing the procedures for the study:

1. Even though the groups of secretaries (CPS's, experienced secretaries in other categories) and the groups of high school students (secretarial practice and/or advanced shorthand classes and vocational office block programs) may be employed or enrolled in different institutions, their scores on the in-basket can be grouped together so that a total score for a specific group of subjects may be obtained.

2. The samples of secretaries and students will want to participate in the study, based upon the background of the study and the preparation for the experimental phases of the study.

This research in the development of in-basket simulation required the researcher to work under restricted conditions at certain stages of the study and to face the following limitations:

1. The in-basket developed in this research study represented terminal evaluation of the secretary's decision-making ability in setting work priorities, not intermediate evaluation.

2. The in-basket was designed in such a way that the participant indicated responses on a special answer sheet. Within the time limit set for the in-basket it would have been impossible to have the participant actually produce typewritten problems or perform other actions in addition to making appropriate work-priority decisions.

3. The in-basket itself was based upon a time limitation of 45 minutes. Therefore, the number of in-basket items was limited to 40 items, two in-basket items for each of 20 problem categories.

4. The samples of secretaries contacted during the critical incident study were drawn from the membership rolls of the Michigan Division of the National Secretaries Association (International) and the Institute for Certifying Secretaries. The samples of secretaries selected for field testing included: (a) Certified Professional Secretaries residing in the State of Michigan, (b) secretaries who are members of the Michigan Division of the National Secretaries Association (International) and residing in the State of Michigan, and (c) secretaries to divisional managers of the Michigan Bell Telephone Company, Detroit, Michigan.

5. High school students participating in the field testing were selected from high schools in the State of Michigan, selected on the basis of whether there were single-period secretarial practice and/or advanced shorthand classes or vocational office block programs.

6. The number of tryouts for the in-basket was limited to two, the first tryout followed by a revision stage.

Theoretical Principles for the Development of In-Basket Simulation

Basic theories relevant to the design and development of in-basket simulation require the integration of sound and innovative concepts from the real business world with meaningful and relevant methods of instruction in the classroom environment. There has been little published on the actual design of in-basket simulation; therefore, this summation of the theoretical principles used as the basis for THE SECRETARIAL IN-BASKET provides a rather comprehensive analysis of those principles that are applicable to the development of in-basket simulation:

1. Basic Approaches to Test Development: The rational hypothesis approach provides the basic approach to the development of in-basket simulation because it produces tests of typical performance in real-life situations.

2. Philosophical Theory for In-Basket Development: In-basket simulation must represent as closely as possible a situational excerpt from the real world in its attempt to bridge the gap between the business world and the conventional classroom.

3. Psychological Theory for In-Basket Development: The stimulus-response-feedback theory and the identical elements theory are prominent in the development of in-basket simulation in order that transfer of learning occurs and motivation for learning enhanced.

4. Sociological Theory for In-Basket Development: The development of an in-basket simulation authenticating a given occupational role requires a study of the social role arising from the job classification under study with specific relevance to the human relations required in the work to be performed on the job.

5. Integrated Theory for In-Basket Development: An integrated approach to in-basket simulation appears essential in order to tie the foregoing philosophical, psychological, and sociological elements to the mechanistic theory essential for control in design.

6. Measurement of Individual Performance: Accurate measurement of what the individual has learned (specific skills and knowledges, behavioral changes in attitude, awareness of self, and motivation) is essential in evaluating and making decisions about that individual's performance on the test.

7. Standardization of Testing Procedures: Every detail of the testing situation must be identical for all subjects tested if any form of standardization is to occur.

8. Maintenance of Test Reliability: Test reliability is the consistency with which the in-basket simulation measures what it is intended to measure from one time to another.

9. Establishment of Test Validity: The validity of in-basket simulation (content, construct, concurrent, and predictive) is proportional to the degree of correspondence between performance on the in-basket and performance on the job.

The Design and Development of THE SECRETARIAL IN-BASKET

One of the questions arising in this research study asked if in-basket simulation can be used to evaluate the ability of an individual to handle specific decision-making required in a particular position, that of secretary. The design and development of THE SECRETARIAL IN-BASKET into an instrument that could, in fact, evaluate an individual's ability to handle these kinds of decisions was dependent upon the following operational phases:

Preliminary Planning. Preliminary preparation for the in-basket research involved two basic operational stages: the establishment of initial contact with the National Secretaries Association (International) and the Institute for Certifying Secretaries. A number of experts in the areas of personnel management, management training and development,

testing and evaluation, manpower planning and research, and teacher education were contacted because of their work in the development of in-basket simulations. Arrangements were made whereby samples of secretaries who were NSA members in the State of Michigan and samples of Certified Professional Secretaries who reside in the State of Michigan could be contacted for purposes of the study.

Review of Related Research and Literature. Four specific areas of study were included in the review of related research and literature pertinent to the study:

1. Design and Developmental Theories: Selected reviews of research and literature pertinent to the development of in-basket simulation; design and developmental theory from areas of education, tests and measurements, psychology, philosophy, and other areas of concentration.

2. The Historical Development of In-Basket Simulation: The use of in-basket simulation in research, management training, and secretarial education as an instructional, training, and/or testing procedure.

3. Analyses of the Secretarial Role: Research pertaining to the role of the secretary and delineation of personal traits, duties, responsibilities, behaviors, and/or tasks performed.

4. Research in Curriculum Development: Application of instructional models, implications for instructional materials and evaluative instruments in the development of secretarial training programs.

The Critical Incident Study. Flanagan's critical incident technique was modified for use in the preliminary search for the kinds of typical but significant decisions the secretary faces in setting work priorities during the routine business day. Two samples of 50 secretaries each, one representing members of the Michigan Division of the National Secretaries Association (International) and one representing Certified Professional Secretaries residing in the State of Michigan,

were contacted in order to obtain samples of the kinds of decisions made by the secretary in her job. Each critical incident was examined and classified according to the specific problem and decision factors inherent in the incident. The 181 critical incidents yielded 415 problem factors, and those 20 problem factors receiving the largest number of tallies were utilized in the development of the in-basket items. The classification of decision factors within a specific incident was based upon the Huffman et al taxonomical framework for analyzing office activities and elicited the kinds of decisions secretaries make in solving given problem situations.

The Development of THE SECRETARIAL IN-BASKET. The actual development of the in-basket simulation involved the following operations that were essential for the completion of the study:

1. The planning, writing, and sequencing of the in-basket items in the in-basket simulation.
2. Reviewing the in-basket items as a reality measure.
3. Developing the procedures to be used in administration of the in-basket to individuals and/or to groups.
4. Administering THE SECRETARIAL IN-BASKET to a panel of experts to determine the experts' responses to the items.
5. Developing the scoring procedure to be used in the evaluation of individual performance.

THE SECRETARIAL IN-BASKET was prepared in such a way that the 40 items were included either in the form of business papers or in the form of taped interruptions. The business papers were organized in a portfolio, and the audio tape of planned interruptions was included as a part of the administrative set of materials.

Field Testing THE SECRETARIAL IN-BASKET. The field testing of THE SECRETARIAL IN-BASKET included two tryouts with a revision stage following the first tryout. The ultimate goal of the field testing phase of

the research was to collect data for validation of the instrument by comparing the performance of experienced secretaries with the performance of students who are preparing to be secretaries and are enrolled in secondary education programs. In order to meet this goal, experienced secretaries (Certified Professional Secretaries, secretaries who are members of the National Secretaries Association (International), and secretaries to divisional managers of the Michigan Bell Telephone Company) and high school students (students in office block programs and students in secretarial practice and/or advanced shorthand classes) were administered the in-basket and the results analyzed.

The field testing phase of the study was conducted as a means of validation for the instrument. It was hypothesized that the in-basket would be sufficiently sensitive to be able to detect differences in the decision-making abilities of experienced secretaries (CPS's, NSA secretaries, and Michigan Bell Telephone Company secretaries) and potential secretaries (students in office block programs and students in secretarial practice and/or advanced shorthand classes). Group comparisons were not intended to serve as a vehicle for comparing types of in-school instructional techniques nor as a measure of comparing CPS's with other groups of experienced secretaries and cannot be validly used to serve this function.

Analysis of the Data. Three types of statistical analyses of the data derived from the field testing phase of the study depicted subjects' performance on THE SECRETARIAL IN-BASKET:

1. Performance on the In-Basket Simulation: A multivariate analysis of variance was used to compare the groups on total number of problems attempted in the entire in-basket, the total quality response scores, and the mean scores for

quality responses. The total problems attempted in the three separate envelopes within the in-basket and the percentage of inversions in the setting of work priorities were also evaluated by means of a multivariate analysis of variance. Scheffé post hoc comparisons were used to evaluate individual univariate differences between means.

2. Opinions on the Importance of the In-Basket Items: Each of the subjects within the five groups was asked to respond to the question of the importance of each in-basket item and to include this information on the answer sheet as decisions were made on in-basket items. No formal item analysis of the importance of the in-basket items, based upon the opinions of the subjects participating in the study, was planned for the in-basket study. However, an informal analysis of the opinions expressed by the groups as well as the testing of hypotheses concerned with the comparison of each group with the panel of experts served to further clarify the effect of the importance ratings on the setting of work priorities. A one-sample t test was used to test the differences between each of the five groups and the panel of experts.

3. Performance on Individual In-Basket Items: No statistical item analysis of the in-basket items was designed into this study. However, a simplified method was used to analyze the group means for each in-basket item on the quality responses (action responses) given to each in-basket item attempted to see if, in fact, the means for the groups appear to differ on the quality response scores.

Findings of the Study

Three general areas of concentration are represented in the findings that result from this in-basket study:

1. Findings that relate to the actual design and development of THE SECRETARIAL IN-BASKET.

2. Findings that relate to the validation of the in-basket simulation.

3. Findings that relate to the development of a measurement schema for the in-basket simulation.

Specific findings related to these three general areas follow in the next subsection.

Findings Related to Design and Development of the In-Basket. During the entire design and developmental process it was evident that one must follow certain theoretical and practical guidelines in developing an in-basket simulation such as THE SECRETARIAL IN-BASKET. The following findings emphasize those essential elements derived from this study for developing in-basket simulations for use in secretarial education:

1. The occupational role to be represented in the in-basket simulation (i.e., secretary) must be analyzed by the researcher in order to assure that the in-basket developed is representative of the occupation.

2. The in-basket simulation must contain problems which are verified by practitioners in the field (secretaries) as cases of real business practice.

3. Each in-basket item must be designed and developed initially in isolation from all other in-basket items; later, these items may be sequenced and "clustered" into the in-basket simulation.

4. A control mechanism must be a part of the in-basket design in order that the situation, the time element, and the individual's performance on the simulation may be standardized.

5. The involvement of both business educators and experienced secretaries is essential at all stages of in-basket development so that intermediate as well as terminal review of the in-basket items and, finally, the entire in-basket itself becomes an essential part of the developmental process.

6. The scoring procedures and devices developed for evaluating an individual's performance on the in-basket simulation must be objective in nature so that the scorer does not deviate from the established scoring pattern.

7. The in-basket simulation must be designed and developed in such a way that it may be administered individually or in groups, independent of a group leader's presence or a researcher's presence.

Findings Related to the Validation of the In-Basket. Although statistical tests of differences were made between the three groups of

secretaries (CPS's, NSA secretaries, and Michigan Bell Telephone secretaries) and the two groups of students (office block students and students in secretarial practice and/or advanced shorthand classes) in terms of performance on this particular in-basket, the reader should not interpret the differences indicated in the findings as meaning that one group of subjects is "better" in any way than another group or that one type of instructional program is "better" in any one than another program. These specific types of comparisons cannot be made as a part of this study for two reasons: (1) There is no way of estimating that any one group of experienced secretaries received more training in decision-making skills or had a higher mean intelligence quotient or functioned at a higher level than any other group of experienced secretaries, and (2) there is no way of estimating that one type of instructional program (in comparison with other programs) provided more training in decision making or had students of higher mean intelligence enrolled in the program or had students who were functioning at higher levels.

One of the main purposes of the study was to determine whether the in-basket did, in fact, distinguish decision-making differences between experienced secretaries and potential secretaries. The use of statistical tests of differences provided the opportunity to examine each group's performance on the in-basket in comparison with other groups in order to substantiate the discriminating power of the in-basket.

The following findings, significant at the .05 level of significance, were based on the second tryout and relate only to the validation of the instrument and are not to be seen as a measure of the type of in-school instructional technique. The experiment was conducted in

order to determine variations in secretarial behavior among groups of secretaries and students on THE SECRETARIAL IN-BASKET.

Performance on the In-Basket Simulation

1. The secretaries combined (CPS, NSA, MBT secretaries) scored significantly higher than the students (the office block program and the single-period classes) on the total response score. Each individual group of experienced secretaries (CPS, NSA, MBT secretaries) scored significantly higher than each individual group of potential secretaries (the office block program and the single-period classes) with which it was compared.

2. The secretaries combined (CPS, NSA, MBT secretaries) scored significantly higher than the students combined (the office block program and the single-period classes) on the mean response score. Each individual group of experienced secretaries (CPS, NSA, MBT secretaries) scored significantly higher than each individual group of potential secretaries (the office block program and the single-period classes) with which it was compared.

3. The only difference on the percentage of inversions found between experienced secretaries (CPS, NSA, MBT secretaries) and potential secretaries (the office block program and the single-period classes) was the following: The Michigan Bell Telephone Company secretaries scored significantly higher than the students in the single-period classes on the percentage of inversions in the in-basket envelope.

Opinions on the Importance of the In-Basket Items

1. There is a significant difference between the opinions of the experts and the opinions of the students in the office block program on the importance of the in-basket items.

2. There is a significant difference between the opinions of the experts and the opinions of the students in the single-period classes on the importance of the in-basket items.

3. The magnitude of the differences of the groups when compared with the experts is about the same. There is no significant difference in the magnitude among the five groups.

Performance on Individual In-Basket Items

1. The analysis shows that one of the three secretary groups had the highest group mean on 39 of the items.

2. The analysis shows that the students in the office block program had the highest group mean on one of the items.

Findings Related to the Development of a Measurement Schema. One question which ultimately results when a testing instrument such as THE SECRETARIAL IN-BASKET is developed and field tested relates to the use of those results in future testing situations. Both the researcher and the classroom teacher need to know how the results of this research may be used in administering THE SECRETARIAL IN-BASKET to another individual. Three basic ways of evaluating the subject's performance on the in-basket, in comparison with all other subjects who have taken the in-basket during this study, have been developed; and these findings result in a suggested measurement schema:

1. A subject's total quality responses on THE SECRETARIAL IN-BASKET may be compared with all secretaries and/or all students who have previously taken the in-basket by using the percentile ranks for total quality responses in Table 57.

2. A subject's performance as it relates to the total number of problems attempted may be compared with all secretaries and/or all students who have previously taken THE SECRETARIAL IN-BASKET by using the percentile ranks for total number of problems attempted in Table 58.

3. A subject's performance on the ordering of the in-basket items may be compared with all secretaries and/or all students who have previously taken the in-basket by using the frequencies for percentages of inversions within the three in-basket envelopes contained in Tables 59, 60, and 61.

The measurement schema is an attempt to relate the field testing that has been done in this study to the reality of using the same in-basket in additional research and classroom settings.

B. Conclusions

The three basic conclusions drawn from the analyses of the data in the foregoing experimental study emphasize the theory of decision making as it must be combined with the career ladder concept, the importance of quality of performance, and the need for levels of secretarial education.

Hierarchy of Decision Making + Career Ladder Concept = Skill Development

The 20 problem factors requiring decision making that were developed in THE SECRETARIAL IN-BASKET were contributed by experienced secretaries averaging 19.25 years of secretarial experience. The kinds of tasks in their respective positions require a high level of decision making with a range from simple to complex problems, but the majority of the tasks were of the latter variety. Those students who are potential secretaries should not be expected to display decision making abilities at the same levels as the experienced secretaries. First, a student in an office block program, a secretarial practice class, or an advanced shorthand class, for example, may not have been exposed to the complete range of decision-making activities that were included in THE IN-BASKET. However, if a student had been exposed to decision-making principles and methodology as they pertained to the specific kinds of tasks in this in-basket, she would no doubt perform at a higher level than if she had not.

Secondly, decision making is a progression skill that moves from the simple to the complex, from the concrete to the abstract, and from the immediate to the remote. That is, as an individual progresses up the career ladder of office occupations, i.e., from clerk-typist to

stenographer to secretary, the complexity of the decisions she must make on the job may be in direct proportion to the complexity of the task requirements. Therefore, in the development and evaluation of decision-making skills, it is first of all essential that educators know and understand (a) the career ladder concept as it relates to the office occupations, (b) the relationship of careers within the office occupations, (c) the job requirements--the specific skills, knowledges, and attitudes needed to perform in specific jobs. Secondly, we need to know what the hierarchy of decision making is within each step on the office occupations career ladder in order to prescribe the appropriate "dosage" of learning in the development of decision-making skills necessary for given entry and exit points on the career ladder.

$$\frac{1}{2}\,\underline{\text{Quality}} + \frac{1}{4}\,\underline{\text{Quantity}} + \frac{1}{4}\,\underline{\text{Time}} = \underline{\text{100\% Efficiency of Performance}}$$

Significant differences among the groups participating in the experimental study occurred, for the most part, on the quality (action) responses of the subjects. No significant differences occurred among the groups on the total number of problems attempted in THE IN-BASKET. A conclusion to be drawn from these data indicates that quality of action responses is very important in determining the status of the performance of an individual, but quality alone is not the only criterion. The total quality responses of an individual on THE IN-BASKET, for example, reflects not only the quality of given responses but also the quality in relation to the quantity of items produced. Therefore, quantity of responses is considered in the individual's performance.

By examining what the individual has accomplished either in his training or on the job, one can determine the quality of the action taken for each task performed. One of the causes for the students not performing as well as the secretaries on the in-basket items may be that the students lack competency in skills and understandings as well as confidence in themselves to make those kinds of judgments that secretaries averaging 19.25 years of experience might make in their jobs. Experienced secretaries are confident in their work, have experienced success on the job, possess skill competencies, and have the desire to be promotable even when they are at the top of the career ladder.

Time is another factor to be considered in relation to decision making. In teaching a student what it is like to work in an office, we often use time as a factor: timing the students for a given number of minutes to see how fast they can type, giving students dictation at a given rate for three or five minutes, administering a 30-minute production test of typing problems, and so on. THE SECRETARIAL IN-BASKET is an example of another timed test, in this case for 45 minutes, on the kinds of decisions in the setting of work priorities experienced in the secretarial position. There may be a need to develop proficiency so that students will be able to handle routine decision-making activities so well that the time taken in making a routine decision is momentary. Certain other kinds of decisions, however, may require unlimited time so that the student can analyze what would be done in a real situation. A student in the process of learning requires time to determine the steps and procedures that may be necessary or to

decide if she should go to the files and look something up or to finish typing the letter she is working on before she delivers a message to her "boss."

Three factors come into focus when efficiency of performance is the ultimate goal: quality, quantity, and time. The conclusion derived from the study is that quality is the most important of the three and deserves additional attention in the determination of performance; however, quantity and time should not be overlooked in their contribution to the overall efficiency of performance needed to accomplish office tasks. Therefore, the basic conclusion is that quality of performance coupled with quantity of items produced plus time as it is applicable to a specific task will lead to greater efficiency of performance on the job.

Setting Work Priorities =

In-School Education + Training Within Industry

The secretaries participating in this study were from three populations: (1) Certified Professional Secretaries, (2) secretaries who are members of the National Secretaries Association (International), and (3) secretaries to divisional managers of the Michigan Bell Telephone Company. The Michigan Bell secretaries were the only group of secretaries to perform significantly higher than the students in the single-period classes on the percentage of inversions in the in-basket envelope (one of three envelopes in THE SECRETARIAL IN-BASKET). There were no significant differences among the other groups of secretaries and the students in the office block program.

In in-school education (secondary and post-secondary) students are to develop a general range of skills, understandings, and attitudes needed to perform within a career range on the ladder. It could be concluded that potential secretaries (students) need training and practice in how to set work priorities as they might relate to specific secretarial responsibilities. The setting of work priorities requires decision-making skill that is practiced in a systematic way in order to develop simple as well as complex decision-making skill.

Decision-making training conducted after the individual obtains a secretarial position within an organization provides her with the specific requirements of her occupation as it relates to the entire company and the given work priorities within that organization. For example, the Michigan Bell Telephone Company has an extensive training program for their secretaries and encourages them to participate in these training programs on company time at specific intervals in their careers. Their training program shows people how to work in a specific company. Michigan Bell has identified what the work priorities are for secretaries to divisional managers, the group of secretaries who participated in THE SECRETARIAL IN-BASKET field testing. Training for Michigan Bell means that they are identifying for their secretaries what those work priorities are and how they are related to the entire operation of the organization. The amount of company training provided to the CPS's and the NSA secretaries participating in the other two secretarial groups is unknown.

C. Implications for the Study

Implications resulting from this in-basket research are evident in the areas of curriculum development (secondary and post-secondary), research, teacher education (pre-service and in-service), and training within industry. One research study like this one is a beginning, not an ending; and, hopefully, others will glean ideas from it and be able to add to the information that has already been obtained.

Curriculum Development

Instructional programs now being developed on the secondary and post-secondary levels will require a learning environment which teaches students how to make decisions and then provides opportunities to practice making decisions--decisions about their personal lives, decisions about their careers, decisions about given tasks to be performed, decisions which affect their futures. Teachers have an obligation to provide the kind of learning environment that will assist students in making appropriate vocational and personal choices, and thus both the teacher and the student should have a thorough understanding of the decision-making process.

In order to develop vocational curricula which are relevant and meaningful to the students, teachers need to understand the requirements of given occupations either by means of task analyses, job surveys, and other types of occupational studies. Curriculum developers need to be aware of the ways in which information obtained from business can be utilized in updating and revamping the current occupational curricula. Instructional materials, whether they are for the secretarial program or one of the other vocational programs, will need to be realistic to

the students. The tasks in the materials need to be representative of the kinds of tasks that are actually required on the job. One of the most important implications arising from this study is the importance of evaluating performance in the classroom according to on-the-job business standards. If a student is performing an office task in the classroom and receives a grade of C, what does that represent? That same student as a secretary in the business office will type a business letter that will either be mailed out or not mailed out, depending upon whether it was acceptable or unacceptable to the employer. Also, evaluation of student performance in decision making in a laboratory situation must be related to the performance standard that is evident in the real job situation.

If there is a progression of decision-making skills required at various entry and exit points on the office occupations career ladder, it is essential that vocational programs include this progression of decision-making skills (with appropriate instructional materials) in the curriculum. These skills must range from simple to complex, from concrete to abstract, and from immediate to remote. Students must be given an opportunity to practice making the kinds of decisions they will make later on the job. Too often teachers have not incorporated the simplest decisions in the development of instructional materials; too often they "jump in" at the more complex levels. Time should also be built into the instructional materials for the learning of decision-making skills. The student must be given time to analyze given problems and situations to determine how best to handle them and what steps and procedures might be necessary. Real or simulated experiences in

the classroom or laboratory will provide students with the skills, understandings, and attitudes needed on the job.

Research

A number of possible research studies could stem from the basis of this study:

1. A replication of this study with larger samples in order to make the measurement more reliable; a replication with additional samples (students in area center programs, secretaries in training programs within industry).

2. A study to determine the correlation between the progression an individual makes on a given career ladder and his equivalent progression on a learning hierarchy, especially as it relates to decision-making skill.

3. A study of the levels of years of experience of secretaries to determine the kinds of decisions which are, in fact, required at various points on the secretarial career ladder.

4. Formal item analysis of items contained in in-basket simulations or other situational tests to see what levels of decision-making might be required.

5. A study of the theory of decision making as it relates to the means by which experienced secretaries (at different rungs of the career ladder) do actually make decisions.

6. Analysis of items contained in in-basket simulations and other situational tests to develop evaluations for these items based upon the tasks to be performed and the decision making required.

7. A study of the opinions of secretaries as to the importance of tasks inherent in their positions in comparison with students in secretarial programs and their opinions on the same tasks.

Teacher Education

In order to adequately prepare students for the world of work, a teacher must be acquainted with the career ladder concept and its relationship to the vocational curriculum. An understanding of the

learning hierarchy is essential in developing appropriate instructional materials for the teaching of decision-making skills to students, and this basic understanding can best be obtained through a teacher education program that is geared to the development of these types of basic competencies. Teachers not only need to know how to develop instructional materials, but they also need to know how to implement these materials in the classroom situation. Teachers also need assistance in knowing how to evaluate the effectiveness of instructional materials in the classroom or laboratory. In addition, teachers need to be aware of the close ties with business and industry that are essential in developing vocational programs to effectively meet business needs for future employees.

These "needs" of the vocational teacher can be answered best through teacher education, both pre-service and in-service programs. The times change very rapidly, and the teacher education program can help the local teacher change and adapt his secondary or post-secondary program to meet the needs of the times.

Training within Industry

A secretarial program cannot do all things for all people. Therefore, a secretarial program, whether it is on the secondary or post-secondary level, is not a substitute for nor in lieu of industrial training. The secretarial program may speed a student on her way to the development of skill and knowledge competencies required for a given career on the ladder and provide her with a basic, general understanding of the nature of secretarial work. If, at the end of her program, she enters employment with a particular company, it will

be necessary for her to be trained in the rules and regulations for the company, the work priorities that exist for her specific position, and any other specific information on the entire operation of the business vital to her smooth functioning. Therefore, there is a need for a coordinated effort between education and business to provide a complete secretarial education for the secretary.

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Greenlaw, Paul S., Professor of Management, The Pennsylvania State University; letter dated November 21, 1969.

Huck, James H., Personnel Assessment Center, Michigan Bell Telephone Company, Detroit, Michigan; interview on September 29, 1971.

Meyer, Herbert H., Manager, Personnel Research, General Electric Company; letter dated December 2, 1969.

Popham, Estelle L., Chairman, Department of Business Education, Hunter College of the City University of New York; letter dated December 18, 1969.

Scott, Hugh M., M. D., Royal Victoria Hospital, Montreal 112, P. Q.; letter dated March 3, 1970.

Wisner, Roscoe W., Supervisor, Personnel Testing, The Port of New York Authority; letter dated December--, 1969.

Zoll, Allen A., III, Management Education Advisor, The Boeing Company; letter dated November 24, 1969.

APPENDICES

A. DEVELOPERS OF IN-BASKET SIMULATION FOR SELECTION, TRAINING, AND EVALUATION

B. CLASSIFICATION OF SECRETARIAL PROBLEMS:

Table 1: Classification of Secretarial Problems (by Day of Week)

Table 2: Classification of Secretarial Problems (Frequency)

Table 3: Classification of Secretarial Problems (by Years of Experience)

Table 4: Classification of Secretarial Problems (by Time of Day)

APPENDIX A

DEVELOPERS OF IN-BASKET SIMULATION FOR SELECTION, TRAINING, AND EVALUATION

The following individuals were contacted during the preliminary planning of the study because of their experience in developing in-baskets for selection, training, and evaluation:

1. V. Jon Bentz
   Director of Psychological Research and Services
   Sears, Roebuck and Company, Chicago, Illinois 60607

2. C. P. Breen
   Training Services Manager, Montgomery Ward
   619 West Chicago Avenue, Chicago, Illinois 60607

3. Norman Frederiksen
   Director, Educational Testing Service
   Princeton, New Jersey 08540

4. Paul S. Greenlaw
   Professor of Management, The Pennsylvania State University, University Park, Pennsylvania 16802

5. Herbert H. Meyer
   Manager, Personnel Research, General Electric Company
   570 Lexington Avenue, New York, New York 10022

6. Estelle L. Popham
   Chairman, Department of Business Education
   Hunter College of the City University of New York
   695 Park Avenue, New York, New York 10021

7. Hugh M. Scott, M. D.
   Royal Victoria Hospital
   687 Pine Avenue West, Montreal 112, P. Q.

8. Roscoe W. Wisner
   Supervisor, Personnel Testing, The Port of New York Authority, 111 8th Avenue, New York, New York 10011

9. Allen A. Zoll, III
   Management Education Advisor
   The Boeing Company, Seattle, Washington 98124

APPENDIX B

TABLE 1

CLASSIFICATION OF SECRETARIAL PROBLEMS
(by Day of Week)

Problem Categories	Number of Problems	M	T	W	Th	F
I. INCOMING COMMUNICATION						
A. INCOMING COMMUNICATION--VERBAL	48	7	5	11	12	13
1. With Employer	10	1	0	2	4	3
2. With Others in Firm	6	1	0	1	2	2
3. With People Outside Firm	4	1	0	1	1	1
4. Telephoning	28	4	5	7	5	7
B. INCOMING COMMUNICATION--RECORDED	30	0	4	5	10	11
1. Mail	22	0	3	1	8	10
2. Telegram-Teletype	4	0	0	1	2	1
3. Messages	1	0	0	1	0	0
4. Dictation	3	0	1	2	0	0
C. MISCELLANEOUS INCOMING COMMUNICATION	7	0	0	3	2	2
TOTAL INCOMING COMMUNICATION	85	7	9	19	24	26

TABLE 1 (Continued)

Problem Categories	Number of Problems	M	T	W	Th	F
II. PROCESSING RESPONSIBILITIES						
A. PREPARING BUSINESS DOCUMENTS AND PAPERS	85	13	20	14	15	23
1. Composing	6	0	3	1	1	1
2. Copying and Duplicating	11	2	1	2	3	3
3. Editing and Revising	6	1	0	2	1	2
4. Taking Dictation	2	0	0	0	0	2
5. Transcribing	12	2	5	1	1	3
6. Typewriting	32	4	6	5	6	11
7. Miscellaneous Problems	16	4	5	3	3	1
B. MAINTAINING AND CONTROLLING RECORDS	13	0	3	1	3	6
1. Filing and Storage of Business Papers	6	0	2	0	1	3
2. Maintaining Records of Financial Data	7	0	1	1	2	3
C. SECURING INFORMATION AND DATA	33	2	5	12	5	9
D. HANDLING BUSINESS ARRANGEMENTS	22	1	8	3	4	6
1. Scheduling Business Appointments	12	1	2	3	2	4
2. Arranging Conferences and Meetings	10	0	6	0	2	2
E. SUPERVISING OFFICE OPERATIONS	48	5	4	16	10	13
1. Directing Paper Flow	27	3	3	9	3	9
2. Assigning Personnel to Tasks	10	1	1	2	3	3
3. Controlling Information Flow	11	1	0	5	4	1

TABLE 1 (Continued)

Problem Categories	Number of Problems		M	T	W	Th	F
II. PROCESSING RESPONSIBILITIES (Continued)							
F. SUPERVISING ADMINISTRATIVE PROBLEMS		14	1	4	2	4	3
1. Analyzing Administrative Problems	8		1	2	1	2	2
2. Offering Recommendations or Suggestions	3		0	1	0	2	0
3. Approving Problem Solution	1		0	0	1	0	0
4. Referring Problem to Other Personnel	2		0	1	0	0	1
TOTAL PROCESSING RESPONSIBILITIES		215	22	44	48	41	60

TABLE 1 (Continued)

Problem Categories	Number of Problems	M	T	W	Th	F
III. OUTGOING COMMUNICATION						
A. OUTGOING COMMUNICATION--VERBAL	68	7	11	17	8	25
1. With Employer	15	0	1	7	3	4
2. With Others in Firm	2	0	1	1	0	0
3. With Others Outside Firm	1	0	1	0	0	0
4. Telephoning	50	7	8	9	5	21
B. OUTGOING COMMUNICATION--RECORDED	39	3	6	9	9	12
1. Mail	15	3	2	2	3	5
2. Telegram-Teletype	7	0	0	1	3	3
3. Messages	4	0	1	1	1	1
4. Personal Delivery	13	0	3	5	2	3
C. MISCELLANEOUS OUTGOING COMMUNICATION	8	1	1	1	2	3
TOTAL OUTGOING COMMUNICATION	115	11	18	27	19	40

APPENDIX B

TABLE 2

CLASSIFICATION OF SECRETARIAL PROBLEMS
(Frequency)

Problem Categories	Number of Problems	Daily	Weekly	Monthly	Occ'ly
I. INCOMING COMMUNICATION					
A. INCOMING COMMUNICATION--VERBAL	48	12	9	5	22
1. With Employer	10	3	2	2	3
2. With Others in Firm	6	0	1	1	4
3. With People Outside Firm	4	1	2	0	1
4. Telephoning	28	8	4	2	14
B. INCOMING COMMUNICATION--RECORDED	30	10	5	5	10
1. Mail	22	7	4	3	8
2. Telegram-Teletype	4	0	1	2	1
3. Messages	1	0	0	0	1
4. Dictation	3	3	0	0	0
C. MISCELLANEOUS INCOMING COMMUNICATION	7	1	2	0	4
TOTAL INCOMING COMMUNICATION	85	23	16	10	36

APPENDIX B

TABLE 2 (Continued)

Problem Categories	Number of Problems	Daily	Weekly	Monthly	Occ'ly
II. PROCESSING RESPONSIBILITIES					
A. PREPARING BUSINESS DOCUMENTS AND PAPERS	85	29	14	13	29
1. Composing	6	1	0	2	3
2. Copying and Duplicating	11	2	3	2	4
3. Editing and Revising	6	2	1	1	2
4. Taking Dictation	2	1	0	1	0
5. Transcribing	12	8	4	0	0
6. Typewriting	32	8	6	7	11
7. Miscellaneous Problems	16	7	0	0	9
B. MAINTAINING AND CONTROLLING RECORDS	13	6	2	1	4
1. Filing and Storage of Business Papers	6	3	2	0	1
2. Maintaining Records of Financial Data	7	3	0	1	3
C. SECURING INFORMATION AND DATA	33	5	7	4	17
D. HANDLING BUSINESS ARRANGEMENTS	22	3	7	4	8
1. Scheduling Business Appointments	12	2	5	3	2
2. Arranging Conferences and Meetings	10	1	2	1	6
E. SUPERVISING OFFICE OPERATIONS	48	11	2	10	25
1. Directing Paper Flow	27	8	1	6	12
2. Assigning Personnel to Tasks	10	1	1	3	5
3. Controlling Information Flow	11	2	0	1	8

TABLE 2 (Continued)

Problem Categories	Number of Problems	Daily	Weekly	Monthly	Occ'ly
II. PROCESSING RESPONSIBILITIES					
F. SUPERVISING ADMINISTRATIVE PROBLEMS	14	0	1	2	11
1. Analyzing Administrative Problems	8	0	1	1	6
2. Offering Recommendations or Suggestions	3	0	0	1	2
3. Approving Problem Solution	1	0	0	0	1
4. Referring Problem to Other Personnel	2	0	0	0	2
TOTAL PROCESSING RESPONSIBILITIES	215	54	33	34	94

TABLE 2 (Continued)

Problem Categories	Number of Problems	Daily	Weekly	Monthly	Occ'ly
III. OUTGOING COMMUNICATION					
A. OUTGOING COMMUNICATION--VERBAL	68	14	12	6	36
1. With Employer	15	5	2	3	5
2. With Others in Firm	2	0	1	0	1
3. With Others Outside Firm	1	0	0	0	1
4. Telephoning	50	9	9	3	29
B. OUTGOING COMMUNICATION--RECORDED	39	5	5	9	20
1. Mail	15	0	3	4	8
2. Telegram-Teletype	7	0	1	2	4
3. Messages	4	0	0	1	3
4. Personal Delivery	13	5	1	2	5
C. MISCELLANEOUS OUTGOING COMMUNICATION	8	2	3	1	2
TOTAL OUTGOING COMMUNICATION	115	21	20	16	58

APPENDIX B

TABLE 3

CLASSIFICATION OF SECRETARIAL PROBLEMS
(by Years of Experience)

Problem Categories	Number of Problems	Years of Experience													
		5	6	10	11	15	17	19	20	23	24	25	30	37
I. INCOMING COMMUNICATION														
A. INCOMING COMMUNICATION--VERBAL	48													
1. With Employer	10	2		1		3	2		1				1	
2. With Others in Firm	6			3		2			1					
3. With People Outside Firm	4		1	2		1								
4. Telephoning	28	1	2	6	2	2	3	4	2			1	2	3
B. INCOMING COMMUNICATION--RECORDED	30													
1. Mail	22	1		2		3	5	2	5		2	1		1
2. Telegram-Teletype	4			1	1	1								1
3. Messages	1				1									
4. Dictation	3	2						1						
C. MISCELLANEOUS INCOMING COMMUNICATION	7			1					4				1	1
TOTAL INCOMING COMMUNICATION	85	6	3	16	4	12	10	7	13	0	2	2	4	6

APPENDIX B

TABLE 3 (Continued)

Problem Categories	Number of Problems	Years of Experience 5	6	10	11	15	17	19	20	23	24	25	30	37
II. PROCESSING RESPONSIBILITIES														
A. PREPARING BUSINESS DOCUMENTS AND PAPERS	85													
1. Composing	6			1					2		1		2	
2. Copying and Duplicating	11		1	1	1		1	1	4			1	1	
3. Editing and Revising	6	1		2					1			1	1	
4. Taking Dictation	2			1								1		
5. Transcribing	12			1			2	4		2	1	1	1	
6. Typewriting	32	1	1	6		1	4	5	5	1	3	3	2	
*7. Miscellaneous Problems	16													
B. MAINTAINING AND CONTROLLING RECORDS	13													
1. Filing and Storage of Business Papers	6						1		1		1	1	1	1
2. Maintaining Records of Financial Data	7					1	1	1			2	1		1
C. SECURING INFORMATION AND DATA	33	4		8	2	2	1	2	7		1	1	2	3
D. HANDLING BUSINESS ARRANGEMENTS	22													
1. Scheduling Business Appointments	12	3		3		1	2		1		1		1	
2. Arranging Conferences and Meetings	10			2			1		1		1		2	3

TABLE 3 (Continued)

Problem Categories	Number of Problems	Years of Experience												
		5	6	10	11	15	17	19	20	23	24	25	30	37
II. PROCESSING RESPONSIBILITIES														
E. SUPERVISING OFFICE OPERATIONS	48													
1. Directing Paper Flow	27	4	3		1	2	3		7		1	3	2	1
*2. Assigning Personnel to Tasks	10	1		1		1	2		1			1		1
3. Controlling Information Flow	11	2	2		1				1		2			3
F. SUPERVISING ADMINISTRATIVE PROBLEMS	14													
1. Analyzing Administrative Problems	8		1			1	1		1				1	3
2. Offering Recommendations or Suggestions	3					1			1					1
3. Approving Problem Solution	1		1											
4. Referring Problem to Other Personnel	2			1										1
TOTAL PROCESSING RESPONSIBILITIES	215	16	9	27	5	10	19	13	33	3	14	14	16	18

* 18 Problems are excluded from this analysis; no years of experience were given by the secretary contributing the critical incident.

TABLE 3 (Continued)

Problem Categories	Number of Problems	Years of Experience 5	6	10	11	15	17	19	20	23	24	25	30	37
III. OUTGOING COMMUNICATION														
A. OUTGOING COMMUNICATION--VERBAL	68													
1. With Employer	15	5		2		1		1	3			1		2
2. With Others in Firm	2	1												1
3. With Others Outside Firm	1													1
4. Telephoning	50	4	1	8	2		8	5	10		5	2	2	3
B. OUTGOING COMMUNICATION--RECORDED	39													
1. Mail	15			1	1	3	1		7			1	1	
2. Telegram-Teletype	7				1	2	2					1		1
3. Messages	4			1					2					1
4. Personal Delivery	13	4			1		1	3	2		1	1		
C. MISCELLANEOUS OUTGOING COMMUNICATION	8	—	—	1	—	—	—	—	2	1	—	1	2	1
TOTAL OUTGOING COMMUNICATION	115	14	1	13	5	6	12	9	26	1	6	7	5	10

APPENDIX B

TABLE 4

CLASSIFICATION OF SECRETARIAL PROBLEMS
(by Time of Day)

Problem Categories	Number of Problems	Time of Day 8	9	10	11	12	1	2	3	4	5
I. INCOMING COMMUNICATION											
A. INCOMING COMMUNICATION--VERBAL	48										
1. With Employer	10	1	1	4	4						
2. With Others in Firm	6	1		1	3		1				
3. With People Outside Firm	4	1	2				1				
4. Telephoning	28	3	7	4	3	3	4	1	2	1	
B. INCOMING COMMUNICATION--RECORDED	30										
1. Mail	22	4	5	4	3		2	1	2	1	
2. Telegram-Teletype	4	2		2							
3. Messages	1		1								
4. Dictation	3	1							1	1	
C. MISCELLANEOUS INCOMING COMMUNICATION	7	—	2	—	2	—	—	1	1	1	—
TOTAL INCOMING COMMUNICATION	85	13	18	15	15	3	8	3	6	4	0

TABLE 4 (Continued)

Problem Categories	Number of Problems	Time of Day 8	9	10	11	12	1	2	3	4	5
II. PROCESSING RESPONSIBILITIES											
A. PREPARING BUSINESS DOCUMENTS AND PAPERS	85										
1. Composing	6		2	1				2		1	
2. Copying and Duplicating	11	4	2	2	1				1	1	
3. Editing and Revising	6	2		2	1		1				
4. Taking Dictation	2						1	1			
5. Transcribing	12	4	1	2	1		4				
6. Typewriting	32	7	6	7	6		3	1	1	1	
*7. Miscellaneous Problems	16										
B. MAINTAINING AND CONTROLLING RECORDS	13										
1. Filing and Storage of Business Papers	6	2	1		1			1		1	
2. Maintaining Records of Financial Data	7	2	1				1		2	1	
C. SECURING INFORMATION AND DATA	33	5	6	6	6		2	4	2	2	
D. HANDLING BUSINESS ARRANGEMENTS	22										
1. Scheduling Business Appointments	12		4	1	3		1	1	1	1	
2. Arranging Conferences and Meetings	10	4	2	1	2				1		
E. SUPERVISING OFFICE OPERATIONS	48										
1. Directing Paper Flow	27	6	7	2	2		2	1	3	4	
*2. Assigning Personnel to Tasks	10	2	2	4			1				
3. Controlling Information Flow	11	2	4	1	2		2				

TABLE 4 (Continued)

Problem Categories	Number of Problems	Time of Day 8	9	10	11	12	1	2	3	4	5
II. PROCESSING RESPONSIBILITIES											
F. SUPERVISING ADMINISTRATIVE PROBLEMS	14										
1. Analyzing Administrative Problems	8	2	1		2			1		2	
2. Offering Recommendations or Suggestions	3	2			1						
3. Approving Problem Solution	1		1								
4. Referring Problem to Other Personnel	2	1								1	
TOTAL PROCESSING RESPONSIBILITIES	215	45	40	29	28	0	18	12	11	15	0

* 17 Problems are excluded from this analysis; no time of day was given by the secretary who contributed the critical incident.

TABLE 4 (Continued)

Problem Categories	Number of Problems	Time of Day 8	9	10	11	12	1	2	3	4	5
III. OUTGOING COMMUNICATION											
A. OUTGOING COMMUNICATION--VERBAL	68										
1. With Employer	15	3	3	2	2			2	1	2	
2. With Others in Firm	2	1	1								
3. With Others Outside Firm	1	1									
4. Telephoning	50	5	14	7	5	3	4	2	6	4	
B. OUTGOING COMMUNICATION--RECORDED	39										
1. Mail	15	1	2	2	1			2	3	4	
2. Telegram-Teletype	7	2	1	1					2	1	
3. Messages	4	1	1				1		1		
4. Personal Delivery	13	1	3	2	3		2		1	1	
C. MISCELLANEOUS OUTGOING COMMUNICATION	8	1	—	2	2	—	—	2	—	1	—
TOTAL OUTGOING COMMUNICATION	115	16	25	16	13	3	7	8	14	13	0