NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.
President and Fellows of Harvard University entered into Contract N5ori-07669 with the Office of Naval Research, Department of the Navy as of January 1, 1955. The original agreement supported continuation of Tiedeman's interests in applying multivariate statistical methods to the study of career development. Two specific tasks were completed in satisfaction of this original agreement. One task was to investigate the consistency with which school counselors used scores of differential aptitudes in allocating pupils to high school curricula. The other task was to assay the influence of students' migrations among college majors on the basis of multivariate distributions of their scores at entry into college. This latter study was replicated in order to test for consistency in results.

Continuation and Termination

Contract N5ori-07669 was replaced on December 1, 1956, by Contract Nonr-1866(31) and was further renewed from time to time until December 31, 1962, when technical developments were terminated as agreed.

Tasks Undertaken

The following tasks were undertaken in fulfillment of the agreements:

Task 1 A logical analysis of the problem of educational and occupational ability patterns.

Task 2 Test of hypothesis that antecedent multivariate test-score distributions become more homogeneous as people migrate from educational or occupational groups.

Task 3 Test of hypothesis that educational and occupational ability patterns are consistently expected by persons responsible for guiding the educational and occupational differentiation of people.

Task 4 Logical analyses of the problem of predicting educational and occupational choices.
Task 5  Study of the relationship between identity and level of occupational aspiration.

Task 6  Study of the time when each of several conceptions of vocational relevance begin to enter into adolescents' evaluations of themselves.

Task 7  Study of development in the fidelity of an adolescent's awareness of attributes of vocational relevance.

Task 8  Relating self conceptions and role perceptions to continuation in nursing school

Task 9  Relating conceptions of self inferred from an autobiography to the field of concentration in college.

Task 10 Family atmosphere during childhood in relation to career.

Task 11 Study of the marriage-career interaction among women between the ages of 13-25.

Task 12 Relating parental expectancies and task involvement to continuation in a sequence of physics courses in college.

Task 13 Vocational development and the election of a secondary school curriculum.

Task 14 Consistency of self conceptions in relation to achievement in high school.

Task 15 Ascertaining the relative importance of information and support on students' aspirations for higher education.

Task 16 A logical analysis of self-concept and its relation to career development.

Task 17 Relating achievement independent of scholastic aptitude to self conceptions reported by high school boys.

Task 18 Relating the quality of projection to ink blots to that of projection to vocational choice.
Technical Reports

The following Technical Reports have been delivered and are still supplied upon request unless they are now in the general literature:

1. Tiedeman, David V. and O'Hara, Robert P. "Preparedness and Occupational Choice." A modified version of this report which was entitled "Preparedness and the Freedom to Choose One's Occupation" was published in: Gruber, Frederick C. (Editor) *The Good Education of Youth*. Philadelphia: University of Pennsylvania Press, 1957. pp. 229-248. (This report is related to Tasks 1 and 4).

2. Tatsuoka, Maurice H. *Joint Probability of Membership and success in a Group: An Index which Combines the Information from Discriminant and Regression Analyses as Applied to the Guidance Problem*. Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, 1957. (Mimeo) (This report was completed as a part of Task 4 but is also relevant to Task 1)


4. Tiedeman, David V.; and Pandit, Jiwan Lal. *On Identity and Level of Occupational Aspiration*. Cambridge, Mass.: The senior author, 13 Kirkland Street, 1958. (Mimeo) (This is a report of Task 5)

5. Tiedeman, David V.; O'Hara, Robert P.; and Matthews, Esther. *Position Choices and Careers: Elements of a Theory*. Cambridge, Mass.: The senior author, 17 Sumner Road, 1958. (Mimeo) (This report is related to Task 7)


7. Kugris, Violet; and Tiedeman, David V. "You Ought to Study...": Method and Results in Relation to the Election of a Curriculum in Secondary School. Cambridge, Mass.: The junior author, 17 Sumner Road, 1959. (Mimeo). Under revision. (This is a report of Task 3.)
8. Kibrick, Anne K.; and Tiedeman, David V. "Conceptions of Self and Perception of Role in Schools of Nursing", Journal of Counseling Psychology, 8, 62-69 (1961) (This is a report of Task 8.)


10. O'Hara, Robert P. Talk about Self: The Results of a Pilot Series of Interviews in Relation to Ginzberg's Theory of Occupational Choice. Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, 1959. (Mimeo) (This is a report of Task 6)


12. Tiedeman, David V.; and O'Hara, Robert P. The Harvard Studies in Career Development: In Retrospect and Prospect, Cambridge, Mass.: The senior author, 17 Sumner Road, 1960. (Mimeo) (This report is related to Task 4.)


14. O'Hara, Robert P. "Awareness of Interests of Boys in Grades Seven and Eight", Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, Sept. 1961. (Typewritten) (This is a report of additional work completed under Task 7.)

15. Matthews, Esther; and Tiedeman, David V. The Imprinting of Attitudes towards Career and Marriage upon the Life Styles of Young Women. Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, Sept. 1961. (Typewritten) (This is a report of Task 11.)

17. Congdon, Robert G. *Similarity to Parents, Reality Orientation, and Interpersonal Behavior as Factors in Vocational Maldevelopment.* Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, Oct. 1961. (Typewritten) (This is a report of Task 12.)


19. O'Hara, Robert P. *Vocational Self Concepts and High School Achievement.* Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, February 1962. (Mimeo) (This is a report of Task 17.)

20. Tiedeman, David V.; and O'Hara, Robert P. *Differentiation and Integration in Career Development.* Cambridge, Mass.: The senior author, 17 Sumner Road, Feb. 1962. (This is a continuation of work on Task 4.)


22.*Field, Frank L. *Self as Process: A Revision of Vocational Theory Directed Toward the Study of Individual Development in the Vocational Situation.* Cambridge, Mass.: D.V. Tiedeman, 17 Sumner Road, May 1962 (Mimeo) (This report is related to Task 16.)

* Unfortunately, two reports were numbered as 22.
Developments in theory

I have repeatedly reported consolidations of the findings emerging both from the studies supported by this and other grants of mine and from relevant studies of other investigators at Harvard and elsewhere. These efforts are on file with ONR in Technical Reports on Tasks 1-17 (except for Task 14) as identified above.

Data on Task 14 were analyzed but not reported. Computations will be made available upon demand of interested professionals. A report is being drafted by Robert O'Hara.

Task 18 is still being developed. The results will probably be available at a later time at least in a dissertation on file in Widener Library.

My efforts at consolidation have sought clarification of a linguistic frame within which a more comprehensive theory of career development can be formulated. Since my entry into the study of career development was through method, my linguistic frame for career development has been clarified most by realizing that method must be the servant of idea rather than the reverse. My present theory of career development simply incorporates this realization into the model out of which a career is fashioned.

My work on career development as this realization about agency was being understood can be characterized in terms of three modes of thought:

1) statistical method;
2) application of method; and
3) harmonization of method and use through clarification of a psycho-social theory of career development with the formation of an identity as the central issue (Tiedeman and O'Hara, TR 12, 1960). The work at Harvard is referred to these three categories in Attachment A. The work specifically supported by Contracts N5ori-07669 and Nonr-1866(31) is denoted by an asterisk (*).

Field, Kehas, and I (T.R. 21, 1961) are presently trying to provide empiric support for later ideas we have concerning needed revisions in the
forming psycho-social theory of career development. Kehas is investigating the denotation of self-concept. Field is investigating the appearance of mechanisms likely to trigger action as resident in both projective and vocational data.

Disclosure

Technical reports have been delivered as tasks were completed. All tasks are now complete except for Tasks 14 and 18 as noted above. Technical Reports have been modified and published in the general literature as rapidly as possible. The final work of Field and Kehas which was initiated with support under terms of this Contract will probably soon be available in Widener Library. I shall assume responsibility for seeing that wider disclosure is considered by Kehas and Field. I do not anticipate difficulty because both have entered university careers.

Subsidization of Students

During the course of this agreement, funds from this Contract enabled the completion of doctoral work as follows:

<table>
<thead>
<tr>
<th>Student awarded</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
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<td></td>
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<td>0</td>
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<td>1962</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
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</table>
A Classification of Work in Career Development Completed at the Harvard Graduate School of Education Since 1950 is Reported in the Following Categories:

I. Method - multivariate analysis, particularly multiple discriminant analysis.
II. Application of method
   A. Secondary school curriculum choice
   B. College major choice
   C. Prediction of occupation
   D. Summary of method and application
III. Clarification of theory in career development
   A. Self concept, identity, and career
   B. A psycho-social theory of career
      1. Education
      2. Family
      3. Reciprocity
   C. Continuity of choice
   D. Models

Each work in the classification is cited fully when first noted. If a work is also relevant to a later category, it is merely noted in the later category by author if possible and also by date when necessary. Citations are arranged alphabetically within a category. Studies supported by funds from Contracts N5ori-07669 and Nonr-1866(31) are preceded by an asterisk(*).

I. METHOD - MULTIVARIATE ANALYSIS, PARTICULARLY MULTIPLE DISCRIMINANT ANALYSIS


Dunn, Frances E. "Two Methods of Predicting the Selection of a College Major", Journal of Counseling Psychology, 1959, 6, 16-26.


Tatsuoka, Maurice N. *Joint-Probability of Membership and Success in a Group: An Index which Combines the Information from Discriminant and Regression Analyses as Applied to the Guidance Problem.* Cambridge, Mass.: D.V. Tiedeman, 17 Summer Road, 1957 (mimeo).

Tiedeman, David V. "On the Study of Types" *Symposium on Pattern Analyses.* Air University, USAF School of Aviation Medicine, Randolph Field, Texas, May, 1955.


II. APPLICATION OF METHOD

A. Secondary School Curriculum Choice

* Cass, and Tiedeman, op. cit.

* Kugris, Violet; and Tiedeman, David V. "You Ought to Study...": Method and Results in Relation to the Election of a Curriculum in Secondary School. Cambridge, Mass.: The junior author, 17 Summer Road, 1959 (mimeo)
B. College Major Choice


Dunn, *op. cit.*

French, *op. cit.*

King, *op. cit.*

* Tatsuoka, *op. cit.*

Tiedeman and 3ryan, *op. cit.*


* Cole, Joseph W.; Wilson, Kenneth M.; and Tiedeman, David V.: *Dispersion Analysis and the Search for Educational Goals in College: A Study in Duplicate*. Cambridge, Mass.: The junior author, 17 Sumner Road, 1962 (Mimeo). (Being revised for
C. Prediction of Occupation

French, op. cit.


Tiedeman, Rulon, and Bryan, op. cit.

D. Summary of Method and Application


III. CLASSIFICATION OF THEORY IN CAREER DEVELOPMENT

A. Self Concept, Identity and Career

* Cass, op. cit.

Dunn, op. cit.

* Field, Frank L. *Self as Process: A Revision of Vocational*
Theory Directed Toward the Study of Individual Development in the Vocational Situation. Cambridge, Mass.: D.V. Tiedeman, 17 Summer Road, 1962 (Mimeo)


Kugris and Tiedeman, op. cit.


Matthews, Esther; and Tiedeman, David V.: The Imprinting of Attitudes towards Career and Marriage upon the Life Styles of Young Women. Cambridge, Mass.: The junior author, 17 Summer Rd., 1962 (Mimeo) (Submitted for publication in Journal of Counseling Psychology.)


O'Hara, Robert P.; and Tiedeman, David V. "Vocational Self Concept in Adolescence." Journal of Counseling Psychology 1959, 6, 292-301.

Tiedeman, David V.; and O'Hara, Robert P. Differentiation and Integration in Career Development. Cambridge, Mass.: The senior author, 17 Sumner Road, 1962 (Mimeo)

Walston, op. cit.

B. A. i. psycho-social Theory of Career

1. Education


* O'Hara and Tiedeman, op. cit.


2. Family

* Cass and Tiedeman, op. cit.

Coffee, op. cit.

* Hagen, op. cit.


Roe, Anne; and Siegelman, Marvin. A Study of the Origin of Interests (in press)

3 Reciprocity


* Tiedeman, David V.; and Pandit, Jivan Lal. On Identity and Level of Occupational Aspiration. Cambridge, Mass.: The senior author, 17 Sumner Road, 1958 (Mimeo)

0. Perseveration of Choice

* Cole, Wilson, and Tiedeman, op. cit.

Walston, op. cit.


D. Models

I. Herriott, op. cit.

Tatsuoka, op. cit.


Tiedeman, and O'Hara, op. cit.

III. Field, op. cit.

Field, Tiedeman and Kehas, op. cit.

Kehas, op. cit.

Tiedeman and Field, op. cit.