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13. ABSTRACT (Maximum 200 words) This research investigated the factors that influence U. S. Navy unrestricted line (URL) officers' decisions whether to obtain a proven subspecialty in a secondary, technical occupation or not. Data were collected from a sample of 1,329 aviators and surface warfare officers with 10 or more years of commissioned service. Survey data were obtained before the officers had an opportunity to acquire a proven subspecialty and were supplemented from personnel records. Decisions about obtaining a proven subspecialty were not heavily influenced by the officers' perceptions of its contribution to their Navy and post-navy careers ( $p < .01$ ). Obtaining a proven subspecialty was influenced by officers' decisions ( $p < .01$ ) and the opportunity provided by the Navy. It appears to be important for the Navy to ensure that officers with Navy-sponsored educations are provided consistently with opportunities to obtain a proven subspecialty.			
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## 91-11455



## Roadblocks to Warrior Subspecialty Development

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This research investigated the factors that influence U.S. Navy unrestricted line (URL) officers' decisions whether to obtain a proven subspecialty in a secondary, technical occupation or not. Data were collected from a sample of 1,329 aviators and surface warfare officers with 10 or more years of commissioned service. Survey data were obtained before the officers had an opportunity to acquire a proven subspecialty and were supplemented from personnel records. Decisions about obtaining a proven subspecialty were most heavily influenced by the officers' perceptions of its contribution to their Navy and post-Navy careers ( $p < .01$ ). Obtaining a proven subspecialty was influenced by officers' decisions ( $p < .01$ ) and the opportunity provided by the Navy. It appears to be important for the Navy to ensure that officers with Navy-sponsored educations are provided consistently with opportunities to obtain a proven subspecialty.

In many organizations, there are two types of leaders: *line leaders*, who are responsible for its mission, and *staff leaders*, who provide support to the direct mission function. In the Navy, the former are URL officers, the warfare leaders, and the latter are restricted line and staff officers, the leaders of support activities. Support activities tend to drift away from backing line functions and drift toward activities that become ends in themselves unless mechanisms are installed to make them continually concentrate on organizational goals (Etzioni, 1961). One way the Navy has chosen to help focus support activities on line requirements is to transfer personnel from warfare (line) roles to support roles and back again. The focus of this research is the Navy's program for rotating some URL officers



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between their primary warfare specialties and their secondary support specialties in weapons and materiel acquisition.

Most warfare officers alternate between warfare (sea) and nonwarfare (shore) assignments for the first 20 to 25 years of their careers. After initial training, the junior officers spend 3 years on sea duty learning their warfare roles. Some of their first sea-duty assignments, such as antisubmarine warfare, have been related to technical specialties, earning the officers in them designation as specialists based on their experience. Others must wait until they have a shore assignment and can acquire a postgraduate degree or extensive training in a specified technical or managerial curriculum (e.g., electronics engineering or financial management), thus becoming specialists based on their education. Both groups of officers are given the status of proven specialist when second, relevant-experience assignments<sup>1</sup> are completed, performance is acceptable, and promotion at 10 years of service to the grade of lieutenant commander or higher is attained. The URL-proven specialist should be skilled in the technology and applications unique to the subspecialty and be ready to develop skill in managing technical, administrative, or acquisition support functions. Because of the constant movement between warfare specialty and support subspecialty assignments, it is appropriate to characterize the process as concurrent dual-career development. Although the comparison is not ideal, dual-career ladders in business and industry have many similarities to the Navy URL-/subspecialty career program.

### DUAL-CAREER LADDER

In nonmilitary technical (e.g., physics or chemical engineering), professional (e.g., accounting or law), or semiprofessional (e.g., marketing or consulting) organizations, employees start with specialized positions. They slowly acquire supervisory responsibilities or try out their leadership in ad hoc situations; after several years, they commit themselves to the managerial ladder or the professional-technical ladder (Saltzman, 1990). Promotions take place within each career ladder, and the employees do not rotate between the two (Morrison & Vosburgh, 1987).

Many excellent firms, including Winston & Strawn, Arthur Andersen, IBM, 3M, General Mills, Control Data, and Monsanto, have dual-career ladders. However, the following criticisms of the usefulness of this ap-

<sup>1</sup>For those receiving a Navy sponsored graduate education, Department of Defense policy requires the officer to complete, within two assignments after graduation, a follow up assignment that applies the education

proach (Roth, 1984) are shared with the Navy's program: (a) The specialist (technical/professional) ladder lacks prestige because it is viewed as a dumping ground for those who do not have managerial potential or fail in management; (b) employees on the specialist ladder lack opportunities for participating in the major decisions affecting the organization and their own jobs; and (c) management fails to use the qualifying standards, performance appraisal and promotion criteria, and the jobs and job titles that comprise the specialist ladder.

Considerable effort has been spent on identifying the characteristics of effective managerial career ladders, including the identification and development of managerial potential (Howard & Bray, 1988). However, little attention has been given to the selection of candidates for the specialist career ladder or the process the employee uses in making decisions about pursuing that ladder over the managerial career ladder. For dual-ladder programs to be truly successful, organizations must focus more specifically and extensively on the employee's decision-making process. For example, do all professional-technical employees make a conscious decision to pursue one track or another? For those who do, what are the factors that drive such decisions? Clear communications about the dual-ladder program to employees early in their careers may be desired by both organizations (Roth, 1984) and employees, but what is the best way to communicate? Do employees feel the need for a career-counseling system? What sources do individuals use to obtain career-planning information?

Access to information about the decision-making process and the decisions of its professional-technical employees should help the organization plan its human resources and build an effective career-development program including a dual-career system. A compendium of unresolved questions has been presented effectively elsewhere (Cleveland, 1989).

Despite the large proportion of URL officers who are designated as proven subspecialists, the Navy has little data about their decision-making process or the factors influencing the decisions that officers make in choosing subspecialty-related careers. Without such information, it is difficult for staffing planners to predict how many and what quality of URL-proven subspecialists will be available within each subspecialty occupation at any given time. Thus, staffing managers find it difficult to develop or change policies or practices that will increase the supply of skilled officers in subspecialty fields when there are shortages or will decrease the supply when there are surpluses. This research fills that void by statistically modeling those factors that influence URL officers' decisions either to maintain their warfare status and become proven subspecialists in a technical or financial management field or to pursue a traditional, unitary warfare-career track.

## METHOD

## Population

The officers in this research were the URL community members who had the opportunity to demonstrate their performance in one of two career tracks. The first track, warriors (Ws), expressed a total commitment to a warfare specialty. The second track, warrior technicians (WTs), was composed of officers who spent the majority of their time in developing a warfare specialty, with the remainder of their time being focused on becoming skilled in a secondary professional-technical management occupation (i.e., a proven subspecialty). The specific population chosen consisted of those aviation and surface warfare URL officers who remained in their communities and had the opportunity to become proven subspecialists between November 1981 and August 1986 (Morrison & Cook, 1985). Officers commissioned between 1969 and 1976 had such an opportunity.

Although the Navy's subspecialty program covers a wide variety of occupational skills, we decided to concentrate on the technical and financial management subspecialties. The URL officers with public affairs, intelligence, and political-military subspecialties and the remaining management subspecialties were not included. The population consisted of 3,429 aviators and 1,829 surface warfare officers (SWOs).

## Sample

A search of the officer career-development research data base (Morrison & Cook, 1985) identified 1,111 aviators and 467 SWOs who met the criteria previously established for the population. The power of the aviator and SWO samples was .02 and .04 respectively, indicating that these samples could be assumed to represent their populations with an acceptable level of confidence (Cochran, 1963). Two hundred forty-nine officers who could not be specifically assigned to a criterion group (defined in the next section) were omitted from the sample. About 90% of the officers were married. Forty percent were SWOs; 62% of the aviators were pilots, and 38% were naval flight officers (NFOs).

## Criterion

The sample was segmented into three groups according to their status in August 1986 (see Table 1). The W group had had the opportunity to acquire subspecialty-related experience or education and had not done so. The WT group had acquired the status of proven subspecialist in a technical or financial management field since November 1981 in addition to maintaining

TABLE 1  
Population/Sample by Criterion Status

1986 Status		1982 Status	
Subspecialist	WT	n	W
Training (Extensive)	73/11	129/53	295/64
Postgraduate Degree	18/2	208/30	777/422
Experience	41/15	165/73	25/18
Training (extensive)	78/25	48/19	38/30
Postgraduate degree	437/143	111/38	175/78
Experience	223/57	771/238	3/2
Training	9/2	12/6	
Postgraduate degree	3/1	42/10	
Experience	73/11	79/12	
Training (extensive)	188/28	2/0	
Postgraduate degree	1/1	5/0	
Experience	188/28	129/53	
Training (extensive)	76/39	129/53	
Postgraduate degree	0/0	111/38	
Experience	171/75	771/238	
Training		12/6	
Postgraduate degree		42/10	
Experience		79/12	
Training (extensive)		2/0	
Postgraduate degree		165/73	
Experience		48/19	
Training (extensive)		777/422	
Postgraduate degree		25/18	
Experience		38/30	

Note: The population consists of aviators and SWOs commissioned between 1969 and 1976; those with a proven subspecialty (WT) in 1982 have been deleted. W = warrior, WT = warrior technician. Population and sample class status from December 1986 and August 1986 Officer Personnel Files (OPFs), respectively. "SWO data collected November 1981; aviator data collected March 1982; class status obtained from June 1982 OPFs.

their warfare specialty. A third group had retained status in their warfare community and had acquired a postgraduate degree, extensive training, or a single-experience tour in a field related to a technical or financial management subspecialty. Whether the members of this group of subspecialists would ever complete the requirements to become proven subspecialists could not be determined. This group was omitted from further analyses. Table 1 provides the population-to-sample ratios for each criterion group.

### Measures

The measures of the independent variables used in this research came from an officer career-development research data base compiled in 1982. Background variables came from the Officer Personnel Files, and the remaining variables came from a survey of the officers' perceptions. Twenty-one variables were classified into the following categories according to the model hypothesized for the research (see Figure 1):

1. Background
  - a. Education major (nontechnical or technical).
  - b. Source of commission (regular or reserve).
2. Family
  - a. Spouse supports Navy career.
  - b. Spouse employed in a nontraditional job.

- c. Evaluation of separation from family/friends in present job.
  - d. Family stability is better in Navy than in civilian career.
3. Career-decision process
    - a. Officers need a special career-counseling system.
  4. Information sources.
    1. Headquarters.
    2. Peers.
    3. Network.
    4. Command.
    5. Public media.
  5. Career attitude
    - a. Career satisfaction.
  6. Assignments received based on experience/performance.
  7. Change
    - a. Attitude toward changing jobs every 2 to 3 years.
    - b. Attitude toward geographic relocation with each job change.
  8. Perceived instrumentalities
    - a. A subspecialty is important for my Navy career.
    - b. A subspecialty is important for my post-Navy career.
    - c. A postgraduate degree will help my promotion.
  9. Career decisions
    - a. I have decided to obtain a proven subspecialty.
    - b. I have decided to request postgraduate school.

Responses for some independent variables were recorded to form better approximations of the normal curve, and multicollinearity was minimized by dropping redundant items or combining them into scales.

### Hypotheses and Analytic Strategy

The general model for the Navy officer career-development research (Morrison & Cook, 1985) was made more explicit for this research (see Figure 1). We developed hypotheses for each of several categories of variables as follows:

#### Career decisions hypotheses.

- 1a. More officers who obtained proven subspecialties would have decided to obtain postgraduate degrees.
- 1b. More officers who had decided to obtain postgraduate degrees would have decided to obtain proven subspecialties.
- 1c. The opportunity to obtain a proven subspecialty, as represented by the organization mission, would moderate the relations between the criterion and the decisions. Four subgroups for organization mission

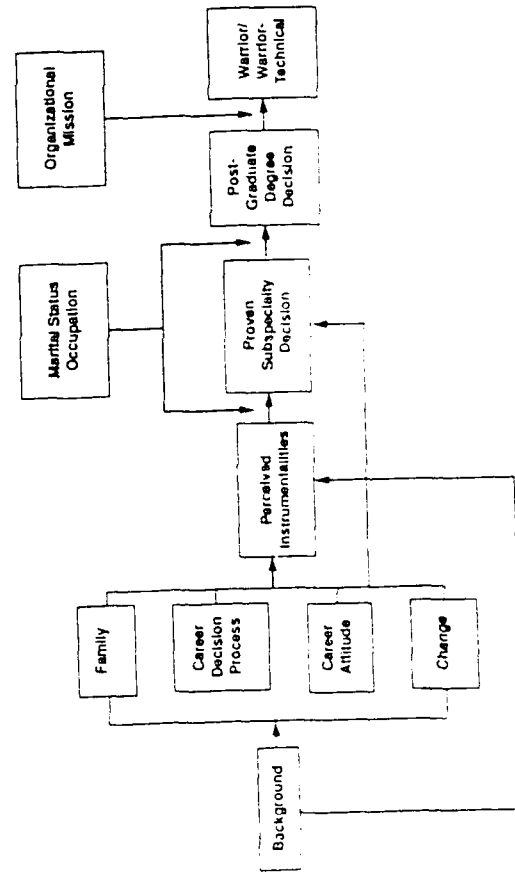


FIGURE 1 Hypothesized general model of URT officer-proven SUBSPs.

were determined by clustering aviators according to their common opportunity to acquire a proven subspecialty. Each of the subgroups was composed of the following mission subcommunities that were internally homogeneous and externally heterogeneous in the ratio of experience-based WT's (EXWT's) to W's: (a) SWOs; (b) aviators in fighter, attack, cargo helicopter, and mine warfare helicopter (TACPLUS) subcommunities; (c) aviators in carrier-based and helicopter antisubmarine warfare (ASW) and electronics warfare (EW) subcommunities; and (d) aviators in the patrol ASW (VP) subcommunity. The proportion of education-based WT's (EDWT's) was consistent among the subgroups.

- 1d. Occupation would moderate the relation between the decision to obtain a postgraduate degree and the decision to obtain a proven subspecialty, because the direct transfer of Navy-acquired skills to the civilian job market was limited for SWOs and NFOs but not for pilots.
- 1e. Married officers would describe a different relation between the decisions than would single officers because of the presence of family influences.

Perceived instrumentalities hypotheses. In contrast to those who have chosen not to pursue a proven subspecialty, officers who have decided to obtain a proven subspecialty would perceive that:

- 2a. A proven subspecialty will help their Navy careers.
- 2b. A proven subspecialty will help their post-Navy careers.
- 2c. A postgraduate degree will enhance their opportunities for promotion.
- 2d. Marital status would moderate the relations between perceived instrumentalities and the decisions.

Family (married officers only) hypotheses. Officers who decide not to obtain a proven subspecialty would:

- 3a. Describe their spouses as more supportive of their Navy careers.
- 3b. Assess separation from family and friends and family stability more positively than those who decide to obtain a proven subspecialty.
- 3c. Have a greater proportion of their spouses employed in more traditional occupations than officers who decide to obtain a proven subspecialty.

Career-decision process hypotheses. In contrast to those who decide not to obtain a proven subspecialty, those who do would:

- 4a. Desire a special career counseling system for officers.
- 4b. More frequently use headquarters, public media, and network sources of career information.
- 4c. Less frequently use command and peer sources of career information.
- 4d. Less frequently interact with senior officers and less frequently use them as career role models.
- 4e. Describe themselves as receiving less counseling on their community's career system and more counseling on Navy career opportunities outside their community.
- 4f. Describe themselves as having received less counseling on Navy norms and values.

Career attitude hypotheses. Officers who decide not to obtain proven subspecialties would:

- 5a. Have a more positive attitude toward their present career than officers who decide to obtain proven subspecialties.
- 5b. Perceive that their previous assignments had been received on the basis of their experience and performance.

Change hypotheses. In contrast to officers who decide to obtain a proven subspecialty, officers who decide not to obtain one would have less positive attitudes toward:

- 6a. Changing jobs.
- 6b. Geographic location.

Background hypotheses. Officers would decide more frequently to obtain proven subspecialties if they:

- 7a. Have technical (BS) degrees.
- 7b. Are commissioned from regular sources that produce more technical degrees.

The primary analytic procedure used in this research was hierarchical inclusion multiple regression (SPSS Inc., 1988) with moderator variables (Stone & Hollenbeck, 1989). Effects coding (Pedhazur, 1982) was used to represent nominal variables. The significance levels used were  $p \leq .05$  for smaller samples and  $p \leq .01$  for larger samples.

## RESULTS

Using the hypothesized model depicted in Figure 1 as a reference, the criterion (W/WT) was regressed on the decision to obtain a postgraduate degree (PGS). The PGS was then regressed on the decision to obtain a proven subspecialty (SUBSP). Multiple correlations for PGS and SUBSP were statistically significant,  $R = .21$ ,  $F(1, 1276) = 60.2$ ,  $p = .00$ , and,  $R = .32$ ,  $F(1, 1255) = 145.3$ ,  $p = .00$ , respectively, supporting Hypotheses 1a and 1b. More officers who had obtained proven subspecialties had decided to obtain postgraduate degrees (1a), and SUBSPs was related to PGS (1b).

However, these results were disappointingly small. Because a detailed description of the sample indicated that many more officers received experience-based rather than education-based proven subspecialties, it was decided to conduct exploratory analyses. First, the criterion was regressed on both decisions (PGS and SUBSP). The result was a significantly greater multiple correlation,  $R = .31$ ,  $F(2, 1254) = 68.8$ ,  $p = .00$ . Because experience-based proven subspecialties were heavily dependent on the organization mission/job assignment combination, the nominal variable, organization mission, was then added to the prediction side of the equation. The  $R$  increased significantly to  $.49$ ,  $F(5, 1251) = 78.7$ ,  $p = .00$ . The addition of the terms for the interactions between the nominal variable codes and the decisions did not increase the  $R^2$  significantly,  $F = 1.4$ ,  $p = .21$ , indicating that organization mission did not moderate the decisions. Because the beta weights for all the nominal variables were significant, the resulting equations differed in their intercepts as expected when the groups were established.

$$\begin{aligned} \text{SWO:} & \quad \text{W/WT} = 1.16 + .05 \text{ PGS} + .09 \text{ SUBSP} \\ \text{T.ACPLUS:} & \quad \text{W/WT} = 1.25 + .05 \text{ PGS} + .09 \text{ SUBSP} \\ \text{ASW/EW:} & \quad \text{W/WT} = .84 + .05 \text{ PGS} + .09 \text{ SUBSP} \\ \text{VP:} & \quad \text{W/WT} = 1.26 + .05 \text{ PGS} + .09 \text{ SUBSP} \end{aligned}$$

Thus, although the proportion of Ws to WTs varies significantly across organization missions, the decision-criterion relations are similar for all four groups in contrast to Hypothesis 1c. The model was revised to include both decisions and organization mission as predictors of the criterion (W/WT) because of the major increase in criterion variance accounted for.

To continue the development of the path model, the second step was to expand the regression of PGS on SUBSP to include nominally scaled variables for the three occupation groups. The multiple correlation increased significantly to  $.42$ ,  $F(3, 1074) = 77.6$ ,  $p = .00$ . In the third step, the interaction terms representing the occupation groups and SUBSP were

added to the prediction side of the equation. There was no significant increase in  $R^2$ ,  $\Delta R^2 = .00$ ,  $F = .92$ ,  $p = .40$ . In Step 4, the three measures of instrumentality were added to the regression equation. The increase in  $R^2$  was not significant,  $R^2 = .01$ ,  $F = 2.3$ ,  $p = .08$ . In Step 5, the six interaction terms representing the occupation groups and the three instrumentalities were added to the regression equation. There was no significant increase in  $R^2$ ,  $\Delta R^2 = .00$ ,  $F = 1.00$ ,  $p = .42$ . In Step 6, the 14 variables representing the family, career decision process, career attitude, and change constructs were added to the prediction equation. The resulting change in  $R^2$  was significant,  $\Delta R^2 = .02$ ,  $F = 1.98$ ,  $p = .01$ . The addition of the interaction terms and background variables did not significantly add to the ability to predict PGS,  $R^2 = .00$ ,  $F = .97$ ,  $p = .42$ .

The final equation, resulting from the Step 6 analysis, was composed of seven variables with beta weights significant at the  $p = .05$  level or better and  $R = .44$ ,  $F(8, 1069) = 32.8$ ,  $p = .00$ . Because two of the variables represented nominal variables for occupation, the following three separate equations were formed:

$$\begin{aligned} \text{SWOs: PGS} &= 1.62 + .31 \text{ SUBSP} + .03 \text{ POSTNAVY} + .06 \\ & \quad \text{HDQTRS} - .03 \text{ PUBLIC} - .05 \text{ ASSIGN}, \end{aligned}$$

POSTNAVY = contribution to a post-Navy career; HDQTRS and PUBLIC = using headquarters and public sources, respectively, for career information; and ASSIGN = felt past assignments were based on experience performance.

$$\begin{aligned} \text{NFOs: PGS} &= 1.43 + .31 \text{ SUBSP} + .03 \text{ POSTNAVY} + .06 \\ & \quad \text{HDQTRS} - .03 \text{ PUBLIC} - .05 \text{ ASSIGN} \\ \text{Pilots: PGS} &= 1.62 + .31 \text{ SUBSP} + .06 \text{ HDQTRS} - .03 \text{ PUBLIC} - \\ & \quad .05 \text{ ASSIGN} \end{aligned}$$

The major predictor of PGS was SUBSP. The only difference between the SWOs and NFOs was in the intercept (constant), with the slopes of the regression equations being alike. Pilots differed from the other two occupations because, as per Hypothesis 1d, they did not consider the impact of a postgraduate degree on their post-Navy careers.

The next series of steps used to develop the path predicting PGS within the model required the addition of the third nominal variable—marital status. The inclusion of marital status as either a predictor of PGS or a moderator of the relation between the two decisions did not increase the  $R^2$  significantly,  $F = .01$ ,  $p = .94$  and  $F = 2.25$ ,  $p = .13$ , respectively. Marital status also was not a moderator of the relations among the three instrumentalities and PGS,  $R^2 = .00$ ,  $F = .18$ ,  $p = .91$ . When the four variables

comprising the family factor were included in PGS for married officers, no beta weight was significantly different from 0 at  $p \leq .05$ . Thus, the results concerning marital status and the family were consistent. In contrast to Hypotheses 1e and 2d, married officers' decisions about obtaining a postgraduate degree were influenced by the same factors that influenced single officers' decisions.

To develop the path predicting SUBSP within the model, the same series of analyses was conducted using SUBSP as the dependent variable. When the three occupational groups were used to predict the subspecialty decision, the resulting relation was significant,  $R = .21$ ,  $F(2, 1101) = 24.4$ ,  $p = .00$ . The addition of the three instrumentality measures increased  $R^2$  significantly,  $\Delta R^2 = .24$ ,  $F = 120.0$ ,  $p = .00$ . With the addition of the terms representing the products of the nominal variables for the three occupational groups and the three instrumentalities,  $R^2$  increased significantly,  $\Delta R^2 = .01$ ,  $F = 2.9$ ,  $p = .01$ . In Step 4, the block of 14 variables representing family, career decision process, career attitude, and change were included in the equation. Again,  $R^2$  increased significantly,  $\Delta R^2 = .02$ ,  $F = 1.7$ ,  $p = .04$ . Step 5 (30 interaction terms formed by the occupational variables in combination with the 14 variables in Step 4), Step 6 (2 background variables), and Step 7 (4 Occupation  $\times$  Background) did not provide any significant increase in the variance accounted for.

The final equation, resulting from the Step 4 analysis, was composed of 5 variables with beta weights significant at the .05 level or better and  $R = .51$ ,  $F(7, 1269) = 62.55$ ,  $p = .00$ . Because one variable represented an interaction of the nominal variable for pilots, the following two separate equations were formed:

$$\begin{aligned} \text{SWOs/NFOs: SUBSP} &= .78 + .21 \text{ NAVY} + .05 \text{ POSTNAVY} + \\ &.05 \text{ GEOCHs} - .03 \text{ JOBCHs}, \end{aligned}$$

where NAVY = contribution to a Navy career and GEOCHs and JOBCHs = satisfaction with geographic moves and job changes, respectively.

$$\begin{aligned} \text{Pilots: SUBSP} &= .78 + .19 \text{ NAVY} + .05 \text{ POSTNAVY} + .05 \\ &\text{GEOCHs} - .03 \text{ JOBCHs}. \end{aligned}$$

The only difference among the occupational groups was a somewhat greater feeling by the SWOs and NFOs that a proven subspecialty would aid their careers in the Navy.

As a result of the analyses, the following hypotheses about the perceptions of those officers who had decided to obtain a proven subspecialty were supported: Proven subspecialties would help their Navy careers (Hypothesis 2a), proven subspecialties would help their post-Navy careers (Hypothesis

2b), and frequent geographic relocations were more acceptable (Hypothesis 6b).

In contrast to Hypothesis 6a, officers who decided to obtain a proven subspecialty reported less positive attitudes toward frequent job changes than those who decided not to do so.

No hypotheses regarding career attitudes (5a and 5b), career decision processes (4a through 4f), or background (7a and 7b) were supported. Hypothesis 2c—those choosing to obtain a proven subspecialty would base the decision partially on a postgraduate degree aiding them in promotions—also was not supported.

The final series of analyses used to develop the path predicting SUBSP in the model involved marital status and family. When marital status was considered as either a predictor of the decision to obtain a proven subspecialty or a moderator of the relation between the decision and either of the three instrumentalities, there was no significant contribution to  $R^2$ ,  $\Delta R^2 = .00$ ,  $F(1, 1291) = .75$ ,  $p = .39$  and  $\Delta R^2 = .00$ ,  $F = 1.6$ ,  $p = .18$ , respectively. When the four variables representing the family factors were included in the prediction of the subspecialty decision for married officers, no beta weight was significantly different from 0 at  $p < .05$ . The results for marital status and family were consistent. Married officers' decisions about obtaining a proven subspecialty were based on the same considerations used by single officers. In contrast to Hypotheses 3a, 3b, and 3c, the support of their spouses, family stability, family separation, and spouses' occupations did not influence the officers' decisions about obtaining a proven subspecialty.

Using the results of these analyses, Figure 1 was revised as shown in Figure 2. Note that the model generalizes across marital status and occupation except for the two career instrumentality paths to each decision for pilots. The statistical power of all of the analyses, using an alpha level of .01, was .99 or better (Cohen, 1977).

## DISCUSSION

When the subspecialty program was initiated in the early 1970s, it was designed to develop unique new skills based on postgraduate education programs for officers. As the need for more specialized skills among officers increased, the subspecialty program generated an alternate path based on the development of expertise on the job (i.e., experience-based subspecialties). Although officers acquired education-based subspecialties under their own volition because postgraduate school attendance was voluntary, this was not true for experience-based subspecialists. Most of the officers whose initial tours started them enroute to a proven subspecialty

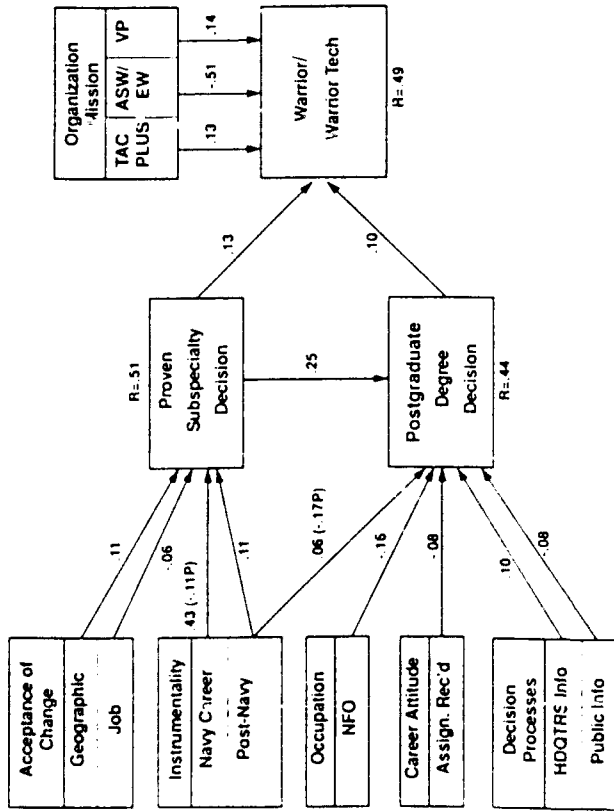


FIGURE 2 Revised model of SUBSPs: (-.11P) = unique path coefficients for pilots.

did not know that they were on such a career path. In addition, their undergraduate degrees were not considered in their assignments. Thus, the originally hypothesized relation between SUBSP and PGS should not have been expected to be very strong. Even the direct linkage between the SUBSP and obtaining one should not be expected to be strong. When the officers are not involved in the decision, they may not even be aware of the process producing such a relation.

Because our analyses did not demonstrate as much volition on the part of the officers as we had expected, we separated experience-based from education-based proven subspecialists. The results (see Table 1) show that 75% of the 1,260 aviators and SWOs who obtained their proven subspecialties between Fiscal Year 1982 and Fiscal Year 1987 did so via experience-based tours rather than a combination of education and experience. Thus, the number of proven subspecialties that was acquired under conditions in which the officers expressed considerable volition was relatively small. Omitting any subgroups, a contrast was made between the ability to predict the bivariate criterion (W/WT) and the ability to predict a trivariate criterion (W/EXWT/EDWT).

Random selection by commissioning years was used to produce samples from the W and EXWT groups that matched the EDWT group. Assuming

that each group represented a different point on the continuum expressing volition in acquiring a proven subspecialty, the groups were coded 1 through 3, respectively. Then hierarchical inclusion multiple regression was used to identify the significant predictors for each criterion. The results are shown in Table 2. Although the 3-point criterion based on differences in volition is predicted materially better than the simple bivariate split, there is minimal difference between the sets of predictors for the two criteria. In fact, the same number of predictors was found for each set. In both, the use of the command as a source of career information correlates with the officers remaining as Ws. Only in the trivariate criterion: (a) The use of peers as a source of career information predicts the officers obtaining a proven subspecialty by attending postgraduate school, and (b) in contrast to what was expected, officers with baccalaureate degrees in a technical field tend to remain Ws. In the bivariate criterion analysis: (a) Regular source officers tend to obtain proven subspecialties at a higher rate than officers from reserve sources, and (b) satisfaction with frequent job changes predicts that the officers will remain Ws.

One of the problems that surfaced during the research was that only 39% of the officers with Navy-sponsored postgraduate degrees in Fiscal Year

TABLE 2 Bivariate and Trivariate Criterion Comparison

Predictor	Criterion <sup>a</sup>	
	W/WT <sup>b</sup>	W/EXWT/EDWT
PGS	.13 (.00)	.16 (.00)
SUBSP	.20 (.00)	.26 (.00)
POSTNAVY	.08 (.01)	.09 (.06)
GEOCHs	.08 (.01)	.10 (.05)
JOBCHs	-.09 (.00)	-
PEER	-	.11 (.03)
CMD	-.09 (.00)	.13 (.01)
ASSIGN	.08 (.06)	.12 (.01)
TECH	-	-.09 (.05)
RESRV	-.06 (.03)	-
R	.36	.48

Note. W = warrior; WT = warrior technician; EXWT = experience-based WT; EDWT = education-based WT; PGS = decision to obtain a postgraduate degree; SUBSP = decision to obtain a proven subspecialty; POSTNAVY = contribution to a post-Navy career; GEOCHs = satisfaction with geographic moves; JOBCHs = satisfaction with job changes; PEER = using peer sources for career information; CMD = using command sources for career information; ASSIGN = felt past assignments were based on experience performance; TECH = technical bachelors degree; RESRV = commissioned as a reserve officer  
<sup>a</sup>Beta weights and significance levels, respectively. <sup>b</sup>n = 1,200; n = 408

1982 had been placed in an assignment that used their academic training by 1987, fulfilling their eligibility for proven subspecialist (see Table 1). These data were unexpected due to the organization policy noted previously. The two-assignment criterion would have been readily achieved from 1982 to 1987. If 61% of the officers did not complete such a requirement, the expectation that a Navy-sponsored postgraduate degree would lead to a proven subspecialty would be reduced markedly. The results are consistent with the expectations expressed by many officers in the interviews we conducted: They did not expect to complete a "payback" assignment that applied their education. As a result, in contrast to Hypothesis 1a, any linkage between PGS and actually obtaining a proven subspecialty should be weak, because policy was not followed. In the majority of instances, this probably occurs because the constraints imposed by the Navy's assignment practices make it difficult to implement policy. In addition, the operational needs of the Navy supercede the requirement to complete a payback assignment.

Analyses show that the officers perceive a strong relation between SUBSP and their perceptions that a proven subspecialty will contribute to their Navy careers. The officers who have chosen the education route to a proven subspecialty, and SWOs and NFOs whose skills do not transfer directly to a civilian occupation, appear to perceive that a proven subspecialty may enhance their post-Navy career. The perception that a proven subspecialty contributes to a Navy career is one that the Navy needs to maintain in order to meet its human resource requirements at senior levels.

As would be expected, the analyses demonstrated that the typical officer who chooses to obtain a proven subspecialty has a positive attitude toward frequent geographic relocation. Most positions requiring a proven subspecialist are located in Washington, DC, whereas all operational jobs are elsewhere. This requires more frequent relocation than Ws would incur, because Ws could possibly "homestead" by spending the majority of their sea and shore assignments in a major seaport, such as San Diego or Norfolk.

In research about retention, the family significantly influences the junior URL officers' decision to stay in or leave the Navy between the 5th and 10th year of commissioned service. It is possible that the officers whose wives do not support their Navy careers have already resigned and are no longer in the population of midcareer and senior officers represented by our sample. This would explain why family factors did not enter into any of the models.

#### SUMMARY AND CONCLUSIONS

This research supports the contention that the path to a proven subspecialty is via obtaining a subspecialty but, contrary to the original objective of the

program, few proven subspecialties are based on a Navy-sponsored postgraduate degree or even specialized training. It appears that a proven subspecialty based on a postgraduate degree is not perceived as enhancing a Navy career any more than alternate subspecialties. Those whose Navy occupations are not readily translated into civilian jobs, however, feel that a postgraduate degree will aid their post-Navy career. PGSs are influenced by Navy headquarters' sources of career information and are fueled by dissatisfaction with the past assignments the officers received. It appears that those who assign the officers to new jobs are effective in convincing officers to obtain postgraduate degrees.

The officers choose to obtain a proven subspecialty because they perceive it as aiding both their Navy career and the career they plan to pursue after retiring from the Navy. Such officers appear to be motivated by the desire to seek more stability in their shore assignments and are willing to relocate frequently to achieve it.

This research indicates that there may be roadblocks in the path to a combination warrior and proven subspecialist (WT) career for URL officers in the Navy. One roadblock is the weak link between obtaining a postgraduate degree and completing the follow-up experience tour that earns designation as a proven subspecialist. If obtaining a Navy-sponsored postgraduate degree was dependent on assignment to a follow-up experience tour, as it is in the U.S. Marine Corps, this roadblock would be minimized. It appears that the application of postgraduate degrees in follow-up assignments has increased since 1987, but this may be an artifact caused by broadening the definition of what is a utilization assignment. The effectiveness of the program might be enhanced by improving the planning process to include newly commissioned officers and by placing all the related programs under the same organizational structure and leadership. A similar study of the Marine Corps program and its members may help clarify which organizational structure, policies, and practices might be most helpful.

Another roadblock appears to be that the majority of the proven subspecialties are earned via two or three experience tours in which there is limited if any initiative (volition) taken on the part of the individual. The Navy assigns such officers as Ws with minimal consideration of their interests, abilities, and potential commitment as proven subspecialists. For the majority, the officers are unaware that such a secondary career has even been initiated by the Navy. Such a situation could be remedied by the consideration of additional information about such officers in their initial assignments, preparing them for their alternate careers, and involving them in the decision.

It appears that Navy officers obtain postgraduate degrees and proven subspecialties because they perceived them as enhancing their Navy and

post-Navy careers. Extrapolating from this finding, we infer that as specific career actions are perceived as instrumental to obtaining an important outcome, individuals will make choices and take actions consistent with such a career path. Thus, it is important for the organization to (a) clearly structure its career policies and paths, (b) implement a reward system that is tied to the career options, and (c) communicate to employees and administer consistently the system of career opportunities and rewards. If designed and administered effectively, such a career system should produce the results the organization desires to the satisfaction of its employees. The implications of this research are generic enough to be applied to any organization.

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The opinions expressed in this article are ours, are not official, and do not necessarily reflect the views of the U.S. Navy Department.

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