

**AN EXAMINATION OF
ATTRITION AND RETENTION PREDICTORS
FOR
CANADIAN NAVAL PERSONNEL**

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by

Marilyn A. Montgomery

**A thesis submitted to
Saint Mary's University
in partial fulfillment of the
requirements for the degree of
MASTER OF SCIENCE
in
APPLIED PSYCHOLOGY**

**Department of Psychology
Saint Mary's University
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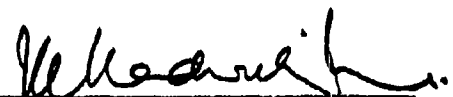
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A thesis submitted to the Department of Psychology
in partial fulfillment of
the requirements for the degree of
Master of Science

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October 4, 1991

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Finally, I dedicate this thesis to the memory of my father, Angus Montgomery, who would enjoy its completion as much as I, and who I miss each and every day.

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ABSTRACT

An Examination of Attrition and retention predictors for Canadian Naval Personnel

**Marilyn A. Montgomery
October 4, 1991**

The primary objectives of this study were: to examine a predictive model of attrition using coping potential, beliefs, attitudes, and intentions; and to determine what differences exist between individuals who stay and individuals who leave, and what effect language group has on attrition. Subjects were 237 sailors in the Canadian Navy, 61 were Francophones, 176 were Anglophones. Subjects completed the Wheel Questionnaire (Shalit, 1982) and the Fleet School Attrition Survey while in QL3 training. The questionnaires addressed how well subjects understood their environment at the time of training, their coping level, beliefs about being in the Navy, beliefs about being in a particular military occupation, their attitudes toward life at Fleet School, and their intentions to serve. Outcome data were gathered at the end of their initial engagement on whether they were still serving or had been released. The findings indicate that using the information gathered while sailors were still in training, one can accurately predict two years later which individuals will stay 60% of the time for Francos, and predict Anglo stayers 67% of the time. However, one can only predict 33% of Franco leavers, and 23% of Anglo leavers. Intention to serve was a useful predictor of behavior. In turn, intention was predicted by beliefs about being in the Navy, beliefs about military

occupation, and attitudes for stayers. For leavers, intention was predicted by beliefs about being in the Navy. The results of the study indicate that 1) it is appropriate to use beliefs and intentions to predict intention to serve, 2) language group has a large influence on rate of attrition, with more Francos attriting than Anglos, and 3) more information is known about stayers than leavers.

INTRODUCTION

Background

A persistent and widespread problem that Industrial/Organizational psychologists are frequently called upon to address is the loss of people from organizations, a process called turnover. A specific instance of turnover is attrition. Attrition is not detrimental in all cases, and is in fact necessary for healthy organizations, allowing for processes that include the growth of new ideas, and individual development (Mowday, Porter, & Steers, 1982). However, the level of attrition sufficient to efficiently promote the flow of new personnel and ideas coming into an organization is often exceeded. Losses of this sort are not those due to retirement, promotions, or geographical movement, but are due to the unexpected exit of individuals from work or training situations. Professionals running human resource programs ranging from setting budgets to staffing schedules are adversely affected by the problems attrition creates, and therefore are in constant search of ways to better understand and reduce it. Problems due to the unplanned loss of personnel affect organizations of all sizes and of all functions, and can come from various sources; student dropout from academic institutions, unexpected failure of trainees in training programs, or employees leaving jobs earlier than expected.

The results of attrition from all organizations include financial losses, inconvenience, and the less tangible but often equally important loss of prestige (especially important to organizations in competition for members of restricted applicant pools). Attrition poses problems for the organizations as well as

for their clients (i.e., the organizations using them). High numbers of dropouts make planning of future programs difficult, and allotments of funding uncertain. In institutions of higher education, the presence of high dropout rates raises concern over the nature of the teaching and the nature of the programs.

Attrition from within-organization training programs (both military and civilian) are costly for a variety of reasons. For example, company sponsored programs are paid for by the organization. If they are not completed, they represent a loss for the group footing the bill. In addition, they require an employee to take time away from work and be replaced at organizational expense, often while receiving salary. Also, if an employee leaves during training, or shortly afterwards, the company needs to repeat the process. Productive time and opportunities are lost due to the continued use of inexperienced staff. Finally, the development of other positions and staff moves within the organization may hinge on one employee being trained to fill a specific position and be delayed if the position is not filled.

Of particular concern to organizations are the higher rates of attrition by members of minority groups. Minorities are comprised of individuals of all races and ethnic groups, women, the physically or mentally challenged, or members of language groups (especially other than English), and make up a large part of the workforce. In countries such as Canada, that are multicultural and multi- or bilingual the problem cannot be ignored. The increasing legal emphasis on equal treatment and opportunity for all groups underlines the fact that disproportional dropout rates need to be addressed. Research indicates that minority groups drop out for

different reasons than do non minorities (Bean, 1980; Russo, 1983; Casas & Ponterotto, 1984; Loo & Rolison, 1986; Metzner & Bean, 1987). It is important, therefore, that models of dropout be developed that can be applied to minorities as well as to majorities, and that our understanding of attrition includes this consideration.

The Canadian Forces (CF) is an institution that has paid particular attention to the problem of attrition, a specific example being that of attrition of Francophones (Francos) from naval hard sea trades training. In June 1988, Maritime Command Headquarters (MARCOMHQ) reported high attrition among Francophone (Franco) students on initial occupation training (QL3) at Fleet School Esquimalt. The report showed that prior to Christmas 1987, the Franco attrition rate was 42% while the Anglophone (Anglo) rate was 14%. Post Christmas attrition rates were similar; 30% for Francos and 18% for Anglos (with the academic failures removed) (Lyon, Montgomery & Martineau, 1989).

For the Navy to effectively deal with the problem of attrition in general, of Francophones, and of other minorities, it is necessary to first develop an understanding of the underlying issues and then to determine which ones are of most concern, determine which areas can be readily intervened in, and determine how the interventions can be most practical and effective. Lyon, Montgomery & Martineau (1989) present an integrated attrition process model and identify a group of factors representing key areas of concern. The study did not identify factors that predict attrition, however, it measured factors that have been used in previous attrition studies (coping, beliefs, attitudes, intentions). It remains, however, to determine which of the identified factors would be of most use in developing a

predictive model of attrition.

Clearly it is desirable to know: what factors contribute to attrition; which of them can be used to predict attrition; what steps can be taken to control it; and, if the patterns for minorities are different. Not surprisingly, a large amount of research has been done in the area in educational, industrial, and military settings. The Canadian Forces (CF) has spent a considerable amount of time and effort studying patterns of attrition and numerous related variables, in areas such as Canadian Armed Forces Maritime Surface and Sub-surface (MARS) Officer training programs (Manning, 1988). Much of the initial work provided descriptions of the groups that withdrew and the variables that characterized the problem. However, few attempts were made in the literature to make sense out of which factors contributed to attrition, which were causes, and which factors were simply co-related. Without knowing whether a given factor is merely a covariate or is a variable that has a unique effect on the attrition process, it becomes difficult to identify information that could be used to reduce the problem.

LITERATURE REVIEW

Cornerstone Study & Related Literature

This thesis is a continuation of the study by Lyon, Montgomery, & Martineau (1989). They investigated the factors that contributed to performance as well as coping levels, beliefs, attitudes, and intentions of students during initial trades training

as it was taking place in the QL3 (initial occupation training) section of the Canadian Navy with a special interest in the differences between English and French trainees. The study provided an initial look at issues contributing to higher Franco attrition, and concluded that it is rooted in poor attitudes about being in the the Navy and their occupation. Francos were not concentrating on school issues, rather, they were removing themselves emotionally and physically from the situation. As well, the findings suggested that factors contributing to performance and commitment were significantly different between the two language groups. *Based on the attrition from QL3, significantly higher attrition is expected after three years for Francos than Anglos.*

To better understand the rationale used in the present study, the theoretical model developed in Lyon, Montgomery & Martineau is presented below. Following their model is a more detailed review of literature on attrition, both in general terms and in terms of the phenomenon of attrition of minorities. This body of literature provides an understanding of how attrition has developed as an area of study, how research on attrition of minorities has contributed to the present study, and how the various facets are related to the theoretical basis of the present research.

Development of present theoretical model

For all practical purposes, intention seems to be the most immediate antecedent of behaviour (Fishbein & Ajzen, 1975; Motowidlo, 1984). Mobley (1977) presented a model of a process that might underlie turnover decisions. In it he indicated that the

relationship between dissatisfaction and turnover is mediated by variables reflecting cognitive operations that occur in a specific causal sequence. Variables included intentions to search for alternative jobs, and intentions to quit. Some variables are not mediated by intentions, but have direct effects on turnover.

Lyon (1987) developed a theoretical framework to study attrition. The two components were Fishbein & Ajzen's Model of Reasoned Action (MRA) (Fishbein & Ajzen, 1980) and Shalit's Sequential Appraisal Model (SAM) (Shalit & Carlstedt, 1984). This model was used as a basis for research conducted by Lyon, Montgomery & Martineau (1989), and proved to be useful in describing the process of attrition from the Canadian Navy.

While MRA was not developed as an attrition model, it has been used successfully in several attrition studies in the past (Horn & Hulin, 1981; Newman, 1974; Prestholdt, Lane, & Matthews, 1987). A central component of the MRA theory is that the best indicator of what an individual will do in a choice situation is found by measuring the individual's intention to act. If, then, the measure of intention to act corresponds with behavioural criterion (and if the intentions remain stable over time), the intentions can be used to predict behavior. Behavior can thus be determined by an individual's stated intention to act.

To successfully predict behavior using intentions, it is necessary to identify what determines intention. The two influences identified in MRA are 1) normative influence (social pressure) to act and 2) the individual's attitude toward the action.

Normative influence is comprised of the individual's perceptions of how people who are important to him or her feel he or

she should act. An example of normative influence is how a sailor thinks his buddies expect him to do in training (i.e., pass or fail training). The balance between attitude toward an action and normative influences will change from situation to situation. Additionally, the way in which attitudes and normative influences effect intentions to act will vary over situations. In some instances the attitudinal influences will be stronger, whereas in other instances the normative influence will exercise the greater effect on intentions (Lyon & Bradley, 1988).

MRA also explains how attitudes and normative influences are determined (see Figure 1). Attitudes are a function of the individual's beliefs about a behavior, particularly about outcomes or consequences of the action. Beliefs are also influenced by the individuals' evaluation of the outcome of a behavior. Normative influences are a function of normative beliefs about how significant others feel individuals should act and a function of how motivated an individual feels to comply with the normative influence.

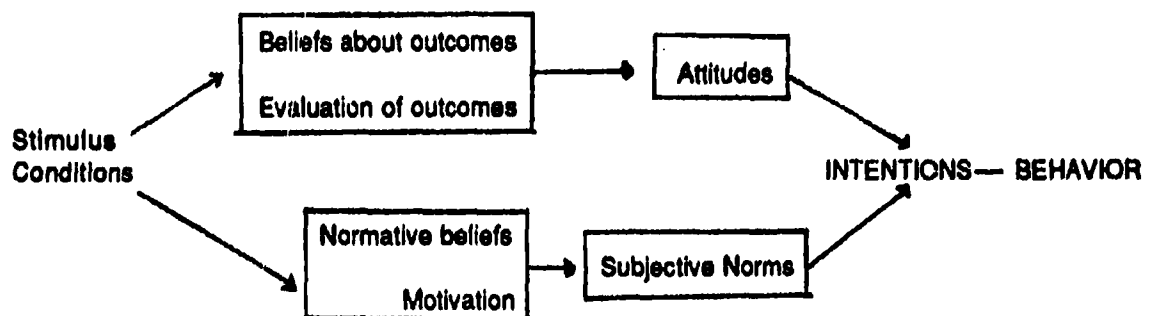


Figure 1 Model of Reasoned Action

Thus, if a change is to be effected in attitude or normative influence, an organization can develop an intervention plan aimed at 1) changing individuals' beliefs about the organization and 2) the

individuals' normative beliefs about their peers. By addressing interventions toward the behavioral and normative beliefs, attitudes and subjective norms can be changed and subsequently produce changes in behavioral intentions and the behavior itself (Lyon & Bradley, 1988).

The Fishbein & Ajzen theory does not, however, provide a complete understanding of the problem of attrition. It does not include concepts like the individuals' ability to cope with training nor does it specify the process by which an individual appraises his or her situation. The second component of the dual approach used by Lyon is Shalit's Sequential Appraisal Model (SAM). SAM is useful in predicting performance as it provides an indication of coping potential, which in turn provides an indication of possible performance and stay/leave behavior. Without adequate appraisal of a situation, one is less likely to be able to perform well. In this area the effect of individual perception plays a large role, as perception is what determines how well one understands a situation and how one creates a strategy to deal with it.

As seen in Figure 2, based on Lazarus' (1976) model of appraisal, Shalit described the perception of a stimulus as being based on a three level process (i.e., cognitive, affective, instrumental) and as being carried out on each of three phases (i.e., structure, motivation, movement) (Shalit, 1968, p. 5). The appraisal phase consists of an individual's evaluation of the stimuli (e.g., factors that contribute to performance in training) and the subsequent establishment of the relationship between the individual and the factors. In the mobilization phase, the individual's resources for interacting with the factors that contribute to

performance are assessed and readied (i.e., arousal). Then, in the realization phase, the individuals' form of utilization of the perceived resources is clarified and the type of coping behaviour is determined. By examining the effectiveness of the processing at each stage the final coping potential of each sailor can be determined.

APPRAISAL		Appraisal	Mobilization	Realization
	Structure	1) What is it?	4) Do I understand?	7) How shall I do?
	Motivation	2) Does it concern me?	5) Do I want?	8) Will I commit myself?
	Movement	3) Can I affect it?	6) Am I ready?	9) DO.

Figure 2. Shalit's Sequential Appraisal Model

SAM focuses only on how one appraises the situation, not other factors such as past experiences and learning, but gives a starting point from which one can assess how a given group or individual is perceiving the environment and their understanding of how it relates to them.

All three aspects of appraisal on all three levels are necessary for successful coping, that is, each question must be answered at least partially, before the next one can be addressed. Failure in any of the 9 cells in Figure 2 may lead to failure to cope, which is associated with poor performance and potential attrition.

Successful completion of the appraisal stages does not ensure success on its own, there must be sufficient resources, motivation, ability, etc. to result in success in undertaking a task.

However, failure in one of the first 3 cells (Figure 3) is sufficient to predict poor processing and thus poor coping potential, making success unlikely.

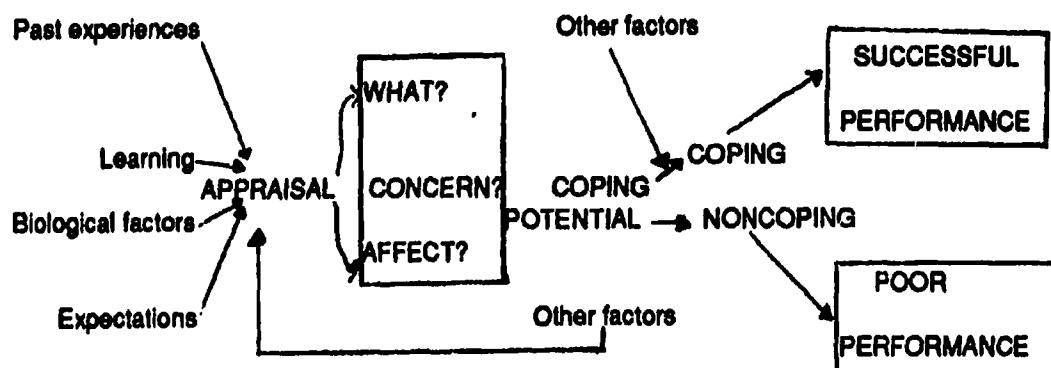


Figure 3. Development of coping potential and its relationship to performance

By combining the models, attrition can be shown to be the product of several interdependent steps.

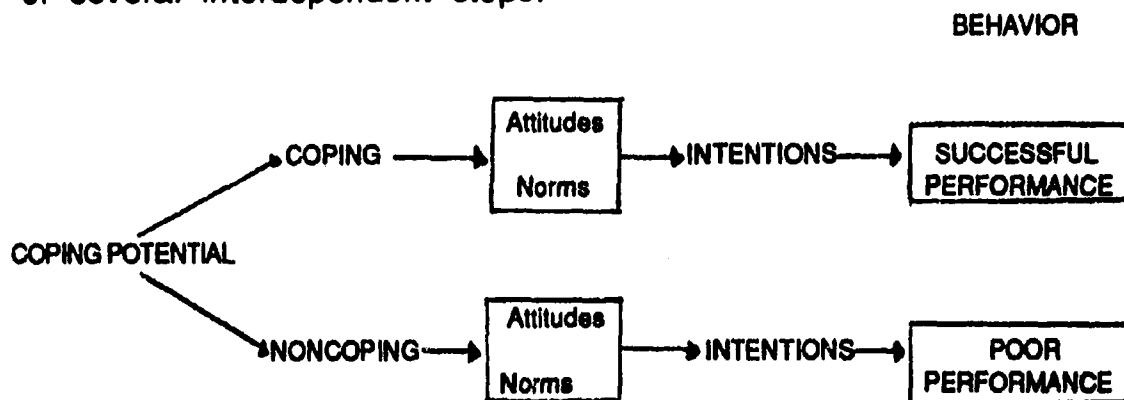


Figure 4. Combined attrition process model.

Applying this combined theory to the premature QL3 attrition problem in the Navy, it follows that a measure of intentions to stay or leave the Navy is likely the best indicator of what the individual will eventually do. Measures of attitudes, normative influences, and intentions can be used to estimate whether QL3 attrition is primarily under attitudinal control, normative control, or a

combination of the two. As well, individuals' ability to cope with life in training can be explained. *It is hypothesized that intention to stay in the Navy will predict stay/leave behavior. As well, it is hypothesized that attitudes, beliefs, and coping will be useful in predicting intention to serve for each language group.*

General Literature on Attrition

The research that follows has been broken down into six sections. The first section describes early research into attrition. The next five describe areas that have been highlighted through research as influencing the attrition process. They are therefore important to consider when developing an understanding of attrition and when developing a plan of how to reduce attrition. As well, they provide both direct and indirect support for the theory used in the present study.

Early Research

The phenomenon of attrition has generated a large body of literature from both military and civilian researchers. Most early work was descriptive in nature, resulting in a vast number of variables possibly related to the attrition process. These early studies investigated the relationship of attrition to a wide variety of factors (e.g., family background, quality of family relationships, socioeconomic status, maturity levels, interpersonal relationships, grades, academic potential, social support, distance from hometown to campus, hometown size, type of housing, etc.). (Spady, 1970; Bean, 1980). While description is vital in understanding any

phenomenon, the problem has been adequately if not over described, and requires more in depth scrutiny. The next step in understanding attrition was the recognition that like any other phenomenon, attrition is not made up of simple relationships, but of complex interactions among groups of variables. The need to develop more theoretically coherent ways of looking at attrition has been filled by Spady (1970; 1971); Tinto (1975); Pascarella & Terezlni, (1977, 1979, 1980); Bean, (1980), Bean & Metzner, (1987) Lyon, (1987). Additionally, research on attrition has often failed to maintain consistent definitions of dropout, and failed to distinguish between academic dismissals and voluntary withdrawals (Manning, 1988). The present study deals with organizational attrition, not attrition seen from an academic standpoint. The question of academic attrition from within the military has been addressed elsewhere.

A key initial framework for understanding attrition was put forth by Spady (1970). In his review of the then current literature, Spady forcefully pointed out the need to stop regarding attrition with an eye to discovering simple relationships and to begin attempting interactional models. His attempt was based on a model used to explain suicide (Durkheim, 1951) and took into consideration both the academic and social systems at college as well as individual and background variables. This was the first model to recognize the impact that integration into social and academic systems has on attrition. The model also recognizes the requirement for socialization of students into the college as a whole, its programs and its social systems, from both academic and peer levels.

Upon further empirical exploration, Spady notes that out of

the many variables related to academic success, academic potential had minimal impact. What really mattered, he found, was having an initial orientation toward intellectual material and the opportunity for contact with faculty and having extracurricular involvement with other students that encouraged critical thinking (Spady, 1971). He further notes that while intuitively one would expect that engaging in little social contact would increase the likelihood of success, it is paradoxical that doing so can lead to low integration and in turn lower performance. As well, Spady concludes that "greater commitment can be generated by educational institutions, if at all, by providing them [the students] with experiences that affect the intrinsically meaningful spheres of their lives as human beings (as opposed to being just students) rather than attempting to modify the academic reward structure itself" (Spady, 1971 p. 60).

A second key piece of research on dropout was presented by Tinto (1975) using higher educational institutions as a reference group. Expanding on Spady's 1970 work, it noted the importance of expectations and commitment on dropout behaviour. Tinto's model accounted for the adjustment that takes place as a result of the experiences at college. A key concept of the model is seeing dropout as a longitudinal process in which the students' characteristics, abilities, and commitment towards the goal of earning a degree interact with levels of integration (social and academic) into the training environment. All students enter training or schooling with a set of background characteristics that have resulted in the student developing a given level of commitment to the goal of earning a degree and a given level of commitment to the institution. These commitments influence and in turn are influenced by the academic

and social systems, a process resulting in a level of integration into the learning environment. Tinto's findings support the use of indications of commitment in dealing with attrition. Intention as demonstrated by Fishbein & Ajzen is such a measure of commitment and was used in the present study.

Influence of Perceptions

That the impact of individual perception on attrition cannot be overstated was also noted by Tinto (1975). The type of environment an organization feels it provides is irrelevant if its members perceive it negatively. In addition, perceptions of social norms and demands influence how a current situation will be dealt with. It is therefore necessary to correctly determine and fully understand what individuals are actually experiencing, not what the organization intends or a researcher expects. Perceptions are a vital part of the present theoretical model. This can be seen when one considers the impact they have on the formation of attitudes toward an event or situation, the formation of beliefs about whether or not an individual belongs there, has made a positive career choice, etc. and the level of coping developed to deal with it. The importance of perception supports the use of Shalit's Sequential Appraisal Model as a means of assessing perceptions.

Tinto's theory was tested by Pascarella & Terenzini (1977; 1979) who found effects for specific types of student-faculty interactions (those that were related to persistence in university). Effects were found for the interactions focusing on intellectual, course related or career related discussions. They suggested that the faculty to whom freshmen are exposed early in their academic exposure are most important. The importance of student-faculty

relationships may in part be due to the repercussions these relationships have on the formation of attitudes, norms, and beliefs. Fishbein & Ajzen's theory indicates that the presence of positive relationships are likely to have influence in the form of beneficial attitudes, norms and beliefs, while negative ones are not.

Influence of Student-Faculty Relationships

Further study by Pascarella & Terenzini (1980) revealed a very strong relationship between student dropout and faculty interactions, noting that the quality of the interactions were as important as the frequency. The faculty were perceived positively by the students particularly if they showed concern for student development and for teaching. Manning (1988) found that dropouts saw training officers as less supportive and less concerned with their progress than did students who were successful. It should be noted that similar patterns exist outside of training/school situations. Positive, supportive relationships between employees and supervisors or employers are as important as positive relationships in other situations. The research conducted by Lyon, Montgomery & Martineau (1989) suggested that the visible minority (Francos) are frequently subjected to negative interactions with teaching staff at Fleet School.

The impact of teacher bias on student performance in the form of the self fulfilling prophecy is frequently noted in literature and media (Clifton, 1981). It is often suggested that one of the reasons for the lower rate of academic advancement of minorities is the negative attitudes and stereotypes that faculty members have toward the groups. Clifton notes that "the educational institution

may be allocating people to positions within the society on the basis of various ascribed characteristics...and part of this allocation can be attributed directly to the expectations that teachers hold for students." (Clifton, 1981, p 36). There is evidence that teachers have important effects on the performance and eventual achievement of students. Furthermore, relative evaluations of ethnic groups by teachers provides a very good match with their retention rates, indicating that if the students had received higher initial ratings by the teachers, they would in fact have had higher retention rates. While there is debate on the magnitude of the impact of the phenomenon, it is important to be aware of possible effects and take steps to counter them. It is vital that teaching staff receive training in keeping personal biases from influencing how they teach and evaluate students.

Influence of Expectations

Expectations are a crucial factor to consider when practitioners are concerned with attrition. As seen in Shalit's explanation of appraisal processes, expectations are one of the influences on how one will assess a given situation. Janis (1958) stipulates that distress is a function of one's expectations. In other words, if expectancies of a stressful situation are realistic, the amount of stress and discomfort experienced would be considerably less than reported by individuals inaccurately informed. In a military application, support for the theory is found in a study of Navy men by Hoiberg & Berry (1978). They found that accurate expectations about what the Navy setting would be like were

significantly related to graduation, and found indications that discharges had been inaccurately informed concerning their future setting. Recommendations included promotion of involvement and support from supervisors and peers, and more accurate preparation and training of individuals for the work they will perform.

Information about what an unknown job will be like is but one area where an individual's expectancies effect attrition decisions. Motowidlo (1984) notes that experiences within a current position (positive vs negative) will influence that person's expectancies of opportunities elsewhere. Thus, someone who feels positive about their current position is likely to feel that opportunities elsewhere are less appealing and less valuable and will have less likelihood of intending to leave, and vice versa. It is therefore worth making the effort to increase the attractiveness of jobs once they have been filled.

Influence of Response Options

Withey & Cooper (1989) explain that when faced with unpleasant or unrewarding work situations, we have a variety of response options. They go on to describe four such options that are appropriate for application to training situations as well: 1) focus attention on nonwork interests, doing nothing about the work situation (neglect); 2) work to improve the situation (voice); 3) find a better job and quit (exit); or 4) stay and support the organization (loyalty).

From an attrition standpoint, (4) causes fewest problems. For those who did not wish to remain stoically silent, attrition from Fleet School training as described in Lyon, Montgomery & Martineau

can be viewed as a combination of 1) and 3). By neglecting the situation, the trainees are likely to fall behind in their work and likely to be less integrated. In some cases neglect may take the form of excessive socializing, but problems with integration can be one of the things being ignored, thereby reducing socialization and increasing isolation. If students fall far enough behind, they will flunk out, or be asked to leave which is, in effect, forcing the option of exit. As demonstrated in Lyon, Montgomery & Martineau (1989), neglect of school interests was seen as one of the problems with Franco QL3 trainees. The same pattern can be applied to the sailors after they had served three years. For example, sailors who had been isolating themselves from their social situation and doing enough work to meet minimum requirements could be expected to leave the service, as opposed to the sailors who were active in their social environment and working hard toward a promotion, who would be more expected to stay in the service.

The above literature indicates clearly that there are factors (e.g., social factors, perceptions, expectations, and response options) which discriminate generally between sailors who are likely to drop out and those who are likely to remain. These factors relate to those identified by Fishbein, Ajzen and Shalit as being useful in research. *It is hypothesized, therefore, that there will be different sets of variables that characterize stayers and leavers.* It is not wise, however, to begin making plans for reducing attrition without acknowledging the existence of a different set of concerns for minorities. Therefore, it can be hypothesized that there will be a difference in factors influencing attrition between students who stay and those who leave the Navy after three years of service.

Literature on attrition and minorities

Importance of tailoring interventions

One of the first causal models of student attrition was developed by Bean (1980). The model reiterated Tinto's assertion that dropout is a longitudinal process and noted that models of attrition developed for the workplace can successfully be applied to educational settings. The study found that men and women do not drop out for the same reasons, generally, although there were some common factors. Institutional commitment was the primary influencing variable factor for both. For women, institutional commitment was influenced by satisfaction while in men commitment was influenced by a large number of variables without the intervening relationship of satisfaction. Satisfaction did, however, influence dropout decisions, although differently for men and women. The men who dropped out were satisfied with being students, while the women who dropped out were not.

Before a researcher or practitioner designs a study or an intervention for a group they are not part of, it is critical to adequately understand the target group. Williams (1989) warns against making the mistake of framing questions in the terms of reference used by the group designing the solutions. Instead, he suggested determining how the minority group perceives its problems. Williams (1989) also noted that the often unwitting acceptance and perpetuation of stereotypical myths compounds the problem. Dunbar & Novick (1988) noted that one of the most often repeated errors is the underprediction of women's performance. They cite the underprediction as a result of using common prediction

equations for both males and females. This practice is quite possibly due in part to a lack of understanding of the differences in criterion variables between the groups and of how to obtain better representations of their respective predictors. Based on the knowledge that different groups have different priorities and are characterized by different items, it is hypothesized that the sets of predictors for stayers and leavers will not be the same.

A second implication from Baumgart & Johnstone lies in the fact that different intervention strategies may need to be planned for different subgroups (full time or part time, males or females, different ethnic groups, those at risk for voluntary withdrawal as opposed to expulsion due to failure, and those at risk for exclusion from the social and academic subsystems of the college). The need for different strategies becomes clear when one sees that each subgroup has different key factors that contribute to dropout. The factors that require emphasis to encourage continuing in one group are not necessarily the same for another. Without tailoring intervention strategies somewhat so that they contain elements of relevance to all target groups, there will be less chance of effective impact on attrition rates.

As an example, encouraging participation in defining aims and objectives of their education may result in lower attrition in traditionally oriented Aborigines (Russo, 1983), as this has been demonstrated to be important to that group, but the same opportunity may do little for Hispanic students (Casas & Ponterotto, 1984). On the other hand, encouraging more women's reentry programs may be effective for Hispanics, as this is an area that has been demonstrated as important to that group. Less extreme

differences exist between similar groups that are performing at different levels.

Behavioral and attitudinal norms are in their turn a function of the cultural environment in which they develop. Given that, it can be seen how different cultural groups would develop different beliefs and attitudes and develop their expectations differently from one another. A case in point is the difference between French and English cultures in Canada. Therefore, one can hypothesize that that language group will be a large predictor of attrition.

The complexity of the attrition process and the various forms it takes with different subgroups is seen in an interesting piece of research by Bean and Metzner (1987). They assessed the pattern that attrition follows for nontraditional students. Typically, the focus of student attrition has been those students who are under 24 years of age, enrolled full time, and residing at college. The rate of attrition for nontraditional students (i.e., 25 or older, enrolled part time, commuting) is even higher than for traditional ones. This subgroup raises some interesting questions about attrition intervention programs, and the types of group characteristics to select from when making entrance decisions. The attriting nontraditional students typically do not have the socialization that regular students do but unlike the traditional students, socialization seemed to have no effect on dropout. The best predictors of dropout for this group were low grade point averages and intent to leave. Unlike other studies, one of the first recommendations of Bean & Metzner was to increase the perceived value of the degree being obtained.

Integration Issues

The nature of much of the attrition process is social (Bean 1980) and depends on how much individuals feel a part of their training, how much they interact with faculty and with other students, and how committed they are to remaining there. When dealing with attrition of minorities the importance of socialization becomes magnified, due to the often already strained existence of those groups. Alienation can be damaging academically, make integration difficult, and may be difficult to reduce because of resistance from the minority itself. Loo & Rolison (1986) found that the alienation of ethnic minority students at a mostly white university was quite high. Students felt that the ethnic isolation was compounded by being a small part of the student body. Moreover, the feeling of culture shock was seen in some cases as making it difficult to perform academically. It is interesting to note that when minorities and whites were questioned about ethnic clustering (tending to remain with one's own ethnic group), whites felt it was undesirable for the minorities, while the minorities viewed it as a source of support.

Becoming integrated into another culture is a complex process that frequently is operating in and around the process of attrition. Bass & Barrett (1975) note that any training method is dependent upon cultural setting, be it rural vs. urban or English vs. French. They describe the process of integration as following a U-curve of initial positive reaction followed by a longer, negative period of adjustment followed by a return to the positive state, one which is persistent. However, the process can be stalled by

interrupting contact with the other groups. After the initial positive reaction (a "honeymoon" type phenomenon) when adjustment starts taking place, the reality of everyday give and take between groups results in a second phase, which is marked by a rise in negative feelings toward one another. It is in this negative phase that groups tend to remain, if contact with other groups is not maintained. If contact is lost, the groups do not have the opportunity to work through the adjustment period and learn to live together, rather, they remain unfriendly (Bass & Barrett, 1975; Lamerson, 1987).

That is, initially both the minority group that is integrating and the larger group that is typically dominant will have positive attitudes toward one another individually and the presence of the other group as a whole. Then, as one group adjusts to the other's presence, the differences between the groups and the new procedures that sometimes accompany the introduction of new people begin to surface and to cause friction. In other words, the honeymoon is over. When negative feelings of this type arise, the reaction is frequently for the groups to withdraw from one another. Withdrawal causes the groups to remain in the negative phase, and prevents them from working through the period of adjustment toward the stage where problems are resolved and positive attitudes are predominant. The danger is greater for the minority, as withdrawing into one's own group has detrimental effects on success in the learning environment, and is associated with higher dropout.

Summary

The literature on minorities adds a new dimension to our knowledge of attrition. Different factors are important to different groups. There is more need to focus on socialization and integration and the need to be sure that remedies are applicable to all subgroups within the larger one (e.g., Native Indians and Francophones in the CF). It is necessary that plans for reducing attrition take into account the principles of attrition in a general sense and also the principles for minorities if they are present. *It can be hypothesized, then, that language groups will have different sets of predictors for staying and leaving.*

Aim

The purpose of this study is twofold. The first is to examine a predictive model based on a set of previously determined variables that can be used to reduce the occurrence of attrition. Using MRA, we can expect that the most important predictor of behavior will be intentions. Following the theory through the development of intentions, the next logical factor would be beliefs, then attitudes. An additional factor extracted from the literature (Shalit, 1980) and previous research (Lyon, Montgomery & Martineau, 1989) is coping potential. The impact of coping potential is perhaps less noticeable than the factors drawn from MRA, but it is important as a necessary although not sufficient condition for successful performance. Based on the model, suggestions will be made as to where changes might be most effective in reducing the problem.

The second aim is to examine the patterns of relationship between attrition and specific factors for stayers and to determine

whether these relationships differ from those of leavers. Within the breakdown of stayers and leavers, the relationships will be assessed to determine if there are effects of language. The pattern of identified factors may be relevant not only in Francophone attrition but has the potential to apply to other minority groups in the CF, e.g., Blacks and women.

Selection of Variables for Study

Based on the literature presented above, a specific group of factors were chosen as potential sources of useful information on the phenomenon of attrition. Lyon, Montgomery & Martineau (1989) identified the following factors as related to attrition of QL3 trainees in the Canadian Forces. First, one of the best indicators of what any individual will do is that individual's intention to act. Intention to act, therefore, was a primary factor for consideration and included intentions to pass, intentions to stay in a particular military occupation (MOC), and intention to stay in the Navy.

Intentions, however, do not exist in a vacuum, but are the result of interactions between additional factors (Fishbein & Ajzen 1980). For example, intentions are in part determined by an individual's beliefs and attitudes about a situation and by that individual's beliefs and attitudes about the outcomes of behaviour in that situation. Therefore, beliefs and attitudes about training and toward the Navy and beliefs and attitudes about the outcomes of behaviour in training were included for study.

In addition to the factors identified in the Fishbein & Ajzen theory, there are other factors which are useful in understanding the process of attrition. One of these is found in SAM. Shalit (1984)

states that adequate appraisal of a situation is necessary for coping behaviour. The ability to cope with the training situation is in turn necessary for success in Fleet School. Therefore, coping potential of QL3 students is a factor to consider when studying attrition.

Also influencing the process of attrition are individual factors such as past experiences, expectations, educational background, socioeconomic status, family background, personality variables, etc., that are operating simultaneously with those under consideration here. While these factors are indeed related to attrition, it is impossible to include all factors that may influence attrition in any one study. The rationale for their exclusion is supported by four facts. One, the variables have already been studied extensively, making their inclusion in the present study redundant. Two, past use of these factors has not proven to be particularly effective in helping to reduce attrition (Spady, 1970, Tinto, 1975). Third, they are the type of factors that are difficult if not impossible to manipulate (e.g., socioeconomic status). Fourth, the factors being examined in this study are in part the result of the effects of the excluded factors. For example, attitudes about the outcome of remaining in the Navy may vary considerably depending on whether the individual has no job and no marketable skill compared to having a guaranteed place in the family business.

The variables that were assessed in the study therefore, were those that provided information on attrition rate after three years, intentions to serve, beliefs about being in a specific military occupation, beliefs about being in the Navy, attitudes toward training, how the participants perceived their training, and how well they were coping with it.

HYPOTHESES

This study is an attempt to provide predictive information on the attrition of sailors in naval hard sea occupations, specifically the factors that will predict Franco and Anglo sailors' leaving. From researching the literature and examining preliminary data on the QL3s the following hypotheses have been extracted:

1. Based on the attrition at QL3, there will be a significantly higher attrition rate for Francos than Anglos after three years of service.
2. Intention to serve will predict stay/leave behavior for each language group.
3. The factors identified in MRA (attitudes, beliefs) and SAM (coping), will predict intentions to serve for each language group.
4. Different predictor variables will characterize stayers and leavers in each language group.
5. There will be different predictor variables within stayers for Francos and Anglos.
6. There will be different predictor variables within leavers for Francos and Anglos

METHOD

Participants

The participants in the original study were QL3 students at Canadian Forces Fleet School Esquimalt (CFFSE) from November 1988 to February 1989 in all hard sea occupations. The criterion for inclusion was that the participants had been in Fleet School for at least one month, in order that they have time to experience lifestyle and training at the school. The information from the questionnaire provided a description of the sailors as they were in QL3 training during their first year of service (See Appendix A).

Of the original sample, 235 participants were included in the present study. Subjects were dropped when missing or invalid SIN numbers prevented researchers at Directorate of Personnel Requirements Control from identifying them for information on current military occupation, rank, and date of release, if applicable. Five Francos were dropped, and 18 Anglos, which corresponds to 7.5% and 9.3%, respectively. The final sample consisted of 174 Anglophones and 61 Francophones. The Franco group was 93.4% male, 6.6% female. Eighty eight percent of Francos were single, and most had either Grade 12 (34.4%) or Grade 13 (41%). The Anglos were 92.5% male, 86.2% single and had mostly Grade 12 (52.9%) and community college (19.5%) education. Ages for both groups ranged from 18 to 33 with a mode of 19.

Data Collection

The data was collected in two parts. Archival data collected by Lyon, Montgomery & Martineau (1989) on QL3 trainees was the first of the data used in the present study. Questionnaires were administered to the participants during class time at Fleet School Esquimalt in B.C. Francophone participants were given a French version of the questionnaire, which was administered by a Francophone researcher. Anglophone participants were given the questionnaire in English. The method of administration was similar to that designed by Shalit to measure stress reactions (Shalit, 1979,1982). A copy of administration instructions is at Appendix B. In the first section of the survey, respondents were asked to complete the Wheel Questionnaire and provide information related to factors that contributed to their performance in training. In the second section, a series of closed ended questions were asked about their commitment to training, their military occupation, and the Navy. The questions addressed beliefs, attitudes, intentions, and commitment.

The second step was the data requested from the Canadian Forces on the participants of the original study as to their current military occupation, current status (i.e., whether they were still serving or not) and release dates for those who had left up to two years after the original data collection. The timeframe was chosen to correspond with the end of the first term of mandatory service that would have applied to all of the participants. It was necessary to do so to avoid misrepresenting the number of sailors who stayed. After the initial time commitment had expired the sailors who wished to leave would be free to do so. Before this time, they would

have shown in the statistics as stayers when in fact they may have possibly left.

Instrument

The Fleet School Attrition Survey (See Appendix C) incorporated the components of SAM as presented by Shalit as well as each of the components of MRA following the Fishbein & Ajzen methodology. In the first section, respondents were asked to complete the Wheel Questionnaire (WQ) (Shalit 1986). The WQ is an open ended instrument which asked for information on factors that contributed to the students' performance in training. Information obtained from the WQ was analyzed using the indices and categorization methods developed by Shalit (1986) (See Appendix D). The WQ (Wheel Questionnaire) maps the effectiveness of structure, motivation, and movement, thus giving an indication of coping potential. Two primary points of focus provided the basis for scoring the WQ (i.e., the Form of the responses and the Content of the responses).

WQ Indices. The WQ indices are defined as follows:

- a. Structure (R) - the degree to which the respondents can rank-order and thus distinguish between the importance of different elements which they have characterized as contributing to their performance at Fleet School.
- b. Motivation (M) - the degree of interest or emotional investment the student has in his or her performance in Fleet School.
- c. Emotional Balance (E) - whether performance factors are

considered as positive, negative, or benign.

- d. Coping (CI) - an estimate of the extent to which the student has a sense of control over his or her performance in Fleet School.

The scoring of the content was based on two dimensions: the focus of the responses (i.e., whether the response dealt with the individual; a special frame of reference such as the Unit; or, a non-specific reference such as feelings [other]); and, the aspect of the response (i.e., whether the response dealt with cognitive [e.g., knowledge, understanding], affective [e.g., feelings, emotions, attitudes] or, instrumental [e.g., functions, actions, equipment] aspects).

By examining the frequency of responses using a three-by-three matrix an estimate was made of how the QL3 trainee conceptualizes performance at Fleet School. This estimate determined whether the respondents understood performance demands, its effect on them and their coping ability.

In the second section of the questionnaire, a series of closed ended questions were asked about Reasoned Action components concerning the QL3s' training, their particular MOC, and the Navy in general. Beliefs were scored on a seven point scale. A score of 7 indicates a positive belief or statement, a score of 4 indicates a neutral belief or statement, and a score of 1 indicates a negative belief or statement. The questions assessed the trainees' own beliefs and attitudes about the Navy and their MOC (i.e., IMOC, INAVY), and their perceptions of how people significant to them (e.g., family & friends) felt about the trainees being in the Navy and their particular MOC (i.e., SIGMOC, SIGNAVY). Each question was scored on

a 7 point scale with a range of 1 to 7. A score of 4 indicated the respondent was unsure about the belief in question, a score of 1 indicated they felt negative about the belief (e.g., I believe I should not be in my military occupation, I believe I should not be in the Navy) while a score of 7 indicated a positive belief (e.g., I believe I should be in my military occupation, I believe I should be in the Navy).

Attitude towards life at Fleet School is a composite score comprised of 10 separate attitudinal questions in which the respondent was asked to describe life at Fleet School (e.g., pleasant-unpleasant, sweet-sour, easy-demanding) on an adjective checklist. Responses were again scored on a seven point scale, with a 1 to 7 range and a midpoint of 4; 7 indicating a positive response, 4 indicating a neutral response, and 1 indicating a negative response.

As well, questions were included that assessed the participants' own intentions to pass (IPASS), others' intentions to pass (SIGPASS), and own intentions to stay in the Navy in terms of years of service (STAY). Intentions to pass were scored on a seven point scale, with a score of 7 indicating a strong intention to pass, a score of 4 indicating an undecided or unsure opinion, and a score of 1 indicating a strong intention to fail. As all participants indicated very strongly that they intended to pass it did not discriminate well between Anglos and Francos or stayers and leavers. Intention to stay in the Navy was measured in anticipated years of service. A score of 1 indicated the participant intended to stay in the Navy 0-3 years, a score of 2 indicated they intended to stay 3-5 years, a score of 3 indicated an intention to stay 6-10 years, a score of 4 indicated an intention to stay 11-20 years, and a score of 6 indicated an

intention to stay in the Navy for 20+ years.

Results of Questionnaire Administration

A summary of the descriptive findings of the initial study is presented below to give the reader a good understanding of the subjects as of their QL3 training. The descriptions reflect how the subjects felt and answered while they were in QL3 training in the fall of 1989. It is inappropriate to attribute these descriptions to the group as it exists in 1991, however, the clear picture of them as they were in training is of use to us in determining how to predict and reduce staying and leaving.

In WQ components, Francos had less emotional investment in factors that contributed to their performance, felt negative toward the factors and felt less control over their performance in contrast to Anglos. As well, Francos considered Fleet School important to individuals and to the class in the form of fact (cognitive) and feeling (affective) components with a noticeable lack of action components. In terms of content categorization (See Appendix E), the most important performance factors for Francos were family and friends, accommodations, and military routines.

On MRA components, they were unsure about being in their military occupation and were unsure about being in the Navy, and felt others significant to them were unsure whether they should be in their military occupation and the Navy. They were confident about passing, and felt that others significant to them felt positive about the trainees passing training. Finally, most Francos indicated an intention to stay in the Navy less than 10 years.

Anglos, meanwhile, had more emotional investment in factors

that contributed to their performance, and were slightly positive in attitude toward the factors. The average Anglo coping index was very slightly negative, indicating they were just managing to cope with Fleet School. In contrast to the Francos, the most important factors for Anglos were school/learning, family and friends, and mental attitudes which are the type of factors expected to contribute to a learning environment.

On MRA components, Anglos believed that they should be in their MOC and believed they should be in the Navy. With respect to how Anglos perceived how others significant to them felt about them (the QL3s) being in the Navy and their particular military occupation, they believed the significant others thought they should be in their military occupation and in the Navy. They were confident about passing and thought their significant others were confident as well. Most Anglos indicated they wanted to stay in the Navy more than 10 years.

The patterns for stayers and leavers correspond closely to those that describe the differences between Anglos and Francos. In fact, they are nearly identical, which indicates how closely language group and stay/leave behavior is related. Detailed means, modes and standard deviations are presented in Appendix F.

By the time the sailors were assessed as to their position (still in service or released) in June 1991, they had passed through the following stages in their military experience. First, they enlisted in the Navy, second, they completed basic training at Cornwallis or St Jean. After completion of basic training, they took their trades training courses to become boatswains, Naval signalmen, Naval Electronics Technicians, Hull Technicians etc.

After receiving training they spent the remainder of their time in the Fleet in their chosen occupations. June 1991 was the end of the initial engagement period of three years.

Variables in present analyses

Not all the variables in the questionnaire were used in the analyses. For example, some of the items from the WQ were not used, as they are part of the coping score, while others merely identify the number of responses in categories. The specific variables used in the present analyses were chosen on the basis of information compiled from examination of the complete correlation matrices of the variables in the questionnaire, on the basis of the SAM and MRA theories, and on the basis of the findings of Lyon, Montgomery and Martineau (1989). The variables provide information on intentions, beliefs, attitudes, levels of coping potential and behavior. The variables chosen are defined as follows:

1. Language group - when the survey was administered each sailor identified him or her self as English or French speaking. Bilingual sailors were asked to identify themselves as one of the group they considered themselves to belong.
2. Intention to stay in the Navy (STAY) - an indication in years of how long the sailors expected to stay in the Navy.
3. Own belief about each sailors' particular military occupation (IMOC) - an indication of whether the trainees feel they should be in their military occupation, should not, or are unsure.
4. Own belief about being in the Navy (INAVY) - an indication of whether the sailors feel they should be in

the Navy, should not, or are unsure.

5. **Attitude (ATTITUDE)** - an additive indication of the attitudes that trainees hold toward life at Fleet School, positive, negative, or benign.
6. **Coping (CI)** - an estimate of the extent to which the sailor has a sense of control over his or her performance in Fleet School.
7. **Stay / Leave behavior (STATUS)** - the status of the trainee as of June, 1991, whether they were still serving, or whether they had been released from the CF.

Statistical Analysis Procedures

The analytical strategy was aimed at determining which factors are best predictors of attrition after three years of service, in the hope that the knowledge will be useful in reducing attrition. The first step was to describe the sample in terms of the SAM and MRA components as reported in previous work. By doing so, we have a clear picture of how the participants were thinking and feeling about their training in 1989. In addition, the descriptive process was used to look at the characteristics of the data and to determine where they could be used in further analyses. The second step was to conduct correlational analyses to determine the significant patterns of relationships, as variables that are related usually have predictive potential.

The third step was the use of multiple regression analyses. Multiple regression allows for the prediction of a criterion variable (e.g., intentions) or determine what variables predict a criterion

variable, from a set of two or more predictor variables (e.g., beliefs, attitudes, coping) by producing a set of regression coefficients which represent the amount of variance accounted for in the criterion variable by the predictor variables (Tabachnick & Fidell, 1983). The results of regression analysis are regression coefficients that are the correlation between the predicted and obtained Y values. Several multiple regression techniques are available. They include standard, hierarchical, stepwise and setwise, the latter of which is a combination of hierarchical and stepwise. In standard regression, all predictor variables are entered simultaneously. Each predictor is then assessed as if it had entered the regression after all other variables had been entered. In hierarchical regression, the researcher controls the order of entry of the variables. This decision is based on theoretical grounds. Each predictor variable is assessed in terms of what it adds to the equation at its own point of entry. Stepwise regression is similar to hierarchical in that it orders the entry of the predictor variables. However, stepwise regression is used when there is no theory to guide the order in which the predictors are entered into the equation, or to test a theory before attempting a hierarchical regression. At each step in the procedure, the predictor variable that adds most to the prediction equation in terms of increasing the multiple correlation coefficient is entered. The process is continued until no more useful information is provided by the addition of variables, with the researcher setting the statistical criteria for entry (probability of F to enter - or PIN [.01]) and deletion (probability of F for removal- or POUT [.05]) of variables.

The present study used stepwise regression, although the

theory that has been presented could have been used to guide the entry of variables. It was felt, however, that a stepwise regression would be appropriate at this point to assess the applicability of the theory to the specific area under investigation. In doing so, there will be a more solid basis for conducting hierarchical regressions in the area in future. Language group was not included as a predictor variable in most of the analyses. Its dichotomous nature makes it unsuitable for the chosen regression procedure, and its effect would be strong enough to prevent other factors from achieving statistical significance. It was, however, one of the most important variables in understanding the attrition process. Collapsing data across language groups is not advisable given the marked differences between the groups. By assessing the language groups in separate analyses it was possible to extract information that would have remained hidden were they analyzed together.

The fourth step was to characterize the stayers and leavers of each language group using discriminant function analysis (DISCRIM) to compute the categorization and provide a check on the outcome. Discriminant function analysis uses a variety of predictor variables to predict group membership by finding the best combination of variables that maximizes the difference between groups. It can be thought of as a multivariate multiple regression in which grouping variables are discrete, and predictor variables are either continuous or discrete. Discriminant analysis can be used for two purposes. One, the researcher may be interested in a decision rule for classifying new cases. In this situation, the number of dimensions and their meaning is irrelevant. In the second use, the emphasis is on interpreting the discrimination space in terms of the

variables contributing most heavily to separation of groups. It is this second use that is of interest here (Tabachnick & Fidell, 1983).

The use of discriminant function analysis is warranted by the linking of regressions. There was no need to carry out tests of relatedness in the form of ANOVAS since that is incorporated in the regression techniques and it was previously done in the earlier study. After a preliminary analysis of the data indicated a problem with some of the assumptions required for multiple regression, DISCRIM was included in the analysis strategy since DISCRIM is more robust to the violation of statistical assumptions than is multiple regression. In addition, DISCRIM is robust to different sizes of N's. In both cases, the violation of assumption for multiple regression leads to underprediction of results.

RESULTS

The results are presented broken down by stay/leave behavior and by language group. First is a description of the intended years of service for both language groups, broken down by stayers and leavers. Following the description section is the presentation of assumptions required for the statistical analyses, (particularly multiple regression) and the corrections undertaken to meet them. The next section presents the results of correlational analyses to determine the significant relationships among variables for each behavior group (stayers and leavers).

The multiple regression analyses were designed and run as follows. The first regression attempted to predict stay/leave behavior using all the variables identified earlier i.e., Language (LANG), intent to serve (TIME), own belief about the present military occupation (IMOC), own belief about being in the Navy (INAVY), attitude (ATTITUDE) and coping (CI) as possible predictors. This regression was designed to show the effect of language as an overwhelming variable. The next step was to break the regressions down by language group, and begin predicting stay/leave behavior. The results of those regressions indicated it would be more appropriate to begin predicting intent to serve. The regressions were therefore run on stayers and leavers separately, with the goal of predicting intention to serve. The last set of regressions were run with the goal of determining if there are differences within stayers and leavers unique to different language group on factors

that predict intention to serve.

The final section presents the results of discriminant function analyses to predict characterize stayers and leavers behavior for each language group.

Stayers and Leavers by Language Group

As of June 1991, after three years of service for the initial engagement, of the 237 subjects, 174 (74%) were still serving and 63 (26%) were released. When broken down by language group as seen in Figure 5, a total of 144 (82.75%) Anglophones remained in service, while 30 (17.25%) had been released. Of the Francophones, 28 (46%) remained, while 33 (54%) left. These numbers echo the trend that Francos attrit at a higher rate than do Anglos. In fact, the rate of attrition for this sample is even higher than the rate the Navy had reported for earlier groups. Part of the reason this finding seems so large is that the total reflects attrition after training as well as attrition in training. However, the percentages still indicate there is a real problem with the rate of Franco attrition.

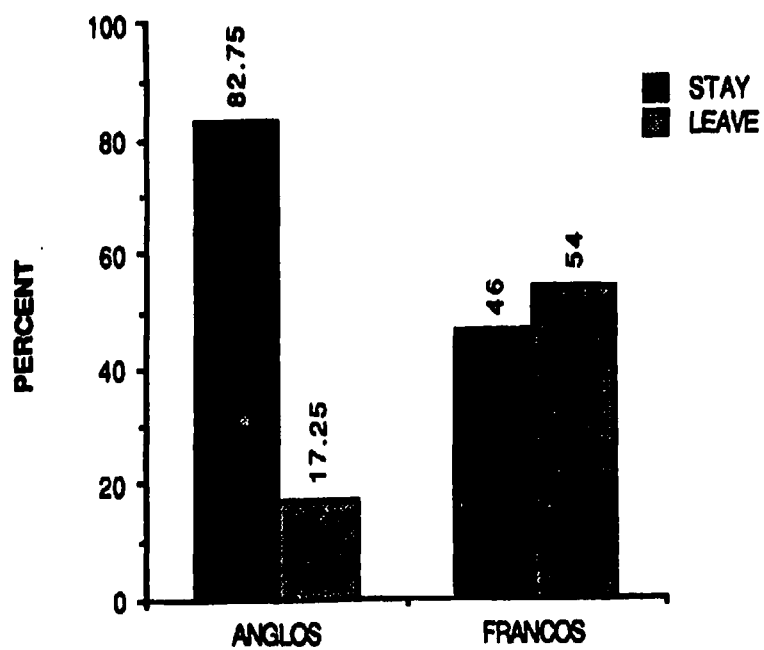


FIGURE 5. Percent of Stayers and Leavers by Language Group.

The patterns of leaving are presented below for each language group. Figure 6 shows the number of individuals in each language group that had left at specific times. The timeframes were chosen to represent the pattern as clearly as possible without leaving large gaps, and are given in months from enrollment date to the date the individual was released.

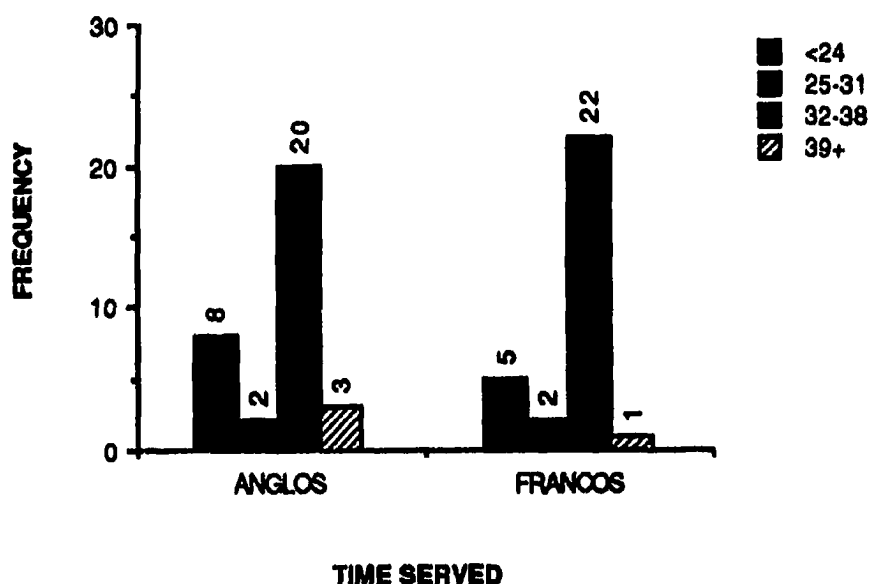


Figure 6. Pattern of attrition for Anglos and Francos from date of enrollment to date of release.

Figures 7 and 8 present the pattern of attrition from another angle, giving a description of how long stayers and leavers originally indicated they were going to stay in the Navy compared with what they actually did. In other words, did a participant who has been released at the end of the three year initial engagement think at the time of Fleet School that he or she would leave in 0-3 years, or did they expect at that time to stay in service longer, say 6-10 years. Figure 7 presents the breakdown for Francos, while Figure 8 presents the breakdown for Anglos.

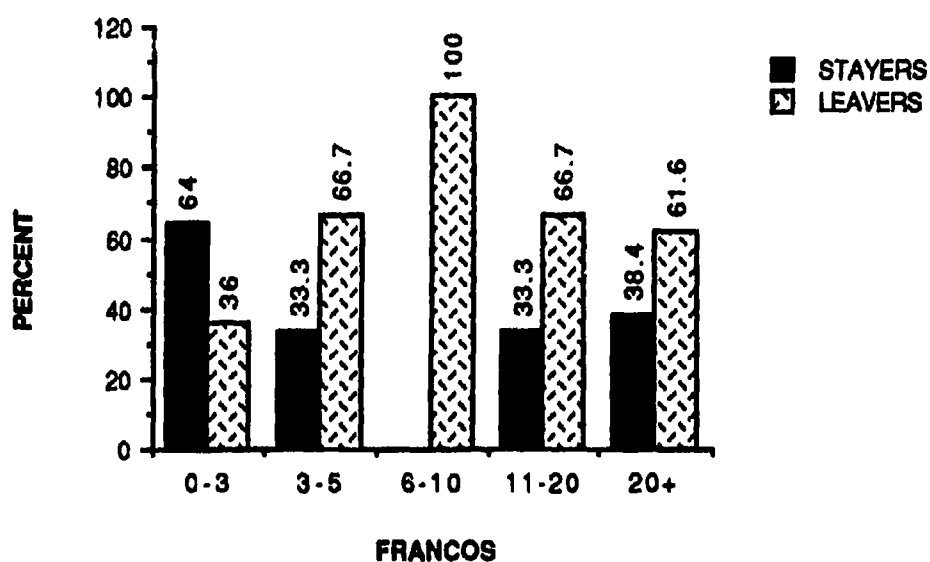


Figure 7. Percent of Franco stayers and leavers by intended years of service.

Close examination of the graphs reveals that more of the Francos that left had originally intended to stay much longer than they actually did. This finding indicates that perhaps something is happening after Fleet School that changes the Francos' minds about how long they want to stay in the Navy. Anglos, however, as seen below, had a more accurate estimation of how long they wanted to stay in, as more of them who indicated they would leave early did just that. Anglos seem to be less effected by events after Fleet School.

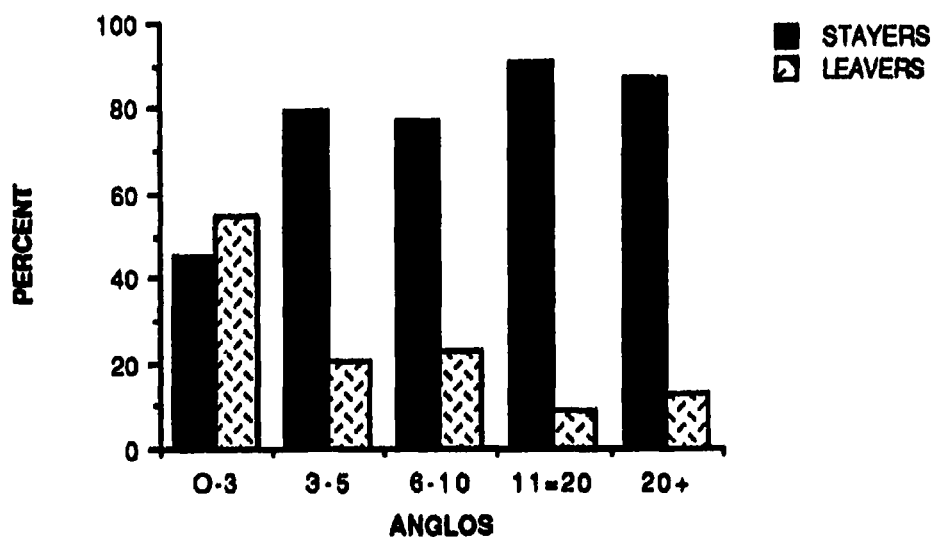


Figure 8. Percent of Anglo stayers and leavers by intended years of service.

Correlational Analysis

Presented below for each behavior group are the intercorrelations between variables pertaining to beliefs and attitudes toward training (MRA), coping with life at Fleet School (SAM), beliefs about being in a particular military occupation, the Navy, passing, and intentions to stay in the Navy. Although the belief items were included in the correlation matrices, they are to be regarded with extreme caution. The reason for their inclusion was merely to provide a complete description of results for the reader. From the correlations in Table 1 the patterns of correlations for stayers can be seen. Belief items intercorrelate quite strongly, as one would expect from MRA theory. More importantly, these scores are correlated significantly and strongly with intention to stay. Interestingly, attitudes toward life at Fleet School correlate negatively and significantly with all other variables. It was expected that the more positive one's attitude toward life at Fleet School, the more positive one's beliefs would be, and the longer one would intend to stay. However, the opposite pattern appeared. The variable CI displays strong significant correlations with all factors except beliefs about passing training, which is possibly a spurious result because of the skew in the belief items.

Table 1
Intercorrelation Matrix for ATTITUDE, CI, IMOC, IPASS, INAVY,
SIGPASS, SIGNAVY, and TIME for Stayers

Variables	1	2	3	4	5	6	7	8
1. CI	-							
2. IMOC	.25**	-						
3. IPASS	.11	.26**	-					
4. INAVY	.27**	.56**	.40**	-				
5. SIGPASS	.09	.27**	.26**	.33**	-			
6. SIGNAVY	.25**	.44**	.36**	.70**	.43**	-		
7. ATTITUDE	-.25**	-.17*	-.26**	-.34**	-.01	-.23**	-	
8. TIME	.27**	.45**	.17*	.50**	.21**	.36*	-.30**	-

*p <.05

**p <.01

CI = coping potential

Belief Variables

IMOC = participants' belief about being in MOC

IPASS = participants' belief about passing training

INAVY = participants' belief about being in Navy

SIGPASS = others' belief about participant passing training

SIGNAVY = others' belief about participant being in Navy

Attitude

ATTITUDE = attitude toward life at Fleet School

Intention to stay

TIME = length of time participant intends to stay in Navy

The correlations for leavers are presented in Table 2. As with stayers, the correlation coefficients indicate that the different belief items have a strong relationship. Belief scores are positively and significantly correlated with intentions to serve. This means that those who believe more strongly that they should be in the Navy have indicated an intention to stay longer, but in fact have left. This may mean that something happened after Fleet School to change their decision or intention. Attitudes toward life at Fleet School again correlate negatively and significantly with all other variables. The attitude measures are problematic. It is possible that the direction of what is considered a good attitude in training may not relate to long term service. As an example, easy training may be seen as a positive factor, but continued easy life at sea may be seen as boring and unchallenging, and thus negative. The variable CI displays positive, significant correlations with beliefs but does not display a significant relationship with intention to serve for leavers.

Table 2
Intercorrelation Matrix for ATTITUDE, CI, IMOC, IPASS, INAVY,
SIGPASS, SIGNAVY, and TIME for Leavers.

Variables	1	2	3	4	5	6	7	8
1. CI	-							
2. IMOC	.31*	-						
3. IPASS	.36**	.13	-					
4. INAVY	.13	.37**	.25**	-				
5. SIGPASS	.30*	.14	.47**	.35**	-			
6. SIGNAVY	.19	.22	.23	.77**	.43**	-		
7. ATTITUDE	-.27*	-.26**	-.09	-.39**	-.33*	-.35**	-	
8. TIME	.09	.26*	.19	.60**	.20	.50**	-.21	-

*p < .05

**p < .01

CI = coping potential

Belief Variables

IMOC = participants' belief about being in MOC

IPASS = participants' belief about passing training

INAVY = participants' belief about being in Navy

SIGPASS = others' belief about participant passing training

SIGNAVY = others' belief about participant being in Navy

Attitude

ATTITUDE = attitude toward life at Fleet School

Intention to stay

TIME = length of time participant intends to stay in Navy

Prediction of Stay/Leave Behavior

Assumptions

Univariate outliers were identified and dealt with by replacing extreme scores with a z score = ± 3.00 . No multivariate outliers were detected. No problems were identified with multicollinearity or perfect collinearity (Mahalanobis, Cook's statistics). The variables dealing with beliefs about passing, being in the Navy, and being in a specific military occupation (IPASS, INAVY, IMOC, SIGPASS, SIGNAVY) did not have normality of distribution and required transformation before regression analysis could proceed. The skew was likely the result of the nature of the questions, since there is a known bias for people to tend to respond positively to questions of this sort. The correction for moderate skewness (INAVY, IMOC, SIGNAVY) was to use the square of the variable for analysis, while the correction for severe skewness (IPASS, SIGPASS) was to use the logarithm of the variable. Where transformations of variables were required, the transformed data were used to maintain consistency throughout all analyses. Despite the transformation, the two most severe still violated the assumption of normality of distribution. Because of this severe skewness, IPASS and SIGPASS were dropped from the regression analyses.

Analyses to predict stay /leave behavior. The first set of regressions were aimed at attempting to predict behavior (still serving or released). In the first regression all variables were entered including: language (LANG); intention to serve (STAY); own belief about being in a particular military occupation (IMOC); own belief about being in the Navy (INAVY); attitude toward life at Fleet School (ATTITUDE); and level of coping (CI), as a means of identifying the key predictors for the outcome variable current status.

The effect of language masked the effects of other variables as seen in Table 3. Language had a multiple regression coefficient of .34, and an R^2 of .12, indicating that language explained 12% of the variability in staying and leaving behavior.

Table 3
Multiple Regression to Predict Status from
LANG, TIME and MRA Scores

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
LANG	.34	.12	.12	30.15

* F is significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

It was felt that combining the data from both language groups may have been hiding relationships as the groups represent two distinctive populations. When separate analyses were done for the language groups, there still remained only one significant predictor for Anglos, intended years of service (TIME) (Table 4). The multiple regression coefficient was .21, with an R^2 of .05, indicating that only 5% of the variance in the criterion of stay/leave behavior is explained by the factor intention to stay. There was no significant predictor for Francos.

Table 4
Multiple Regression to Predict Stay /Leave from
TIME and MRA Scores for Anglos

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
TIME	.21	.05	.05	8.10

* F is significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Analyses to predict intention to stay (TIME). It becomes apparent that intention to stay is closely linked with status, as it is the only predictor that entered into the first multiple regression equation. Therefore, it would be helpful to know what predicts intention to stay. Table 5 summarizes the regression findings for **sailors who stayed**. The first variable that entered the regression was own beliefs about being in the Navy (INAVY), with a coefficient of .50 and an R^2 of .25, indicating that it explained 25% of the variance in intention to stay. This means that the stayers' own beliefs about being in the Navy is very influential to their decision to stay in the Navy. The second variable to enter the equation was own beliefs about being in present military occupation (IMOC). IMOC had a multiple regression coefficient of .54, an R^2 of .29, which tells us that own beliefs about present military occupation added 4% to the total amount of explained variance in intended years of service for stayers. The third and last variable to enter the regression was attitude toward life at Fleet School. Attitude had a multiple regression coefficient of .56, an R^2 of .31, and added another 2% to the total amount of explained variance, which now stands at 31%.

Table 5
Multiple Regression to Predict Intended Years of Service (TIME) from
MRA Scores for Stayers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
INAVY	.50	.25	.25	54.79
IMOC	.54	.29	.04	33.82
ATTITUDE	.56	.31	.02	24.63

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Table 6 summarizes the findings for sailors who left. The variable own beliefs about being in the Navy (INAVY) entered first as it did for stayers, with a multiple regression coefficient of .60, and R^2 of .35, explaining 35% of the variance in intention to stay.

Table 6
Multiple Regression to Predict Intended Years of Service (TIME)
from MRA Scores for Leavers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
INAVY	.60	.35	.35	31.49

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

The regressions indicate that when we try to predict intent to serve for the behavior groups separately, we explain 31% of the variance in stayers, and do slightly better (35%) in explaining leaver results.

Intentions to Stay by Language Group

A final set of regressions was run to determine predictors of intentions to serve for stayers and leavers by language group. The multiple regressions on stayers and leavers in the separated language groups are summarized in Tables 7 to 10, below. Tables 7

and 8 summarize the regressions for Francophone and Anglophone stayers.

Intentions to Stay for Franco Stayers

Regression on Franco stayers (Table 7) produced one significant predictor of intent to stay, that being IMOC. It had a multiple regression coefficient of .59, and an R^2 of .35, indicating that own beliefs about present military occupation explained 35% of the variance in intent to stay for Franco stayers. In other words, Francos who made the right choice of military occupation intended to stay.

Table 7

Multiple Regression to Predict Intended Years of Service (TIME) from MRA Scores for Franco Stayers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
IMOC	0.59	0.35	0.35	13.71

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Intentions to Stay for Anglo Stayers

In Table 8, we see that there were two significant predictors of Anglos' intent to stay (TIME): INAVY and ATTITUDE. Own beliefs about being in the Navy entered on the first step, and had a multiple regression coefficient of .35, an R^2 of .12, and explained 12% of the variance in TIME. On the second step, attitudes toward life at Fleet School entered with a regression coefficient of .40, an R^2 of .16, and explaining an additional 3% of the variance in intent to stay, bringing the total to 16%.

Table 8
Multiple Regression to Predict Intended Years of Service (TIME) from
MRA Scores for Anglo Stayers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
INAVY	0.35	0.12	0.12	18.78
ATTITUDE	0.40	0.16	0.03	12.47

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Tables 9 and 10 summarize the results of the regressions using the scores from Franco and Anglo leavers.

Intentions to Stay for Franco Leavers

The regression for Franco leavers (Table 9) produced a sole predictor variable, own beliefs about being in the Navy (INAVY). INAVY had a multiple regression coefficient of .60, and an R^2 of .36, telling us that own beliefs about being in the Navy explained 36% of the variance in intent to stay. It is interesting to notice that the most important factors in predicting intent to stay for Francos were their beliefs about being in the Navy and present military occupation.

Table 9
Multiple Regression to Predict Intended Years of Service (TIME) from
MRA Scores for Franco Leavers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
INAVY	0.60	0.36	0.36	15.85

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Intentions to Stay for Anglo Leavers

The final regression was done on Anglo leavers, and is presented in Table 10. The single significant predictor of intent to stay was own beliefs about being in the Navy. It has a multiple regression coefficient of .59, with an R^2 of .35, which means that own beliefs about being in the Navy explains 35% of the variance in intent to stay.

Table 10
Multiple Regression to Predict Intended Years of Service (TIME) from
MRA Scores for Anglo Leavers

Variables Entered	Mult R	R^2	R^2 Change	Overall F^*
INAVY	0.59	0.35	0.35	14.41

*All F 's are significant at the $p < .01$ level.

Note: Only those variables that are associated with a significant F -value are included in the table.

Discriminant function analysis

Characterization for Francos

Discriminant function analysis to predict group membership (still serving vs released) for Francophones indicated that 64% of cases overall would be correctly classified by using a function that entered variables in the order IMOC, TIME, CI and ATTITUDE. Within that total percentage, one would correctly predict which Francos would stay 60% of the time, but would correctly predict those who would leave only 33% of the time, which is worse than chance performance. See Table 11, Figure 9.

Table 11

Standardized Coefficients & Classification Results for Discriminant Model

Analysis	Canonical correlation	Classification accuracy	Variables included	Standardized coefficients
FRANCO				
Function 1	.24	64%	IMOC	.72
			TIME	.33
			CI	.32
			ATTITUDE	-.06

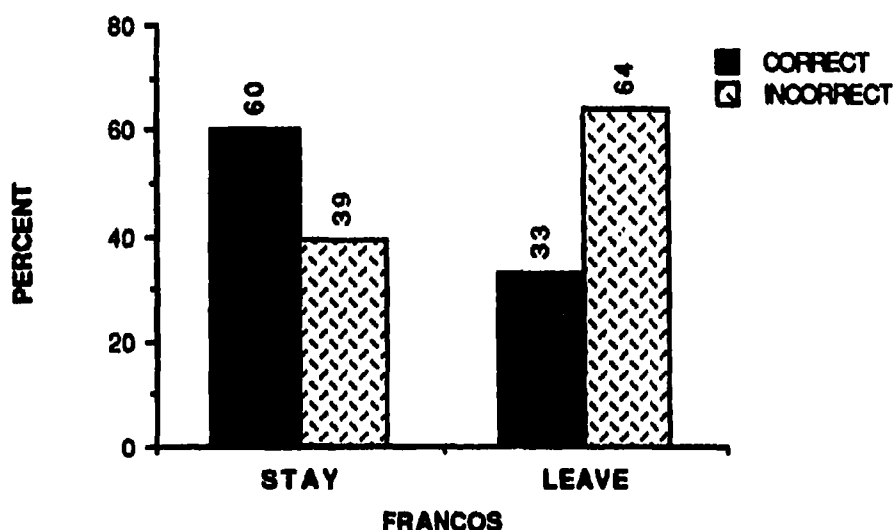


Figure 9. Accuracy of discriminant function for Francos

Characterization for Anglos

A similar analysis for Anglophones produced a discriminant function that was slightly better, at 69%. With it, one would correctly predict which Anglos would stay in the Navy 67% of the time, while correctly predicting leavers only 28% of the time which again is a very poor prediction. The function for Anglos used the variables in the order ATTITUDE, TIME, CI and IMOC. See Table 12, Figure 10. While care must be taken when interpreting the order of variables, they fell out in much the same order as in the multiple regressions.

Table 12

Standardized Coefficients & Classification Results for Discriminant Model

Analysis	Canonical correlation	Classification accuracy	Variables included	Standardized coefficients
<hr/>				
ANGLO				
Function 1	.30	68%	ATTITUDE	0.79
			TIME	.38
			CI	-.43
			IMOC	0.25
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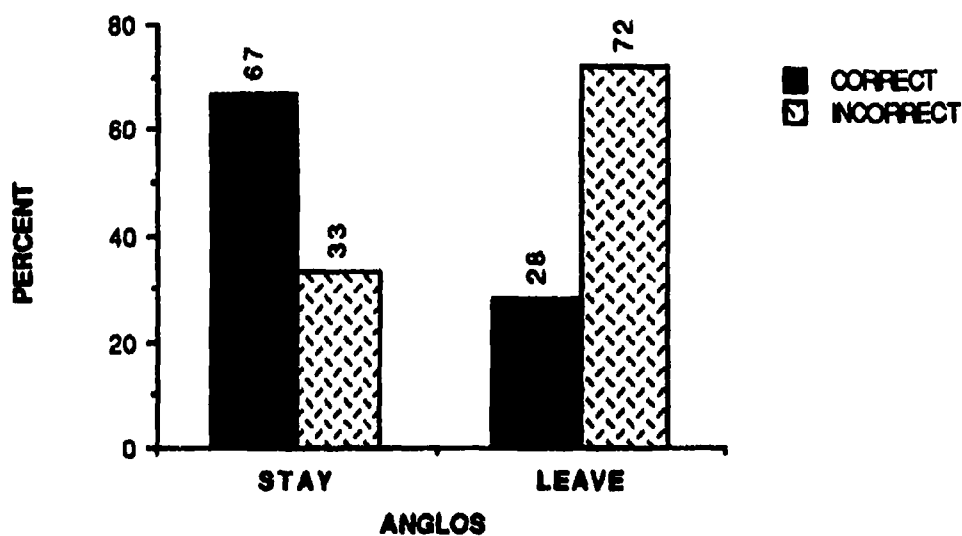


Figure 10. Accuracy of discriminant function for Anglophones

Summary

In summary, a significantly higher number of Francos left the service than Anglos. Language groups displayed several differences on several factors at the time of the original data collection.

Correlational analyses showed that for both stayers and leavers, beliefs and attitudes are related to intentions to stay and each other. Beliefs held by the trainees themselves are more highly correlated with intention than the beliefs of others. For both groups, attitudes toward Fleet School were negatively correlated with beliefs and intentions. Coping with life at Fleet School was positively related to beliefs and intentions, but was correlated negatively with attitudes. Multiple regression analyses indicated that individual beliefs are of significance in predicting intentions to serve for both language groups. Of particular importance were the trainees' own beliefs about being in the Navy and about being in their present military occupation. Discriminant function analyses produced fairly good rates of success in predicting stayers. Stayers are characterized by their attitude, their intentions to stay, their coping, and their military occupation. There was less success in predicting leavers, who are characterized by the importance of beliefs about being in their military occupation, their intentions to stay, their coping, and last, their attitude. The poorer rates of prediction of leavers indicates that there is information which characterizes leavers that is not assessed in the Fleet School Attrition Survey. Also, events after they leave Fleet School may be influencing their actions in different directions from their original intentions. Discriminant analyses also showed the influence of coping on staying and leaving, (particularly for Anglophones) as well as emphasizing the role of beliefs and intentions to serve.

Discussion

It is well documented and widely known that attrition presents a challenge to organizations and to the people who staff them. It is an additional concern that minorities typically have higher rates of attrition than majority groups. The Canadian Navy has identified such a problem with the high rates of Francophone attrition from QL3 trades training. The purpose of this research was to predict staying and leaving behavior of the sailors up to the end of their initial engagement using Fishbein & Ajzen's Model of Reasoned Action and Shalit's Sequential Appraisal Model as described in Lyon, Montgomery & Martineau (1989). The model suggests that the most important factor in predicting behavior is intention toward that behavior. Intention is in turn predicted by beliefs, attitudes and level of coping. The findings have implications for several areas in both research and practical application.

FINDINGS

Language Differences

A large effect was found for language group, with proportionally more Francophones attriting than Anglophones, which provides strong support for Hypothesis 1. While the finding may seem at first glance to be rather obvious, it was important that it be empirically evaluated for recommendations to have a stronger foundation and so that there can be little room for speculation on

the need to address Francophone attrition. From this finding, it was concluded that Franco and Anglo attrition should be analysed separately. The effects of this finding are far reaching, with influence on areas ranging from the design of programs, recruiting, training, to operational procedures of service personnel.

All sailors encounter a degree of confusion as they make the transition into military life, but the transition is considerably easier for those entering the Canadian Forces who are English speakers. Francophones bring differences to the CF that are emphasized by the fact that they are in many cases encountering a bilingual environment for the first time. Not only is it new to them, but also it is often hostile. Their integration into the military is complicated by the fact that they are simultaneously undergoing integration into another culture. If the integration process is not successful, the sailors will find it harder to enjoy their term of service, especially when at sea where there is such close contact. That the process does, in fact, appear to be stalling, is indicated by the degree of attrition by the Francos. As evidenced by the factors they considered most important at the time of training (non-school issues), they had begun to mentally remove themselves, possibly using the response option of neglect as described by Withey & Cooper (1989).

An area that has the potential to positively affect the integration process and bilingual experience for Francos is the support they perceive from leadership. As noted earlier,

student-faculty relationships are important to the dropout process and performance of minorities. Encouraging leadership both in Fleet School and in other areas of the CF to display positive attitudes toward Francos will act as positive examples for Anglos. In addition, the act of giving support will help dispel many myths and misconceptions held by leaders which exist in any environment where two cultures come together in close quarters.

In terms of interventions, the difference between the language groups underlines the necessity for practitioners to proceed with interventions while being aware that what is likely to be a suitable intervention for one group may not be suitable for the other. This awareness of the need to provide interventions based on information that applies to minorities as well as majorities can be productive if new processes are developed by pooling information from all groups. In doing so the interventions will have the benefit of using the differences the two groups bring to training which are the by-products of separate cultures, educational and life experiences. The result is very likely to be much better than anything that would result from consideration of any group in isolation and likely to be beneficial to all.

While it may be tempting to conclude that the best way to reduce attrition from the CF is to stop recruiting high risk groups, clearly, that is not an option. It is critical to use the knowledge of their differences to more effectively deal with the groups, not to mistakenly conclude that one is less desirable or less capable than

another.

Support for Theory

Another important finding was the support for the theoretical relationships between coping, beliefs, attitudes, intentions and behavior. These findings give support to Hypotheses 2 and 3. Intentions to stay were indeed useful in predicting stay/leave behavior. Attitudes, beliefs and coping were useful in predicting intentions. There was slightly less support for Hypothesis 2 since it was difficult to predict stay/leave behavior (being a dichotomous variable), and would have been better predicted by the use of logistical regression procedures.

Intentions to stay were useful for predicting behavior for Anglos, but there was no corresponding factor for Francos. This finding begs the question of where the difference arises. It is possible that we do not yet know enough about Francos to identify the factor or factors that would predict their behavior. It is possible that the majority of Francos who left changed their minds after the data was collected at Fleet School. As seen in the breakdown of when the Francos left, most stayed until the end of their initial engagement. This suggests that perhaps they encountered experiences that made them change after their Fleet School training, but far enough into their engagement to finish it out. However, the generally expected pattern held, in that beliefs, attitudes and coping predicted intention to serve, which in turn

predicted behavior. Of particular importance were the sailors' own beliefs about being in the Navy and about being in the present military occupation. Correlational analyses, regression findings, and the discriminant functions all indicate the importance of these beliefs. Therefore, we conclude that beliefs and coping are of significance in predicting staying and leaving, and that the relationships are positive.

This conclusion has implications for practical application of the theory. If it holds, then by increasing coping levels through increased integration and increased understanding of and involvement with the environment (Shalit, 1980), one could possibly reduce attrition. As well, the fostering of positive beliefs about being in the Navy and in each military occupation may result in lower attrition. It would appear that one way to encourage a higher incidence of positive beliefs would be to pay particular attention to early stages of choosing the Navy and choosing particular military occupations. As an example, Francos would likely hold more positive beliefs about being in the Army, from where they could be posted to Quebec, as opposed to being in the Navy and being posted to one of the coasts.

Attitude had a rather unexpected relationship with other factors in that its direction was negative. It is possible that the negative relationship of attitude is a result of an adversarial type reaction to military lifestyle for Francos and Anglos alike. The attitude variable was composed of factors that described Fleet

School. The higher the score, the "better" the attitude in the eyes of the researchers when the questionnaire scoring was developed (i.e., Lyon, Montgomery & Martineau). However, it is possible that since the descriptions refer to factors that would be thought of as unpleasant or stress producing in a nonmilitary context, the reaction to them could be reversed. For example, training is usually considered successfully run if it is a hard, fast, demanding experience. In fact, the right attitude may be to have a slightly negative opinion of life in Fleet School. The administrators may have the belief that Fleet School is not conducive to those values the students think are desirable. What's easy and boring may be negative in researchers' and administration eyes but positive to the student. This particular example underlines how important to understand the group being studied. Another study using a similar population would benefit from an awareness of this particular twist on attitudes.

The difference in expected direction of relationship may also be due to the fact that what is a positive attitude in training may not be positive when dealing with the longer term of service this research was concerned with, as opposed to the shorter term that was identified Fleet School.

Influence of beliefs on staying and leaving

A third finding of particular interest was the patterns of

information obtained on stayers and leavers. As proposed in Hypothesis 4, there were differences in the factors that predicted intention to serve for stayers and leavers. For stayers there were more beliefs that predicted intention to serve than there was for leavers, indicating that of the set of factors chosen for study, more are useful in predicting and characterizing stayers than they are for leavers. The results of discriminant function analyses indicate that there was more success in characterizing stayers than leavers. The combination of results suggest that we may not have tapped enough information on leavers to be of use in predicting their intentions.

Analyses to assess the possibility of language group differences within stayers and leavers showed there were slight differences in leavers between Anglos and Francos (Hypothesis 5). Anglos were most affected by own beliefs about being in the Navy. Francos, however, were more influenced by their beliefs about being in their particular military occupation. Hypothesis 6 was not supported, as stayers for both language groups were strongly affected by their beliefs about being in the Navy.

Sailors who believe they should be in the Navy and in their occupation are going to be more likely to stay than if they are unsure or if they feel they belong elsewhere. Therefore, it would be helpful to understand how those beliefs are developed. The effect of perceptions of the Canadian Navy on the development of beliefs is crucial, as are the perceptions of suitability of military occupation. Perceptions are vitally important as they are in fact the reality a

sailor is experiencing. Understanding how the leavers are experiencing the environment and how stayers are experiencing it will show their differences, and possibly give some clues as to how their beliefs have developed. For example, Manning (1988), notes that stayers report reward and evaluation procedures as being fairer than do leavers. The same system is perceived differently by the two groups, with the effect being the same as if there actually were two systems operating.

Implications for Interventions

Influence of Timing of interventions

Baumgart & Johnstone (1977) note that despite the vast amount of research done on attrition or wastage, the rates have remained very stable in most institutions of higher education. They suggest that although some of the stability may come from factors that are beyond the control of administrators (e.g., family and personality variables), there remains two important implications for theory. First, since most dropout occurs in the first year of studies, the earlier interventions aimed at reducing attrition are implemented in programs, the more potential they will have for reducing attrition. In terms of our attrition model, the appraisal stage is again being indicated as important, as is the early development of attitudes. In fact, Kealy & Rockel (1987) note in a paper on student perceptions of college quality, that influence on

students' perception of their college begins long before a student comes to the classes, starting with campus visits and recruitment information received when choosing a college. Hicks & Klimoski (1987) document the importance that maintaining correct previews of training programs has on subsequent graduation rates. As well, Meglino, DeNisi, Youngblood and Williams (1988) note that information given to U.S. Army basic trainees early in their training (realistic job previews or RJPs) significantly lowers attrition.

Van Maanen & Schien (1979) suggest that it is early organizational experiences that often have the most lasting impact on how an individual will react to his or her environment and Manning (1988) states that experiences during training are more important than the characteristics students bring to training. For this reason, one would expect that the first perceptions formed by students in training courses will have lasting effect on organizational beliefs, attitudes, and behavior.

It is important that intervention strategies be planned for reducing the attrition of minorities. The benefits of expending the effort have many positive effects other than the obvious ones of reducing costs. If left unchecked, attrition can spread from the dissatisfied individuals in a snowball effect. By reducing it in the early stages, it will be much easier to handle. Sailors who are leaving are a useful source of information, and often feel more free to express their thoughts upon exit. However, listening to them while they are still part of the CF can have the effect of reducing

future attrition, and possibly avoid the need for them to leave at all.

Methodological Limitations

Some limitations apply to the generalizability of the findings in this study. First, one of the more important considerations when designing questionnaire items based on MRA is to make the question as situation specific as possible (Ajzen 1980). Using questionnaire items originally intended to assess intentions to stay in the Navy while the participant is a trainee in QL3 trades training may not be perfectly compatible with predicting staying and leaving in three years time. The value of intention to serve as a predictor of stay/leave behavior may have been higher if the questions were more specific.

Also, the regressions attempting to predict stay/leave behavior from intentions may have been more successful with the use of a multiple regression technique better suited to categorical data. Although techniques for multiple regression on categorical data exist, they were not available to the researcher.

Several constructs (e.g., intention to serve, beliefs about passing training, beliefs about others passing training) were measured using single item questions. Unfortunately, there are numerous problems inherent to that format. It is difficult to assess their reliability, and they are susceptible to reader error, unclear wording etc, even more than a multi item measure. In a future

study, it is suggested that more items be added to increase the stability of those constructs.

Data on several variables displayed skewed distributions and the assumption of homoscedasticity was violated, especially for the variables of IPASS and SIGPASS. Transformations of the data reduced the problems somewhat, but did not alleviate them completely. In addition, transformed data is slightly suspect for use when making predictions, as underprediction tends to result.

The underprediction of leavers and Francos may be a result of the small numbers of leavers, and the small number of Francos in total. A larger number of those subjects would reduce the likelihood of this problem.

Finally, it is necessary to use caution with data of this nature, to allow for the possible effects of social desirability. While every effort was made to be sure that the participants were in fact telling us what they thought and felt and not what they thought we wanted to hear, there is no way of knowing how successful we were. It is possible that the setting (military) may contribute more to the incidence of "good" answers. If so, the prediction rates would suffer correspondingly.

Recommendations for Future Research

The study's support for the combined MRA and SAM theory suggests it is appropriate to use in wider applications. It is suggested that in future research of this type, additional surveys be conducted at various points during the course of a sailor's career to provide information on the participants at different time frames. By doing so, a clearer idea of how and when their beliefs, attitudes, coping potential and intentions develop and change would be obtained.

It is suggested that the theory be applied to other settings. For instance, its application in Army, Air Force, and civilian situations would greatly enhance its generalizability. As well, using a larger dataset would improve the stability of the results, making analyses of minorities more robust, and generally making the effects of underprediction less likely to cloud results.

Any research into attrition has the ultimate aim of applying results to practical interventions. The importance ascribed in the literature to the integration of minority groups leads to the suggestion that the addition of integration, leadership and socialization variables to future research would increase the ability to make concrete recommendations.

The results of the present research point to the requirement for a questionnaire containing items designed to assess the

construct of leaving. While it is helpful to know what characterizes stayers, a more complete understanding of leavers would help greatly in reducing their numbers. In addition, it is suggested that a larger number of leavers be analysed than were available in this study. The small n of leavers in total, and the correspondingly smaller number of leavers from each language group contributed to the lowered ability to predict.

It is also suggested that attention be given to redeveloping or replacing the items used to assess intentions to pass and intentions to fail. The questions in the present instrument were highly susceptible to social desirability in that participants' responses were universally positive. Another type of variable should be considered as an alternative to direct question about intentions to pass since these were of no use in discriminating between groups.

There were no demographic variables used in the present study. It is suggested that future research in the area include them in the analyses. In particular, it is suggested that the relationship between higher Franco attrition and the education level of Franco sailors be assessed. It was noticed that the Francos in this study had a slightly higher level of education, a finding that is consistent with Navy records of Franco sailors. It is possible that more information on this relationship may shed more light on the attrition problem.

Conclusion

The aim of this thesis was to predict attrition of Anglophone and Francophone sailors using a number of factors including; coping, beliefs about being in a particular military occupation, beliefs about being in the Navy, attitudes toward the training, and intentions to serve. As well, a second aim was to look at the differences and examine relationships for each language group.

The most significant findings are the fact that language group is the number one predictor of stay/leave behavior, and the support found for the coping - belief - attitude - intention - behavior pattern. In supporting the theory we can present it as a method of selecting variables and areas for possible interventions. As well, being able to predict the sailors who are likely to remain in the service can help focus the energies of recruiters and training staff on the individuals more likely to benefit from the attention.

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APPENDIX A
DEMOGRAPHICS

GENDER

	FRANCO		ANGLO	
	%	FREQ	%	FREQ
MALE	93.4	57	92.5	161
FEMALE	6.6	4	7.5	13
TOTAL	100.0	61	100.0	174

MARITAL STATUS

	FRANCO		ANGLO	
	%	FREQ	%	FREQ
SINGLE	88.5	54	86.2	150
MARRIED	8.2	4	8.6	14
COMMON LAW	3.3	3	4.0	7
SEP/DIV/WID	0.0	0	1.7	3
TOTAL	100.0	61	100.0	174

EDUCATION

	FRANCO		ANGLO	
	%	FREQ	%	FREQ
GR 9	0.0	0	0.6	1
GR 10	0.0	0	2.3	4
GR 11	14.8	9	9.2	16
GR 12	34.4	21	52.9	92
GR 13	41.0	25	4.0	7
SOME COMMUNITY COLLEGE	8.2	5	13.8	24
COMPLETED COMMUNITY COLLEGE	1.6	1	5.7	10
SOME UNIVERSITY	0.0	0	11.5	20
TOTAL	100	61	100	174

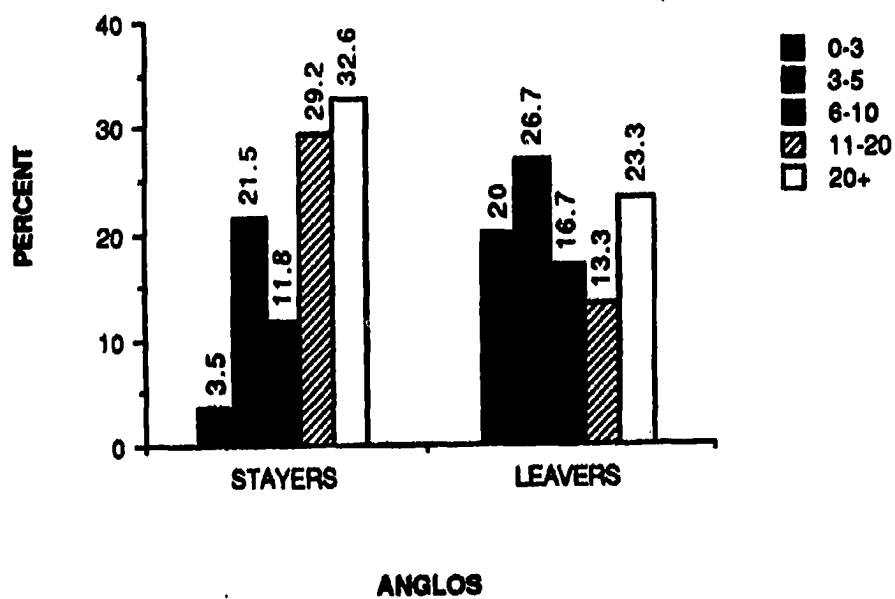
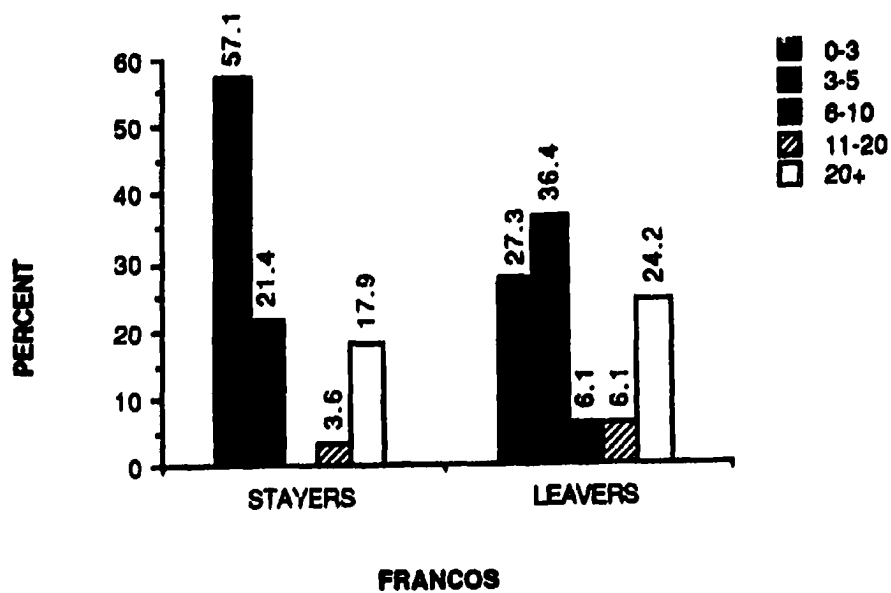
PLACE OF BIRTH

	FRANCO		ANGLO	
	%	FREQ	%	FREQ
NFLD	1.6	1	12.1	21
NS	0.0	0	14.9	26
NB	1.6	1	4.0	7
PEI	0.0	0	2.3	4
QUE	86.9	53	4.0	7
ONT	6.6	4	30.5	53
MAN	0.0	0	4.0	7
SASK	0.0	0	4.6	8
ALTA	0.0	0	8.0	14
BC	0.0	0	9.8	17
OTHER	1.6	1	5.7	10
MISSING	1.6	1	0.0	0
TOTAL	100.0	61	100.0	174

MILITARY OCCUPATION

065 Naval Weapons Technician
 181 Boatswain
 262 Naval Signalman
 273 Naval Acoustic Operator
 274 Naval Radio Operator
 275 Naval Combat Information Officer
 276 Naval Electronic Sensor Operator
 283 Naval Electronics Technician (Acoustics)
 284 Naval Electronics Technician (Communications)
 285 Naval Electronics Technician (Tactical)
 312 Marine Engineering Mechanic
 321 Hull Technician

MOC	FRANCO		ANGLO	
	%	FREQ	%	FREQ
065	1.6	1	0.0	0
181	9.8	6	1.7	3
262	19.7	12	14.4	25
273	3.3	2	2.3	4
274	4.9	3	11.5	20
275	3.3	2	1.1	2
276	16.4	10	8.0	14
283	3.3	2	0.0	0
284	4.9	3	12.6	22
285	4.9	3	8.0	14
312	13.1	8	14.4	25
321	14.8	9	24.7	43
Missing	0.0	0	1.2	2
TOTAL	100.0	61	100.0	174



APPENDIX B

ADMINISTRATION

SECTION 1
FLEET SCHOOL SURVEY
PARTICIPANT'S INSTRUCTIONS

The purpose of this survey is to find out about the way that students at Fleet School understand their learning environment and how it contributes to their performance. Everyone sees life at Fleet School in their own way. This means that different people have different views of the same situation and that your views are probably not the same as others in your class. Therefore, there are no right and wrong answers to the questions I will be asking you.

Before you is the response sheet. I will be asking you several questions and will direct you where to respond on the diagram. Feel free to raise your hand if you do not understand any aspect of the task.

To begin, I would like you to think about your performance at Fleet School. Take into account the whole situation, including academic, military, athletic, cultural and social activities. I would like to know what contributes to your performance at Fleet School: what factors or aspects are most characteristic or typical for you. As was mentioned earlier, there are no right or wrong answers. It is what you think and feel that is important.

Remember, think of your own performance at Fleet School. First, look the largest segments of the diagram. Write down those factors that you think are most characteristic or most typical that contribute to your performance. Factors can be any noun, verb, adjective or phrase that describe your understanding of the factors that contribute to your performance. Please write only one factor in each of the largest segments. You may write as many or as few factors as you wish to write, only one factor per segment.

Now look at all the factors you have written. Think of how important they are for you. In the innermost segment of the circle write a "1" by that factor which you is the most important to you. Write a "2" by the next most important and so on until all the factors have been ranked. You may feel that two or more factors are equally important for you. If this is the case, assign them the same number. Be sure to write you numbers in the inner segments of the circle.

Now look again at the factors. You may think that some of them are positive or attractive while others may be negative or unpleasant. Consider each factors in turn. Indicate your feelings by putting an "X" through one of the plus, zero or minus choice on the outer rim of the wheel. If you think a factor is very negative, mark the double minus; negative, mark one minus; very positive, mark the double plus; or positive, the single plus. If you feel that factors is neither positive nor negative, mark the zero.

Look again at the factors. You may feel you can control or do something about some of these factors while for others you may feel that you cannot affect them at all. If you think you have no control over a factors, mark the "NONE" in the appropriate section on the outer rim. If you think you have some control over the factor, mark "SOME"; while if you think you have much control over the factor, mark "MUCH".

Now we would like to understand what you thought about when you wrote down the factors. Again this is not a question of right or wrong but an understanding of what you think about the factors that contribute to your performance.

For each factors, we would like to know what it is most concerned with; is it most concerned with facts or knowledge, with emotions or feelings, or with doing and acting?

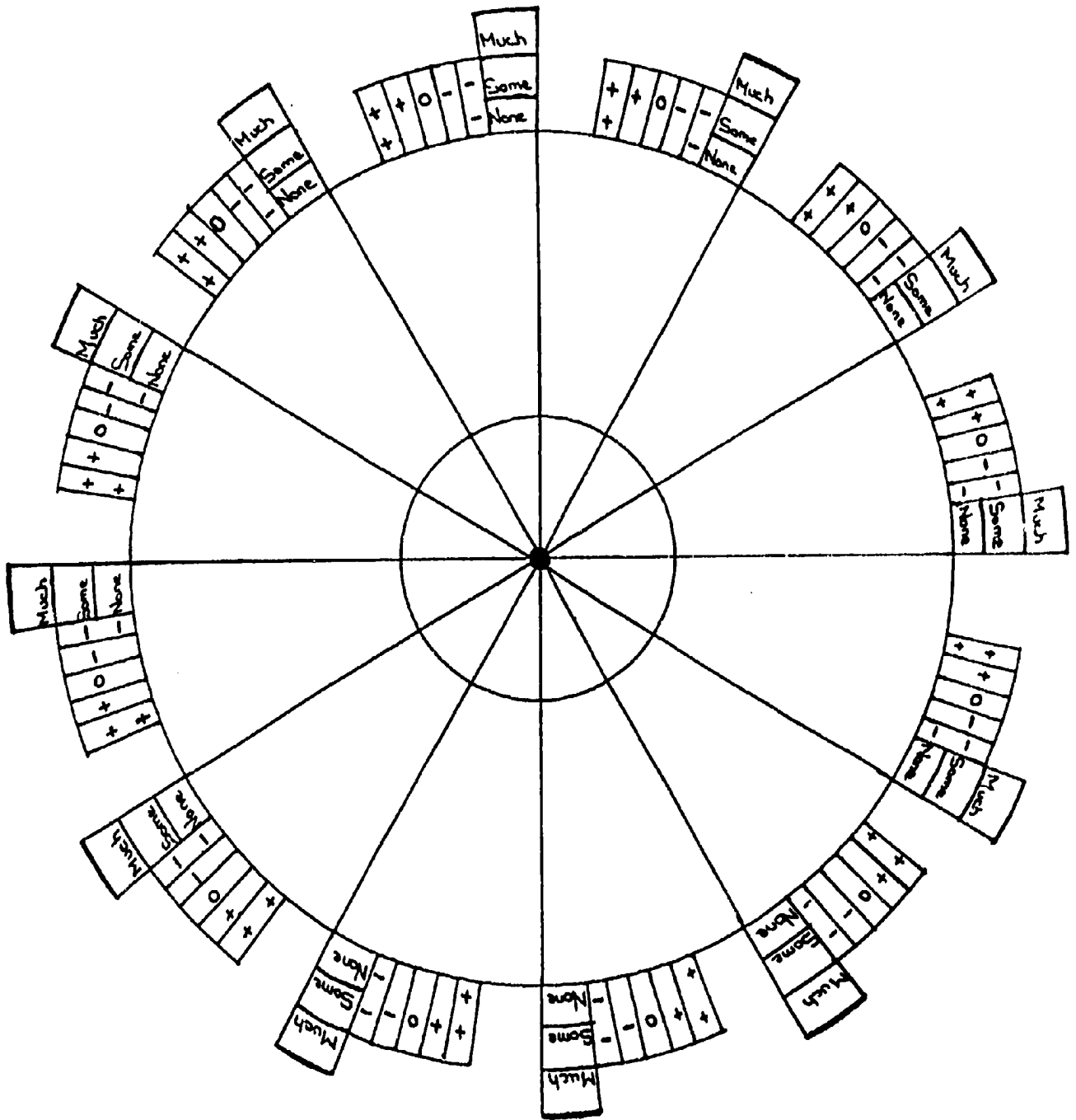
If the factor mostly describes acts or knowledge, then write the letter "F" beside the factor. If the factor mostly describes emotions or feelings, then write the letter "E" beside the factor. If the factor mostly describes what you do or how you act, then mark the letter "D" beside the factor.

Some of the factors may be concerned with several of these aspects. You should write down that aspect which is the most important for each factor.

Now look for the last time at your factors. If you feel that the factor was mostly concerned with yourself, then write the letter "Y" beside it. If the factor was mostly concerned with those who are nearest to you (e.g., your friends, your class), then write the letter "N" beside it. If you feel that the factor was mostly concerned with general issues or with other people, then write the letter "O" beside it. Use your best judgement and assign only one letter to a factor.

APPENDIX C

**FLEET SCHOOL
ATTRITION SURVEY**



SECTION 2

95

The following are a number of questions about your life in Fleet School. Remember to be as honest as possible with your answers. All responses will be kept in the strictest of confidence.

Place an "X" in the appropriate box and only put one mark per question.

1. Most people who are important to me think:

a. I will

--	--	--	--	--	--	--	--

pass QL3.

I will not

b. I should

--	--	--	--	--	--	--	--

be in the Navy.

I should not

c. I should

--	--	--	--	--	--	--	--

be in another MOC.

I should not

2. Most people at Fleet School who do not want to be in the Navy:

a. would

--	--	--	--	--	--	--	--

be prepared to fail QL3 training intentionally.

would not

3. I believe:

a. I will

--	--	--	--	--	--	--	--

pass QL3.

I will not

b. I should

--	--	--	--	--	--	--	--

be in the Navy.

I should not

SECTION 2

96

3. I believe:

c. I should

--	--	--	--	--	--	--	--

be in another MOC.

I should not

d. I will

--	--	--	--	--	--	--	--

fail QL3 training intentionally.

I will not

4. Life at Fleet School is:

Pleasant

--	--	--	--	--	--	--	--

Unpleasant

Hard

--	--	--	--	--	--	--	--

Soft

Bad

--	--	--	--	--	--	--	--

Good

Slow

--	--	--	--	--	--	--	--

Fast

Happy

--	--	--	--	--	--	--	--

Sad

Sweet

--	--	--	--	--	--	--	--

Sour

Active

--	--	--	--	--	--	--	--

Passive

Lonely

--	--	--	--	--	--	--	--

Friendly

Stimulating

--	--	--	--	--	--	--	--

Boring

Demanding

--	--	--	--	--	--	--	--

Easy

SECTION 2

97

5. So far, how would you characterize your overall performance on QL3 training:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extremely High	High	Middle	Low	Extremely Low

6. How long do you intend to stay in the Navy?

☐ Less than 3 years.

☐ 3 - 5 years.

☐ 6 - 10 years.

☐ 11 - 20 years.

☐ more than 20 years.

7. If you failed in your QL3 training, would you want a

☐ recourse.

☐ occupation transfer in the Navy.

☐ occupation transfer to another service.

☐ release from the Canadian Forces.

SECTION 3

The following are a number of questions that will be used in conjunction with your responses to the first two sections of the survey and to your final results in training. This will allow us to group the data so that we will be able to understand the factors that contribute to overall performance at Fleet School. Please be as honest and thorough as possible.

1. Course serial number is _____.
2. Gender ☐ Female ☐ Male
3. Primary Official Language ☐ French ☐ English
4. Today's date _____
day/month/year
5. Education level:
 - ☐ Grade 9
 - ☐ Grade 10
 - ☐ Grade 11
 - ☐ Grade 12
 - ☐ Grade 13
 - ☐ Some Community College
 - ☐ Completed Community College
 - ☐ Some University
 - ☐ Completed University

SECTION 3

6. MOC

--	--	--	--

7. Place of Birth _____

8. Place of Enrolment _____

9. Marital Status

□

Single

10

Married



Common Law

Separated/Divorced/Widowed

10. Date of Birth _____ day/month/year

11. SIN

[illegible]

APPENDIX D

**TECHNICAL ANALYSIS
OF THE
WHEEL QUESTIONNAIRE**

TECHNICAL ANALYSES OF THE WHEEL QUESTIONNAIRE

Introduction

Information obtained from the WQ was analysed using the indices and categorization methods developed by Shalit (1986). Two primary points of focus provided the basis for scoring the WQ (i.e., the Indices and the Content of the responses).

Scoring the Indices

Four indices of appraisal (i.e., Structure, Motivation, Emotional Balance, and Coping) are calculated using the following information from the WQ:

		<u>Range</u>
a. The number of factors filled in.	d	(1 to 12)
b. The rank given each factor.	r	(1 to 12)
c. The lowest rank given.	'r	(1 to 12)
d. The loading (i.e., positive, zero or negative) given to each factor.	L	(-2 to +2)
e. The degree of control attributed to each factor (i.e., + more control).	C	(-1 to + 1)

Structure (R). The level of ambiguity that the respondent has about performance at Fleet School is measured by the individual's ability to differentiate among the factors that were identified in the WQ. As well, it estimates the degree to which the perceived elements are unique and distinct. This index is calculated on the lowest rank given minus 1, divided by the total number of factors (i.e., $R = (r-1)/d$). This index ranges from .92 (12 factors and 12 ranks) to 0.0 (1 rank, regardless of number of factors). The higher the "r" value the less ambiguous and more differentiated is the trainee's understanding of performance at Fleet School.

Motivation (M). This provides an estimate of the emotional investment the individual has in Fleet School. Motivation is based on the absolute sum of plus and minus responses (L). Thus two pluses (++) and one minus (-) equals three (i.e., $M = 3$). Motivation scores range from 0 to 24.

Emotional Balance (E). This is an estimate of the direction of emotional investment of the trainee toward performance factors. The index indicates whether performance factors are considered to be positive, negative, or benign. It is calculated by algebraically summing the total number of positive and negative signs and dividing the sum by the total number of factors given. Thus, the intensity of the direction of the involvement is provided. The range of possible responses is from -2 to +2 (i.e., $E = L/d$ or -24/12 to 24/12).

Coping (CI). This index estimates the extent to which the trainee has a sense of control over performance. It involves two calculations (i.e., Intensity [I] and Control [C]).

To calculate intensity (I), each loading $L = 2, 1, 0, -1, \text{ or } -2$ is divided by the ranking of the factor (r), hence $I = L/r$ (e.g., a factor with two pluses (++) ranked first will have more weight than a similar factor ranked seventh (e.g., 2/1, 2/7)).

For each intensity ratio (i.e., one ratio for each factor) a weight is added according to the perceived control (C). "Much" has the value of +1, "some" has the value 0, and "none" has the value -1. A performance factor that is perceived as negative has less negative effect if the trainee feels he or she has control over the factor. Conversely, a positive factor for which the trainees perceives little or no control will have a negative value. The range for this index is -36 to +36 (i.e., $CI = [I + C]$).

In summary, determination of the indices consisted of examining the cognitive structure (i.e., the ambiguity concerning the understanding of performance and the ability to discriminate between factors); emotional involvement (i.e., the amount of emotional involvement the respondent has with performance as well as the direction of that emotion); and, the feeling of control over performance. The results of this analysis identified the areas of focus for improving performance.

Scoring the Content.

The scoring of the content is based on two dimensions: the focus of the responses (i.e., whether the response dealt with the individual; a specific frame of reference such as the Unit; or, a non-specific reference such as feelings [other]); and, the aspect of the responses (i.e., whether the the response dealt with cognitive [e.g., knowledge, understanding], affective [e.g., feelings, emotions, attitudes] or, instrumental [e.g., functions, actions, equipment] aspects).

By examining the frequency of responses using a three-by-three matrix an estimate can be made of how the QL3 trainee conceptualizes performance at Fleet School. This estimate determined whether the respondents understood performance demands, its effects on them and their coping ability.

APPENDIX E

**CONTENT ANALYSIS OF
THE WHEEL QUESTIONNAIRE**

CONTENT ANALYSIS

Content analysis consisted of two stages. On the basis of knowledge of performance literature, researchers subjectively categorized each response for Anglophones and Francophones according to content. These categories were then grouped under functional headings: family & friends, School/learning, accommodations, mental attitudes, physical activities, personal lifestyle, military routines, Navy environment, leadership, language concerns, gender concerns, and miscellaneous.

FAMILY & FRIENDS

Grouped under the heading Family & Friends are factors that indicated support and/or influence from people close to the respondent either emotionally (e.g., spouse or parents) or physically (e.g., classmates and roommates).

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
FRIENDS	121	91	212
FAMILY SUPPORT	68	23	91
GIRLFRIEND	27	10	37
FAMILY SEPARATION	8	6	14
ROOMMATES	<u>6</u>	<u>4</u>	<u>10</u>
	230	134	364

SCHOOL/LEARNING

Factors that represented a reference to a part of the training process directly related to experiences, process, and success were placed under the heading School/learning.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
INSTRUCTORS	96	18	114
STUDY TIME	38	2	40
INTERESTING MATERIAL	12	10	22
PRACTICAL EXPERIENCE	20	1	21
PRE CF EDUCATION	19	0	19
CLASSROOM ATMOSPHERE	16	0	16
COURSE LENGTH	14	1	15
GRADES	15	0	15
OUTDATED MATERIAL/EQUIPMENT	9	5	14
ENJOY LEARNING	9	2	11
ABILITY	7	0	7
HOURS	5	1	6
SMALL CLASSES	4	1	5
CLASSROOM CONDITION	3	0	3
MISLED AT RECRUITMENT	<u>1</u>	<u>1</u>	<u>2</u>
	268	42	310

ACCOMMODATIONS

The accommodations category includes factors referring specifically to issues about living conditions provided for trainees.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
ACCOMMODATIONS	90	37	127
FOOD	60	29	89
NOISE	10	9	19
NO HEAT	8	6	14
NO PRIVACY	2	3	5
LAUNDRY FACILITIES	2	3	5
PARKING	2	2	4
NO BANKING FACILITIES	<u>2</u>	<u>0</u>	<u>2</u>
	182	93	273

MENTAL ATTITUDES

The Mental Attitudes heading contains factors that specifically deal with attitudes, thoughts, and emotions that contribute to performance at Fleet School.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
MOTIVATION	35	3	38
LONELINESS	21	7	28
ATTITUDE	20	6	26
SATISFACTION	22	0	22
PRIDE	17	2	19
STRESS	13	3	16
EMOTIONS	13	1	14
AMBITION	10	1	11
SELF-CONFIDENCE	10	0	10
FRUSTRATION	7	1	8
BOREDOM	7	0	7
WORRY	6	0	6
HUMOR	3	0	3
WEST COAST ATTITUDE	<u>1</u>	<u>0</u>	<u>1</u>
	185	24	209

PHYSICAL ACTIVITIES

The factors that describe physical concerns, physical activities, and physical conditions are included under the heading Physical Activities

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
WEATHER	34	14	48
FITNESS	31	14	45
SLEEP	23	5	28
ALCOHOL	15	6	21
SMOKING HABITS	11	3	14
AEROBICS	9	2	11
SEASICK	<u>0</u>	<u>1</u>	<u>1</u>
	123	45	168

PERSONAL LIFESTYLE

Factors under the heading Personal Lifestyle are those relating to personal activities, goals, and factors that are not directly related to Fleet School itself but that directly influence performance.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
LEISURE TIME	35	20	45
SOCIAL LIFE	26	4	30
RECREATIONAL ACTIVITIES	19	5	24
POSITIVE EXPERIENCE	21	0	21
CAREER	14	0	14
POSITIVE FUTURE	10	3	13
OWN TRANSPORTATION	5	2	7
SEX	3	3	6
FINANCIAL PROBLEMS	<u>4</u>	<u>2</u>	<u>6</u>
	137	39	176

MILITARY ROUTINES

The Military Routines heading contains factors that are directly related to Fleet School and its administration or military procedures that are contributing to performance.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
PAY	28	18	46
DUTY WATCHES	16	18	34
LOCATION	23	5	28
MILITARY ROUTINES	16	9	25
SPORTS FACILITIES	9	5	14
ADMINISTRATION	6	5	11
WORKING CONDITIONS	<u>3</u>	<u>0</u>	<u>3</u>
	101	60	161

NAVY ENVIRONMENT

Factors that are directly contributing to performance at Fleet School and refer to the Navy in particular are grouped under the heading Navy Environment.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
INSPECTIONS	12	5	17
DISCIPLINE	11	5	16
TRAVEL	8	0	8
UNIFORMS	4	2	6
SAILING	<u>4</u>	<u>0</u>	<u>4</u>
	39	12	51

LEADERSHIP

The factors that refer specifically to leadership behaviors as perceived by trainees are grouped under the leadership heading.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
NO RESPECT FOR STUDENTS	14	12	26
DEROGATORY REMARKS	12	0	12
OVER SUPERVISION	1	0	1
DISORGANIZED	4	0	4
INCONSISTENT	3	0	3
FAVORITISM	<u>4</u>	<u>0</u>	<u>4</u>
	38	12	50

LANGUAGE CONCERNS

Factors representing concerns about language issues are contained in the Language Concerns heading.

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
NOT ENOUGH FRENCH USED	0	24	24
ANGLO/FRANCO MIX	5	6	11
NEW CULTURE	<u>0</u>	<u>4</u>	<u>4</u>
	5	34	39

GENDER CONCERNS

Factors representing specific concerns or issues related to gender differences are grouped under the heading Gender Concerns

<u>FACTORS</u>	<u>ANGLOS</u>	<u>FRANCOS</u>	<u>TOTAL</u>
MALE/FEMALE DOUBLE STANDARD	5	3	8
WOMEN IN CLASS	3	0	3
PLEASANT WOMEN	1	1	2
BEING FEMALE	<u>1</u>	<u>0</u>	<u>1</u>
	10	4	14

APPENDIX F
DESCRIPTION OF LANGUAGE GROUPS
ON MRA AND SAM VARIABLES

FRANCOPHONE MEANS, STANDARD DEVIATIONS, AND MODES ON MRA
AND SAM VARIABLES.

<u>VARIABLE</u>	<u>MEAN</u>	<u>STANDARD DEVIATION</u>	<u>MODE</u>
R	0.75	.12	0.75
M	8.6	.53	7.00
E	-0.5	.74	-1.00
CI	-4.0	4.62	-6.08
IMOC	3.5	2.10	1.00
INAVY	4.5	2.28	7.00
IPASS	6.5	.13	7.00
SIGMOC	4.2	1.97	4.00
SIGNAVY	4.7	1.95	6.00
SIGPASS	6.3	1.26	7.00
ATTITUDE	35.7	9.36	47.00
STAY	2.3	1.57	1.00

ANGLOPHONE MEANS, STANDARD DEVIATIONS, AND MODES ON MRA
AND SAM VARIABLES.

<u>VARIABLE</u>	<u>MEAN</u>	<u>STANDARD DEVIATION</u>	<u>MODE</u>
R	.74	.15	.92
M	10.69	4.24	10.00
E	.31	.89	1.00
CI	.04	6.19	-13.53
IMOC	5.45	2.15	7.00
INAVY	6.14	1.38	7.00
IPASS	6.78	.77	7.00
SIGMOC	5.37	2.06	7.00
SIGNAVY	5.99	1.40	7.00
SIGPASS	6.75	.85	7.00
ATTITUDE	35.02	1.31	32.00
STAY	3.5	1.31	5.00