NAMRL Technical Memorandum

CAUSES OF STUDENT ATTRITION IN US NAVAL AVIATION TRAINING: A FIVE YEAR REVIEW FROM FY 2003 TO FY 2007

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Introduction and Method

The costs of student pilot and flight officer attrition from Naval Aviation training are substantial, such that even marginal reductions in the attrition rate will produce significant cost savings. The purpose of this review is to identify current trends in the causes of aviation training attrition, and from these trends recommend future RDT&E efforts aimed at improved personnel screening practices and selection testing.

A detailed analysis of cost to train and attrition data conducted in 2002 estimated that the average investment in each attrited Student Naval Aviator (SNA) from commencement of flight training to separation from training was about $160k. The corresponding figure for Student Naval Flight Officers (SNFO) was estimated at approximately $115k (Arnold, 2002). FY07 "actual cost per student" data (CNATRA, 2008b) were used to replicate this analysis, weighting phase- and pipeline-specific costs by phase- and pipeline-specific attrition rates. The "actual cost" data used for the FY07 analysis accounted for recoverable costs only, whereas the 2002 cost figures included some fixed costs in addition to recoverable costs. Thus, the FY07 figures produced lower average attrition costs, even with inflation factored in. The FY07 estimates are $89k per attrited SNA and $43k per attrited SNFO.

The US Navy and Marine Corps Aviation Selection Test Battery (ASTB) historically has been a highly effective means for reducing attrition in flight training. It has been estimated that attrition would rise by approximately 50% in its absence (Arnold, 2002), or by approximately 150 attrites (100 SNAs and 50 SNFOs) per year. Such a rise would require a corresponding increase in the number of annual training accessions to graduate the same numbers currently being winged each year. Thus, the cost of such increased attrition, or conversely the cost savings ASTB produced via reduced attrition, is estimated at $11.05 million annually, using the FY07 training cost estimates. This is a conservative estimate of total savings, as it does not include increases to fixed training costs a perpetually larger student population would require; nor does it account for increases in average time to train or mishaps projected in the absence of ASTB.

The Naval Air Training Command (NATC) administers an exit survey to all attrited flight students and to a representative sample of students completing each phase of training. The results of the exit survey are tabulated in a biannual report produced by the Naval Aerospace Medicine Institute (NAMI), the past ten of which form the basis for this review. The following notation will be used to refer to each report and reporting period:

03-1 for October 2002 to March 2003 period (Senn, 2003a)
03-2 for March 2003 to October 2003 period (Senn, 2003b)
04-1 for October 2003 to March 2004 period (unattributed, 2004)
04-2 for April 2004 to October 2004 period (Olde, 2004)
05-1 for November 2004 to April 2005 period (Miller, 2005)
05-2 for May 2005 to September 2005 period (Miller, 2005)
06-1 for October 2005 to March 2006 period (Stitcher-Singleton, 2006a)
06-2 for April 2006 to September 2006 period (Stitcher-Singleton, 2006b)
07-1 for October 2006 to March 2007 period (Stitcher-Singleton, 2007a)
07-2 for April 2007 to September 2007 period (Stitcher-Singleton, 2007b)

CNATRAINST 1500.4D directs administration of the attrition survey to all attrited students and a random 10% of students completing each phase of training. During the period FY2003-2007, CNATRA reported 1,558 cases of student attrition (CNATRA 2008a); while for the same period NAMI reported 942 survey responses from attrited students. Data irregularities in the 06-2 report caused them to be excluded from the present review, so the figures are aggregated from nine, rather than ten reports. Assuming the 06-2 report would have included a representative number of respondents (appx. n = 105), the total in the NAMI sample would represent about a 67% response rate from attrited students. This aggregate total of 942 attrited students includes 428 student pilots (see table 1) and 205 student flight officers (see table 2). Reports 06-1 to 07-2 combined survey results from student pilots and flight officers, so this review combines the 309 attriters from this period as well (see table 3). All-phase CNATRA attrition rates averaged 17% for student pilots and 23% for student flight officers during this period (CNATRA, 2008a).

Of interest in this review are self-reported "administrative reason(s) for attrition". Thirteen attrition categories are reported during the five year review period. However, some categories are not included in all reports, and others appear to have been modified over time. Five categories appear in all nine reports: Academic Failure, Disciplinary, Drop on Request (DOR), Flight Failure, and Other. Two categories appear in 8 of the 9 reports. Not Aeronautically Adapted appears in all but the last, as does Not Physically Qualified (NPQ), which in the last report is instead split into the eighth and ninth categories: NPQ – vision related and NPQ- non-vision-related categories. The other four categories, Physical Training Failure, Practical Work Failure, Transfer to SNA or SNFO program, and Insufficient NSS (Navy Standard Score) are included sporadically. However, among these last four, only Insufficient NSS appears to account for a sizeable number of attrited students, a total of 31 between reports 05-1 and 07-1.

Tables 1 through 4 present frequencies and attrition rates (percent, relative to all attriters in report period) of self-reported administrative reasons for attrition between FY03 and FY07. Table 5 presents self-reported factors influencing attrition. The 15 most frequently endorsed items across reporting periods are presented; the table reports percentages of attriters who "strongly" or "very strongly" endorsed each response option.

Results

Table 1. Student Naval Aviator (SNA) self-reported reasons for attrition: frequency and (%)

	03-1	03-2	04-1	04-2	05-1	05-2	06-1	06-2	07-1	07-2	Total
Academic Failure	8 (7%)	1 (2%)	4 (5%)	7 (10%)	6 (9%)	3 (6%)	*	*	*	*	29 (7%)
Disciplinary	1 (1%)	1 (2%)	2 (3%)	2 (3%)	1 (1%)	-	*	*	*	*	7 (2%)
Drop on Request	33 (29%)	18 (39%)	40 (50%)	27 (38%)	26 (38%)	19 (39%)	*	*	*	*	163 (38%)
Flight Failure	31 (27%)	11 (24%)	12 (15%)	22 (31%)	10 (14%)	14 (29%)	*	*	*	*	100 (23%)
Not Aero. Adapted	7 (6%)	1 (2%)	4 (5%)	3 (4%)	1 (1%)	-	*	*	*	*	16 (4%)
Not Physically Qualified	20 (18%)	9 (20%)	9 (11%)	8 (11%)	7 (10%)	7 (14%)	*	*	*	*	60 (14%)
NPQ - vision	-	-	-	-	-	-	*	*	*	*	
NPQ – non-vision related	-	-	-	-	-	-	*	*	*	*	
Phys.Trng. Failure	1 (1%)	0 (0%)	0 (0%)	1 (1%)	-	-	*	*	*	*	2 (<1%)
Pract. Work Failure	1 (1%)	2 (4%)	1 (1%)	0 (0%)	1 (1%)	-	*	*	*	*	5 (1%)
Tranx to SNA/SNFO	1 (1%)	0 (0%)	-	-	-	-	*	*	*	*	1 (<1%)
Insufficient NSS	-	-	-	-	11 (16%)	4 (8%)	*	*	*	*	15 (4%)
Other	10 (9%)	3 (7%)	8 (10%)	1 (1%)	6 (9%)	2 (4%)	*	*	*	*	30 (7%)
Total	113	46	80	71	69	49					428

* Note: from report 06-1 to 07-2 SNA and SNFO data were combined, and are presented in table 3.

Table 2. Student Naval Flight Officer (SNFO) self-reported reasons for attrition: frequency and (%)

	03-1	03-2	04-1	04-2	05-1	05-2	06-1	06-2	07-1	07-2	Total
Academic Failure	8 (13%)	1 (8%)	3 (10%)	5 (17%)	6 (11%)	3 (20%)	*	*	*	*	26 (13%)
Disciplinary	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	-	*	*	*	*	0 (0%)
Drop on Request	20 (31%)	4 (33%)	14 (48%)	14 (48%)	28 (50%)	4 (27%)	*	*	*	*	84 (41%)
Flight Failure	16 (25%)	1 (8%)	4 (14%)	5 (17%)	14 (25%)	6 (40%)	*	*	*	*	46 (22%)
Not Aero. Adapted	5 (8%)	1 (8%)	1 (3%)	1 (3%)	1 (2%)	-	*	*	*	*	9 (4%)
Not Physically Qualified	7 (11%)	4 (33%)	4 (14%)	2 (6%)	3 (5%)	1 (7%)	*	*	*	*	21 (10%)
NPQ - vision	-	-	-	-	-	-	*	*	*	*	
NPQ – non-vision related	-	-	-	-	-	-	*	*	*	*	
Phys.Trng. Failure	0 (0%)	0 (0%)	0 (0%)	0 (1%)	-	-	*	*	*	*	0 (0%)
Pract. Work Failure	1 (2%)	1 (8%)	0 (0%)	1 (3%)	0 (0%)	-	*	*	*	*	3 (1%)
Tranx to SNA/SNFO	1 (2%)	0 (0%)	-	-	-	-	*	*	*	*	1 (<1%)
Insufficient NSS	-	-	-	-	0 (0%)	1 (7%)	*	*	*	*	1 (<1%)
Other	6 (9%)	0 (0%)	3 (10%)	1 (3%)	4 (7%)	0 (0%)	*	*	*	*	14 (7%)
Total	64	12	29	29	56	15					205

* Note: from report 06-1 to 07-2 SNA and SNFO data were combined, and are presented in table 3.

Table 3. Combined SNA and SNFO self-reported reasons for attrition: frequency and (%), reporting periods 06-1 to 07-2

	03-1	03-2	04-1	04-2	05-1	05-2	06-1	06-2	07-1	07-2	Total
Academic Failure							15 (12%)	*	5 (5%)	11 (15%)	31 (10%)
Disciplinary							-	*	2 (2%)	1 (1%)	3 (1%)
Drop on Request							57 (46%)	*	45 (41%)	26 (35%)	128 (41%)
Flight Failure							30 (24%)	*	31 (28%)	18 (24%)	79 (25%)
Not Aero. Adapted							-	*	2 (2%)	-	2 (<1%)
Not Physically Qualified							12 (10%)	*	6 (6%)	-	18 (6%)
NPQ - vision							-	*	-	2 (3%)	2 (<1%)
NPQ – non-vision related							-	*	-	15 (20%)	15 (5%)
Phys.Trng. Failure							-	*	-	-	
Pract. Work Failure							-	*	2 (2%)	-	2 (<1%)
Tranx to SNA/SNFO							-	*	-	-	
Insufficient NSS							4 (3%)	*	11 (10%)	-	15 (5%)
Other							7 (6%)	*	5 (5%)	2 (3%)	14 (5%)
Total							125	*	109	75	309

*06-2 data excluded from all analyses

Table 4. Combined SNA and SNFO self-reported reasons for attrition: frequency and (%), full five year period

	03-1	03-2	04-1	04-2	05-1	05-2	06-1	06-2	07-1	07-2	Total
Academic Failure	16 (9%)	2 (3%)	7 (6%)	12 (12%)	12 (10%)	6 (9%)	15 (12%)	*	5 (5%)	11 (15%)	86 (9%)
Disciplinary	1 (<1%)	1 (2%)	2 (2%)	2 (2%)	1 (1%)	-	-	*	2 (2%)	1 (1%)	10 (1%)
Drop on Request	53 (30%)	22 (38%)	54 (50%)	41 (41%)	54 (43%)	23 (36%)	57 (46%)	*	45 (41%)	26 (35%)	375 (40%)
Flight Failure	47 (27%)	12 (21%)	16 (15%)	27 (27%)	24 (19%)	20 (31%)	30 (24%)	*	31 (28%)	18 (24%)	225 (24%)
Not Aero. Adapted	12 (7%)	2 (3%)	5 (5%)	4 (4%)	2 (2%)	-	-	*	2 (2%)	-	27 (3%)
Not Physically Qualified	27 (15%)	13 (22%)	13 (12%)	10 (10%)	10 (8%)	8 (13%)	12 (10%)	*	6 (6%)	-	116 (12%)
NPQ - vision	-	-	-	-	-	-	-	*	-	2 (3%)	**
NPQ – non-vision related	-	-	-	-	-	-	-	*	-	15 (20%)	**
Phys.Trng. Failure	1 (<1%)	0 (0%)	0 (0%)	1 (1%)	-	-	-	*	-	-	2 (<1%)
Pract. Work Failure	2 (1%)	3 (5%)	1 (1%)	1 (1%)	1 (1%)	-	-	*	2 (2%)	-	10 (1%)
Tranx to SNA/SNFO	2 (1%)	0 (0%)	-	-	-	-	-	*	-	-	2 (<1%)
Insufficient NSS	-	-	-	-	11 (9%)	5 (8%)	4 (3%)	*	11 (10%)	-	31 (3%)
Other	16 (9%)	3 (5%)	11 (10%)	2 (2%)	10 (8%)	2 (3%)	7 (6%)	*	5 (5%)	2 (3%)	58 (6%)
Total	177	58	109	100	125	64	125	*	109	75	942

*06-2 data excluded from all analyses

** NPQ sub-categories from 07-2 included in general NPQ total

Table 5. Difficulties encountered during training: attrites. Top 15 of 31 items, percent of attriters endorsing item with highest rating (strongly/very strongly agree).

	03-1	03-2	04-1	04-2	05-1	05-2	06-1	06-2	07-1	07-2
Nervousness and anxiety generated by flight program	31	24	22	21	26	37	35	*	47	37
Extreme apprehension when anticipating upcoming flights or during flights	28	28	26	21	22	24	31	*	40	28
Do not enjoy flying as much as expected	22	20	19	16	24	24	32	*	33	33
Performance while flying	40	24	22	22	22	16	26	*	29	25
Loss of interest in flight program	29	20	27	17	27	22	21	*	31	24
Delays in training	-	-	-	-	-	-	19	*	28	24
Pace of learning ground and flight material	31	16	15	4	21	26	28	*	25	24
Shift in career interest	9	15	13	12	20	24	32	*	28	17
Ground and flight school material	23	10	9	8	15	16	16	*	17	16
Pressure in the program	18	13	10	6	13	10	17	*	19	15
Motion sickness	13	16	6	9	-	-	11	*	11	15
Extent of instructor standardization	19	12	9	1	-	32	12	*	15	12
Shift in career interest to surface or staff designator	21	13	10	10	-	-	13	*	10	12
Length of the flight training program	7	7	4	1	7	12	6	*	15	8

Note: not all items appeared on all surveys; these are denoted with (-). Wording of some items changed slightly between surveys. Response options changed after the 03-2 report from a 3-point to a 5-point Likert scale.

*06-2 data excluded from all analyses

Discussion

The most salient finding in this review is the significantly large proportion of attrition accounted for by voluntary self-elimination from training, or drop on request (DOR). In fact, over this five year period, DORs accounted for more attrition than did all types of performance-related attrition combined (academic failure, flight failure, physical training failure, insufficient NSS and practical work failure), 40% vs. 37%. The current version of ASTB is composed exclusively of aptitude and knowledge tests. Though it once included a Biographical Inventory (BI) section designed to measure interests and motivational traits predictive of training persistence, this test has not been included in ASTB since 2002. NAMI is currently developing a replacement Biographical Inventory, in addition to personality scales, for subsequent validation in the prediction of DOR. One difficulty with such self-report measures, unlike aptitude or ability tests, is that they are susceptible to positive response distortion. Pervasive response distortion was probably the reason the once-valid BI declined to uselessness within a few years of its implementation. Given the high prevalence of DOR in naval flight training, it seems warranted to investigate other means of assessing applicant motivation and persistence in addition to self-report measures. Furthermore, it is likely that variables other than motivation, interests, and persistence are also significant factors in DOR-related attrition.

Unfortunately, survey results are not presented separately for DOR and non-DOR attrites. However, considering the nature of some of the most frequently endorsed contributing factors, and the high proportion of attrition from DOR, it is not unreasonable to assume that factors such as "nervousness and anxiety generated by the flight program" and extreme apprehension when anticipating upcoming flights or during flights" are particularly relevant to DOR. It also seems likely that "motion sickness" and the several options related to loss of interest in flying are disproportionately represented among DORs. In future survey analyses, particularly those related to factors contributing to attrition, comparative analyses according to administrative reasons for attrition may provide additional insight into the causes of DOR.

Among performance-related causes of attrition, flight failure accounted for 24% of all attrition. ASTB is an effective predictor of performance during flight phases of training. However, previous research shows that computer-based tests of psychomotor and multitasking ability, when used in combination with paper-and pencil ability tests such as ASTB, provide substantial incremental predictive validity (Delaney, 1990; Griffin & McBride, 1986). NAMI is currently evaluating one such test for inclusion in an expanded ASTB, the Performance Based Measurement Battery (PBM). Even with improvements expected from this expanded test battery, there remains at least one important cognitive ability related to flight performance that is not addressed by either ASTB or PBM: Task Prioritization. In fact task prioritization was rated by Instructor Pilots as the number one cognitive skill for SNAs and number three for SNFOs, among 32 cognitive skills rated (Mangos et al., 2005). Not only does the Navy lack a valid measure of task prioritization, the commercial testing industry has yet to produce an adequate, validated measure of task prioritization. This appears to be a neglected but promising area of research to address problems of attrition due to flight failure.

Among other causes of attrition, physical disqualification (NPQ) accounts for a significant proportion of attrition, at 12%. Certainly students develop disqualifying conditions over the

course of training; however, such a high figure suggests significant missed screening opportunities during the accession process. A thorough review of the medical screening/aviation physical exam process is clearly warranted. This should present a relatively easily implemented administrative intervention to reduce attrition.

Air sickness/motion sickness is not separately categorized as an "administrative reason for attrition", but is included as a "difficulties encountered in training" survey response option. It is undoubtedly a significant contributing factor in aviation training attrition. In the 8 reports in which it was included as a response option, motion sickness was reported as a "significant" or "strong/very strong" factor by an average of 11% (range 4 to 16%) of attrited respondents (see table 5). In terms of frequency of reported airsickness attriters were on average, across reports, 400% more likely than completers to endorse the highest frequency response option (10 or more incidents of airsickness).

The Naval Aviation Student Training Attrition Report provides actionable data concerning the causes of attrition, which should serve as a requirements roadmap for future aviation selection S&T investments. Drop on request, as the most common reason for attrition should be the top priority. However, with significant training cost savings to be gained from even marginal reductions in attrition, investments in tools to address medical- and performance-related attrition are warranted as well.

Recommendations

A multi-pronged attack on flight training attrition is indicated. Research investments should be made in non-traditional measurement of motivation and persistence, but also of fearfulness and anxiety, especially as they relate to flying or performance evaluation. Research focusing on self-report measurement methods resistant to response distortion should be conducted. These efforts should be informed by a detailed examination of the causes of DOR, including interviews with both attrited students and instructors. An assessment of aviation physical examination/medical screening processes should be undertaken in the interest of identifying and correcting loopholes allowing accession of non-qualified applicants. Research and development of tests of important, but currently neglected, cognitive abilities or skills such as task prioritization should be conducted in the interest of reducing attrition due to flight failure. Research on motion sickness prediction and treatment should be conducted to: 1) determine how to identify individuals prone to motion sickness, and 2) to develop interventions (e.g., training, systematic desensitization, pharmaceutical) to ameliorate motion sickness and reduce its contribution to attrition, both voluntary and involuntary.

References

Arnold, R.D. (2002). The utility of the Aviation Selection Test Battery (ASTB) in the reduction of Naval Aviation training attrition. Naval Aerospace Medical Institute, technical memorandum dated 10 March 2002, Pensacola, FL.

CNATRA (2008a). 5 year attrition rates FY03 through FY07 with FY07 program averages. Unpublished CNATRA data.

CNATRA (2008b). FY07 CNATRA Actual Cost Per Student. CNATRA report dated 25 August 2008.

Delaney, H.D. (1990). Validation of dichotic listening and psychomotor task performance as predictors of primary flight training criteria: Highlighting relevant statistical issues. Naval Aerospace Medical Research Laboratory, report number NAMRL-1357, Pensacola, FL.

Griffin, G.R. & McBride, D.K. (1986). Multitask performance: Predicting success in Naval Aviation primary flight training. Naval Aerospace Medical Research Laboratory, report number NAMRL-1316, Pensacola, FL

Mangos, P.M., Arnold, R.D., Mead, A., Merket, D., Littrell, L, Credo, K., Young, R., Tolentino, A. & Kessler, S. (2005). Technical report: Analysis of work of Naval Aviation training pipelines. NAWCTSD, Orlando, FL.

Miller, T.B. (2005a). Naval Aviation student training biannual attrition report: Nov 2004 – April 2005. Naval Operational Medicine Report, Pensacola, FL.

Miller, T.B. (2005b). Naval Aviation student training biannual attrition report: May 2005 – Sep 2005. Naval Operational Medicine Report, Pensacola, FL.

Olde, B.A. (2004). Naval Aviation student training biannual attrition report: 1 April 2004 – 31 October 2004. Naval Operational Medicine Report, Pensacola, FL.

Senn, D.J. (2003a). Naval Aviation student training attrition survey report: October 2002 – March 2003. Naval Operational Medicine Report, Pensacola, FL.

Senn, D.J. (2003b). Naval Aviation student training attrition survey report: March 2003 – October 2003. Naval Operational Medicine Report, Pensacola, FL.

Stitcher-Singleton, A.C. (2006a). Naval Aviation student training biannual attrition report: October 2005 – March 2006. Naval Operational Medicine Institute, Pensacola, FL.

Stitcher-Singleton, A.C. (2006b). Naval Aviation student training biannual attrition report: April 2005 – September 2006. Naval Operational Medicine Institute, Pensacola, FL.

Stitcher-Singleton, A.C. (2007a). Naval Aviation student training biannual attrition report: October 2006 – March 2007. Naval Operational Medicine Institute, Pensacola, FL.

Stitcher-Singleton, A.C. (2007b). Naval Aviation student training biannual attrition report: April 2007 – September 2007. Naval Operational Medicine Institute, Pensacola, FL.

Unattributed (2004). Naval Aviation training biannual attrition report: 1 OCT 03 – 31 MAR 04. Naval Operational Medicine Report, Pensacola, FL.

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14. ABSTRACT (maximum 200 words)

A review of self-reported causes of Naval Aviation student training attrition was conducted for the period FY 2003 to FY 2007. Data were aggregated from Naval Aerospace Medical Institute attrition reports published during the period under review. Drop on Request (DOR) was the single greatest self-reported administrative reason for attrition during this five-year period, accounting for 40% of attrition among survey respondents. Performance-related attrition was 37% of all attrition, with flight failure the most frequent cause in this category, at 24% of all attrition. Self-reported contributory factors were also examined. Survey response options related to anxiety and nervousness related to flying and to the flight program were among the most frequently endorsed contributing factors. Among other frequently endorsed factors were poor flight performance, loss/change of interest, and motion sickness. To reduce training attrition, recommendations are made for S&T investments in aviation personnel selection research to identify valid predictors of anxiety, fearfulness, task prioritization, motivation, and motion sickness susceptibility.

15. SUBJECT TERMS
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Part A – NMSC PAO Synopsis

Causes of student attrition in US naval aviation training: A five year review from FY 2003 to FY 2007. This is a technical memorandum summarizing a 5-year review of the causes of flight training attrition. **SYNOPSIS**: This review was conducted to identify the primary causes of student attrition from Navy flight training and make recommendations for RDT&E based solutions. Voluntary attrition, or Drop on Request (DOR) is by far the most frequent administrative reason for attrition, at 40% of all attrition. It is followed by flight failure (24%), physical disqualification (NPQ) (12%) and academic failure (9%). Recommendations are made for S&T investments in improved selection tests of applicant motivation, interests, anxiety, motion sickness susceptibility and task prioritization ability.