International Journal of Aviation, Aeronautics, and Aerospace

Volume 2 | Issue 2 Article 3

4-1-2015

The Effect of Regional Airline Attendance Policies on Pilot Self-Removal from Duty for Illness or Fatigue

David R. Freiwald Ph.D., CSP
Embry Riddle Aeronautical University, dfreiwald@gmail.com
Michael F. O'Toole Ph.D.
Embry-Riddle Aeronautical University, otoolem@erau.edu

Regional airline operations in the United States operate with a significantly reduced cost structure when compared to their larger branded counterparts. One of the largest areas of relative cost difference is in personnel expenditures. Most regional airlines pay dramatically less, operate with a leaner staffing model, and have much more restrictive work rules compared with legacy carriers. A consequence of the lean staffing model is the inability to operate scheduled flights when even a small number of employees report ill or fatigued and remove themselves from duty as required by regulation. Because of governmental prohibitions on crewmembers performing duties when ill or fatigued some regional airlines have adopted parallel attendance policies that track absences regardless of reason and assign discipline based upon the number of occurrences. This might encourage crewmembers to operate contrary to federal regulation.

Background

The relationship between employment policies and pilot operation during fatigue and illness is a subject that is just beginning to come to light in the mass media. Following several high profile accidents this decade involving United States regional airlines, it has become clear that crews are being pressured to operate contrary to regulation. The former Pinnacle Airlines, together with its subsidiary Colgan Air, have been involved in seven hull-loss accidents between 2004 and 2010. In all but one, crewmember fitness or fatigue was cited as a contributory if not causal factor. These policies reflect the status quo at many regional airlines that have not negotiated better work rule protections through collective bargaining agreements. Of particular interest to the researcher is the implementation of so called no-fault attendance policies that assign progressive discipline to crewmembers missing scheduled work, even if continued operation would be in violation of Federal Aviation Regulations. A review of the literature discovered no previous studies on this topic, although there are multiple articles written on the underlying issues.

Fitness for Flight

Despite abundant anecdotal information, there are few peer-reviewed studies on the subject of crewmembers operating when ill. In the United States, Federal Aviation Regulations (FARs) explicitly forbid operation, termed exercise of privileges during any period of medical deficiency (Federal Aviation Regulations, 2014). While total incapacity would be quickly recognized by other crewmembers, a reduction in capacity may be far more insidious as it may not be apparent to others. Such partial incapacitation or reduction in capacity may be the

result of factors such as fatigue, stress, sleep, circadian disruptions, or medication (Hawkins, 2002).

In spite of evidence that suggests that reduction in capacity to perform occurs frequently, it is debatable to what extent this reduction in capacity is the direct cause of accidents. This is evidenced in the 2009 crash of Colgan Flight 3407 where it was revealed that the Captain and flying pilot spent two of the three previous nights using a public crew lounge as sleeping quarters (National Transportation Safety Board, 2010a). Despite this information and its extensive discussion during public hearings and within the docket of the investigation, the NTSB failed to include fatigue as a contributing factor to the accident (National Transportation Safety Board, 2010b). For the purpose of this study, fitness might be defined as a condition that permits a generally high level of physical and mental performance. It suggests an ability to perform with minimal fatigue, to be tolerant to stresses and to be readily able to cope with changes in the environment. Understandably, it can be difficult to get a crewmember to self-report these conditions particularly when economic or career jeopardy may be attached.

Fatigue

Fatigue is one of the greatest issues facing contemporary flight operations. Miller says in his operational risk management of fatigue effects report, "In any human-machine system, the most variable component in the system is the human. After training and currency, the greatest contributor to that variability is fatigue" (Miller, 2005, p. 4).

Fatigue is a very individualized human factor, and while there are some correlations that can be found through testing, an individual must know his or her own body to battle fatigue effectively. Fatigue can be broken down into four distinct parts: physical fatigue, acute mental fatigue, cumulative mental fatigue and chronic mental fatigue (Miller, 2005). Physical fatigue is a factor characterized by diminished capacity due to overexertion, measured in time or relative load, and it degrades task performance. Acute mental fatigue is characterized by diminished mental capability due to prolonged wakefulness, usually sixteen hours or more, which occurs between two major sleep periods. This type of fatigue degrades task performance. Cumulative mental fatigue is characterized by diminished mental capability due to disturbed or shortened major sleep periods between two or more successive major waking periods such as duty or work. Cumulative mental fatigue also degrades task performance. Chronic mental fatigue is characterized by exposure to frequent periods of sleep loss during at least one month or multiple periods of prolonged wakefulness, excessive work hours, disturbed or shortened major sleep periods, unresolved conflicts, or

prolonged frustration. Again, chronic mental fatigue also degrades task performance.

Organizational Culture

Companies can influence their employee's behavior through the norms that they develop—norms that can be as powerful an influence on employee behavior as can cultural norms. Numerous illustrations of organizational practices, even among companies seemingly dedicated to enhancing operational safety, demonstrate the potentially adverse effect of norms on safety practices.

As with national cultures, corporate cultural factors can affect safety and become antecedents to error or mitigate opportunities for error. Moreover, employee groups within companies develop their own norms based on commonly held professional standards and beliefs. Vaughan (1996) examined the influence of the cultures at NASA, its primary space shuttle contractor, Morton Thiokol, and the shared engineer culture of both, on the Challenger accident. She suggested that engineers and their supervisors at both Morton Thiokol and at NASA had developed techniques of responding to the risky technology involved in space operations that minimized the perception of and appreciation for the risks inherent to the mission. Despite considerable evidence suggesting that the low outside temperatures that were present at the time of the launch could seriously degrade the integrity of a system component, officials at both organizations agreed to the launch, which proceeded with disastrous results (Vaughan, 1996).

Company practices. Aspects of a company's culture are revealed in its selection policies, operating procedures, and operational oversight, all of which can affect performance. Companies that operate complex systems are required to perform these tasks, but companies that are especially safety oriented will perform them more thoroughly, and at a higher level, than others. Practices that encourage operator responsibility, professionalism, and participation in safety matters can enhance operator attention to safety details; punitive practices do not. A company's culture can also be reflected in its definitions of and response to employee transgressions. Companies that require extensive documentation of occasional and infrequent absences, for example, encourage their employees to report to work when ill, increasing the likelihood of errors (Dekker, 2004).

Previous company incidents and accidents can also reveal much about corporate commitment to safety. Numerous incidents and accidents relative to those of comparable companies suggest deficiencies in company practices, standards, and oversight. Common issues found in multiple events may indicate an unwillingness to identify and address potential system safety hazards.

Likewise, thorough company investigations of their events and sincere efforts to address identified safety deficiencies reveal aspects of a positive corporate culture (Dekker, 2004).

Pilot pushing and corporate policies. Pilot pushing can best be defined as an external influence applied to flight crewmembers in order to push the bounds of operational safety, typically with a financial gain for the pusher. An airline's management, as it seeks to increase profits to its stockholders, must maintain costs at a level that allows it to maximize the return to its investors. Management views safety as an overhead cost to be balanced against the bottom line. A company will often weigh the cost of safety improvements against how much implementing them will cost per passenger; those that are found to be too costly and not federally mandated are discarded (Holt & Poynor, 2006).

Accidents that resulted in the death or injury of passengers and crew have forced numerous safety practices upon airlines. The FAA, responding to public pressure and congressional attention, devises regulations to address specific accidents and their causes. However, being safer does not enhance profits. Therefore, except for maintaining an acceptable reputation, one airline has no real incentive to spend more on safety than another airline. A usual pattern to emerge is one of more safety problems, followed by more adverse press, then a worse safety reputation, fewer passengers, less income. That scenario, however, is reactive and does not provide an acceptable safety margin to passengers accustomed to safe air travel (Holt & Poynor, 2006).

The FARs are the minimum standards that an airline must achieve to continue flight operations. Unfortunately, many of those standards are at their lowest acceptable level, and passengers have no other standards to use to gauge an airline's safety record. Passengers rarely realize that some airlines actually aim for the lowest regulatory standard they can achieve (Holt & Poynor, 2006). Recent events have highlighted passenger safety concerns. News reports regarding crew rest facilities and scheduled crew duty periods have raised awareness, at least temporarily, of government and corporate safety limitations. The FARs do not necessarily provide the safety net that passengers expect and demand.

Colgan Air, which operated the Continental Connection flight that crashed in Clarence, New York in February 2009, prior to it’s merger with Pinnacle Airlines, now Endeavor Air, was getting tougher on pilots who say they are too tired to fly even in the wake of the accident. An internal memo sent to the company's pilots and flight attendants, dated December 30, 2009, indicates that

crewmembers have abused the more-lenient fatigue policy the company instituted after the crash (Zremski, 2010).

"Over the past several months, we have maintained a 'no questions asked' approach to fatigue calls in order to give pilots and flight attendants an ability to report a fatigue condition without any feeling of punishment or retribution," wrote Dan Morgan, vice president of safety and regulatory compliance at Colgan. "However, over the past two months, the instance of fatigue calls with no valid reason for fatigue have increased to the point where frivolous fatigue calls are now the majority" (Zremski, 2010, para.16). Crewmembers will no longer be allowed to call in fatigued if they had at least twelve hours rest prior to the start of their shift or if they are returning from days off. In addition, pilots will not be allowed to call in fatigued for future flights (Zremski, 2010).

After the crash, Colgan shifted responsibility for its fatigue calls to the Safety Department, which, pilots said, took a much more reasonable approach than the chief pilot, who previously took such calls. Joe F. Williams, a spokesman for Colgan's parent, Pinnacle Airlines, stressed that fatigue calls will continue to go to the Safety Department in wake of the changes announced this week. "This is an enhancement of the policy that was revised earlier this year," he said. "We worked with our crews in developing this policy, and continue to work closely with our crews regarding enhancements" (Zremski, 2010, para. 13).

Captain John Prater, then-president of the Air Line Pilots Association, stressed that Colgan imposed the policy unilaterally and spelled it out in a memo that amounted to "intimidation." Under the change, Colgan pilots may be scared to call in fatigued even if they are too tired to fly, Prater said. "Even if [the fatigue policy] is being used wrongly, how many pilots are they scaring off from using it correctly?" Prater asked (Air Line Pilots Association, 2010, para. 4).

"Although our fatigue policy has resulted in professional crew members recognizing and declaring true fatigue situations, the policy has also shown that when given an opportunity to demonstrate a lack of professionalism and maturity, a disappointing number of our crew members will do so," Morgan wrote (Zremski, 2010, para. 19).

Colgan implemented the changes immediately. Meanwhile, Morgan wrote: "Any further blatant abuse of the fatigue option will be addressed as a disciplinary action, and fatigue resulting from an improper use of rest periods or personal time off duty will be treated as missed trips," meaning the crew member won't be paid (Zremski, 2010, para. 21).

Pilots are forced almost daily to make decisions that border on compromising FARs so they can deliver their passengers to their scheduled destinations. The pressure on an individual crewmember to meet the schedule can be tremendous. At some airlines, corporate management will support a flight crew's safety decision, albeit reluctantly; at others, the company will scrutinize the pilots for costing money and for causing inconvenience. As one senior airline flight operations manager was quoted in the Wall Street Journal, "We trust our pilots implicitly, until they give us reason not to" (Brannigan, 1999, para. 25).

Flight crews thus are forced to act as the last line of safe flight operations. By placing pilots in situations in which they must risk their income and careers to ensure corporate compliance with the FARs, airlines have abrogated their responsibility to the passenger and traveling public. The safety net supposedly built into the U.S. air transportation system devolves to the level most susceptible to coercive corporate influences and the very effects of fatigue that the public expects the FARs to prevent. This research revealed that the participants agreed with the hypothesis that states regional airline pilots would feel pressured to fly as a consequence of punitive attendance policies. The research also revealed that these pilots were willing to report flying when they knew themselves to be ill or fatigued as a direct consequence of the company's attendance policies.

Methodology

This was a quantitative descriptive study using a survey instrument to establish the attitudes and beliefs of current regional airline pilots towards the attendance policies of their airlines and whether they may have felt pressured to operate aircraft when ill or fatigued.

Population

The survey link was distributed to approximately 4,300 verified email addresses of current regional airline pilots in the United States. The number of valid responses received totaled 1,566 (38.2% response rate). At the time of survey administration this represented a sample of approximately 7.5% of the estimated 21,000 active regional airline pilots in the United States (Regional Airline Association, 2015). The participants were broken into experiential groups based upon age, total flight experience, current seat position, and total employment time. By the very nature of aviation, pilots are a widely disseminated group with nearly every geographic region represented for both crew basing as well as personal domiciles. There is no central repository for contacting or releasing survey information. Though a greater number of survey results were gained by focusing on airlines where the researcher had unrestricted

access, this may have introduced a bias specific to the experiences at those companies. All data used in this study was collected through the online survey.

Data Collection Device

The data collection device was a survey written with software developed by QuestionPro. The survey was accessible online. The survey used a variety of question types, most of which used the Likert scale with Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree as possible answers. The QuestionPro software provides several different analysis tools that were used to evaluate the data from the study and analyze the final results. The software automatically removed respondents with less than 70% completion of items as non-responsive, as a result 28 cases were removed for non-responsiveness reducing the usable sample size to 1,538 (37.5% usable response rate).

Due to the length of the survey, a limited number of duplicate questions were included within the survey. The QuestionPro software automatically compared the answers against each other to determine if the respondent's data was reliable. There was no occasion where all three duplicate questions were failed thus necessitating removal of an individual's responses.

Participants

Nearly 57% of participants indicated that they lived in the same metropolitan area as their assigned domicile. For all respondents, 52% stated that their travel time to base was less than one hour, 31% have a one to three hour commute, with the balance living more than three hours from base.

Only 8% reported total flight time below 1,500 hours, the minimum for Airline Transport Pilot certification, 16% reported flight times between 1,500 and 3,000 hours while 50% reported experience between 3,001 and 7,000 hours. Lastly, 25% claimed experience in excess of 7,000 flight hours.

Few (4%) respondents reported that their current air carrier had employed them less than one year, 31% had been employed between one and three years, with 27% each for between three and five years and between five and ten years. Those that had been employed for over ten years comprised 9% of responses. A slight majority (51%) of those who replied indicated that their present position was that of First Officer. The remainder was comprised of Captains, of whom 4% were check airmen and 0.42%, or six individuals, identified as management pilots. Separation of the results by the various demographics was beyond the scope of this study but will be examined further to provide guidance for future

studies. Correlations between demographic groups and responses are discussed and summarized in tabular form.

Results

Fatigue, Illness, and Company Policy

The research revealed that the participants agreed with the hypothesis that states regional airline pilots would feel pressured to fly as a consequence of punitive attendance policies. The research also revealed that these pilots were willing to report flying when they knew themselves to be ill or fatigued as a direct consequence of the company's attendance policies. When asked if the company has a non-punitive fatigue policy 54% of participants disagreed or strongly disagreed. Among the participants, 71% disagreed or strongly disagreed that their company had a non-punitive sick policy. These items are summarized in Table 1 in the Appendix.

Among participants, 87% disagreed with the statement "I have never operated a flight while feeling ill." Responses for the question "My Company has a non-punitive sickness policy" showed disagreement by 71% of participants; 9% responded neutrally and 20% agreed with the statement. Seventy-seven percent of respondents disagreed with the statement "I believe that my company's sickness policy places safety above all other considerations." These items are summarized in Table 2 in the Appendix.

Effect of Company Policy on Decision Making

When asked if company policy does not affect the decision to "call in fatigued" 63% disagreed. Of all participants, 29% agreed with the statement and 7% responded neutrally. Fifty-nine percent disagreed with the statement "My Company's attendance policy does not apply to fatigue calls." Presented with the statement "My company's attendance policy does not affect my decision to 'call in sick'" 70% disagreed. A majority of participants (86%) disagreed with the statement "My Company's attendance policy does not apply to sick calls."

The statement "I believe that my company's attendance policy places safety above all other considerations" was disagreed with by 83% of participants. More than three-quarters of respondents (79%) agreed with the statement "I believe that my company's sickness policy prevents crewmembers from placing safety above all other considerations" with 25% in disagreement. These items are summarized in Table 3 in the Appendix.

In-Flight Fatigue and Countermeasures

The sample yielded 95% of respondents that agreed that they had felt sleepy in the cockpit at some point in their career; 4% disagreed with the statement. There was an overwhelming (89%) desire at some point to "rest their eyes" while in the cockpit. The statement "I have made arrangements with another crewmember to 'rest my eyes' while in the cockpit" showed 47% of participants agreeing with the statement and 48% disagreeing. Fifty-eight percent of study participants admit to having fallen asleep while in the cockpit and 97% disagreed with the statement "I have never felt sleepy in the cockpit" with 1% in agreement with the statement. These items are summarized in Table 4 in the Appendix.

Most (72%) participants reported having used caffeine to maintain alertness while in the cockpit. Over 95% of respondents have used conversation to maintain alertness. Fifty-two percent disagreed with the statement "I have left my duty station to maintain alertness while in the cockpit." Within the responses, 64% disagreed with the statement "I have physically left the flight deck to maintain alertness while in the cockpit" while 30% agreed. Similarly, 64% report having used reading to maintain alertness while in the cockpit and 58% have used breathing exercises or crew oxygen to maintain alertness while in the cockpit. These items are summarized in Table 5 in the Appendix.

Correlation Analysis

Correlation analysis was conducted using SPSS version 22 software. The Pearson product moment correlation coefficient, r, was computed for interactions between variables for age, position, part 121 experience, employment length, and total flight time and the responses to the six items most directly related to the study. The coefficient of determination, R^2, is also provided for each interaction in the attached tables.

There was a moderate positive correlation between age and agreement with the statement "My Company has a non-punitive fatigue policy" with younger pilots more likely to disagree with the statement. There were mixed results in statistical significance between this statement and the other variables, most of which indicated a weak correlation (see Table 6 in the appendix).

The influence of the company's fatigue policy on individual decisions to remove oneself from duty were weakly correlated with both age and employment length, with individuals of lesser experience or age being more likely to work when fatigued as a result of the policy (see Table 7 in the appendix).

Similar to fatigue, there was a weak positive correlation between age and agreement with the statement "My Company has a non-punitive sick policy" with younger pilots more likely to disagree with the statement. There were no other statistically significant interactions between this statement and the other variables and correlation values indicated infirm relationships (see Table 8 in the appendix).

The influence of the company's sick policy on individual decisions to remove oneself from duty moderately correlated with age and weakly with part 121 experience, and employment length, with individuals of lesser experience or age being more likely to work when ill as a result of the policy (see Table 9 in the appendix).

Age was moderately, positively correlated with the influence of the attendance policy on fatigue calls. The relationship between the statement and employment length, position, part 121 experience, and total flight time were also statistically significant though the level of correlation was very low. (see Table 10 in the appendix).

There was a positive correlation between the statement "My Company's attendance policy does not affect my decision to call in sick" and each of the variables. Agreement was moderately associated with age, part 121 experience, employment length but weakly related to position and total flight time (see Table 11 in the appendix).

Discussion

The data confirm that flight crewmembers employed at regional airlines feel pressured to fly when ill or fatigued as a consequence of punitive attendance policies. Flight crewmembers have a significant amount of responsibility to themselves, their company, and to the public at large when conducting air carrier operations. It is precisely for this reason that regulatory agencies require higher levels of experience, physical fitness, and currency compared with private pilots. Because of the common carriage nature of the industry, the system has a responsibility to create the safest and most effective environment for pilots and their passengers. Equipment and lives can be lost due to inadequacies in the system. It is critical that these inadequacies be identified and removed. One very significant inadequacy is the current ability of certain regional airlines to manipulate crewmember behavior through the use of punitive attendance policies in contravention of both the letter and spirit of controlling federal regulations and often the carrier's own safety programs.

The overwhelming majority of respondents felt that their companies' fatigue, illness, and attendance policies were punitive, either by design or implementation. The participants were also more likely to state that these policies affected their decision to remove themselves from duty when ill or fatigued. Additionally, the majority thought that other considerations were placed above safety in either the design or implementation of their company's fatigue, illness, and attendance policies. While the outcomes were not entirely unexpected, the frequencies involved, as well as the candor expressed in the comments, was surprising. It is atypical for the pilot personality to disclose perceived weakness or operational noncompliance in nonspecific scenarios. This may have been the most significant result of the study.

This study clearly shows dissatisfaction with the current implementation of attendance policies for illness and fatigue at many regional airlines. Additional study in the area is needed. A study linking responses to the current policies of the employing airlines may be beneficial to correlate the effect of specific policy language with crewmember behaviors and attitudes. Unfortunately, the researcher alone is unlikely to achieve statistically valid sample sizes from each regional carrier with the same degree of candor shown in this study. Possession of such information could allow all of the stakeholders to achieve their objectives, both safety and financial, through the modification of exit policies. Stakeholder organizations such as Airlines for America, the Regional Airline Association, the Air Line Pilots Association, as well as the code-sharing legacy airlines, would be well served to pursue this research in furtherance of their own interests and risk mitigation.

Research beyond surveys, such as accident, incident, and discipline rates by carrier and demographic group would also provide essential information in evaluating the current system. While much of this information could be collected through Flight Operations Quality Assurance and Aviation Safety Action Programs, it is unlikely that this researcher could gain independent access. As this is one of the first studies of its kind to assess attendance policies and a behavior modifier, there is a significant amount of data that has yet to be explored. This study has served to prove that current regional airline attendance policies do cause pilots to feel pressured to fly when ill or fatigued and that modifications to the present system are needed.

References

Air Line Pilots Association. (2010, February 2). *NTSB Colgan 3407 investigation report.* Washington, DC: Author.

Brannigan, M. (1999, April 15). Tired Delta crew diverts flight. *The Wall Street Journal*. Retreived from http://www.wsj.com

Dekker, S. (2004). Investigating Human Error: Incidents, Accidents and Complex Systems. *Risk Management, 6*(1), 73–74. doi:10.1057/palgrave.rm.8240175

Federal Aviation Regulations, 14 C.F.R. § 61.53 (2014).

Hawkins, F. H. (2002). *Human factors in flight*. Aldershot, England: Ashgate. doi:10.1017/s0373463300015228

Holt, M. J. & Poynor, P. J. (2006). *Air carrier operations*. Newcastle, WA: Aviation Supplies and Academics.

Miller, J.C. (2005). *Operational risk management of fatigue effects*. Brooks AFB, TX. Biodynamics and Protection Div; United States: Air Force Research Lab. Retrieved from NTIS database. doi:10.1037/e441922005-001

National Transportation Safety Board. (2010a). *Preliminary accident report* (DCA09MA027). Retrieved from: http://www.ntsb.gov/ntsb

National Transportation Safety Board. (2010b). *Operations/Human Performance Group Chairman's factual report* (DCA09MA027). Retrieved from: http://www.ntsb.gov/ntsb

Regional Airline Association. (2015). *Regional airline full-time equivalent employees*. Retrieved from: http://www.raa.org/resource/resmgr/AR2014/RAA2014_RegAirlinesEmployees.jpg

Vaughan, D. (1996). *The Challenger laungh decision: Risky technology, culture, and deviance at NASA*. Chicago: The University of Chicago Press. doi:10.7208/chicago/9780226851785.001.0001

Zremski, J. (2010, January 3). Colgan is again tightening fatigue rules. *The Buffalo News*. Retreived from http://www.buffalonews.com

Appendix

Table 1
Response percentages for fatigue policy items

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*M*	*SD*
I have never operated a flight while feeling fatigued	50.24	35.27	3.38	7.25	3.86	1.79	1.07
If I had to "call in fatigued" I would not be disciplined	20.77	32.85	17.39	24.15	4.83	2.59	1.20
My company has a non-punitive fatigue policy	24.88	28.78	21.46	20.49	4.39	2.51	1.19
My company's fatigue policy has no influence on my "calling in fatigued" if I am fatigued	27.94	29.41	8.33	20.59	13.73	2.63	1.43
I believe that my company's fatigue policy places safety above all other considerations	40.58	33.82	12.56	10.14	2.90	2.01	1.10

Table 2
Response percentages for sick policy items

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*M*	*SD*
I have never operated a flight while feeling ill	32.18	54.46	2.48	8.42	2.48	1.95	0.95
If I had to "call in sick" I would not be disciplined	26.47	32.35	8.82	24.51	7.84	2.55	1.32
My company has a non-punitive sickness policy	43.35	28.08	9.36	14.78	5.54	2.09	1.23
My company's sickness policy has no influence on my "calling in fatigued" if I am fatigued	25.62	33.00	11.33	18.23	11.82	2.58	1.36
I believe that my company's sickness policy places safety above all other considerations	45.59	31.37	9.31	9.80	3.92	1.95	1.14

Table 3
Response percentages for attendance policy perception items

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*M*	*SD*
My company's attendance policy does not affect my decision to "call in fatigued"	24.88	38.31	7.46	20.90	8.46	2.50	1.30
My company's attendance policy does not apply to fatigue calls	31.84	27.36	19.90	14.93	5.97	2.36	1.24
My company's attendance policy does not affect my decision to "call in sick"	36.14	33.66	5.94	16.34	7.92	2.26	1.31
My company's attendance policy does not apply to sick calls	62.81	23.62	8.54	4.02	1.01	1.57	0.88
I believe that my company's attendance policy places safety above all other considerations	51.24	31.34	9.95	4.48	2.99	1.77	1.01
I believe that my company's sickness policy prevents crewmembers from placing safety above all other considerations	12.44	12.44	5.97	30.85	38.31	3.70	1.41

Table 4
Response percentages for fatigue self-perception items

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*M*	*SD*
I have felt sleepy in the cockpit	2.00	2.00	1.00	25.50	69.50	4.59	0.79
I have wanted to "rest my eyes" while in the cockpit	3.50	3.50	4.00	32.00	57.00	4.36	0.97
I have made arrangements with another crewmember to "rest my eyes" while in the cockpit	23.00	24.50	5.50	24.50	22.50	2.99	1.52
I have fallen asleep while in the cockpit	21.61	14.07	6.53	34.17	23.62	3.24	1.50
I have never felt sleepy while in the cockpit	75.12	22.39	1.49	0.50	0.50	1.29	0.57

Table 5
Response percentages for alertness self-perception items

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	*M*	*SD*
I have used caffeine to maintain alertness while in the cockpit	4.00	3.50	1.00	30.50	61.00	4.41	0.98
I have used conversation to maintain alertness while in the cockpit	1.00	1.99	1.49	39.80	55.72	4.47	0.72
I have used left my duty station to maintain alertness while in the cockpit	20.41	31.61	11.73	18.88	17.35	2.81	1.41
I have physically left the flight deck to maintain alertness while in the cockpit	29.00	35.00	6.50	14.50	15.00	2.52	1.42
I have used reading to maintain alertness while in the cockpit	9.09	21.21	5.56	37.88	26.26	3.51	1.32
I have used breathing exercises or crew oxygen to maintain alertness while in the cockpit	13.43	32.34	5.97	28.86	19.4	3.08	1.39

Table 6
Non-punitive fatigue policy agreement correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.2194	0.0481	2.80, 2.90	<0.001
Position	-0.0272	0.0007	1.55, 1.63	0.286
Part 121 experience	0.0804	0.0065	3.30, 3.42	0.002
Employment length	0.1257	0.0158	3.06, 3.18	<0.001
Total flight time	0.0568	0.0032	2.88, 2.96	0.026

Table 7
Fatigue policy influence correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.1923	0.0370	2.80, 2.90	<0.001
Position	0.1217	0.0148	1.55, 1.63	<0.001
Part 121 experience	0.1253	0.0157	3.30, 3.42	<0.001
Employment length	0.1741	0.0303	3.06, 3.18	<0.001
Total flight time	0.0555	0.0031	2.88, 2.96	0.029

Table 8
Non-punitive sick policy agreement correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.1612	0.0260	2.80, 2.90	<0.001
Position	-0.0592	0.0035	1.55, 1.63	0.051
Part 121 experience	0.0453	0.0021	3.30, 3.42	0.076
Employment length	0.0437	0.0019	3.06, 3.18	0.087
Total flight time	0.0264	0.0007	2.88, 2.96	0.301

Table 9
Sick policy influence correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.2684	0.0721	2.80, 2.90	<0.001
Position	0.1126	0.0127	1.55, 1.63	<0.001
Part 121 experience	0.1357	0.0184	3.30, 3.42	<0.001
Employment length	0.1631	0.0266	3.06, 3.18	<0.001
Total flight time	0.1152	0.0133	2.88, 2.96	<0.001

Table 10
Attendance policy influence on fatigue calls correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.2341	0.0548	2.80, 2.90	<0.001
Position	0.0752	0.0057	1.55, 1.63	0.003
Part 121 experience	0.1180	0.0139	3.30, 3.42	<0.001
Employment length	0.1487	0.0341	3.06, 3.18	<0.001
Total flight time	0.0999	0.0099	2.88, 2.96	0.001

Table 11
Attendance policy influence on sick calls correlations by demographic

Variable	*r*	R^2	95% CI	*p*
Age	0.3151	0.9930	2.80, 2.90	<0.001
Position	0.1384	0.0192	1.55, 1.63	<0.001
Part 121 experience	0.2254	0.0508	3.30, 3.42	<0.001
Employment length	0.2308	0.0533	3.06, 3.18	<0.001
Total flight time	0.1572	0.0247	2.88, 2.96	<0.001