January 2022

Incorporating Worker Protections In Collective Bargaining Agreements As A Facilitator For Self-Reporting

Todd Heyne

INCORPORATING WORKER PROTECTIONS IN COLLECTIVE BARGAINING AGREEMENTS AS A FACILITATOR FOR SELF-REPORTING

by

Todd Michael Heyne
Bachelor of Science, University of Nebraska, 1998

A Thesis

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Master of Science

Grand Forks, North Dakota

August
2022

Name: Todd Heyne

Degree: Master of Science

This document, submitted in partial fulfillment of the requirements for the degree from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

DocuSigned by:

James Higgins

DocuSigned by:

Brandon Wild

Brandon Wild

DocuSigned by:

Shayne Daku

DocuSigned by:

Daniel Kwasi Adjekum

Daniel Kwasi Adjekum

This document is being submitted by the appointed advisory committee as having met all the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

DocuSigned by:

Chris Nelson

Chris Nelson
Dean of the School of Graduate Studies

7/28/2022

Date

PERMISSION

Title Incorporating Worker Protections in CBAs as a Facilitator for Self-Reporting

Department Aviation

Degree Master of Science

In presenting this thesis in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my thesis work or, in his absence, by the chairperson of the department or the dean of the School of Graduate Studies. It is understood that any copying or publication or other use of this thesis or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and the University of North Dakota in any scholarly use which may be made of any material in my thesis.

Todd Michael Heyne
May 10, 2022

TABLE OF CONTENTS

LIST OF FIGURES

Figure Page

LIST OF TABLES

ACKNOWLEDGEMENTS

In loving memory of my Dad, Warren Heyne, who passed away during my time at the University of North Dakota, and for my gracious and wonderful Mother, Bonnie, who has supported me throughout. To my kids who got to witness what follow-through looks like. Love you and thank you both!

A special thanks to my committee for their input, guidance, and assistance in my research and for their valuable input and mentorship.

I would like to thank Dr. Adjekum for inspiring me to pursue safety management systems and cultivating my interest in pursuing a higher calling. His tutelage and assistance have been instrumental to this achievement, and his input will leave me forever grateful.

I would like to thank Dr. Daku for going above and beyond when my urgency turned out to be anything but that urgent. He is a calm voice when all else seems to be in a panic. Dr. Wild was so helpful and encouraging, given a somewhat difficult topic. Being able to relate our similar experience and the positive input is very much appreciated. Thank you!

My Committee Chair, Dr. James Higgins, thank you so much from one kindred soul to another. I am so thankful that you were called upon to by my advisor and Chair. Your mentorship was appreciated, however, your stewardship of my completing this endeavor and your encouragement for my future endeavors will never be forgotten.

Thanks to God for blessing me with this achievement and blessings of being a part of the UND Aviation Program. I also would like to share my appreciation with my classmates who made this journey a worthwhile and memorable experience.

Key Terms

Collective Bargaining Agreement – Also known as a CBA or collective agreement. The labor contract between a union representing employees and the employer (management) (Thomas Reuters, 2022).

Just cause – A reason that is legally acceptable or sufficient (Black's Law Dictionary, 2022b).

Just Culture- A culture in which front-line operators or other persons are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, willful violations and destructive acts are not tolerated. (EU Occurrence Regulation 376/2014, Article 2, § 12)

Safety Management System – a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures (ICAO SMM Doc 9859 4th edition).

Restorative justice- To restore the status and heal relationships and injuries of victims and the wider community in the wake of an ethical breach (Dekker and Breakey, 2016).

ABSTRACT

The US airline industry relies on the willing participation of frontline employees to self-report safety hazards as part of an effective reporting culture. Current literature suggests fear of punitive actions as a barrier to self-reporting. Using a quantitative method, this study evaluated how employee protections from punitive actions incorporated into collective bargaining agreements (CBA) of Part 121 airline employees facilitates self-reporting. An Exploratory Factor Analysis suggests that Enhanced Reporting, Employee Protections, Roles and Responsibility, and Employee Engagement undergird self-reporting culture. All the factors had acceptable reliabilities and were significantly related to each other. Regression analysis suggested that Employee Protection was a significant predictor of Enhanced Reporting accounting for about 48% of variances. An implication for policy is to include protections in CBAs which can engender trust and facilitate enhanced self-reporting by employees. The study provides a framework for airlines and unions to improve the safety reporting culture using CBA protections.

CHAPTER 1

INTRODUCTION

Commercial airlines, Part 121 air carriers, rely on various labor groups with diverse functions to conduct their mission of public air transportation. These labor groups include pilots, flight attendants, machinists and mechanics, dispatchers, meteorologists, ramp agents, and customer service agents. Often representing these diverse groups are labor unions that negotiate on behalf of their respective collective bargaining unit with management to develop a comprehensive contract called a Collective Bargaining Agreement (CBA) (Thomas Reuters, 2022). CBAs provide a set of rules and policies to ensure the rights of management to manage their operations and labor to have protections from unreasonable discipline or discharge. CBAs extensively cover other rules and policies that include work rules, vacation, sick leave, retirement, and incorporate regulations to ensure compliance with Title 14 of the Code of Federal Regulations (CFR), such as duty time and rest requirements (Black's Law Dictionary, 2022a; Association of Flight Attendants-CWA, AFL-CIO, 2020b). CBAs are usually negotiated months, if not years, in advance of a contract's amendable date and are usually in effect for years.

Since 2018, the Federal Aviation Administration (FAA) has required US Part 121 air carriers to have a Safety Management System (SMS) (FAA, 2015). An SMS is a systematic approach to managing safety, including the necessary organizational

structures, accountability, responsibilities, policies, and procedures (ICAO, 2018). There are four pillars of SMS that include policy, safety risk management, safety assurance and safety promotion (FAA, 2015).

Generally speaking, policy is top management's involvement in the organizational structure to define the procedures and develop policies to meet safety goals. Safety risk management is the process of identifying and mitigating hazards that are either identified in the introduction of a new process or procedure, or from the safety assurance pillar, which includes surveillance and feedback from audits, internal evaluation programs, and employee self-reporting of current practice of policies and procedures (FAA, 2015; ICAO, 2018).

The implementation an effective SMS requires a robust safety culture as an integral part of the fourth pillar of SMS, safety promotion (FAA, 2015) that can impact the effectiveness of the self-reporting component of the safety assurance pillar. The development of a safety culture is an informed culture that disseminates information the system has gathered and analyzed though proactive surveillance and incidents that can only be obtain through self-reporting (Reason, 1997).

To ensure robust self-reporting, the FAA's implementation of SMSs has allowed the use of the Aviation Safety Action Program (ASAP), which predates SMS implementation in aviation (FAA, 2020), to satisfy the regulatory requirement of confidential self-reporting (FAA, 2015). Consequently, not all airlines and labor groups of an airline chose to participate in an ASAP but must adopt an alternative method of confidential self-reporting to meet the SMS regulatory requirement. The purpose was to identify systemic and latent factors that could lead to fatal errors by changing from a

more retributive just culture to a more restorative just culture to promote self-reporting (Stolzer and Goglia, 2015).

The ASAP was incorporated into SMS as a reliable means to incorporate regulator, air carrier, and frontline workers (FAA, 2015; FAA, 2020). The use of ASAP as a confidential self-reporting method is incorporated through a Memorandum of Understanding (MOU) (FAA, 2020), and perhaps codified into the CBA during negotiations between employees and management (Mills and Reiss, 2014). In the ASAP, an Event Review Committee (ERC) comprises a representative of the airline, the labor group or union, and the FAA who review de-identified self-reports to review the safety aspects of the report and decide the appropriate course of action (FAA, 2020).

The main purpose of this process is to ensure safety-related information is passed to the front-line workers without punishing those who report. The goal is to have a process in place to identify, collate and manage safety-related hazards and associated risk in the organization. This mechanism attempts to achieve a just culture with the three core components of a just culture with a substantive justice of rules in place, procedural justice which sets a process for breaches, and restorative justice by restoring the system to a safer status (Dekker and Breakey, 2016). Potentially confounding robust reporting is the different backgrounds and cultures of each of the diverse labor groups in their trust in self-reporting (Reason, 1997).

Statement of the Problem

Unions are an appropriate third-party to build support and trust (Mills, Koliba, and Reiss, 2018) in order to develop a positive safety culture and should be included in this process from the beginning. (Stolzer and Goglia, 2015).

However, the diversity of labor groups, represented and not represented by a union, may have different work cultures, perceptions, education, and environments and therefore, each group may have a different level of bias and perceptions of trust as it relates to confidentiality in self-reporting.

These perceptions and biases can be a deficiency that may be a barrier to self-reporting. The confidential reporting program itself and perceptions of potential adverse impacts of self-reporting may limit the development of a just culture. Conversely, the nonpunitive approach of confidential self-reporting may have allowed a sort of culture that the system can be blamed, and therefore misuse of reporting negatively impacts a just culture.

It will be instructive to find out if the current safety management initiatives such as SMS and components such as safety reporting programs have adequate provisions in terms of safety accountabilities for employees assigned operational responsibilities. It may be insightful to understand the dynamic relationships between CBAs with just culture elements and a proactive safety reporting culture within an SMS environment.

In the U.S, the mandate for a fully implemented SMS under 14 CFR Part 5 by Part 121 service providers required SMS for new carriers in 2015 and a phased implementation period for existing operating carriers to be completed by March 9, 2018 (FAA, 2015). The majority of the currently effective CBAs had been negotiated or agreed to well before meeting the implementation requirement of Part 5 (Association of Flight Attendants, 2022). However, some of these CBAs did not incorporate voluntary reporting within a non-punitive paradigm under SMS implementation that can positively

impact work rules and offer protections such as duty time and rest requirements (Association of Flight Attendants, 2022; Flight Time/Duty Time Seminar, 2016). Incorporating language in CBAs that pertains to non-punitive safety reporting within a just culture environment to ensure trust in safety reporting systems is worth researching due to the potential for enhanced propensity to self-report safety issues by employees.

Purpose of the Study

The purpose of this study was to assess the factors that underly an effective self-reporting culture among Part 121 service providers in the U.S. Another objective of the study was to assess the perceptions of respondents on incorporating clauses that ensures employee protections such as non-retribution and non-punitive actions for self -reporting safety events in collective bargaining agreements among U.S Part 121 airlines and the effects on self-reporting culture. The perceptions of a cross-section of Part 121 airline personnel representing the different functional labor groups (pilots, cabin crew, maintenance) were sampled using a quantitative survey instrument and differences in perceptions of these respondents on factors underlying survey instrument items were assessed for significance.

Creswell and Creswell (2018) states that "a survey design provides a quantitative description of trends, attitudes, and opinions of a population, or tests for associations among variables of a population," (p. 147). The rationale to use the quantitative research method using a survey design is well known in the social sciences, and through inferential statistics, a representation of the sentiment of the population of airline employees on safety and reporting can be attained.

Research Questions

To achieve the research objectives, the following research questions were developed to explore the research problem:

1. What are the factors underlying the dimension self-reporting culture among respondents in Part 121 airlines in the U.S?
2. What are the strengths of the relationship between the factors underlying self-reporting culture and how do codifying employee protections affect enhanced reporting in Part 121 airlines?
3. What are the variations in the mean scores of perceptions of the factors by functional groups, Union and non-Union participation, and Reporting types, Non-ASAP vs ASAP?

CHAPTER 2

LITERATURE REVIEW

Defining Safety Culture in Safety Management Systems

Reason (1997) defines safety culture as shared values within an organization that have seven main components or elements:

1) As a system with the goal or drive to achieve maximum safety.

2) The safety system has respect for those things that can harm it.

3) To have an informed culture with data to promote knowledge of the wellness of the system.

4) A reporting culture of safety infractions that has front line workers who are willing to participate.

5) Trust through a restorative culture rather than a punitive one.

6) A flexible culture with adaptability and is prepared for crises.

7) A learning culture that will learn from the system to change as needed.

These shared values can be different in each labor group within an organization as a safety culture has many different components (pp. 195-196).

The environment where SMS is applied comprises of four subcultures that include a flexible, learning, reporting, and just cultures that Reason (1997) says interact to create an informed culture (p. 196). Figure 1 outlines the theoretical structure of a safety culture.

Figure 1

Five Components that make up a Safety Culture (FAA, 2016)

Gerde (2015) identified significant challenges to SMS implementation that primarily focused on the cultural transformations that could lead to a potentially poor safety culture. Stoltzer and Goglia (2015) discuss the dynamics of implementing a safety culture in SMS:

> *"One of the most challenging elements of SMS is the creation and nurturing of a safety culture,…A safety culture begins at the top of the organization, with the incorporation of policies and procedures that cultivate a reporting culture (where structures are in place that allows safety-related information to flow from all levels of the organization into a system empowered to correct problems) and a just culture (in which individuals are both held accountable for their actions and treated fairly by the organization). (p. 50).*

A voluntary reporting culture is imperative to the constant improvement cycle of increased safety, and labor relies on its proper functioning and information to increase productivity while also improving safety. Mills and Reiss (2014) state:

> "*Voluntary disclosure programs generate information and insights about the usual practices of the industry, the division of labor, typical problems, and ways to handle them – those details often invisible to those outside an organization or inside the organization but known by those "on the ground." (p. 403).*

The voluntary reporting system and culture gives voice to the frontline employees that can provide valuable data that is required by SMS for continuous improvement (Gerde, 2015; Liao, 2015, and Jausan, et al., 2017). Under and Gerde (2021) state:

> *"If disciplinary system practices in an organization causes such an unfair perception of unfairness, employees' fear and worries concerning reporting will increase and the weak positive just culture will force them into silence" (p. 11).*

Dekker and Breakey (2016) point to three forms of justice which comprise a just culture as substantive justice, procedural justice, and restorative justice. Substantive justice is derived from the fairness of the rules and has to do with their content. Procedural justice is much like a court system, the processes to facilitate a remedy when a rule has been violated, protect the violator with a just result, and the mechanism to delegate who has authority to make determinations.

Restorative justice is restoring the stakeholders to a state of safety or healing, even second and third-party participants. The reporting mechanisms in ASAP or other approved reporting system has the purpose of incorporating these three components into the SMS and just cultures (Dekker and Breakey, 2016).

A "Just culture promotes a sense of shared organizational responsibility for safety hazards and, thus, honest communication about at-risk behavior resulting from systemic weaknesses" (Dekker, 2014: as cited in, Darveaua, and Hannon, 2017). In particular, the goal of this research is to understand the inter-relationships between a reporting culture and just culture within Part 121 operations. It will be insightful to assess how the incorporation of verbiage on employee protections from punitive actions for self-reporting inadvertent mistakes, errors and potential violations in a CBA can facilitate trust and enhance self-reporting propensity.

Precepts of a Just Culture

Schubert (2004) attributes the genesis of aviation's movement to a just culture as recognition of legal barriers in creating a safety culture, and the balance of the various interests in an acceptable manner to participation, and states, "Overcoming legal barriers to safety will often depend less on the formulation of the law, than in the way the law is applied" (p. 63). This means that the application of the law will be the determinant on the various interests and their level of participation.

Dekker (2011) reviewed the criminalization of human error in aviation and healthcare and found that fear of criminalization negatively impacted voluntary reporting. These legal issues have implications that impact individual trust. Pellegrino (2013) illustrates the trust issue as it relates to State implementation:

> *"The EU and its Member States are not currently set up to use the widest possible range of data to prevent accidents and to address the risks to aviation safety in a systematic manner. This situation is caused by a number of factors, not the least of which is a general lack of trust for reporting occurrences." (p. 478)*

Even though Pellegrino and Schubert predate mandatory SMS application in US aviation, they are contemporary to the ASAP. The legal distinction in the application of the law has to do with the differences between the legalities of negligence and willful negligence as well as willful misconduct and recklessness.

Lawrenson and Braithwaite (2018) evaluated various strategies in which safety management can address the legal standards as it applies to safety culture, perhaps as a legal construct or concept within SMS itself. Lawrenson and Braithwaite (2018)

> *"Safety culture would appear to be developing not just as a mechanism to manage safety-related values and attitudes within organisations, but also as a legal concept that associates accidents with corporate criminal liability "(p. 260).*

Even though the SMS is an internal process, in the face of legal liability, there has been an emergence of criminalization of corporate behavior and the SMS' safety culture needs to consider aspects of evolving public sentiment, especially since aviation has achieved a high level of safety (Lawrenson and Braithwaite, 2018).

Despite this higher level of safety, the consumer perception still is favorable for criminalization unless pilots were determined to not be at fault (Winter, et. al, 2020), potentially making voluntary disclosure retributive in courts. Kováčová et al (2019) provide an 11-step process to a just culture that includes a just culture working group periodically meeting with investigators, court and law authorities, and aviation stakeholders on how to protect safety data and the system of reporting.

In an ASAP, if it is determined that the employee who volunteered in the program by self-reporting engaged in willful misconduct, regulatory noncompliance or include the "Big Five" of criminal activity, controlled substances or substance abuse, intentional

falsification, or alcohol, the immunity of the self-report is lost, and the report is referred to the FAA for remedy (FAA, 2020).

This is markedly different than the application of SMS in the health industry which distinguishes three distinct behaviors or the level of intentions, one of which creates a distinguishable gray area for interpretation, "at-risk" behavior, in aviation. Harvey and Sotardi (2017), identify the three levels of intentions in the area of health as being human error as being unintentional, at-risk behavior as unrecognizable or justifiable breaches in policy or procedures, and recklessness as being, intentional disregard for "substantial and unjustifiable risk" (p. 1240).

Perhaps as litigation and criminalization makes corporations or systems within corporations liable (Lawrenson & Braithwaite 2018); ERC's may refer more reports for action making remedies sought for employee protection a required attribute of SMS. Since most union members must vote to ratify contracts and participate in the process there would be more ownership in the substantive justice aspect to include self-reporting in CBA's (Dekker & Breakey, 2016). Legislation in some states eliminates the concept of malicious intent leaving accidents and negligence in the bounds of criminal law (Hurley & Berghahn, 2010). It is the at-risk behavior that is deemed "willful misconduct" or regulatory noncompliance that begs the question and leaves a CBA remedy wanting.

Overcoming Barriers to Voluntary Reporting

Despite Schubert (2004) legal barriers to a just culture, latent to an individual's apprehension of participation in self-reporting due to fear of being punished, it is Pellegrino's view, "spontaneous reporting is considered to be a means of ensuring the

application of the principle of 'just culture' in an atmosphere of complete trust without the fear of being punished" (Pellegrino, 2013, p. 477) that requires execution. Not only is trust an issue, but cultural differences impact perceptions and attitudes in reporting, learning and just cultures (Liao, 2015).

Under and Gerde (2021) developed a tool to measure different forms of silence as reasons for maintenance personnel for not reporting. Findings suggest that relational and prosocial silence, the fear of negatively impacting relationships within the working environment, was the number one factor for not reporting. However, the highest load for a variable item measured in the study was a just culture that was weak (Under and Gerde, 2021).

Current research findings by Under and Gerde (2021) supports earlier ones by Darveaua and Hannon (2017) who did an extensive qualitative literature review to identify various barriers to voluntary reporting in various industries including aviation. The results of the research indicated trust in the reporting system and trust in management as major barriers to reporting, among seven other reasons that include more local perceptions of training and attitude. The findings suggest significant differences in the perceptions of study constructs among machinists and mechanics. The facilitators to reporting identified by Darveaua, and Hannon (2017) include providing more training in the reporting systems themselves.

Afaya and Konlan (2021) identified three barriers including individual, professional, and organizational barriers to voluntary reporting in the health industry. A review of 14 studies revealed that fear of lawsuits, management behavior such as retribution, and inadequate reporting systems were the main barriers to reporting. For the

airline industry, a 2004 study found that although all occupational groups of an airline needed to improve safety culture that there were differences in cultures between each group (Gilla and Shergill, 2004).

Gao, et al., (2015) suggest that working experience has a significant effect on safety attitudes towards reporting and safety climate perceptions can be different across different occupational groups and attribute the variance to a possible influence of sub-cultures within each group. In a cross-sectional survey of the various functional groups within Taiwan's Ministry of Defence Aviation Division, Wang (2018) found out significant differences in perceptions of safety reporting culture. Wang (2018) further states that "Nevertheless, all responders (pilots and GSS) believed that safety culture in their organizations is a reporting culture" (p. 110), ground personnel (GSS) had a more favorable perception on safety reporting culture than the Air Force and Army pilots.

Liao (2015) in a study of how differences in national culture impacts safety reporting in an airline, suggested that pilots from western cultural background had a more favorable view of safety reporting as compared to their Chinese colleagues with the Chinese pilots being more fearful of retribution. Within-group evaluation of safety climate looking at effects of rank and company experience for an Asia-Pacific airline by Gao et al. (2013) showed that there was a difference in self-reporting by pilots based on experience.

The overall result of the analyses found younger pilots were less likely to report than to share safety concerns with a supervisor and tended to view the safety themes of their airline as for more positive than senior pilots (Gao, et al., 2013). These differences between the various labor groups within an airline, the method of reporting, union

participation and CBA protections need to be assessed, as to further understand safety performance and SMS in 14 CFR Part 121 airlines as suggested by Adjekum (2017).

Union Aspects of Safety Culture

Collective bargaining agreements outline both management's and the union's responsibilities and rights, including employee working conditions, wages, and hours (Thomas Reuters, 2022). CBAs include worker protections from actions by management that violates the CBA, such as safety related issues or workplace violations. The CBA delineates the grievance and arbitration procedures to addresses those violations as well as to provide due process from discipline for actions committed by the employee that management deems is a violation (Thomas Reuters, 2022).

The history of collective bargaining agreements in aviation dates back to 1919 pilot protests over the Post Office insistence that mail is transported in poor weather conditions and was later formally organized in 1920, 1926, and 1930 as the Air Mail Pilots of America, National Pilots' Association, and the Air Line Pilots Association (ALPA) (Northrup, 1947). ALPA desired the labor protections of the arbitration procedure afforded under the Railway Labor Act that were extended to airlines in legislation in 1936 and the Civil Aeronautics Act of 1938 (Northrup, 1947). Currently, ALPA represents pilots of some 38 airlines (Air Line Pilots Association [ALPA], n.d.).

The same year of the Civil Aeronautics Act of 1938 was passed, machinists began to unionize. At the time, it was made up of machinists and engineers that worked on the railroad but eventually migrated into a more industrial type of labor union with less engineers and today, with over 800,000 members, it is known as the International Association of Machinists (Georgia State University, 2019).

The Transportation Workers Union established an aviation division in the 1940's to form unions for Pan American and Eastern Airlines. The union comprises of ground handlers, ramp workers, airline mechanics and flight attendants (Transport Workers Union of America, AFL-CIO, 2022). The first flight attendant union was established in 1945 in the United States as the Air Line Stewardesses Association, now is the Association of Flight Attendants (Association of Flight Attendants-CWA - AFA United MEC, 2022).

All labor groups serving in the airline industry have unions, but not all labor groups of a company have union contracts or union representation (Chaison, 2007). "Union density reached 47.5% in 2004 and has been consistently above the overall private sector rate—usually four or five times that rate" (Chaison, 2007, p. 644). However, unionization may be much higher with an estimate of nearly 69 percent (Gittell et al., 2006).

There is very little in the public domain regarding the contents of each airline CBA. However, the best-documented CBAs within the public domain include the Association of Flight Attendants-CWA, AFL-CIO (Association of Flight Attendants-CWA [AFA], n.d.). A comparison of contracts within the AFA-CWA indicated that except for the Alaska Airlines contract, there are no provisions of protection for voluntary self-reporting, (ourcontract.org, 2022). The Association of Flight Attendants-CWA, AFL-CIO (2021) Alaska Airlines' contract states for management serving as a flight attendant the protection of reporting under ASAP:

> "*4. No single-source discipline may result from the Inflight management employee's presence on the sequence. Safety issues will be eligible for*

submission under the Aviation Safety Action Program (ASAP). If either party does not participate in the ASAP program, the Company and the Association will meet and agree to an equivalent alternative process."

For an airline to take disciplinary or punitive action against an employee, just cause for such discipline has to exist for the disciplinary action to stand.

In 1964, Arbitrator Carroll Daugherty produced a list of seven questions that comprise just cause. Requirements of just cause include fair notice or prior communication of the rules and penalties, reasonableness of the discipline especially when considering prior enforcement, due process in the form of fair investigations, substantial proof with credible evidence, evenhanded treatment or equal treatment ensuring that employees that commit the same offense get the same treatment, and proportional penalties in a progressive discipline that considers a seventh element of mitigating or aggravating circumstances (Schwartz, 2013). Each of these elements of just cause need not be individually stated in a CBA, but the protections of voluntary self-reporting should be, with each of these elements inherent and just as fundamental to the contract as the work rules.

Mills, Koliba, and Reiss (2018) identify unions as the appropriate third-party to help facilitate industry accountability, "In our case, the presence of employee unions in one voluntary program helps prevent the industry from engaging in large-scale regulatory deception while also helping prevent regulators from using self-disclosed data in punitive actions against employees and air carriers" (p. 1480). Further, Mills, Koliba, and Reiss (2018) describes their inclusion of labor and employees in the voluntary reporting, particularly the safety data process as "Involving employees and their unions in the

analysis of safety data can help to mitigate potential incidents while also utilizing the expertise of employees (professional accountability)" (p. 1503).

The perceptions of frontline workers within a safety culture facilitate a reporting and just culture that being codified to a collective bargaining agreement may improve that culture. The definition of "at-risk" behavior looms upon a determination by the Event Review Committee (ERC) of the ASAP report being referred for investigation as willful misconduct or regulatory noncompliance and nothing prohibits an air carrier from taking its actions to discipline and discharge despite this determination (FAA, 2020).

CHAPTER III

METHODOLOGY

A quantitative research method with a cross-sectional approach using a survey instrument was used in this study. The survey instrument was divided into a three-parts. The survey items were developed from a review of previously validated questionnaires (Gao, et al., 2013; Gao, et al., 2015), and SMS training documents (TSI, 2022). Initially, a list of potential survey items was collated and given to an SMS subject matter expert who reviewed and provided initial face/content validity of survey items. A final list of survey instrument items was obtained for the study.

The research was reviewed and approved by the University of North Dakota's Institutional Review Board (IRB) on March 9, 2022. The anonymous survey instrument was deployed online through a third party (SurveyMonkey.com) to facilitate the response of Part 121 airline employees representing the various functional labor groups of pilots, flight attendants, machinists and mechanics, ramp agents, flight planning, management, and airport customer service. The anonymous survey link was posted online between March 10 and March 26, 2022, via a Facebook post on a social media page and was promoted via Facebook's post boost. A link to the anonymous survey was also sent via emails to numerous airline employees facilitated by known contact persons at various airlines during the same period.

Part one of the survey included consent and the independent variables including job role, years of experience, self-reporting methods, employment status, and union participation. To facilitate response, no demographic information such as gender, age, race, or airline affiliation were gathered. Other than facilitating the completion of the survey, a determination was made that there was no basis in this research to gather demographics.

Part Two comprised of 15 statements that required respondents to rate how much they agreed or disagreed with the statements (Appendix A). These items are unforced Likert-style rankings on a five-point scale rating from 'strongly disagree to 'strongly agree' with the statements to ascertain attitude on safety culture, reporting culture, and their CBA's language for reporting protections. Two of the 15 statements (Table 1) required respondents to rate how much they agree or disagree with the statement to determine their view of current CBAs or other employment contract language and the impact of adding language to CBAs or employment contracts on self-reporting.

Part two statements representing themes associated with culture (Figure 1) and perceptions of CBAs were included in analyses as dependent variables. Part Three include the open-ended qualitative questions with comment boxes and one general comments box for feedback. There were 23 questions in the survey instrument and the complete survey is provided in Appendix C.

Table 1

Survey Questions Regarding CBA Language

Question
20. My employment contract (union, third party, or nonunion agreement) ensures protection from punitive action for self-reporting safety violations or unsafe conditions.
21. If language were included in my employment contract providing protections for self-reporting of safety violations it would improve reporting of safety violations or incidents?

Preliminary Data Analysis and Exploratory Factor Analysis (EFA)

At the end of the survey period, a total of 149 survey responses were collected through surveymonkey.com. Incomplete surveys and surveys with responses that were consider spurious were removed. Spurious responses include responses that were completed in a time that would preclude thoughtful participation ($t < 1$ min), that had the same response for all questions (e.g., all 5's), and ones where comments were made that represented irritability or disdain for the survey in combination of other reasons. The total number of remaining survey participants ($n = 116$) were used for the remaining analyses. An apriori statistical significance level of 0.50 (2-tail) was used in all analyses unless otherwise stated.

Statistical analyses were performed using SPSS Statistics 26 by IBM®. Analysis of the statistics were performed to evaluate whether the final dataset had normality to preclude any bias. Exploratory Factor Analyses (EFA) were performed to identify the factors underlying the dimension reporting culture among respondents. The goal of EFA is to reduce the variables through "dimension reduction" and understand the correlation

pattern matrix of items that explains reporting culture (Warner, 2008; Fields, 2018). Reliability analyses were conducted to evaluate if the survey items under each of the identified explanatory factors (variables) are consistent.

Correlation analysis was performed to evaluate the strengths of the relationship between the factors underlying reporting culture, as well as to evaluate the effect of years of experience on the factors identified through EFA. Regression analysis was conducted to determine if the hypothesized predictive relationship between the factor that has items on employee protections such as CBA language and the factor that had items related to trust and willingness to self-reporting was statistically significant. The regression analysis also provided an assessment of the strength of relationship between these factors and determined how CBA language impacts self-reporting.

An independent T-test of means was performed to determine if there is any significance on the factors in terms of perceptions of respondents based on their union involvement (unionized verses non-unionized) and if reporting type had any significance on the factors identified in EFA. A two-by-two factorial ANOVA was performed to analyze if there were main effects and potential interaction effects from union and non-union and ASAP and non-ASAP reporting methods on the factors identified in EFA. An ANOVA was done to evaluate the different perceptions of the factors by the functional labor group variable.

Open-ended questions were added to the survey instrument as part of the survey instrument to collect responses that will provide descriptive context and further amplify the quantitative data. The qualitative questions elicited responses on suggested text

related to employee protections to be incorporated into a CBA and strategies to improve labor-management relationships.

CHAPTER IV

RESULTS

As stated earlier, there were one-hundred and sixteen (n=116) responses from emails sent out and social media promotions which had the anonymous link to the survey. Union members represented 83.6% of the sample population and 96.6% are currently employed fulltime or part-time while the remainder are either retired or furloughed. The mean airline experience of respondents is 12.5 years (SD= 8.2).

A normal distribution was assumed for all the data set even though a visual inspection of the histogram and descriptive statistics revealed that the skewness and the kurtosis values for two variables (Union participation and Reporting Type) were above the recommended +/- 1 (Fields, 2018). A robust approach using bootstrapping was used in subsequent analyses to minimize any potential violations of normality. Table 2 shows a summary of the descriptive statistics and Table 3 gives a statistical summary of the breakdown of the respondents' job duties.

Factors Underlying the Dimension Reporting Culture

An Exploratory Factor Analysis (EFA) was done using Principal Axis Factoring (PAF) as the extraction method with Oblimin-Kaiser normalization rotation showing coefficients of .3 and Kaiser criterion of Eigenvalue of 1 to evaluate survey items 7 through 21. A review of the pattern matrix revealed four factors and was confirmed by

Table 2

Descriptive Analysis Summary

Measures	N	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Airline Experience (years)	115	12.5	8.2	1	32	.410	-.833
Union Participation	116	1.16	.372	1	2	1.841	1.413
Union Members	97	-	-	-	-	-	-
Non-Union Members	19	-	-	-	-	-	-
Reporting Type	116	1.55*	1.05	1	4	1.63	1.38
ASAP	89	-	-	-	-	-	-
Non-ASAP	27	-	-	-	-	-	-

* Out of a scale of 1-4.

Table 3

Summary of Roles Completing the Survey

Labor Group	Frequency	Percent
Pilots	80	69%
Dispatcher/Meteorologist	1	0.9%
Airport Customer Service	7	6.0%
Flight Attendant	13	11.2%
Maintenance	3	2.6%
Ramp Agent	10	8.6%
Management	4	3.5%
Other	2	1.7%

scree plot leveling (Appendix B) after the four factors. Bartlett's test of sphericity was $\chi 2$ (91) = 694.22, $p < 0.001$ with Kaiser-Meyer-Olkin (KMO = .85). The four factors revealed explained 66.2% of the variance.

In the first iteration of the EFA, Item 19, "confidence to file an ASAP or non-ASAP without fear" cross-loaded under both enhanced reporting (factor 1) and employee protections. An EFA was performed without Item 19 resulting in four factors grouped as

Tables 4, 5, 6, and 7. The four factors were Enhanced Reporting, Roles and Responsibility, Employee Protections and Employee Engagement. Reliability analyses were conducted to evaluate each of the factors represented as Tables 4 -7. Each factor resulted in Cronbach's alphas of .83, .80, .74, and .65, respectively. The reliability results are included in each of the Tables 4, 5, 6, and 7. Interestingly the item related to adding CBA language failed to load on any of the four factors. Table 8 is a summary of the averaged safety reporting culture underlying factors produced by EFA and used for further analyses.

Table 4

Factor 1: Enhanced Reporting

	N	Mean	SD
15. Managers/Supervisors promote safety by leading by example	116	3.23	1.24
16. There is trust between management/supervisors and employees	116	2.88	1.17
18. Management encourages reporting of incidents or safety concerns even if there are adverse consequences	116	3.71	0.99
Cronbach's alpha = .83			

Table 5

Factor 2: Roles and Responsibilities

	N	Mean	SD
7. Everyone understands their role in safety	116	3.83	1.13
8. Everyone is accountable for their safety responsibilities	116	3.94	1.09
9. Employees are properly trained for their position	115	3.68	1.11
Cronbach's alpha = .80			

Table 6

Factor 3: Employee Protections

	N	Mean	SD
10. There are punitive actions by management for self-reporting safety issues	116	3.72	1.21
14. There is a system in place whereby staff can report incidents anonymously	116	3.80	1.14
17. Our self-reporting policy of safety violations is non-punitive	116	3.85	0.93
19. I feel confident that I can file an ASAP or other voluntary safety report without fear of punitive action by management.	116	4.00	1.07
20. My employment contract (union, third party, or nonunion agreement) ensures protection from punitive action for self-reporting safety violations or unsafe conditions	115	3.91	1.10
Cronbach's alpha = .74			

Table 7

Factor 4: Employee Engagement

	N	Mean	SD
11. There are consequences for intentional violations	116	4.03	1.04
12. People report conditions that exist for an accident to occur	116	3.60	0.88
13. There is clear evidence that employees have a voice in safety	116	3.49	1.20
Cronbach's alpha = .65			

Table 8

Summary of Averaged Factors

	N	Mean	SD
Enhanced Reporting	116	3.27	0.98
Roles and Responsibilities	116	3.82	0.94
Employee Protections	116	3.86	0.83
Employee Engagement	116	3.71	0.80

Strengths of the relationship between the factors underlying reporting culture

A correlation analysis was conducted to evaluate the relationship between the four factors and the years of experience. The results showed significance between experience and employee protections ($r = .212$, $p < .05$). The results were significant between the four factors determined by EFA and the results are included in Table 9.

Table 9

Correlation Summary Table: Four Factors and Experience

Measures	N	Mean	SD	1	2	3	4
1. Experience	115	12.5	8.21	-			
2. Enhanced Reporting	116	3.27	.98	.097	-		
3. Roles and Responsibilities	116	3.82	.94	-.03	.487**	-	
4. Employee Protections	116	3.86	.83	.212*	.689**	.395**	
5. Employee Engagement	116	3.71	.80	-.122	.585**	.544**	.497**

* Indicates significance of p < 0.05; ** Indicates significance of p < 0.01
r statistics are shown in the diagonal

Two factors that best represented the reporting culture dimension and CBA protections were employee protections and enhanced reporting. A simple regression

analysis was done using a bootstrap sample of 1000 to determine whether employee protections is a significant predictor of enhanced reporting. The result indicates a significant predictive relationship between employee protections and enhanced reporting (F (1,114) = 102.99, R^2 = .475, p < .001). Table 10 shows the results of the regression analysis.

Table 10

Model Summary Between Employee Protections and Enhanced Reporting

Regression Weights	Standardized Beta Coefficient	R^2	F	p-value
EP → ER	.689	.48	102.99	.000

The R^2, which is a measure of the effect size, indicates that employee protections accounts for nearly 48% of enhanced reporting and suggest that any variations in items that measure employee protections could significantly affect enhanced reporting. The standardized beta coefficient indicates that for every unit increase in enhanced employee protection, there would be a corresponding .689 increase in enhanced reporting. It is instructive to note that the employee protection factor has an item on CBA protection and self-reporting and these results suggest that it is significantly predictive of items such as trust and propensity to self-report safety issues which are items under enhanced reporting. Table 11 shows the results of the bootstrap analysis.

A multiple regression was performed to determine if the inclusion of the other factors underlying reporting culture will be predictive of enhanced reporting and improve the model. Even though there were model significance and all the other factors also had

significant coefficients, incorporating the other two factors had minimal impact on model goodness-of-fit and overall effect size. The analysis was also not relevant in answering the key research question 2.

Table 11

Bootstrap for Coefficients

			Bootstrap[a]				
					Sig (2-	95% Confidence Interval	
Model		B	Bias	St. Error	Tailed)	Lower	Upper
1	(Constant)	.132	.006	.268	.621	-.409	.649
	Employee_Protections	.815	-.002	.068	.001	.685	.947

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

However, the standardized beta value for the employee protection predictor was reduced to 0.504 and suggest the contribution of the other factors to the model reduced the contribution of enhanced protection to the variance observed in enhanced reporting. It also suggests that when all the other factors were kept constant, enhanced protections increases by 0.50 for every unit increase of enhanced reporting. Results are reported in Table 12.

Table 12

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	-.771	.343		-2.248	.027	-1.450	-.091
	Roles_Responsibilities	.158	.078	.151	2.015	.046	.003	.313
	Employee_Protections	.596	.086	.504	6.938	.000	.426	.766
	Employee_Engagement	.308	.097	.252	3.164	.002	.115	.501

a. Dependent Variable: Enhanced_Reporting1

Perceptions of Union and Non-Union Participation and Reporting Type

An Independent sample *t*-tests were performed to evaluate the relationship between the union and non-union groups with the four factors from EFA. There was a statistical significance between union and non-union groups perceptions on employee protections (t (28.10) = 2.88, $p < .05$). There was no statistical difference between union and non-union groups with enhanced reporting (t (114) = .133, p > .05), roles and responsibilities (t (114) = 2.38, p >.05), and employee engagement (t (114) = 1.09, p > .05). The results are summarized in Table 13.

Table 13

Results of Union Participation on Four Factors

	Union		non-Union			
Parameter	*M*	*SD*	*M*	*SD*	*t* (114)	*p*
Enhanced Reporting	3.28	.96	3.25	1.11	0.133	.895
Roles and Responsibilities	3.82	.95	3.77	.88	.238	.812
Employee Protections	3.94	.82	3.41	.72	2.88	.008
Employee Engagement	3.75	.81	3.53	.72	1.09	.277

Independent sample *t*-tests were performed to evaluate if ASAP and non-ASAP reporting types influenced the perceptions on the four factors determined by EFA. The results show significance of ASAP and Non-ASAP reporting types on all four factors of enhanced reporting (t (37.38) = 3.51, p < .05), roles and responsibilities (t (41.14) = 3.09, p < .05), employee protections (t (37.65) = 7.10, p < .05), and employee engagement (t (36.42) = 3.08, p < .05). Results are summarized in Table 14.

Table 14

Results of Reporting Type on Four Factors

	ASAP		non-ASAP			
Parameter	*M*	*SD*	*M*	*SD*	*t* (114)	*p*
Enhanced Reporting	3.46	.88	2.67	1.07	3.51	.001
Roles and Responsibilities	3.97	.89	3.33	.94	3.09	.004
Employee Protections	4.12	.64	2.97	.77	7.10	.000
Employee Engagement	3.84	.72	3.26	.91	3.08	.004

A 2x2 between subjects factorial ANOVA was performed to evaluate reporting methods (ASAP and Non-ASAP) and union membership on the four factors of enhanced reporting, roles and responsibilities, employee protections, and employee engagement. The result of the 2x2 factorial ANOVA showed significance main effect for enhanced reporting (F (1, 112) = 4.49, $p < .05$). There was no statistical significance of the other three factors role and responsibilities (F (1, 112) = .79, $p > .05$), employee protections (F (1, 112) = 2.48, $p > .05$), and employee engagement (F (1, 112) = .12, $p > .05$).

Perceptions Between Various Functional Labor Groups

A one-way ANOVA analysis was performed to analyze the factors between the various functional labor groups. The functional group, flight planning, had less than two responses and was removed from the ANOVA in order to conduct Tukey post hoc analysis. There was a statistical significance between the functional labor groups for enhanced reporting [F (5, 109) = 2.69, p = .025], employee protections [(F (5, 109) = 11.22, p = .000)], and employee engagement [(F (5, 109) = 4.57, p = .001)].

A post hoc test using the Tukey method was performed and identified significance in enhanced reporting between flight attendants and pilots (p = .012). Post hoc tests using the Tukey method were also performed and identified significance between pilot

and other ($p = .021$) for employee engagement. Post hoc tests showed significance between pilots and ACS ($p = .040$), pilots and flight attendants ($p = .000$), and pilots and ramp agents ($p = .006$) for employee protections.

Qualitative Open-Ended Questions

There were some open-ended questions as part of the survey instrument to collect responses that will provide descriptive context and further amplify the quantitative data. The qualitative questions elicited responses on suggested text related to employee protections to be incorporated into a CBA and strategies to improve labor-management relationships. Twenty-nine (29) of the 116 respondents of the survey, or 25% of those surveyed provided a response on suggested verbiage.

CHAPTER V

DISCUSSION

Extant literature suggests a relationship between employee protection and self-reporting culture in various organizations. An objective of the study was to understand the relationships between hypothesized factors that underly self-reporting culture in Part 121 airline operations. The study also hypothesized that adding protection clauses in CBAs that ensure non-punitive action for self-reporting safety issues by employees can enhance self-reporting propensity. An EFA confirmed four factors as explanatory constructs underlying self-reporting culture.

The factors were enhanced reporting, roles and responsibilities, employee protections, and employee engagement. All the factors had relatively good factor loadings and the items' reliability for three of the factors was good ($\alpha>0.70$) and one of them had an alpha value of 0.65 which though low was acceptable. The results suggest that the survey instrument was psychometrically valid and reliable. Assessing the strength of the relationships between the factors underlying self-reporting culture and the variable working experience. All the factors were also significantly related to each other, and they all had high effect sizes further confirming their role as underlying factors of self-reporting culture.

There was a significant relationship between working experience and employee protection. The trend suggested that as working experiences increased perceptions of the

merits of having employee protections increased. This finding is similar to an earlier study by Gao (2013) which suggested that younger and less experienced pilots in an airline had relatively lower perceptions of protections offered to employees for reporting safety issues and did not report using the voluntary self-reporting tools available but would rather communicate with a member of the management directly. An implication for policy is to ensure that employee protections afforded by a self-reporting program are explained and communicated effectively to less experienced employees as part of indoctrination training and advocating support from senior colleagues and management.

There was statistical significance in terms of the linear relationships between the four factors, indicating that improvement in enhanced reporting could result from any improvement in one of the other three factors. This study found a significant predictive relationship between employee protections and enhanced reporting. This is instructive to Part 121 providers, in that the improvement in policy regarding employee protections should be a focus to improve enhanced reporting culture. The variable with the least mean (M=2.88) was that of trust, which loaded with enhanced reporting, suggests that the formulation of employee protections as part of any self-reporting program must have clauses that engender trust between employees and management to enhance effectiveness.

A policy implication is for Part 121 providers to focus on promoting employee protections by incorporating a memorandum of understanding on non-punitive self-reporting of safety events in CBAs and also improved training of younger or less experienced airline employees who may not feel confident in reporting. It may even be more instructive if such employee protections are codified intrinsically as part of the

CBAs for greater effect on enhanced reporting based on the predictive relationship that suggests commensurate improvement in employee protections may drive enhanced reporting.

The variations in the perceptions of the factors by functional groups, union participation, and reporting types revealed that there was significance between the different functional labor groups, which reporting type was significant in all four factors, and that union participation was significant with employee protections. What these analyses reveal is the differences in perceptions of the factors between pilots and the other labor groups more broadly.

There was significance between pilots and at least one labor group for each of the factors of enhanced reporting, employee engagement, and employee protections. There was no significance between the other labor groups whatsoever. There could be varying reasons for these results, however, the result of differences in the demographic variables; reporting type, ASAP and non-ASAP, and union participation seem to highlight more favorable perceptions of the factors by pilot respondents as compared to the other labor groups.

A plausible rationale for this observation may be due to the incorporation of the ASAP into the pilot work rules dating back to the early 1990s and the protections afforded by ASAP for pilots in terms of self-reporting of safety issues in a just culture environment are evident (FAA, 2020). For all the other labor groups, the use of an ASAP-style reporting program may be relatively new, and the inured benefits of protections for self-reporting may not significantly influence their perceptions.

Another plausible reason is that pilot groups may be more unionized and codifying employee protections under CBAs may be much easier to implement than non-unionized employee groups. This is further corroborated by the result that suggests that employees who participated in union or had union membership significantly perceived the merits of employee protection better than non-unionized employees. This could also be due to the likelihood of unions advocating and fighting to ensure administrative and restorative justice for members.

As part of the open-ended questions to provide context and further amplify the quantitative data. Some respondent suggested improvements to CBAs by including procedural items such as a first response method that require review by a union representative or trusted cohort of the same labor group prior to submission, outlining who has access to reports, and the method of de-identification.

Some technical suggestions included ensuring that aircraft flight data such as Flight Operations Quality Assurance (FOQA) type data are also afforded the same protections from recrimination and punitive actions. Some respondents also recommended that direct reports to supervisors and top-level management be treated with the same anonymity and protection. Some suggestions related to punitive and legal processes related to the monitoring of the reporting employee to ensure protection from retaliation.

Other suggestions touched on the need for transparent grievance procedures and disciplinary processes. Ensuring follow-up or actionable items are covered and greater definitions of labor and management roles in the management of safety events reported were highlighted. Overall language to improve self-reporting included comprehensive

annual training that provides knowledge on safety report filing procedures and accessibility to self-reporting systems.

There were also recommendations to provide information as part of self-reporting programs that delineate actions that warrant punitive actions such as intentional disregard for safety and sabotage. To improve labor-management relations, financial reward for safety (reporting), better communication, and training was suggested. A lead-by-example option to experience issues firsthand was suggested, by having management be involved with the frontline operations as well.

In terms of study limitations, the small sample size and skewness towards pilots may have impacted the results and a future study with a relatively bigger and well-stratified sample is recommended to update the findings of this study. The COVID-19 pandemic and the subsequent adverse airline performance and personnel issues may also have impacted the results of this survey. A future study may also include other stakeholders in aviation such as Part 135 operators and Air Traffic Management personnel in the U.S to assess the study variables.

REFERENCES

Adjekum, D. (2017). An evaluation of the relationships between collegiate aviation safety management system initiative, self-efficacy, transformational safety leadership and safety behavior mediated by safety motivation in collegiate aviation. *International Journal of Aviation, Aeronautics, and Aerospace*, *4*(2). https://doi.org/10.15394/ijaa.2017.1169

Afaya, A., Konlan, K.D. & Kim Do, H. (2021). Improving patient safety through identifying barriers to reporting medication administration errors among nurses: an integrative review. *BMC Health Serv Res., 21*. p 1156 https://doi.org/10.1186/s12913-021-07187-5

Air Line Pilots Association, INT'L. (2021). *Our Pilot Groups*. https://www.alpa.org/about-alpa/our-pilot-groups

Association of Flight Attendants-CWA - AFA United MEC. (2022). *AFA Milestones. https://unitedafa.org/afa/about/milestones/*

Association of Flight Attendants-CWA, AFL-CIO. (2020a). *Collective Bargaining*. https://www.afacwa.org/collective-bargaining

Association of Flight Attendants-CWA, AFL-CIO (December 9, 2021). (2020b). *2016 – 2021 Joint Collective Bargaining Tentative Agreement Summary & Industry Comparison.* pp. 50-55. https://ourcontract.org/docs/ta/industry-comparison.pdf

Association of Flight Attendants-CWA, AFL-CIO (December 9, 2021). Ourcontract-Airlines. (2021a). *Airlines*. https://ourcontract.org/airlines/

Association of Flight Attendants-CWA, AFL-CIO (December 9, 2021b) https://cdn.afacwa.org/docs/cba/alaska/alaska-airlines-contract-2014-2019.pdf

Black's Law Dictionary. (2022a). The Law Dictionary. https://thelawdictionary.org/collective-bargaining-agreement/

Black's Law Dictionary. (2022b). The Law Dictionary. https://thelawdictionary.org/just-cause/

Chaison, G. (2007). Airline negotiations and the new concessionary bargaining. *Journal of Labor Research*, *28*(4). pp. 644. doi:10.1007/s12122-007-9011-4.10.1177/0010880402435009

Creswell, J W, and Creswell, J.D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches.* 5th edition. Sage Publications: Thousand Oaks, CA.

Darveau, K., and Hannon, D. (2017). Barriers and facilitators to voluntary reporting and their impact on safety culture. *International Journal of Aerospace Psychology*, *27*(3-4). pp. 100-104. doi:10.1080/24721840.2018.1442221

Dekker, S. (2011). The criminalization of human error in aviation and healthcare: A review. *Safety Science*, *49*(2), 121–127. https://doi.org/10.1016/j.ssci.2010.09.010.

Dekker, S.W.A., and Breakey H. (2016). 'Just culture:' Improving safety by achieving substantive, procedural and restorative justice. *Safety Science. 85,* 187–193.

Federal Aviation Administration. (2020). Aviation safety action program (ASAP) (Advisory Circular No. 120-66C). Retrieved from https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-66C_(Edit).pdf

Federal Aviation Administration. (2016). Introduction to "Just Culture." Retrieved from https://www.icao.int/ESAF/Documents/meetings/2016/ATS%20Incident%20Investigation%202016/Presentations/3%20-%202016-07-18%20-%20Just%20Culture%20Introduction%20-%20Nairobi.pdf

Federal Aviation Administration. (2015). Safety management systems for aviation service providers (Advisory Circular No. 120-92B). Retrieved from https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-92B.pdf

Field, A.P. (2018). *Discovering Statistics Using IBM SPSS Statistics.* 5th Edition. Thousand Oaks, California: Sage Publications Inc.

Gao, Y., Bruce, P.J., & Rajendran, N. (2015). Safety climate of a commercial airline: A cross-sectional comparison of four occupational groups." *Journal of Air Transport Management, 47*, 162–171. doi:10.1016/j.jairtraman.2015.05.010.

Gao, Y., Bruce, P.J., Newman, D.G., & Zhang, C.B. (2013). Safety climate of commercial pilots: The effect of pilot ranks and employment experiences. *Journal of Air Transport Management*, *30*, 17–24. doi:10.1016/j.jairtraman.2013.04.001.

Georgia State University: University Library. (2019, May 29). *Southern Labor Archives: Archives of the International Association of Machinists and Aerospace Workers: History of the IAM*. https://research.library.gsu.edu/IAMAWCollections

Gerede, E. (2015). A qualitative study on the exploration of challenges to the implementation of the safety management system in aircraft maintenance organizations in Turkey. *Journal of Air Transport Management*, *47*, 230–240. https://doi.org/10.1016/j.jairtraman.2015.06.006.

Gilla, G.K. and Shergill, G.S. (2004). Perceptions of safety management and safety culture in the aviation industry in New Zealand. *Journal of Air Transport Management*, *10*, 233–239. doi:10.1016/j.jairtraman.2004.02.002.

Harvey, H.B., and Sotardi, S.T. (2017). The just culture framework. *Journal of the American College of Radiology, 14*(9), 1239-1241. doi:https://doi.org/10.1016/j.jacr.2017.04.030

Hurley, S.P. and Berghahn, M.J. (2010). Medication errors and criminal negligence: Lessons from two cases. *Journal of Nursing Regulation*, *1*, 39-43. https://doi.org/10.1016/S2155-8256(15)30365-3.

ICAO (2018). Safety Management Manual, Doc 9859 AN/474 (4th Edition). Montréal: International Civil Aviation Organization.

Jausan, M., Silva, J., & Sabatini, R. (2017). A holistic approach to evaluating the effect of safety barriers on the performance of safety reporting systems in aviation organisations. *Journal of Air Transport Management, 63*, 95–107. https://doi.org/10.1016/j.jairtraman.2017.06.004.

Kováčová, M, Licu, A, & Bálint J. (2019). Just Culture – Eleven steps implementation methodology for organisations in civil aviation – "JC 11". *Transportation Research Procedia, 43*, 104-112.

Lawrenson, A.J., and Braithwaite, G.R. (2018). Regulation or criminalisation: What determines legal standards of safety culture in commercial aviation? *Safety Science*, *102*, 251–262. https://doi.org/10.1016/j.ssci.2017.09.024.

Liao, M-Y. (2015). Safety culture in commercial aviation: Differences in perspective between Chinese and Western pilots. *Safety Science*, *79*, 193–205. https://doi.org/10.1016/j.ssci.2015.05.011.

Mills, R.W., Koliba, C.J. & Reiss, D.R. (2018). Ensuring compliance from 35,000 feet: Accountability and trade-offs in aviation safety regulatory networks. *Administration & Society*, *50*(10), 1480 and 1503. doi:10.1177/0095399716656223.

Mills, R.W., and Reiss, D.R. (2014). Secondary learning and the unintended benefits of collaborative mechanisms: The Federal Aviation Administration's Voluntary Disclosure Programs. *Regulation & Governance*, *8*(4), 443. doi:10.1111/rego.12046.

Northrup, Herbert R. (1947). Collective bargaining by air line pilots. *The Quarterly Journal of Economics,* 61(4), 535-536., doi:10.2307/1885049.

Pellegrino, Francesca. (2013). Just culture principles in aviation law from a European perspective. *Annals of Air and Space Law. 38*, 477-478.

Pellegrino, Francesca. (2019). *The just culture principles in aviation law: Towards a safety-oriented approach*. Legal Studies in International, European and Comparative Criminal Law 3. Cham, Switzerland: Springer International Publishing AG.

Reason, James. (1997). *Managing the risks of organizational accidents*. England: Ashgate.

Schubert, Francis. (2004). Legal barriers to a safety culture in aviation. *Annals of Air and Space Law*. *29*, 63.

SKYbrary. (2020). Safety management system. Retrieved from https://www.skybrary.aero/index.php/Safety_Management_System

Stolzer, A. J., and Goglia, J. J. (2015). *Safety management systems in aviation (2)*. Burlington, VT: Ashgate.

Schwartz, Robert M., (2013). *Just Cause: A Union Guide to Winning Discipline Cases*. Cambridge, MA: Work Rights Press.

Thomas Reuters. (2022). *Practical Law*. https://content.next.westlaw.com/4-504-1300?__lrTS=20200911212451804&transitionType=Default&contextData=(sc.Default)&firstPage=true

Transport Workers Union of America, AFL-CIO. (2022). *United Invincible: Advocating on Behalf of Working Men and Women Since 1934*. Retrieved from: https://www.twu.org/wp-content/uploads/2021/03/TWU_FactSheet_2018v4-compressed.pdf

Under, I. and Gerede, E. (2021). Silence in aviation: Development and validation of a tool to measure reasons for aircraft maintenance staff not reporting. *Organizacija*, *54*(1). 3-16. https://doi.org/10.2478/orga-2021-0001

Warner, R.M. (2008). Applied Statistics: From Bivariate Through Multivariate Techniques. Thousand Oaks, California : Sage Publications Inc.

Winter, S.R., Rice, S., Spence, T., O'Toole, N.M., Tamilselvan, G., Baugh, B.S., Takano, U., Gupta, M., Valecha, D., Milner, M.N., & Cortés, A.I. (2020). A Quantitative investigation on criminalization of airline pilots: Consumer and pilot perspectives. *Safety Science. 130*, 104904. https://doi.org/10.1016/j.ssci.2020.104904.

APPENDIX A

Survey Questions
v7. Everyone understands their role in safety
v8 Everyone is accountable for their safety responsibilities
v9 Employees are properly trained for their position
v10 There are punitive actions by management for self-reporting safety issues
v11 There are consequences for intentional violations
v12 People report conditions that exist for an accident to occur
v13 There is clear evidence that employees have a voice in safety
v14 There is a system in place whereby staff can report incidents anonymously
v15 Managers/Supervisors promote safety through leading by example
v16 There is trust between management/supervisors and employees
v17 Our self-reporting policy of safety violations is non-punitive
v18 Management encourages reporting of incidents or safety concerns even if there are adverse consequences (for the company)
v19, I feel confident that I can file an ASAP or other voluntary safety report without fear of punitive action by management
v20 My employment contract (union, third party, or nonunion agreement) ensures protection from punitive action for self-reporting safety violations or unsafe conditions
v21 If language were included in my employment contract providing protections for self-reporting of safety violations it would improve reporting of safety violations or incidents?

APPENDIX B

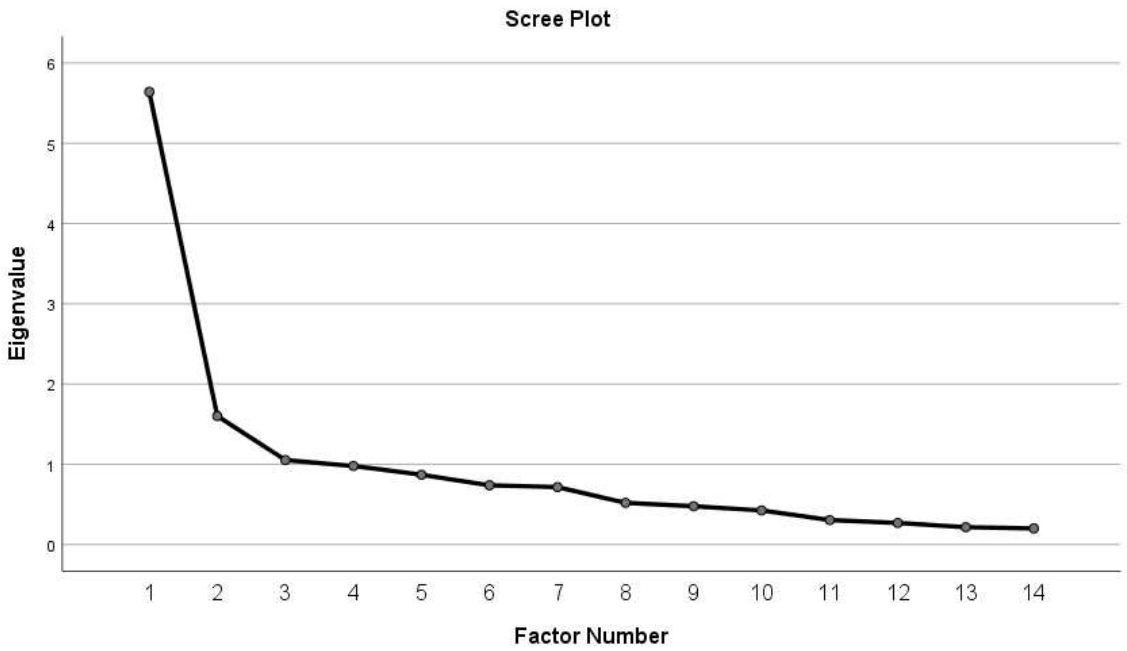
Exploratory Factor Analysis

Factor	1	2	3	4
v7. Role		.581		
v8. Accountable		.969		
v9. Trained		.565		
v10. Punitive			.580	
v11. Consequences				.439
v12. CTEFAATO*				.519
v13. Voice				.768
v14. System			.389	
v15. Lead	.630			
v16. Trust	.817			
v17. Nonpunitive			.777	
v18. Encourage_Reporting	.340			
v20. CBA_protects			.551	
v21. CBA_Language				

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

*Smith, D. (January 21, 2021) TSI Training, Safety Management Systems Oklahoma, City, OK.



APPENDIX C

Airline Employee Safety Survey

Confidential and Voluntary Survey for Airline Employees: Thank you for your time!

Question Title

1. What is your job role or what was your job role in the airline industry?

Airline Pilot

Airline Dispatcher

Airport Customer Service/Gate Agent

Flight Attendant

Maintenance (Line)

Maintenance (Base)

Meteorologist

Ramp Agent/Station Operations

Contract Maintenance (Station/Field)

Other (please specify)

Question Title

2. How many years have you been employed in the airline industry?

Question Title

3. Are (were) you a member of a Labor Union for your job role in the airline industry?

Yes

No

Question Title

4. What is your current employment status within the airline industry?

Full Employment

Part-time

Furloughed

Retired

None of the Above

Question Title

5. What type of voluntary safety reporting program does your airline have for your job?

State sponsored reporting program with labor Union representation (ASAP)

State sponsored reporting program but I do not know how it works (ASAP)

Company developed safety reporting program

Unknown

Not required to have a safety reporting program

Other (please specify)

Please indicate how strongly you agree or disagree with the following statements:

6. Everyone understands their role in safety

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

7. Everyone is accountable for their safety responsibilities

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

8. Employees are properly trained for their position

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

9. There are punitive actions by management for self-reporting safety issues

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

10. There are consequences for intentional violations

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

11. People report conditions that exist for an accident to occur

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

12. There is clear evidence that employees have a voice in safety

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

13. There is a system in place whereby staff can report incidents anonymously

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

14. Managers/Supervisors promote safety through leading by example

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

15. There is trust between management/supervisors and employees

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

16. Our self-reporting policy of safety violations is non-punitive

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

17. Management encourages reporting of incidents or safety concerns even if there are adverse consequences (for the company).

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

18. I feel confident that I can file an ASAP or other voluntary safety report without fear of punitive action by management.

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

19. My employment contract (union, third party, or nonunion agreement) ensures protection from punitive action for self-reporting safety violations or unsafe conditions.

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

20. If language were included in my employment contract providing protections for self-reporting of safety violations it would improve reporting of safety violations or incidents?

Strongly Disagree

Disagree

Neutral/Neither agree nor disagree

Agree

Strongly Agree

Airline Employee Safety Survey

21. What language or additions would you suggest for CBA's or employment agreements to improve confidential safety reporting?

22. What suggestions do you have for the management/labor relationship to be improved to ensure safety reporting of potential violations?

23. Please feel free to provide any information or share any other comments you have below:

APPENDIX D

Subject: UND IRB Approval Letter for Exempt Protocol

From: Michelle Bowles

Sent date: 2022-03-09 03:29:19

To: James Albert Higgins

CC: Todd Heyne

Division of Research & Economic Development
Office of Research Compliance & Ethics

Principal Investigator: James Albert Higgins
Protocol Title: Incorporating Worker Protections in Collective Bargaining Agreements as a Facilitator for Self-Reporting
Protocol Number: IRB0004609
Protocol Review Level: Exempt 2
Approval Date: 03/09/2022
Expiration Date: 03/08/2025

The application form and all included documentation for the above-referenced project have been reviewed and approved via the procedures of the University of North Dakota Institutional Review Board.

If you need to make changes to your research, you must submit an amendment to the IRB for review and approval. No changes to approved research may take place without prior IRB approval.

This project has been approved for 3 years, as permitted by UND IRB policies for exempt research. You have approval for this project through the above-listed expiration date. When this research is completed, please submit a termination request to the IRB.

Sincerely,

Michelle L. Bowles, M.P.A., CIP
she/her/hers
Director of Research Assurance & Ethics
Office of Research Compliance & Ethics
Division of Research & Economic Development
University of North Dakota