

Biosketch for Dr. Amanda Lamp

BIOGRAPHICAL SKETCH

NAME: Amanda Lamp

eRA COMMONS USER NAME (credential, e.g., agency login): LAMPAM

POSITION TITLE: Research Assistant Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	Completion Date MM/YYYY	FIELD OF STUDY
Washington State University, Pullman, WA	BS	May 2004	Neuroscience, Minor in Psychology, Pre-Med
Washington State University, Pullman, WA	MS	May 2016	Prevention Science
Washington State University, Pullman, WA	PhD	May 2018	Prevention Science

A. Personal Statement

My academic background includes Neuroscience (BS) with a Psychology minor, Prevention Science (MS, PhD), and over 6 years working with one of the leading occupational sleep medicine scientists, Dr. Gregory Belenky, on sleep and performance research. This background has allowed me to establish expertise in the field of sleep, along with a high degree of understanding why prevention and intervention studies and programs are so important. In addition, I have gained a solid understanding of the brain and how this knowledge overlays all of my studies and research projects.

Our team, of which I have been the Scientific Manager for over six and a half years continues to work for United Airlines as scientific consultants and Fatigue Risk Management Systems experts with our substantial multi-year contract with them. In my role as Scientific Manager, I oversee all day-to-day operations and manage our four Research Assistants and the executing of all projects and papers. Prior to my current work, I also worked in the Program of Excellence in Addiction Research (PEAR) and was almost immediately promoted to run the field study that was initiated when I began work. These work experiences are incredibly valuable because it has built my expertise in running field studies and working with various levels of management in a corporate aviation company including pilots, chief pilots, union representatives, mid- and upper-level management of airline companies, and FAA representatives. This operational knowledge has allowed me to become adept at interacting with and finding common group with various diverse populations of stakeholders. After successfully defending my PhD dissertation in March 2018 I was hired as a Research Assistant Professor at WSU so that I could continue working on all of our sleep and performance aviation research studies and projects. In addition, I have

successfully collaborated with other researchers to produce several peer-reviewed publications and FAA reports and as well as currently working on a paper and FAA report co-authored with NASA sleep researchers. I have been asked to submit an abstract to be on a panel for the 2019 AsMA Annual Conference. I have also been asked to present my work for a SLEEP 2019 Rapid Fire Symposium on sleep, fatigue and performance, safety outcomes, and fatigue mitigation strategies in commercial aviation, healthcare, emergency services, and policing. I am a member of a select of key aviation specialists to be on the Fatigue Countermeasures Working Group that has convened every quarter for the past 18 months and in November 2018 published a paper on controlled rest guidance for aviation titled *Controlled Rest on the Flightdeck: A resource for operators*. Through all of these collaborative projects I have learned leadership and communication skills that will directly apply to all future research projects, including the study submitted in the SRSF Career Development Award application. In addition, our United Airlines contract requires yearly statements of work that include an outline of work (strategies, techniques, and procedures), scope of services (all expected projects and tasks therein), timeline, progress reports, and budget. As I have helped to write and update the SOW each year and meet all requirements of the SOW for over six years, I have a firm understanding of what is practical and realistic in regard to expectations, task completions, budgets, and timelines.

- a. Belenky G, **Lamp A**, Hemp A, Zaslona J (2013) Fatigue in the workplace. In Bianchi MT (Ed.), *Sleep Deprivation and Disease*, New York: Springer, pp. 243-268.
- b. **Lamp, A.**, Chen, J., McCullough, D., Belenky, G. (2018) Equal to or better than: The application of statistical non-inferiority to fatigue risk management. *Accident Analysis and Prevention*, <https://doi.org/10.1016/j.aap.2018.01.020>
- c. McDonald J, Potyk D, Fischer D, Parmenter B, Lillis T, Tompkins L, Bowen A, Grant D, **Lamp A**, Belenky G (2013) Napping on the Night Shift: A study of sleep, performance, and learning in physicians-in-training. *Journal of Graduate Medical Education*, 5(4): 634-638.

B. Positions and Honors

Positions and Employment

2012-present	Scientific Manager, Occupational Sleep Medicine Group, Sleep and Performance Research Center, Department of Medical Education and Clinical Sciences, Elson S. Floyd College of Medicine, Washington State University
2011-2012	Research Assistant, Program of Excellence in Addiction Research, Washington State University
Mar-Oct 2010	Working Student, Under Professional Dressage Rider Christoph Koschel (WEG 2010) and International Judge/retired Olympic team coach Jürgen Koschel, Hagen, Germany
2006-2007	Working Student, Under Professional Dressage Rider Jan Ebeling (Olympics 2012), Moorpark, CA, USA

2004-2005	Working Student, Under Professional Jumper Rider Scott Keach (Olympics 1988 and 2016, WEG 2018, shortlisted for Olympics 2020) Goolway, Australia
2001-2005	Research Associate, Dementia Research (Dr. Allan Troupin), Spokane, WA

Other Experience and Professional Organizational Memberships

Sleep Research Society	Member	2012 – present
Aerospace Medical Association	Member	2018 – present
Fatigue Countermeasures Working Group	Member	2017 – present

C. Contribution to Science

1. One of my primary contributions to science is the application of non-inferiority to Fatigue Risk Management Systems (FRMS). Non-inferiority has traditionally been used by the pharmaceutical companies to ensure a new version of a drug is as good as or better than a current version. As the FAA language calls for an “equivalent level of safety” non-inferiority exactly answers the regulatory language as it is the logical union of equivalence and superiority, replacing the current superiority and equivalence testing. Thus, non-inferiority simplifies the analysis for all FRMS studies and will be promoted as a new standard to use in all occupational settings where the question is whether a new device/route/system/etc. is equal to or better than what is currently used. For FRMS specifically, this ensures that the new operation is as safe as or safer than the existing operations.
 - a. **Lamp**, Chen, Mccullough, and Belenky. "Equal to or Better Than: The Application of Statistical Non-inferiority to Fatigue Risk Management." *Accident Analysis and Prevention*, (2018). Full text link: <https://doi.org/10.1016/j.aap.2018.01.020>
2. Another primary contribution to science and safety was collaborating with 35 of the top scientists, commercial airline representatives, and commercial airline union representatives across the world to publish a resource guidance document for controlled rest (CR) on the flightdeck. This work was developed to give international operators in countries that legally allow pilots to take CR a science-based resource to standardize the current CR practices and give the FAA a scientifically based document demonstrating the benefits to legally allowing CR on the flightdeck in the US (it is currently illegal in the US except for our armed forces). In the US, this document is a first step toward the FAA changing its stance legally on CR. This is an important issue because CR is occurring on US flights, just unintentionally because pilots cannot help if they become too fatigued to stay awake, with studies showing microsleeps occur even at Critical Phases of Flight (when the pilot needs to be the most alert). If we can get CR legalized, we can properly monitor and help pilots manage their CR, leading to greater safety in aviation. Internationally, this document standardizes CR practices, again increasing safety in aviation.

- a. Fatigue Countermeasures Working Group (including **Lamp**). “Controlled Rest on the Flight Deck: A resource for operators.” Flight Safety Foundation. Nov 2018. *Full text link: <https://flightsafety.org/wp-content/uploads/2018/11/Controlled-Rest.pdf>*
3. The third primary contribution to science is ensuring the safety of commercial airline flights that are flown under a data-driven alternative to the current prescriptive regulations. These flights/operations are called an Alternative Method of Compliance (AMOC) and must be shown through data collection that they are as safe as or safer than operations flown under the existing prescriptive regulations. This is done by verifying through modeling, data collection, and analysis of findings on safety measures of fatigue, sleepiness, sleep, and cognitive performance. This matters because technology has allowed people to build better airplanes and equipment that push the boundaries of flight and human physiology. We must demonstrate scientifically-based reasons that these operations are safe before allowing these advances to be implemented.
 - a. United Airlines FAA Final Report: Los Angeles – Melbourne Route (July 2018)
 - b. United Airlines FAA Final Report: California – 787/777 Sydney 787/777 Taipei Route Combined Data (June 2018)
 - c. United Airlines FAA FRMS Application Report: Newark – Mumbai Route (January 2018)
 - d. United Airlines FAA Final Report: 3 Pilot Augmented In-Flight Rest (November 2017)
 - e. United Airlines FAA FRMS Application Report: Houston – Sydney Route (September 2017)
 - f. United Airlines FAA Final Report: California – 787 Sydney 787 Taipei (March 2017)
 - g. United Airlines FAA Final Report: California – 777 Sydney 777 Taipei; 777 Sydney 787 Melbourne (October 2016)
 - h. United Airlines FAA Final Report: Guam “Island Hopper” (September 2016)
 - i. United Airlines FAA FRMS Application Report: 3 Pilot Augmented In-Flight Rest (May 2016)
 - j. United Airlines FAA FRMS Application Report: San Francisco – Singapore Route (December 2015)
 - k. United Airlines FAA Final Report: Flight Crew Rest Facility 777/747 Study (May 2015)
 - l. United Airlines FAA FRMS Application Report: California – 777 Sydney 777 Taipei; 777 Sydney 787 Melbourne; 787 Sydney 787 Taipei (September 2014)
 - m. United Airlines FAA FRMS Application Report: Guam “Island Hopper” (September 2013)
4. In kind with the last primary contribution to science, another contribution is also ensuring the safety of flights that meet the current FAA prescriptive regulations. Although these flights have been deemed as safe, there has not been scientific evidence verifying this assumption. Our team is performing studies on currently flown flights to confirm that these flights do not consist of components or elements that cause unsafe levels of fatigue. Through our work, we have not only taught commercial airline representatives and union representatives the major scientific factors affecting sleep and fatigue (e.g., circadian rhythm) to change the culture of scheduling trips but have demonstrated through data collection and analysis that specific flights need to be modified for safety reasons. One such example is the MNL-ROR overnight trip that is now being broken up into two flights as the data demonstrated higher than normal

fatigue levels and lower than normal performance levels at Critical Phases of Flight. We currently have another domestic study, the Domestic Crew Alertness Study, that spans a wide range of routes/flights that compares onerous to non-onerous flights and will give us a large amount of data to check the safety of onerous, compliant flights.

- a. United Airlines Internal Report: MNL-ROR Triangle (November 2018)
5. Translation of scientific findings into real world application to help pilots be safer and healthier. Although I do not have as much published or report evidence on this point, I recently asked a pilot what he thought were my greatest contributions as he has seen my work over the past 6+ years and this is what he said and I realized this was a valid point. Along with our prescribed safety work, I have worked diligently to engender an environment where the pilots know we are trying to help them. We are currently writing a resource guide based on sleep science and data to give pilots tools to combat fatigue and increase health both in and out of the flightdeck. I developed and implemented the pilot health culture study to bring light to the fact that pilots cannot advocate for their health due to the current regulatory culture. Helping our pilots to become healthier and less fatigued are primary objectives for me as well as ensuring we bring their perspectives and voices to the table when making decisions involving them (which is often not the case). Thus, I strive to take my scientific knowledge and put it in the hands of pilots so they can make the best decisions available to them.
- a. Commercial Airline Pilot Health Culture qualitative study: Final Publication-Ready Paper (June 2018)

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/amanda.lamp.1/bibliography/57129803/public/?sort=date&direction=ascending>

D. Research Support

Ongoing Research Support

Through our United Airlines contract that began in 2012, we are currently running 7 different studies, have completed 6 FAA FRMS Applications and 7 FAA Final Reports and have begun preparation for data collection for another study.

These studies started primarily as studies comparing long-range (LR) to ultra-long-range (ULR) flights but now encompass domestic studies, including one study we are doing jointly with American Airlines and NASA. Additionally, our studies are almost exclusively Fatigue Risk Management System (FRMS) studies. FRMS are a data-driven alternative to the Federal Aviation Administration's (FAA's) prescriptive regulations. Federal Aviation Regulation (FAR) 117 is the regulation governing flight and duty times. Within FAR 117 is an alternative to the prescriptive regulations that allows an airline (and their scientific consultants) to compare an Alternative Method of Compliance (AMOC) to a Safety Standard Operation (SSO). The AMOC is the flight or designation (e.g., type of rest facility) that does not fall within the prescriptive regulations whereas the SSO is a flight or designation that operates within the current regulations. An example of an AMOC that we are currently studying is the Melbourne (MEL)

route and the SSO is Shanghai (PVG). The outbound MEL flight (flight duty period; FDP) is too long to fit within the current regulations.

United Airlines and our team submit an FRMS application to the FAA that includes our contribution of a “safety case” demonstrating the scientific reasons that this flight should be safe to fly. Then the FAA grants a FAR 117.7 exemption for data collection. We collect data on the route to demonstrate whether the AMOC is as safe as or safer than the SSO. This data is analyzed and written up in a report to the FAA. Once the report is sent to and reviewed by the FAA the FAA either asks for further clarification (more scientific findings) or approves the FRMS, moving the FRMS into an OpSpec. Until the FAA approves the OpSpec we have to continue full data collection or the FAA can suspend the route indefinitely. Once the FAA approves the Op Spec, we move into a process called a Continuing Review with a reduced data collection protocol. This is a new field of study and therefore we have not had any studies that have moved beyond the first couple years of Continuing Review so we are unsure the data collection requirements past this timeline.

For further information on this process, our team has a published non-inferiority paper that walks through the FRMS process as well. It can be found here:

https://urldefense.proofpoint.com/v2/url?u=https-3A__doi.org_10.1016_j.aap.2018.01.020&d=DwIFaQ&c=C3yme8gMkxg_ihJNXS06ZyWk4EJm8LdrvxQb-Je7sw&r=ORILKUMX40Md4WMfqakZLw&m=qg0VLoCYFg5t7bOg0dSEyvQ-L3eIEtJtFNCOF5KAwgg&s=H9xVXkrTSS7pzAIUSMH3v3DUcVAH2IAI6Wg4qfExrMI&e=

Listed below are the FAA FRMS application reports and FAA final reports submitted thus far:

United Airlines FAA Final Report: Los Angeles – Melbourne Route (July 2018)

United Airlines FAA Final Report: California – 787/777 Sydney 787/777 Taipei Route Combined Data (June 2018)

United Airlines FAA FRMS Application Report: Newark – Mumbai Route (January 2018)

United Airlines FAA Final Report: 3 Pilot Augmented In-Flight Rest (November 2017)

United Airlines FAA FRMS Application Report: Houston – Sydney Route (September 2017)

United Airlines FAA Final Report: California – 787 Sydney 787 Taipei (March 2017)

United Airlines FAA Final Report: California – 777 Sydney 777 Taipei; 777 Sydney 787 Melbourne (October 2016)

United Airlines FAA Final Report: Guam “Island Hopper” (September 2016)

United Airlines FAA FRMS Application Report: 3 Pilot Augmented In-Flight Rest (May 2016)

United Airlines FAA FRMS Application Report: San Francisco – Singapore Route (December 2015)

United Airlines FAA Final Report: Flight Crew Rest Facility 777/747 Study (May 2015)

United Airlines FAA FRMS Application Report: California – 777 Sydney 777 Taipei; 777 Sydney 787 Melbourne; 787 Sydney 787 Taipei (September 2014)

United Airlines FAA FRMS Application Report: Guam “Island Hopper” (September 2013)

Scholastic Performance

United Airlines Internal Report: Domestic Crew Alertness Study (In Progress)

United Airlines Internal Report: MNL-ROR Triangle (November 2018)

Commercial Airline Pilot Health Culture qualitative study: Final Publication-Ready Paper (June 2018)

Lead on interdisciplinary Occupational Sleep Medicine and Computer Science team that built a series of in-field executive function tests (January 2013-May 2013)