Curriculum Vitae

Anthony Vance

Associate Professor and Elmer R. Deaver Senior Research Fellow
Department of Management Information Systems

Director of the Center for Cybersecurity
Fox School of Business
Temple University

Associate Editor, *MIS Quarterly*
Board Member, *Journal of the Association for Information Systems*

Anthony@Vance.name
https://anthonyvance.com
+1 801 361 2531

BYU Neurosecurity Lab
https://neurosecurity.byu.edu

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EDUCATION

Ph.D., Information Processing Science   2010
University of Oulu, Oulu, Finland

Dissertation: "Why Do Employees Violate IS Security Policies? Insights from Multiple Theoretical Perspectives"

Ph.D., Computer Information Systems
Georgia State University, Atlanta, Georgia, USA   2009

Joint-dissertation: "Trusting IT Artifacts: How Trust Affects our Use of Technology"

Ph.D., Management Science   2008
Université Paris–Dauphine, Paris, France
Research Center in Management and Organization (DRM/CREPA)

Joint-dissertation: "Trusting IT Artifacts: How Trust Affects our Use of Technology"

Master of Information Systems Management, Marriott School   2004
Brigham Young University, Provo, Utah, USA

Bachelor of Science, Information Systems, Marriott School   2003
Brigham Young University, Provo, Utah, USA

WORK EXPERIENCE

Associate Professor & Elmer Deaver Senior Research Fellow   2018–Present
Temple University, Pennsylvania, USA

Danny & Elsa Lui Distinguished Associate Professor   2017–2018
University of Hawai'i at Mānoa, Hawaii, USA

Associate Professor   2015–2018
Brigham Young University, Utah, USA

Assistant Professor   2009–2015
Brigham Young University, Utah, USA

Visiting Research Professor   2008–2010
University of Oulu, Oulu, Finland

Instructor   2006–2008
Georgia State University, Atlanta, Georgia

Fraud Investigator   2005
Data Quality Integrity, Deloitte LLP, Atlanta, Georgia

Information Security Consultant   2004
Enterprise Risk Services, Deloitte LLP, Atlanta, Georgia

RESEARCH INTERESTS

1. Behavioral and organizational information security
2. Neuroscience applications to information security

SCHOLARSHIP METRICS

- 4,082 citations per Google Scholar
- 23 H-index

JOURNAL PUBLICATIONS

28. **Vance, A**., Siponen, M., Straub, D. "The Effects of Sanctions, Moral Beliefs, and Neutralization on Information Security Policy Violations Across Cultures," ***Information & Management***, conditionally accepted.

27. Siponen, M., **Vance, A.**, Puhakainen, P. "Can Employees' Neutralizations be Overcome? A Field Experiment on Password Policy," ***Computers & Security***, forthcoming.

26. **Vance, A.**, Jenkins, J., Anderson, B., Bjornn, D., Kirwan, B. 2018. "Tuning Out Security Warnings: A Longitudinal Examination of Habituation through fMRI, Eye Tracking, and Field Experiments," ***MIS Quarterly***, 42 (2), pp. 355–380.

25. Jenkins, J., Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D. 2016. "More Harm than Good? How Security Messages that Interrupt Make Us Vulnerable," ***Information Systems Research***, 27 (4), pp. 880–896. Awarded ISR's "**Best Published Paper**" for 2016.

24. Anderson, B., Jenkins, J., **Vance, A.**, Kirwan, B., Eargle, D. 2016. "Your memory Is Working Against You: How Eye Tracking and Memory Explain Habituation to Security Warnings," ***Decision Support Systems***, 92, pp. 3–13.

23. Anderson, B., **Vance, A.**, Kirwan, B., Jenkins, J., Eargle, D. 2016. "From Warning to Wallpaper: Why the Brain Habituates to Security Warnings and What Can Be Done About It," ***Journal of Management Information Systems***, 33 (3), pp. 713–743.

22. Hui, K.L., **Vance, A.**, Zhdanov, D. 2016. "Securing Digital Assets," in ***MIS Quarterly Research Curations***, Ashley Bush and Arun Rai, Eds., http://misq.org/research-curations.

21. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Jenkins, J. 2016. "How Users Perceive and Respond to Security Messages: A NeuroIS Research Agenda and Empirical Study," ***European Journal of Information Systems***, 25 (4), pp. 364–390.

20. Anderson, B., Kirwan, B., Eargle, D., Jensen, S., **Vance, A.** 2015. "Neural Correlates of Gender Differences and Color in Distinguishing Security Warnings and Legitimate Websites: A Neurosecurity Study," **Journal of Cybersecurity**, 1 (1), pp. 109–120.

19. **Vance, A.**, Lowry, P.B., Eggett, D. 2015. "Increasing Accountability through User-Interface Design Artifacts: A New Approach to Addressing the Problem of Access-Policy Violations," *MIS Quarterly*, 39 (2), pp. 345–366.

18. **Vance, A.**, Anderson, B., Kirwan, B., Eargle, D. 2014. "Using Measures of Risk Perception to Predict Information Security Behavior: Insights from Electroencephalography (EEG)," *Journal of the Association for Information Systems*, 15 (10), pp. 679–722.

17. Siponen, M., **Vance, A.** 2014. "Guidelines for Improving the Contextual Relevance of Field Surveys: The Case of Information Security Policy Violations," *European Journal of Information Systems*, 23 (3), pp. 289–305.

16. Lowry, P.B., Moody, G., Galletta, D., **Vance, A.** 2013. "The Drivers in the Use of Online Whistle-Blowing Reporting Systems," *Journal of Management Information Systems*, 30 (1), pp. 153–190.

15. **Vance, A.**, Lowry, P.B., Eggett, D. 2013. "Using Accountability to Reduce Access Policy Violations in Information Systems," *Journal of Management Information Systems*, 29 (4), pp. 263–289.

14. Abbasi, A., Albrecht, C., **Vance, A.**, Hansen, J. 2012. "MetaFraud: A Meta-Learning Framework for Detecting Financial Fraud," *MIS Quarterly*, 36 (4), pp. 1293–1327.

13. Siponen, M., **Vance, A.**, Willison, R. 2012. "New Insights into the Problem of Software Piracy: The Effects of Neutralization, Shame, and Moral Beliefs," *Information & Management*, 49 (7-8), pp. 334–341.

12. Mahmood, M., Siponen, M., López, F., **Vance, A.** 2012. "Measuring Electronic Commerce Technology Enabled Business Value: An Empirical Investigation," *Journal of Organizational Computing and Electronic Commerce*, 22 (3), pp. 256–279.

11. **Vance, A.**, Siponen, M., Pahnila, S. 2012. "Motivating IS Security Compliance: Insights from Habit and Protection Motivation Theory," *Information & Management*, 49, pp. 190–198.

10. Lowry, P.B., Moody, G., **Vance, A.**, Jensen, M., Jenkins, J., and Wells, T. 2012. "Using an Elaboration Likelihood Approach to Better Understand the Persuasiveness of Website Privacy Assurance Cues for Online Consumers," *Journal of the American Society for Information Science and Technology*, 63 (4), pp. 755–776.

9. Borthick, F., Schneider, G., **Vance, A.** 2012. "Using Graphical Representations of Business Processes in Evaluating Internal Control," *Issues in Accounting Education*, 27 (1), pp. 123–140.

8. **Vance, A.**, Siponen, M. 2012. "IS Security Policy Violations: A Rational Choice Perspective," *Journal of Organizational and End User Computing*, 24 (1), pp. 21–41.

7. Barlow, J., Giboney, J., Keith, M., Wilson, D., Schuetzler, R., Lowry, P.B., **Vance, A.** 2011. "Overview and Guidance on Agile Development in Large Organizations," *Communications of the AIS*, 29 (2), pp. 25–44.

6. Siponen, M., **Vance, A.** 2010. "Neutralization: New Insights into the Problem of Employee Information Systems Security Policy Violations," *MIS Quarterly*, 34 (3), pp. 487–502.

5. Borthick, A. F., Schneider, G., **Vance, A.** 2010. **"**Preparing Graphical Representations of Business Processes and Making Inferences from Them," *Issues in Accounting Education*, 25 (3), pp. 569–582.

4. **Vance, A.,** Lowry, P.B., Ogden, J. 2010. "Testing the Potential of RFID to Increase Supply-Chain Agility and to Mitigate the Bullwhip Effect," *International Journal of Applied Logistics*, 1 (1), pp. 48–56.

3. Myyry, L., Siponen, M., Pahnila, S., Vartiainen, T., and **Vance, A**. 2009. "What Levels of Moral Reasoning and Values Explain Adherence to Information Security Rules? An Empirical Study," *European Journal of Information Systems*, 18, pp. 126–139.

2. **Vance, A.**, Elie-dit-Cosaque, C., and Straub, D. 2008. "Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture," *Journal of Management Information Systems*, 24 (4), pp. 73–100.

1. Lowry, P.B., **Vance, A.**, Moody, G., Beckman, B., Read, A. 2008. "Explaining and Predicting the Impact of Branding Alliances and Web Site Quality on Initial Consumer Trust of E-Commerce Web Sites," *Journal of Management Information Systems*, 24 (4), pp. 201–227.

CONFERENCE PUBLICATIONS

25. **Vance, A.**, Eargle, D., Jenkins, J. L., Kirwan, C. B., & Anderson, B. B. 2019. "The Fog of Warnings: How Non-essential Notifications Blur with Security Warnings." In *Fifteenth Symposium on Usable Privacy and Security* (SOUPS), San Jose, CA. 23% acceptance rate.

24. **Vance, A.**, Kirwan, B., Bjornn, D., Jenkins, J., Anderson, B. 2017. "What Do We Really Know about How Habituation to Warnings Occurs Over Time? A Longitudinal fMRI Study of Habituation and Polymorphic Warnings," *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI), Denver, Colorado. 25% acceptance rate.

23. Lerner, A. Saxena, A., Ouimet, K., Turley, B., **Vance, A.**, Kohno, Y., Roesner, F. 2015. "Analyzing the Use of Quick Response Codes in the Wild," *Proceedings of the Thirteenth International Conference on Mobile Systems, Applications and Services,* (MobiSys), Florence, Italy. 13% acceptance rate.

22. Anderson, B., Kirwan, B., Eargle, D., Jenkins, J., Howard, S, **Vance, A.** 2015. "How Polymorphic Warnings Reduce Habituation in the Brain– Insights from an fMRI Study," *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI), pp. 2883–2892. Seoul, Korea, 24% acceptance rate.

21. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Howard, S. 2014. "Users Aren't (Necessarily) Lazy: Using NeuroIS to Explain Habituation to Security Warnings," *International Conference on Information Systems*, Auckland, New Zealand.

20. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Howard, S. 2014. "Why Users Habituate to Security Warnings: Insights from fMRI," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Newcastle, UK.

19. Eargle, D., **Vance, A.**, Eggett, D., Lowry, P.B. 2013. "How Moral Intensity and Impulsivity Moderate the Influence of Accountability on Access Policy Violations in Information Systems," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Milan, Italy.

18. Anderson, B., **Vance, A.**, Eargle, D. 2013. "Is Your Susceptibility to Phishing Dependent on Your Memory?," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Milan, Italy.

17. Anderson, B., **Vance, A.**, Eargle, D., Brock, K. 2013. "Your Memory is Working Against You: How Eye Tracking and Memory Explain Susceptibility to Phishing," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Niagara, NY.

16. **Vance, A.**, Anderson, B., Brock, K., Eargle, D. 2013. "Using Measures of Risk Perception to Predict Information Security Behavior: Insights from Electroencephalography (EEG)," JAIS workshop, *Gmunden Retreat on NeuroIS*, Gmunden, Austria.

15. **Vance, A.**, Eargle, D., Ouimet, K., Straub, D. 2013. "Enhancing Password Security through Interactive Fear Appeals: A Web-based Field Experiment," *Hawaii International Conference on Systems Sciences*, Wailea, HI.

14. Eargle, D., **Vance, A.**, Allen, G., Barrick, D., Peck, D., Bearnson, T., Tian, J. 2012. "Justifying Breaking the Glass: How Accountability Can Deter Unauthorized Access," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Orlando, FL.

13. Anderson, B., **Vance, A.**, Hansen, J., Kirwan, B., Eargle, D., Hinkle, L., Weagel, A. 2012. "Neural Correlates of Gender Differences in Distinguishing Malware Warnings and Legitimate Websites: A NeuroIS Study," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Provo, UT.

12. **Vance, A.**, Eargle, D., Ouimet, K., Straub, D. 2012. "How Interactivity Can Enhance the Effectiveness of Fear Appeals: A Web-based Field Experiment of Password Security," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Provo, UT.

11. **Vance, A.**, Molyneux, B., Lowry, P.B. 2012. "Reducing Unauthorized Access by Insiders through End-User Design: Making Users Accountable," *Hawaii International Conference on Systems Sciences*, Wailea, HI.

10. **Vance, A.**, Siponen, M., Warkentin, M. 2011. "Deterrence Without Borders: How National Culture Affects IS Security Policy Violations," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Shanghai.

9. **Vance, A.**, Molyneux, B., Lowry, P.B. 2011. "A New Approach to the Problem of Unauthorized Access: Raising Perceptions of Accountability through User Interface Design Features," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Blacksburg, VA.

8. **Vance, A.**, Allen, G., Molyneux, B., Lowry, P.B. 2010. "Making Systems Users Accountable: Using Accountability to Reduce Unauthorized Access of Information," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Waltham, MA.

7. Siponen, M., **Vance, A.**, and Willison, R. 2010. "New Insights for an Old Problem: Explaining Software Piracy through Neutralization Theory," *Hawaii International Conference on Systems Sciences*, Poipu, HI.

6. **Vance, A.**, Siponen, M., Pahnila, S. 2009. "How Personality and Habit Affect Protection Motivation," *Workshop on Information Systems & Privacy*, Phoenix, AZ.

5. Borthick, A. F., Schneider, G. P., and **Vance, A.** 2009. "Using Graphical Representations of Business Processes in Evaluating Internal Control," *American Accounting Association Annual Midyear Meeting*.

4. Borthick, F., **Vance, A.** 2007. "Preparing Graphical Representations of Business Processes and   Making Inferences from Them," *American Accounting Association Annual Meeting*.

3. **Vance, A.** 2007. "Modeling Sarbanes-Oxley Compliance as a Knowledge-intensive Process," *40th Annual Hawai'i International Conference on System Sciences*.

2. Pallud, J., Monod, E., **Vance, A.** 2006. "The Implications of the Linguistic Turn on IS," *Proceedings of the Twelfth Americas Conference on Information Systems*.

1. **Vance, A.** 2005. "An Empirical Test of the Potential of RFID Technology to Enhance Supply Chain Agility," *IFIP WG 8.6 Working Conference on Business Agility and IT Diffusion*.

EXTERNAL GRANTS

- 2018 NSF Secure & Trustworthy Cyberspace for proposal entitled, "The Blurring of Non-essential Notifications and Critical Security Warnings: Examining the Problem of Generalization in the Brain" (CNS-1814721). Awarded $151,823 with Drs. Bonnie Anderson and Brock Kirwan.

- 2016 NSF award to supplement grant, "The Force of Habit: Using fMRI to Explain Users' Habituation" (CNS-1422831). Awarded $58,185 with Drs. Bonnie Anderson and Brock Kirwan.

- 2016 Google Faculty Research Award for proposal entitled "Improving Adherence to Security Messages through Intelligent Timing: A Neurosecurity Study." Awarded $34,200 with Drs. Bonnie Anderson and Brock Kirwan.

- 2015 Google Faculty Research Award for proposal entitled, "Has Your Warning Turned into Wallpaper? Using Neuroscience to Design Habituation-Resistant Security Messages." Awarded $35,503 with Drs. Bonnie Anderson and Brock Kirwan.

- 2014 NSF Secure & Trustworthy Cyberspace for proposal entitled, "The Force of Habit: Using fMRI to Explain Users' Habituation to Security Warnings" (CNS-1422831). Awarded $294,341 with Drs. Bonnie Anderson and Brock Kirwan.

UNIVERSITY GRANTS AND STUDENT MENTORING

- 2015 Extension of Magnetic Resonance Imaging Research Facility Initiation Grant, "Understanding the Efficacy of Video-Based Software Privacy Policies." Awarded $5,000 with Drs. Mark Keith and Bonnie Anderson, Brigham Young University.
- 2014 Mentoring Environment Grant for proposal entitled "Your Memory is Working Against You: Using fMRI to Explain How Memory Affects Susceptibility to Phishing." Awarded $19,527 to fund mentored research with MISM graduate students, Brigham Young University.
- 2014 Magnetic Resonance Imaging Research Facility Initiation Grant, "Understanding the Efficacy of Video-Based Software Privacy Policies." Awarded $5,000 with Drs. Mark Keith and Bonnie Anderson, Brigham Young University.
- 2014 ORCA grant for proposal entitled "Look Sharp! How Eye Tracking and Memory Explain Susceptibility to Phishing." Mentored BSIS students Ian Jones, Thomas Kelly, and Jeff Penovich for a $1,500 grant, Brigham Young University.
- 2012 Mentoring Environment Grant for proposal entitled "Accountability through Justification: A New Approach to the Problem of Unauthorized Access of Information Systems." Awarded $19,704 to fund mentored research with MISM graduate students, Brigham Young University.
- 2012 Global Management Center Grant for International Business Research, for "Deterrence without Borders: How National Culture Affects Information Security Policy Violations." Awarded $1,000, Brigham Young University.

- 2011 ORCA grant for proposal entitled "Making Systems Users Accountable through User Interface Design Features." Mentored BSIS student Lee Wood for his $1,500 grant, Brigham Young University.
- 2011 ORCA grant for proposal entitled "Enhancing Password Security through Interactive Fear Appeals." Mentored BSIS student Kirk Ouimet for his $1,500 grant, Brigham Young University.

EXTERNAL SERVICE

- Associate editor, *MIS Quarterly*, 2016–2020
- Editorial board member and guest senior editor for *Journal of the Association for Information Systems*, 2015–present.
- Editor, IFIP Working Group 8.11/11.13, "Information Systems Security Research."
- Minitrack chair, "Innovative Behavioral IS Security and Privacy Research," HICSS.
- USENIX Enigma 2020 Program committee member.
- AMICS 2020 Doctoral Consortium co-chair.
- Program Committee member of the NeuroIS Retreat, 2015–2019, Vienna, Austria.
- AE for *European Journal of Information Systems*, special issue on "Security and Privacy in 21st Century Organisations."
- AE for *Decision Support Systems*, special issue on "A Comprehensive Perspective on Information Systems Security: Technical Advances and Behavioral Issues."
- AE for *International Conference on Information Systems* (ICIS), 2011–2017, "Security and Privacy of Information and IS" track.
- AE for ECIS 2015, "IS Privacy and Security" track, Münster, Germany.
- AE for ECIS 2014, "Information Security and Privacy" track, Tel-Aviv, Israel.
- Session chair for ICIS 2013, "Security and Privacy" track, Milan, Italy.
- Program committee member, Workshop on Information Security & Privacy (WISP), AIS SIGSEC and IFIP TC11.1, Milan, Italy, 2013.
- AE for PACIS 2013, Information Security, Jeju, Korea.
- General chair, Dewald Roode Workshop on Information Systems Security Research, IFIP Working Group 8.11/11.13, 2012, Provo, UT.
- AE for ECIS 2012, "Information Security and Privacy" track, Barcelona, Spain.
- Program committee member, European Security Conference, 2012, Örebro, Sweden.

- Track chair for ECIS 2011, "Information Security and Privacy" track, Helsinki, Finland.
- Program committee member, Privacy Enhanced Technology and Security Engineering 2011, Busan, Korea.
- Program chair, Dewald Roode Workshop on Information Systems Security Research, IFIP Working Group 8.11/11.13, 2010, Waltham, MA.

DISSERTATION COMMITTEE SERVICE

- Dissertation committee member, Daniel Bjornn, Department of Psychology and Neuroscience Center, Brigham Young University, 2018.
- Dissertation committee member, David Eargle, Information Systems and Technology Management, University of Pittsburgh, 2017.
- Dissertation committee member, Sumantra Sarkar, Computer Information Systems Department, Georgia State University, 2014.
- Dissertation opponent for Ella Kolkowska, Örebro University, Sweden, 2013.

UNIVERSITY SERVICE

- Director of the Center for Cybersecurity, Fox School of Business, Temple University, 2018–present.
- Fox School Promotion and Tenure Committee, 2019–present.
- Hiring committee member, Temple University, 2018—present.
- Information Security and Privacy Committee member, BYU, 2014–2017.
- PhD-Preparation coordinator, Marriott School, BYU, 2016–2017.
- Behavioral Lab Steering Committee member, Marriott School, BYU, 2010–2017.
- Faculty recruiting committee member, BYU, 2010–2017.
- Information Security & Digital Forensics track director, Masters of Information Systems Management, BYU, 2012–2017.
- PhD Preparation track director, Masters of Information Systems Management program, BYU, 2011–2016.
- Alumni Relations Committee Chair, BYU, 2014–2016.

SPECIAL RECOGNITIONS/AWARDS

- Elmer R. Deaver Research Fellow, Temple University, 2018–present.
- Lieu Distinguished Professor of MIS, University of Hawai'i at Mānoa, 2017–2018.
- Selvoy J. Boyer Fellowship, Marriott School of Management, 2012—2018.

- Kavli Fellow, U.S. National Academy of Sciences.
- "Best Published Paper Award," *Information Systems Research* for papers published in 2016, for article, "More Harm than Good? How Messages that Interrupt Can Make Us Vulnerable," 27 (4), pp. 880–896.
- Outstanding Research, 2014 Marriott School of Management.
- Nominated for best paper, "Reducing Unauthorized Access by Insiders through End-User Design: Making Users Accountable," **Vance, A.**, Molyneux, B., and Lowry, P.B., *Hawaii International Conference on Systems Sciences*, 2012.
- Dissertation awarded grade "excellent" (5/5) by the University of Oulu, Finland, 2010.
- Nominated for best paper, "New Insights for an Old Problem: Explaining Software Piracy through Neutralization Theory," Siponen, M., **Vance, A.**, and Willison, R., *Hawaii International Conference on Systems Sciences*, 2010.
- Best Case Award, Borthick, A. F., Schneider, G. P., and **Vance, A.** "Using Graphical Representations of Business Processes in Evaluating Internal Control", American Accounting Association Annual Midyear Meeting, 2010.
- Outstanding Education Paper Award, Borthick, A. F., Schneider, G. P., and **Vance, A.** "Preparing Graphical Representations of Business Processes and Making Inferences from Them", American Accounting Association Annual Midyear Meeting, 2009.
- J. Mack Robinson College of Business GTA Teaching Excellence Award, Georgia State University, 2008.
- Nominated for best reviewer, 6th Annual Workshop on HCI in MIS, Montreal, 2007.

PROFESSIONAL AFFILIATIONS

- Founding member, IFIP Working Group 8.11/11.13, "Information Systems Security Research"
- Special Interest Group on Security (SIGSEC), Association for Information Systems

FOREIGN LANGUAGE

- German