

Chien-fei Chen, Ph.D.

508 Min H. Kao Building, 1520 Middle Dr. Knoxville, TN 37996

Tel: (865) 974-3787

E-mail: cchen26@utk.edu

Website: <https://chien-fei-chen.github.io>

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Current Position

Director of Education and Diversity Program

Research Assistant Professor

NSF-DOE Engineering Research Center, Center for Ultra-wide-area Resilient Electrical Energy Transmission Networks (CURENT), University of Tennessee, Knoxville, UTK

Adjunct Research Assistant Professor

Department of Sociology, UTK

Education

- Ph.D. Sociology, Washington State University, 2009
Dissertation: *“Mechanism, Transmission and Enforcement of Social Norms: A Study of College Students’ Drinking Behavior”*
- M.A. Mass Communication, Washington State University
Thesis: *“The Impact of American Media and Interpersonal Communication on the Acculturation Process of Taiwanese Immigrants in the United States”*
- B.A. Foreign Language and Literature (Major: English; Minor: Japanese), National Cheng Kung University, Taiwan

Previous Academic Appointments

- 2009-2010 Research Scientist, Dept. of Electrical Engineering & Computer Science, Virginia Tech
- 2008-2009 Lecturer, Dept. of Communication Studies, UTK
- 2002-2003 Lab Manager, Lab for the Study of Cognitive, Emotion and Communication, WSU

Media and Public Relations Industry Experiences

- 1998 - 2001 Producer and Program Planner, Public Television Service (PTS), Taiwan
- 1998 News Writer & Program Planner, SET Television Station, Taipei, Taiwan
- 1997-1998 Campaign Manager, Vision Communication Public Relation Company, Taipei, Taiwan
- 1997 Writer & Producer, Chinese Television Station, Taipei, Taiwan
- Production Assistant (internship), KCTS-Seattle Public Television, WA
- 1996-1997 Producer and Director, Seattle Chinese Television Station, WA

Research Focus

Social Psychology, Environmental Sociology, Quantitative Research Methods, Interdisciplinary Research of Social Science and Energy Behaviors, and Engineering Education

Journal Publications

- [1] Cooksey, C., Brandi Upton, B., & Chen, C-F. (2017, In press). Incorporating energy-efficient technologies throughout the life cycle of buildings: Strategies for overcoming barriers. *Energy Research and Social Science*.
- [2] Xu, X., Maki, A., Chen, C.-F. Dong, B., & Day, J. (2017, In press). Investigating willingness to save energy and communication about energy use in the American workplace with the attitude-behavior-context model. *Energy Research and Social Science*.
<http://dx.doi.org/10.1016/j.erss.2017.02.011>.
- [3] Chen, C.-F., Xu, X., & Day, J. (2017). Thermal comfort or money saving? Exploring intentions to conserve energy among low-income households in the United States. *Energy Research and Social Science*, 26, 61-71. <http://dx.doi.org/10.1016/j.erss.2017.01.009>
- [4] Chen, C.-F., Xu, X., & Arpan, L. (2017). Between the technology acceptance model and sustainable energy technology acceptance model: Investigating smart meter acceptance in the United States. *Energy Research and Social Science*, 25, 93-104.
<http://dx.doi.org/10.1016/j.erss.2016.12.011>.
- [5] Hong, T., Yan, D., D'Oca, S., & Chen, C.-F. (2016). Ten questions concerning occupant behavior in buildings: The big picture. *Building and Environment*, 114, 518-530.
<http://dx.doi.org/10.1016/j.buildenv.2016.12.006>.
- [6] Chen, C.-F. Xu, X. & Frey, R. S. (2016). Who wants solar water heaters and alternative fuel vehicles? Assessing social-psychological predictors of adoption intention and policy support in China. *Energy Research and Social Science*, 15, 1-11.
<http://dx.doi.org/10.1016/j.erss.2016.02.006>
- [7] Xu, X., Arpan, L., & Chen, C.-F. (2015). The moderating role of individual differences in responses to benefit and temporal framing of messages promoting residential energy saving. *Journal of Environmental Psychology*, 44, 95-108.
<http://dx.doi.org/10.1016/j.jenvp.2015.09.004>
- [8] Chen, C.-F. & Knight, K. (2014). Energy at work: Social psychological factors affecting energy conservation intentions within Chinese electric power companies. *Energy Research and Social Science*, 4, 23-31. <http://dx.doi.org/10.1016/j.erss.2014.08.004>

- [9] Hu, Q., Li, F., & Chen, C.-F. (2014). A smart home test bed for undergraduate education to bridge the curriculum gap from traditional power systems to modernized smart grids. *IEEE Transactions on Education*, 58(1), 32-38. DOI: 10.1109/TE.2014.2321529.
- [10] Chen, C.-F., Tomsovic, K., & Aydeniz, M. (2014). Filling the pipeline: Power system curricula for middle school and high school students. *IEEE Transactions on Power Systems*, 29(24), 1874-1879. [10.1109/TPWRS.2013.2293752](https://doi.org/10.1109/TPWRS.2013.2293752)
- [11] Li, H., Song, J. B., Chen, C.-F., Lai, L., & Qiu, R. (2014). Behavior propagation in cognitive radio networks: A social network approach. *IEEE Transactions on Wireless Communications*, 13(2), 646-657. [10.1109/TW.2013.121813.121964](https://doi.org/10.1109/TW.2013.121813.121964)
- [12] Worcester, A. C., Hickox, V. M., Klimaszewski, J. G., Wilches-Bernal, F., Chow, J. H., & Chen, C.-F. (2013). The sky's the limit: Designing wind farms: A hands-on STEM activity for high school students. *IEEE Power & Energy Magazine*, 11(1) 18-29. [10.1109/MPE.2012.2225213](https://doi.org/10.1109/MPE.2012.2225213)
- [13] Tang, L., & Chen, C.-F. (2013). Effectiveness of health messages to change women's thin-ideal and unhealthy weight control intentions: Connecting social norms and social networks approaches. *Asian Journal of Communication*, 23(5), 519-537. <http://dx.doi.org/10.1080/01292986.2012.756045>
- [14] Horne, C., Chen, C.-F., Berg, J., & Evermann-Druffel, K. (2009). Metanorm expectations: Determining what to sanction. *Advances in Group Processes*, 26, 199-223. [10.1108/S0882-6145\(2009\)0000026011](https://doi.org/10.1108/S0882-6145(2009)0000026011)
- [15] Pinkleton, B., Reagan, J., Aaronson, D., & Chen, C.-F. (1997). The role of individual motivations in information source use and knowledge concerning divergent topics. *Communication Research Reports*, 14(3), 291-301. <http://dx.doi.org/10.1080/08824099709388672>
- [16] Reagan, J., Pinkleton, B., Chen, C.-F. & Aaronson, D. (1995). How do technologies relate to the repertoire of information sources? *Telematics & Informatics*, 12(1), 21-27. [http://dx.doi.org/10.1016/0736-5853\(94\)00035-R](http://dx.doi.org/10.1016/0736-5853(94)00035-R)

Conference Publications

- [1] Chen, C.-F., Arpan L., & Xu, X. (2017, April). Predicting consumer interest in electricity demand response programs in the United States: a social-psychological approach. *The International Conference on Energy Research & Social Science*, Melia Sitges, Spain.
- [2] Chen, C.-F., Xu, X., Arpan, L. & Loveday, A. (2017, August). Fuel Poverty: The Role of Social-Psychological Factors Affecting Low-income Households' Acceptance to Demand Response. The Annual Meeting of *American Sociological Association (ASA)*, Montreal, Canada.
- [3] Roetzel, A., & Chen, C.-F. (2016, December). Understanding qualitative and quantitative influences on occupant behavior in offices. The *International Conference of the Architectural*

Science Association, Adelaide. Australia.

- [4] Asadinejad, A., Varzaneh, M. G., Tomsovic, K., Chen, C. F., & Sawhney, R. (2016, July). Residential customers elasticity estimation and clustering based on their contribution at incentive based demand response. *IEEE Power and Energy Society (PES) General Meeting*.
- [5] Chen, C.-F. (2016, January). Beyond technology: Improving occupants' energy efficiency behaviors through social-psychological analysis. *The Annual American Society of Heating and Air-Conditioning Engineers (ASHRAE) Winter Conference*, Orlando, FL.
- [6] Chen, C.-F., & Xu, X. (2015, August). Exploring social psychological factors and barriers affecting low-income residents' intentions to reduce energy use. *The Annual Meeting of = American Sociological Association (ASA)*, Chicago, IL.
- [7] Hu, Q., Fang, X., Li, F., Xu, X., Chen, C. F., & Hu, H. (2015, July). An approach to assess the responsive residential demand to financial incentives. *2015 IEEE Power & Energy Society General Meeting* (pp. 1-5).
- [8] Xu, X., & Chen, C.-F. (2014, December). Investigating residents' responses to financial incentives and related customer segmentation for promoting demand responses. *The Annual Meeting of The Behavior, Energy and Climate Change (BECC)*, Washington, D.C.
- [9] Chen, C.-F., Xu, X., Zhao, W., & Sun, J. (2014, August). Privacy concern, energy concern, or money consciousness? Examination of factors influencing residents' smart meter acceptance. *The Annual Meeting of American Sociological Association (ASA)*, San Francisco, CA.
- [10] Foy, J., Chen, C.-F., & Wills, E. (2014, June). Integrating assembly language programming into high school STEM education. *The 121st American Society of Engineering Education Annual Meeting (ASEE)*, Indianapolis, IN.
- [11] Chen, C.-F., & Xu, X. (2013, November). Do the right thing or stay comfortable? Exploring social-psychological factors affecting electricity saving among employees in Chinese electric power companies. *The Annual Meeting of BECC*, Sacramento, CA.
- [12] Xu, X., & Chen, C.-F. (2013, November). Saving energy for different reasons: Exploring the social-psychological drivers for electricity curtailment and recycling behaviors. *The Annual Meeting of BECC*, Sacramento, CA.
- [13] Xu, X., Chen, C. F., Gao, W., & Li, H. (2013, August). Beyond classical economics: Exploring the impact of social-psychological factors on preference for speed over price and willingness to pay for a faster wireless service plan. *The 2013 IEEE/CIC International Conference on Communications in China (ICCC)* (pp. 55-60).
- [14] Chen, C.-F., & Shelton, J. (2013, August). Exploring social-psychological factors of affecting electricity use and support of renewable energy policy. *The Annual Meeting of American Sociological Association (ASA)*, New York, NY.

- [15] Chen, C.-F., Li, Y., & Banerjee, D. (2012, August). Exploring social-psychological factors related to energy conservation behavior among Chinese employees. *The Annual Meeting of American Sociological Association (ASA)*, Denver, CO.
- [16] Mar, H., Chen, C.-F., & Li, H. (2012, July). Bayesian network structure learning for analyzing the impact of social networks on adolescent heavy drinking. *The Add Health Users Conference*, NIH Campus, Bethesda, MD.
- [17] Chen, C.-F. & Shen, X. (2012, May). Do fear-appeal media messages work in China? Effects of law enforcement, perceived consequences, and injunctive norms on drinking-and driving behavior among Chinese students. *The Annual Meeting of International Communication Association (ICA)*, Denver, CO.
- [18] Chen, C.-F., & Shen, X. (2011, October). Social and psychological factors of drinking and driving among Chinese college students. *The Proceedings of International Conference on Public Administration*, Dongsan City, China.
- [19] Chen, C.-F., Li, H., & Mar, H. (2011, August). Explaining mechanisms of norms and networks on heavy drinking and alcohol consequences among youth. *The Annual Meeting of American Sociological Association (ASA)*, Las Vegas, NV.
- [20] Chen, L., Markham, P., Chen, C. F., & Liu, Y. (2011, July). Analysis of societal event impacts on the power system frequency using FNET measurements. *2011 IEEE Power and Energy Society General Meeting* (pp. 1-8).
- [21] Li, H., Chen, C. F., & Lai, L. (2011, June). Propagation of spectrum preference in cognitive radio networks: A social network approach. *The 2011 IEEE International Conference on Communications (ICC)* (pp. 1-5).
- [22] Chen, C.-F. (2010, August). Norm transmission, interpersonal communication and drinking decision. *The Annual Meeting of American Sociological Association (ASA)*, Chicago, IL.
- [23] Tang, L., & Chen, C.-F. (2010, June). Connecting social norms and social networks: A study of unhealthy weight control intentions and internalization of thin ideal in China. *The Annual Meeting of International Communication Association (ICA)*, Singapore.
- [24] Chen, C.-F., & Tang, L. (2009, May). Social norms and sanctioning through social networks: A theoretical study of body image. *The Annual Meeting of International Communication Association (ICA)*, Chicago, IL.
- [25] Chen, C.-F., Bolls, P., Bemker, V., Schmidt, N., and Harbor, A. (2004, May). The effects of audio-video redundancy and emotional valence on the allocation of attention to audio and visual processing. *The Annual Meeting of International Communication Association (ICA)*, New Orleans.

Grants and Awards

- 2015 Co-PI, “Collaborative Research: CRISP Type 2: Revolution through Evolution: A Controls Approach to Improve How Society Interacts with Electricity ” (PI: Andrea Mammoli), National Science Foundation (NSF), CNS 1541117 9/15/15-9/14/18 (\$2,499,801).
- 2013-2016 Co-PI, Research Experience for Veterans Supplement Grant (PI: Kevin Tomsovic), NSF 08/1/2014-7/31/2018 (\$40,000).
- 2012 Co-PI, “Collaborative Research: Design, Analysis and Implementation of Social Interactions in Cognitive Radio Networks,” (PI: Husheng Li), NSF CNS1247834, 10/01/2012-9/30/2015 (\$140,000).
- 2011-2018 PI, “Social-psychological Factors of Energy Saving, Public Acceptance of Smart Meter, Demand Response Programs and Renewable Energy Technology,” NSF EEC-1041877, 08/15/2011-08/15/2018 (\$400,000).
- 2011-2018 Senior personnel, “Engineering Education Programs,” NSF EEC-1041877, 08/15/2011-08/15/2018 (\$2,0581,159).
- 2008 PI, “Persuasive Power in Norms: Under What Conditions will Norms Work” Alcohol and Drug Abuse Research Program Pilot Grant (\$10,895), 2008-2009, WSU.
- 2005 & 2007 Gordon D. & Izola P. Morgan Graduate Fellowship, Sociology, WSU

Teaching Experience

- 2008 Lecturer, Department of Communication Studies, UTK
Course: Health Communication Research and Health Campaign
- 2007 Teaching Assistant, Department of Sociology, WSU
Course: Introduction to Sociology
- 2003-2005 Teaching Assistant, Department of Sociology, WSU
Course: Introduction to Statistical Analysis
- 2002-2003 Teaching Assistant, Edward R. Murrow School of Communication, WSU
Course: Introduction to Communication Theory

Invited Presentations

- 2016 The Value of Social Psychology for Improving Building Modeling. Presented for NSF RCN-SEES: Predictive Modeling Network for Sustainable Human-Building

- Ecosystems (SHBE). Workshop Theme IV: Enhancing Interdisciplinary Education and Diversity in Education, Washington D.C. (September 20th-October 1st)
- An International Occupant Behavior Survey Effort. Presented for the 4th Experts' Meeting in Working Phase of IEA EBC Annex 66 Meeting, Ottawa, Canada (August 3-5th).
- Social-Psychological Factors in the Interdisciplinary Research of Demand Response and Renewable Energy Technology. Presented for GEIRI North America (part of State Grid, China) (July 28th).
- Beyond Technology: Why Social-Psychological Factors are Important in the Interdisciplinary Research of Energy and Technology. Presented for ACROSS Research Center, Waseda University, Japan (April 25th), Department of Electrical Engineering at National Sun Yet Sen University, (May 3rd), Taiwan, Department of Electrical Engineering at SouthEast University, China (May 13th), and NARI, Nanjing, China (May 16th).
- Exploring the Relationship between Social-psychological Factors and Residential Demand Response Programs. Presented for the Center of iNnovation and Synergy for Intelligent Home and living Technology (INSIGHT), Taiwan University (May 5th).
- The Importance of Environmental Sociology and Survey Methodology to Occupant Behavior Research. Department of Building Science, Tsinghua University, China (May 18th).
- Integration of Social Psychological Factors and Group Dynamic Analysis of Occupant Behavior in Buildings. Presented for the 3rd Expert Meeting in Working Phase of EBC Annex 66 Meeting, Vienna, Austria (March 31st).
- 2015 Social Psychological Approaches to Analyze Demand Response and Promote Energy Efficiency. Keynote speaker for the joint workshop of US NSF CURENT and Japan ACROSS on Distributed Energy Management System, Waseda University, Japan (December 10th).
- Social-psychological Analysis of Residential Energy Behaviors and Customer Segmentation. Presented to the Center of iNnovation and Synergy for Intelligent Home and living Technology (INSIGHT), Taiwan University (July 21st).
- Environmental Psychology and Improving Energy Efficiency through Social-Psychological Approaches. Presented to Department of Electrical Engineering and Computer Science and School of Architecture, Tsinghua University, Beijing (July 6th); and the Department of Mechanical Engineering and Environmental Science, Nanjing Normal University (July 7th), and the Department of Electrical Engineering, SouthEast University, Nanjing, China (July 8th).

- Beyond Technology: Enhancing Energy Efficiency through Social Psychological Approaches in Public Domain. Presented to the International Energy Agency (IEA), Energy in Buildings and Communities (EBC) Annex 66, Lawrence Berkeley National Laboratory (March 30th).
- 2014
- Social-psychological Approaches to Energy Saving. Presented to the NSF RCN-SEES: Predictive Modeling Network for Sustainable Human-Building Ecosystems (May 26th).
- NSF ERC University Education Programs. Panelist at the NSF Division of Engineering Education and Centers, Engineering Directorate, Engineering Education PI Awardees' Meeting (September 29-30th).
- 2013
- Social-psychological Factors Relating to the Acceptance of Smart Meters. Presented to Vanderbilt Institute for Energy & Environment, Vanderbilt University (October 30th).
- Collaborative Research: Design, Analysis and Implementation of Social Interactions in Cognitive Radio Networks. Presented to the NSF Enhancing Access to the Radio Spectrum (ERAS) Program Workshop (October 6th).
- Promoting Engineering Education to Women. Presented to Federal Bureau of Investigation (FBI), Knoxville (April 3rd).
- Approaches to University Education Diversity Programs. Presented to the NSF Engineering Research Center Annual Meeting (October 20th).
- 2010
- Social-psychological Factors and Energy Issues. Presented to the Department of Electrical Engineering, Southeast University, Nanjing, China (May 20th).
- 2009
- Mechanism, Transmission and Enforcement of Social Norms in Health Decision-Making. Presented to the Department of Sociology, UTK (October 29th).

Services

- NSF RCN Workshop Chair for the “Enhancing Interdisciplinary Education and Diversity” for Predictive Modeling Network for Sustainable Human-building Ecosystems (SHBE) funded by NSF Research Coordination Network (RCN) in Science, Engineering and Education for Sustainability (SEES) program September 30th-October 1st, 2016
- Host summer REU STEM Symposium at UTK in 2015 and 2016
- Reviewer for NSF Science Technology Center Proposal Red Team at UTK in 2015

- Steering committee and lead for Sustainability Education Program for the NSF RCN-SEES: Predictive Modeling Network for Sustainable Human-Building Ecosystems (SHBE) since 2014
- Lead of Social-psychological Modeling Task for the International Energy Agency (IEA), Energy in Buildings and Communities (EBC) Annex 66: Definition and Simulation of Occupant Behavior in Buildings since 2014
- Committee member of the interdisciplinary research task of occupant behavior model for the American Society of Heating and Air-Conditioning Engineers (ASHRAE) since 2016
- NSF reverse site visit reviewer for the Partnership International Research and Education (PIRE) Program, 2014
- Invited panelist for NSF Panel of the Engineering Education Awardee's Meeting: Testing Regimes and Engineering Formation in K-12 setting in 2014
- Co-moderator for the Education and Diversity Program Orientation, NSF Engineering Research Center Annual Meeting, November 14-16th, 2012
- Search committee for assistant professors from the Department of Teaching and Learning, UTK, 2012
- Led a group of five undergraduate and graduate students from the department of EECS, UTK on research and academic exchange visit to Tsinghua, Southeast, and North Electric Power Universities and several utility companies in China in 2103
- Supervisor of CURENT student leadership council since 2011
- Responsible for various university and K-12 engineering education and diversity outreach, curriculum design, and proposal writing: including supervising research experience for undergraduate program (REU), designing engineering education assessment strategies, and professional trainings for graduate and undergraduate students; design and supervise middle school engineering programs, girl-only summer STEM program (Adventure in STEM), young scholar program (for high school students), K-8 Family Engineering Night, and STEM education curriculum development at local k-12 schools to encourage community's broader involvement in STEM education, particularly in the areas schools with economic disadvantages
- Promote diversity in the STEM fields for both universities and K-12 students, including encouraging women, minority, veterans, people with disabilities and lower-social economic background and so on since 2011

Advising Experiences

- Post-doctoral researcher, serving as a major adviser
Dr. Xiaojing Xu, research projects relating to demand response, energy behaviors, and public acceptance of renewable technology, "Social Impact of Power Grid Technology and Energy Conservation Behaviors."
- M.S. and Ph.D. students serving as adviser for NSF-funded research projects for the departments of sociology and psychology, UTK
 1. Wenna Zhao. Energy saving behaviors and environmental impact (2012-2014)
 2. Summer Liu. Assessment for engineering education (2012-2014)
 3. Julie Shelton. Energy conservation behaviors, climate change and public acceptance of renewable energy technology (2013)
 4. Yifan Jiang. Public acceptance of communication and grid technology (2013)

- M.S. and Ph.D. students serving as committee member for the department of EECS, UTK
 1. Drew Maters (Spring 2017). Demand response, smart meter and energy behavioral analysis (Chair: Audris Mockus)
 2. Jiahui Guo. (July 2016). Data analytics and application developments based on synchrophasor, measurements (Chair: Yilu Liu)
 3. Jidong Chai. (June 2016). Wide-area measurement-based applications for power system monitoring and dynamic modeling (Chair: Yilu Liu)
 4. Yin Lei. (August 2015). Wide-Area synchrophasor measurement applications and power system dynamic modeling (Chair: Yilu Liu)
 5. Qinran Hu. (July 2015). Incentive based residential load aggression (Chair: Fran Li).
 6. Lingwei Zhan. (June 2014). Accuracy and stability improvement of synchrophasor measurements (Chair: Yilu Liu)
- Undergraduate students in social science fields, serving as adviser for NSF-funded projects
 1. Alyssa Loveday (psychology): Social-psychological factors affecting smart home management system and demand response, a cross-country comparison (August 2016-present)
 2. Jacqueline Adams (psychology): Occupant behavior and energy saving in commercial building in multi-country context (Fall 2015- present)
 3. Jackson Lanier (sociology): Energy behaviors, public good and occupant behaviors in commercial buildings (Fall 2015-Fall 2016)
 4. Erica Davis (sociology): Energy demand response and social psychological factors (Fall 2015-Summer 2016)
 5. Luke Waring (sociology): Power transmission infrastructure and environmental impact at the community level (2013)
 6. Kayla Stover (sociology). Survey methodology and energy saving behaviors (2012)
- Undergraduate students in engineering fields serving as adviser for NSF-funded projects:
 1. Sean Indelicato (electrical engineering): Incentive based demand response (Spring 2017 - present)
 2. Roy Tan, Brian Lundell, & James Bate (electrical engineering): Using Twitter to analyzing energy issues (Spring 2017-present)
 3. Faiza Islam (industry engineering): Social-psychological factors and residential demand response programs (Fall 2016-present)
 4. Adam Foshie (electrical engineering): Data acquisition and analysis for residential probabilistic demand response modeling (May-August 2016)
 5. Taylor Woodward (industry engineering) and Diane Garcia (electrical engineering): Public acceptance of smart home management system (Spring 2016-present)
 6. Candice Patton (electrical engineering): incentives and demand response programs (Fall 2013-Summer 2014)

Peer Reviewer

American Sociology Association, Energy Research and Social Science, Energy Efficiency, Energy and Buildings, Energy and Environment, Journal of American Sociology, National Communication

Association and International Communication Association