

Xiao-Fei Yang, PhD

Center for Affective Neuroscience, Development, Learning and Education ([CANDLE](#))
Rossier School of Education, Brain and Creativity Institute
University of Southern California
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PROFESSIONAL APPOINTMENT

- 2023- **Assistant Research Professor**
University of Southern California
- 2021- **Scientific Director of CANDLE**
University of Southern California
- 2019-2023 **Senior Research Associate**
University of Southern California

EDUCATION

- 2014-2019 **Postdoctoral Research Associate**
University of Southern California
- 2006 - 2013 **Ph.D. in Neuroscience**
University of Southern California
Dissertation: Individual differences in heart rate responses and expressive behavior during social emotions:
Effects of resting cardiac vagal tone and culture, and relation to the default mode network
- 2002 - 2006 **B.S. Biological Sciences**
Fudan University, Shanghai China

EXTRAMURAL FUNDING

XFY's role is in bold.

- 2022-2025 *Supporting and measuring what matters for at-risk youth and their teachers: A practitioner and researcher consortium for innovation, sustainability and scaling.* Chan Zuckerberg Initiative. (**Project Leader**; M.H. Immordino-Yang, PI; Total grant=\$1.5M)
- 2021 *To err is human and how the brain learns: A transdisciplinary COP approach to schooling for adaptive error monitoring and intellectual humility.* (not funded) Templeton Foundation (**co-PI**; M.H. Immordino-Yang, PI; Total grant \$1M)

- 2020 *Making mistakes matter: a cross-sectional and longitudinal neuropsychological study of educational practices and performance monitoring.* (finalist, not funded) Spencer Foundation (**co-PI**; M.H. Immordino-Yang, PI; Total grant \$1M).
- 2019- 2022 *The role of enhanced mindfulness practices for educators in promoting self-direction among adolescent girls of color.* Chan Zuckerberg Initiative. (**USC co-PI**; M.H. Immordino-Yang, USC PI; P. Noguera, UCLA PI; #CZIF2020-004095; Total grant \$650K.)
- 2018-2020 *Summer program for involving underrepresented, low-SES high school students in interdisciplinary neuroscience investigations.* Army Educational Outreach Program. (**co-PI**; M.H. Immordino-Yang, PI; Battelle Task Order Agreement #610608; Total Grant \$11K)
- 2018-2020 *Neurophysiological predictors of emotion regulation and educational mindset development.* Army Research Laboratory-West Interdisciplinary Collaboration Grant. (**Senior Project Personnel**; M.H. Immordino-Yang, PI; Grant #W911NF-18-2-0084; Total grant \$161,822).

HONORS AND AWARDS

- 2018 Fellow, Latin American School for Education, Cognitive and Neural Sciences (Santiago, Chile)
- 2014 International Mind, Brain and Education Society Conference Distinguished Poster Award
- 2013 Fellow, UCLA Advanced Neuroimaging Training Program (NITP) Summer Course
- 2013 International Cultural Neuroscience Consortium Student Travel Award (\$1000)
- 2012 USC Social Neuroscience Initiative Summer Funding (\$1,000)
- 2011-2012 Neuroscience Merit Fellowship (\$27,000)
- 2010 USC Graduate and Professional Student Senate Conference Travel Grant (\$500)
- 2009 Women in Science and Engineering (WiSE) Travel Grant (\$500)
- 2008 USC U.S.-China institute Graduate Student Summer Fieldwork Grant (\$5,000)

PUBLICATIONS

Peer-Reviewed Articles

- *Gotlieb, R., ***Yang, X.-F.** & Immordino-Yang, M.H. Diverse adolescents' transcendent thinking predicts young adult psychosocial outcomes via brain network development. *Sci Rep* 14, 6254 (2024). <https://doi.org/10.1038/s41598-024-56800-0> *RG and X-FY contributed equally to this work.
- Riveros, R., **Yang, X.-F.**, & Immordino-Yang, M. H. (2023). Sages and seekers: Intergenerational conversations increase abstract talk and values-oriented purpose among low-SES adolescents. *Journal of Positive Psychology*. <https://doi.org/10.1080/17439760.2023.2282774>
- Gotlieb, R. J. M., **Yang, X.-F.**, & Immordino-Yang, M. H. (2022). Concrete and abstract dimensions of diverse adolescents' social-emotional meaning-making, and associations with broader functioning. *Journal of Adolescent Research*. <https://doi.org/10.1177/07435584221091498>
- Gotlieb, R., **Yang, X.-F.**, Immordino-Yang, M.H. (2022). Default and executive networks' roles in diverse adolescents' emotionally engaged construals of complex social issues. *Social Cognitive and Affective Neuroscience*, 17(4), 421–429. <https://doi.org/10.1093/scan/nsab108>

- Gotlieb, R., **Yang, X.-F.**, Immordino-Yang, M.H., (2021). Measuring Learning in the Blink of an Eye: Adolescents' Neurophysiological Reactions Predict Long-Term Memory for Stories. *Front. Educ.* 5:594668. <https://doi.org/10.3389/educ.2020.594668>
- Dénervaud, S., Fornari, E., **Yang, X.-F.**, Hagmann, P., Sander, D., Immordino-Yang, M.H. (2020). Error-monitoring is influenced by school pedagogy: fMRI evidence from Montessori and traditional schoolchildren. *Nature Learning Science*, 5(11), 1-11. <https://doi.org/10.1038/s41539-020-0069-6>
- ***Yang, X.-F.**, *Pavarini, G., Schnall, S. & Immordino-Yang, M.H. (2018). Looking up to virtue: Averted gaze facilitates moral construals via posteromedial cortical activations. *Social Cognitive and Affective Neuroscience*, 13(11), 1131-1139. <https://doi.org/10.1093/scan/nsy081> *GP and X-FY contributed equally to this work.
- Butler, O., **Yang, X.-F.** & Immordino-Yang, M.H. (2018). Community violence exposure correlates with smaller gray matter volume and lower IQ in urban adolescents. *Human Brain Mapping*, 39(5), 2088–2097. <https://doi.org/10.1002/hbm.23988>
- Yang, X.-F.**, Immordino-Yang, M.H. (2017). Cultural group and cardiac vagal tone independently influence emotional expressiveness. *Culture and Brain* 5:36-49. <https://doi.org/10.1007/s40167-017-0048-9>
- Immordino-Yang, M.H. & **Yang, X.-F.** (2017, invited submission) Cultural differences in the neural correlates of social-emotion experiences: An interdisciplinary, developmental perspective. *Current Opinion in Psychology, Special Issue on Emotion* edited by L. Feldman Barrett and B. Mesquita, 17, 34-40. <https://doi.org/10.1016/j.copsyc.2017.06.008>
- Immordino-Yang, M.H., **Yang, X.-F.**, Damasio, H. (2016). Cultural modes of expressing emotions influence how emotions are experienced. *Emotion* 16(7)1033-1039. <https://doi.org/10.1037/emo0000201>
- Immordino-Yang, M.H., **Yang, X.-F.**, Damasio, H. (2014). Correlations between social-emotional feelings and anterior insula activity are independent from visceral states but influenced by culture. *Front. Hum. Neurosci.* 8, 728. <https://doi.org/10.3389/fnhum.2014.00728>
- Yang X.-F.**, Bossmann J., Schiffhauer B., Jordan M. & Immordino-Yang M. H. (2013). Intrinsic default mode network connectivity predicts spontaneous verbal descriptions of autobiographical memories during social processing. *Front. Psychology* 3, 592. <https://doi.org/10.3389/fpsyg.2012.00592>
- Saxbe, D. E., **Yang, X.-F.**, Borofsky, L. A. & Immordino-Yang, M. H. (2013). Embodiment of emotion: Language use during the feeling of social emotions predicts cortical somatosensory activity. *Social Cognitive and Affective Neuroscience*, 8(7), 806-812. <https://doi.org/10.1093/scan/nss075>
- Jin, X. C., Lu, Y. F., **Yang, X.-F.**, Ma, L., & Li, B. M. (2007). Glucocorticoid receptors in the basolateral nucleus of amygdala are required for post-reactivation reconsolidation of auditory fear memory. *European Journal of Neuroscience*, 25(12). <https://doi.org/10.1111/j.1460-9568.2007.05621.x>

Peer-reviewed articles in preparation/under review

- Yang, X.-F.**, Hilliard, K., Gotlieb, R. & Immordino-Yang, M.H. (abstract accepted, to be submitted in January, 2024). Transcendent thinking counteracts longitudinal effects of mid-adolescent exposure to community violence in the anterior cingulate cortex. *Journal of Research on Adolescence*.
- Denervaud, S., Baniqued, P., **Yang, X.-F.**, Immordino-Yang, M.H. (in late-stage preparation). Making mistakes matter: Neuropsychological correlates of performance monitoring in math learning.
- Kundrak, C., **Yang, X.-F.**, & Immordino-Yang, M.H. (in late-stage preparation). Teachers' neurophysiology

mediates the effect of pedagogical practices on secondary students' experiences of challenge.

Kundrak, C., Candaux, E., **Yang, X.-F.**, Baniqued, P., & Immordino-Yang, M.H. (in late-stage preparation). Secondary teachers' beliefs about learning and pedagogical practices are linked via pedagogical orientations, and mediated by cultivated cardiac regulatory capacities.

Jahner, E., Kundrak, C., **Yang, X.-F.**, Farrington, C., Porter, S. & Immordino-Yang, M.H. (in late-stage preparation). Developmental neural, psychological, and emotional correlates of academic mindsets: A 5-year longitudinal study from adolescence to young adulthood

Yang, X.-F., Immordino-Yang, M.H. (in late-stage preparation). Heart-rate responses during social emotion is influenced by culture and relates to individuals' expressiveness.

Yang, X.-F., Immordino-Yang, M.H. (in late-stage preparation). Orienting heart rate deceleration during social emotion processing predicts deactivation in default mode network regions.

PEER REVIEWED CONFERENCE PRESENTATIONS

Moliterni, C., **Yang, X.-F.**, Gonzalez, E., Kundrak, C., Ho, B., & Immordino-Yang, M. H. (2024, July 10-12). *Teachers' heart rate response supports more developmentally-oriented feedback to students* [Poster presentation]. International Mind, Brain, and Education Society Biennial Conference, Leuven, Belgium.

Kundrak, C., **Yang, X.-F.**, Gonzalez, E., & Immordino-Yang, M. H. (2024, July 10-12). *Psychosocial and neurobiological characterizations of effective secondary teaching: An innovative transdisciplinary approach*. In M. H. Immordino-Yang (chair) & C. Kundrak (co-chair), Empirical explorations of the social dimension of teaching and learning: Transdisciplinary research to inform holistic, student-centered education [Symposium]. International Mind, Brain, and Education Society Biennial Conference, Leuven, Belgium.

Yang, X.-F., Hilliard, K., Gotlieb, R., & Immordino-Yang, M. H. (March 25-28, 2024). *Transcendent thinking counteracts longitudinal effects of mid-adolescent exposure to community violence in the anterior cingulate cortex* [Poster presentation]. Society for Social Neuroscience 2024, Tsukuba, Japan.

Yang, X.-F., Kundrak, C., Moliterni, C., & Immordino-Yang, M. H. (March 25-28, 2024). *Secondary teachers' neural and heart-rate dynamics while evaluating their own students' versus other students' academic work* [Poster presentation]. Society for Social Neuroscience 2024, Tsukuba, Japan.

Kundrak, C., **Yang, X.-F.**, Moliterni, C., & Immordino-Yang, M. H. (June 1-3, 2023). Engaging brain networks when grading students' work: Teachers' implicit social-affective processing [Paper presentation]. Jean Piaget Society 2023, Madrid, Spain.

Pueschel, E., **Yang, X.-F.**, Morales, S., Immordino-Yang, M.H. (April 22-25, 2023). *Making meaning of mistakes: error monitoring as a mechanism of linking emotions and learning in math*. Poster presented to the SRCD 2023 Conference, Salt Lake City, UT.

Moliterni, C., **Yang, X.-F.**, Kundrak, C., & Immordino-Yang, M. H. (August 31-September 1, 2022). Heart-rate dynamics suggest teachers' implicit social processing while evaluating students' work. SIG Earli 2022 Conference, Southampton, United Kingdom.

Moliterni, C., **Yang, X.-F.**, Kundrak, C., & Immordino-Yang, M. H. (July 9-13, 2022). Heart rate deceleration as a biomarker of implicit processing: A demonstration of measure sensitivity in a real-world teaching task. FENS 2022 Forum, Paris, France.

Kundrak, C., **Yang, X.-F.**, & Immordino-Yang, M. H. (March 30-April 2, 2022). Secondary teachers' pedagogical practices and teaching-specific heart rate variability dynamics additively contribute to students' perceptions of classroom support. Society for Affective Science Annual Meeting (virtual).

- Hilliard, K., **Yang, X.-F.**, Stone, M. & Immordino-Yang, M.H. (November, 2021). Community violence exposure during mid-adolescence is related to greater grey matter volume reduction in urban youth. Poster presented at the Society for Neuroscience Annual Conference, Chicago, Illinois (virtual).
- Gotlieb, R., **Yang, X.-F.**, & Immordino-Yang, M.H. (May, 2020). Executive Control, Default Mode, and Salience Networks' Activity and Inter-Network Connectivity are related to Adolescents' Concrete and Abstract Interpretations of Social Stories. Poster presented at the Social and Affective Neuroscience Society, Santa Barbara, California. (Conference Canceled)
- Yang, X.-F.** & Immordino-Yang, M.H. (June, 2019). Cultural modes of expressing emotion influence how emotions are experienced. In Fortier, M. (Chair), *The cultural shaping of consciousness*. Plenary symposium presented at the 23rd Annual Meeting of Association for the Scientific Study of Consciousness, London, ON, Canada.
- Yang, X.-F.**, Pavarini, G., Schnall, S. & Immordino-Yang, M.H. (September 2018). Learning to appreciate others' virtues: Behavioral and neural processes facilitate moral thinking. Poster presented at *the International Mind, Brain and Education Society conference*, Los Angeles, CA.
- Krone, C., **Yang, X.-F.**, Farrington, C., & Immordino-Yang, M.H. (September 2018). Developmental neural, psychological, and emotional correlates of academic mindsets. Poster presented at *the International Mind, Brain and Education Society conference*, Los Angeles, CA.
- Jahner, E., **Yang X.-F.**, & Immordino-Yang, M. (2018) Streams of thought: An ICA methodology for lagged resting state analysis. Poster presented at *the 25th Cognitive Neuroscience Society annual meeting*, Boston, MA.
- Riveros, R., **Yang, X.-F.**, Gotlieb, R., Jahner, E. & Immordino-Yang, M.H. (March, 2017). Intrinsic functional connectivity of the default mode network predicts the purposefulness of youths' intended adult lives. Poster presented at 10th annual meeting of the Social & Affective Neuroscience Society, Los Angeles, CA.
- Jahner, E., **Yang, X.-F.**, & Immordino-Yang, M.H. (March, 2017). Resting state temporal dynamics and mind wandering frequency during reading. Poster session presented at *the Cognitive Neuroscience Society annual meeting*, San Francisco, CA. NOTE: This poster received the Best Student Poster Award with a cash prize and enrollment in the week-long human connectome workshop for the first author.
- Gotlieb, R., **Yang, X.-F.**, Rajana, H., Cremat, D., & Immordino-Yang, M.H. (March, 2017). Adolescents' empathic reactions to social stories predict subsequent long-term memory for those stories and connectivity between right anterior insula and medial prefrontal cortices moderates this effect. Poster accepted at the 10th annual convention of the *Social and Affective Neuroscience Society*, Los Angeles, CA.
- Riveros, R., **Yang, X.-F.**, Gotlieb, R., Jahner, E., & Immordino-Yang, M.H. (2016, September). Intrinsic functional connectivity of the default mode network predicts the purposefulness of youths' intended adult lives. Poster presented at *the International Mind, Brain and Education Society conference*, Toronto, ON.
- Gotlieb, R., **Yang, X.-F.**, Cheng, T.W., Hobeika, L. & Immordino-Yang, M.H. (June, 2016). Culture moderates how bicultural adolescents' interoceptive sensitivity impacts their empathy for triumph over adversity. Poster presented at *the European Association for Research on Learning and Instruction: Neuroscience and Education Special Interest Group*, Amsterdam, Netherlands.
- Gotlieb, R., **Yang, X.-F.**, Rhoads, S., Miranda, R.R., & Immordino-Yang, M.H. (June, 2016). Adolescents' empathic reaction to others' triumph over adversity is positively related to intrinsic default mode network connectivity. Poster presented at *the Federation of all European Neuroscience Societies*, Copenhagen, Denmark.
- Rhoads, S. A., **Yang, X.-F.**, Miranda, R. R., Immordino-Yang, M. H. (October, 2015). Adolescents' intrinsic default mode network connectivity is positively related to social media use, but negatively related to non-

social media use. Poster presented at *the 2015 "Digital Media and Developing Minds" Sackler colloquium*, Irvine, CA.

- Immordino-Yang, M.H., **Yang, X.-F.**, Damasio, H. (April, 2015). Cultural modes of expressing emotions influence how emotions are experienced [Abstract]. Poster presented at *the 2015 Meeting of the Social and Affective Neuroscience Society*, Boston, MA.
- Yang, X.-F.**, Cheng, T., Hobeika, L., Vergara, S., Immordino-Yang, M.H. (February, 2015). Interoceptive awareness and cultural identity are related negatively in East-Asian American adolescents, but positively in Latino American adolescents [Abstract]. Poster presented at *the Advances in Cultural Psychology Preconference of the 16th Annual Meeting of the Society for Personality and Social Psychology*, Long Beach, CA.
- Yang, X.-F.**, Immordino-Yang, M.H. (February, 2015). East-Asian adolescents' emotional home life predicts the acquisition of an acculturated pattern of correlation between anterior insula activity and social-emotional feelings [Abstract]. Poster presented at *the Emotion Preconference of the 16th Annual Meeting of the Society for Personality and Social Psychology*, Long Beach, CA.
- Immordino-Yang, M.H., **Yang, X.-F.** (February, 2015). Cultural and individual differences in the contributions of somatosensory neural activity to social-emotional feelings [Abstract]. Poster presented at *the 16th Annual Meeting of the Society for Personality and Social Psychology*, Long Beach, CA.
- Immordino-Yang, M.H., **Yang, X.-F.** (November, 2014). Adolescents' age and emotional home life predict the acquisition of strong and culture-specific patterns of correlation between neural activity and social-emotional feelings [Abstract]. Poster presented at *the 2014 International Mind, Brain and Education Society Conference*, Fort Worth, TX. **Winner of Distinguished Student Poster Award.**
- Jahner, E., Pound, V., **Yang, X.-F.**, Immordino-Yang, M.H. (November, 2014). Cultural literacy, intellectual curiosity, academic resilience and the road to "self as scientist": Qualitative analyses of low-SES adolescents' experiences in a neuroscience camp [Abstract]. Poster presented at *the 2014 International Mind, Brain and Education Society Conference*, Fort Worth, TX. **Winner of Distinguished Student Poster Award.**
- Immordino-Yang, M.H., **Yang, X.-F.** (October, 2014). Cultural influences on emotional expressiveness influence the neural processing of emotional experiences [Abstract]. In Daphna Oyserman & Kees van den Bos (organizers) *From cultural differences as stable characteristics to characteristics malleable by context*. Symposium presented at *the 50th Annual meeting of the Society for Experimental Social Psychology Conference*, Columbus, Ohio.
- Yang, X.-F.**, Immordino-Yang, M.H. (April, 2014). Culture and cardiac vagal tone independently influence expressiveness and heart-rate response during emotion [Abstract]. Presented at *the 2014 International Cultural Neuroscience Consortium Conference*, Ann Arbor, MI.
- Yang, X.-F.**, Immordino-Yang, M.H. (February, 2014). Cultural background and resting cardiac vagal tone additively influence emotional expressiveness [Abstract]. In J. Chiao (chair) *Culture and emotion: Advances from cultural psychology and cultural neuroscience*. Symposium presented at *the 15th Annual Meeting of the Society for Personality and Social Psychology*, Austin, TX.
- Yang, X.-F.**, Immordino-Yang, M.H. (November, 2013). Resting cardiac vagal tone inversely relates to intrinsic salience network connectivity [Abstract]. Presented at *43rd annual meeting of Society for Neuroscience*, San Diego, CA.
- Yang, X.-F.**, Immordino-Yang, M.H. (May, 2013). Cultural and individual differences in heart rate response during the experience of social emotions [Abstract]. Presented at *the inaugural meeting of the International Cultural Neuroscience Consortium*, Chicago, IL. **Winner of ICNC Student Travel Award.**

- Yang, X.-F.**, Wong, S. W. H., & Immordino-Yang, M. H. (June, 2012). Heart rate deceleration predicts BOLD activity in default mode regions during emotion processing. [Abstract]. Presented at *the 18th annual meeting of the Organization of the Human Brain Mapping*, Beijing, China. **Selected for oral presentation.**
- Yang, X.-F.**, Pavarini, G., Schnall, S., Immordino-Yang, M. H. (May, 2012). Spontaneous gaze aversion during interview-induced moral elevation predicts subsequent default network activation. [Abstract]. Presented at *the 2012 Association for Psychological Science Convention*, Chicago, IL.
- Yang, X.-F.**, Saxbe, D. E., Borofsky, L. A., Murphy, M. C., Immordino-Yang, M. H. (November, 2011). Do you think it or feel it? Language and neural activity reflect individual differences in emotion processing. [Abstract]. Presented at *41st annual meeting of Society for Neuroscience*, Washington, D. C.
- Yang, X.-F.**, Wong, S. W. H., & Immordino-Yang, M. H. (November, 2010). Resting Cardiac Vagal Activity Predicts Heart Rate Change during Compassion for Physical Pain. [Abstract]. Presented at *40th annual meeting of Society for Neuroscience*, San Diego, CA.
- Yang, X.-F.**, Shoemaker, K., & Wong, S. W. H. (October, 2009). A wavelet analysis of the dynamic changes in heart rate variability during a 30-sec isometric handgrip task. [Abstract]. Presented at *39th annual meeting of Society for Neuroscience*, Chicago, IL. Supported by WiSE travel grant.

TEACHING AND MENTORING EXPERIENCE

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| Fall 2006 – present | <i>Research mentor</i> , USC
Mentored 5 postdoctoral fellows, 13 graduate students, over 15 undergraduate students and over 10 high school students on cognitive neuroscience research including fMRI techniques, psychophysiological recording techniques, data analysis and statistics, with over 10 undergraduates receiving university fellowships for their research. |
| 2012-2013 | Invited lecture at Neuroscience Graduate Program Core course, USC |
| 2011 | Outstanding TA award during the 2010/2011 academic year, USC |
| Fall 2010/2009/2008 | <i>Teaching Assistant</i> , How the body works: Topics in human physiology, USC
Course Organizers: Dr. Chien-Ping Ko & Dr. Michael Moore |
| Spring 2010 | <i>Teaching Assistant</i> , General Physiology, USC
Course Organizers: Dr. Albert Herrera & Dr. Michael Moore |
| Spring 2009 | <i>Teaching Assistant</i> , Statistics I, USC
Course Organizer: Dr. Stephen, Madigan |

OUTREACH ACTIVITIES

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| February 2014 | Organized and hosted a one-day neuroscience field trip for the 4 th grade class from Venn W. Ferguson Elementary School, CA. |
| Summer 2014 | Designed curriculum and hosted a 9-day neuroscience summer camp for second-generation low SES high school students in the Los Angeles area.
Featured in LA register, link |
| 2012 – 2015 | <i>Neuroscience Instructor and Curriculum Consultant</i> , STAR Education Inc. |