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CURRENT POSITION

2022~	Professor	Department of Education Korea University, Seoul, Korea
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EDUCATION

2010	Ph.D.	University of Minnesota Twin Cities, MN, USA	Quantitative Methods in Education Department of Educational Psychology
2008	M.A.	University of Minnesota Twin Cities, MN, USA	Quantitative Methods in Education Department of Educational Psychology Minor: International Education at the Department of Educational Policy and Administration
2004	B.A.	National Taiwan University Taipei, Taiwan	Department of History Certificate: Secondary School Teacher Education Program Certificate: Communication Program

PROFESSIONAL EXPERIENCE

2023~2024	Invited Professor	Empower Vocational Education Research Center, National Taiwan University of Science and Technology, Taiwan
2020~2022	Associate Professor	Department of Education, Korea University, Korea
2011~2019	Associate Professor Assistant Professor	Graduate Institute of Learning and Instruction & Center for Teacher Education, National Central University, Taiwan
2016~2017	Section Chief	Office of Institutional Research, National Central University, Taiwan
2015	Visiting Scholar	Institute of European and American Studies, Academia Sinica, Taiwan
2014	Visiting Scholar	Research Institute for the Humanities and Social Sciences, Ministry of Science and Technology, Taiwan
2006~2010	Research Assistant Teaching Assistant	Department of Educational Psychology, University of Minnesota, USA
2008~2009	Psychometrician Intern	Clinical Assessment Group, Pearson, USA
2007	Statistician Intern	Professional Data Analysts, Inc., USA
2004~2005	History Student Teacher	Taipei Municipal Bailing High School, Taiwan

EDITORIAL BOARDS

- Journal of Research in Science Teaching, 2023~
- The Journal of Experimental Education, 2023~
- International Journal of Science Education, 2019~
- International Journal of Science and Mathematics Education, 2019~

RESEARCH INTERESTS

- Educational Research in International Large-Scale Assessments
- Motivation and Psychological Constructs
- Applied Statistics and Psychometrics
- Literacies in the Digital Age

JOURNAL ARTICLES

Liou, P.-Y.*, & Myoung, E. (2023). Teacher-perceived science inquiry-based instructional practice on student achievement and motivational beliefs in classroom contexts. *Science Education*, 107(6), 1485–1506. <https://doi.org/10.1002/sce.21812>

Jang, J., Yoo, H., & **Liou, P.-Y.*** (2023). Effects of collaboration on teachers' job satisfaction and self-efficacy: Personal and structural characteristics as moderators. *Educational Studies*, 1–23. <https://doi.org/10.1080/03055698.2023.2256924>

Liou, P.-Y., Lin, Y.-M., Huang, S.-C., & Chen, S. (2023). Gender differences in science motivational beliefs and their relations with achievement over grades 4 and 8: A multinational perspective. *International Journal of Science and Mathematics Education*, 21(1), 233–249. <https://doi.org/10.1007/s10763-021-10243-5>

Suh, H., **Liou, P.-Y.**, Jeong, J. S., & Kim, S. Y. (2022). Perfectionism, prolonged stress reactivity, and depression: A two-wave cross-lagged analysis. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 1–15. <https://doi.org/10.1007/s10942-022-00483-x>

Liou, P.-Y., Huang, S.-C., & Chen, S. (2022). Longitudinal relationships between school burnout, compulsive Internet use, and academic decrement: A three-wave cross-lagged study. *Computers in Human Behavior*, 135, 107363, 1–8. <http://doi.org/10.1016/j.chb.2022.107363>

Myoung, E., & **Liou, P.-Y.*** (2022). Systematic review of empirical studies on international large-scale assessments of civic and citizenship education. *Scandinavian Journal of Educational Research*, 66(7), 1269–1291. <https://doi.org/10.1080/00313831.2022.2131903>

Myoung, E., & **Liou, P.-Y.*** (2022). Adolescents' political socialization at school, citizenship self-efficacy, and expected electoral participation. *Journal of Youth and Adolescence*, 51(7), 1305–1316. <https://doi.org/10.1007/s10964-022-01581-w>

Liou, P.-Y.* (2021). Students' attitudes toward science and science achievement: An analysis of the differential effects of science instructional practices. *Journal of Research in Science Teaching*, 58(3), 310–334. <https://doi.org/10.1002/tea.21643>

Liou, P.-Y.*, Wang, C.-L., Lin, J. J. H., & Areepattamannil, S. (2021). Assessing students' motivational beliefs about learning science across grade level and gender. *The Journal of Experimental Education*, 89(4), 605–624. <https://doi.org/10.1080/00220973.2020.1721413>

Liou, P.-Y., & Lin, J. J. H. (2021). Comparisons of science motivational beliefs of adolescents in Taiwan,

Australia, and the United States: Assessing the measurement invariance across countries and genders. *Frontiers in Psychology*, 12(674902), 1–13. <https://doi.org/10.3389/fpsyg.2021.674902>

Liou, P.-Y.*, & Bulut, O. (2020). The effects of item format and cognitive domain on students' science performance in TIMSS 2011. *Research in Science Education*, 50(1), 99–121. <https://doi.org/10.1007/s11165-017-9682-7>

Chen, L.-T., Ding, Q.-W., Hsieh, C.-Y., Chen, Y.-K., Chiang, Y., Huang, S.-C., Yang, T.-R., Cheng, C., **Liou, P.-Y.**, & Peng, C.-Y. J. (2020). Effect size reporting practices in Taiwanese psychology and education journals: Review and beyond. *Chinese Journal of Psychology*, 62(4), 553–592. [https://doi.org/10.6129/CJP.202009_62\(4\).0006](https://doi.org/10.6129/CJP.202009_62(4).0006) (In Chinese)

Liou, P.-Y.*, Wang, C.-L., & Lin, J. J. H. (2019). Pathways of parental involvement through students' motivational beliefs to science achievement. *Educational Psychology*, 39(7), 960–980. <https://doi.org/10.1080/01443410.2019.1617410>

Lin, J. J. H., & **Liou, P.-Y.*** (2019). Assessing the learning achievement of students from different college entrance channels: A linear growth curve modeling. *Assessment & Evaluation in Higher Education*, 44(5), 732–747. <https://doi.org/10.1080/02602938.2018.1532490>

Liou, P.-Y.*, & Ho, J. H. N. (2018). Relationships among instructional practices, students' motivational beliefs and science achievement in Taiwan using hierarchical linear modelling. *Research Papers in Education*, 33(1), 73–88. <https://doi.org/10.1080/02671522.2016.1236832>

Wang, C.-L., & **Liou, P.-Y.*** (2018). Patterns of motivational beliefs in the science learning of total, high-, and low-achieving students: Evidence of Taiwanese TIMSS 2011 data. *International Journal of Science and Mathematics Education*, 16(4), 603–618. <https://doi.org/10.1007/s10763-017-9797-3>

Liou, P.-Y.* (2017). Profiles of adolescents' motivational beliefs in science learning and science achievement in 26 countries: Results from TIMSS 2011 data. *International Journal of Educational Research*, 81, 83–96. <https://doi.org/10.1016/j.ijer.2016.11.006>

Wang, C.-L., & **Liou, P.-Y.*** (2017). Students' motivational beliefs in science learning, school motivational contexts, and science achievement in Taiwan. *International Journal of Science Education*, 39(7), 898–917. <https://doi.org/10.1080/09500693.2017.1310410>

Huang, Y.-T., Liu, E. Z.-F., Lin, C. H., & **Liou, P.-Y.** (2017). Developing and validating a high school version of the robotics motivated strategies for learning questionnaire. *International Journal of Online Pedagogy and Course Design*, 7(2), 19–33. <https://doi.org/10.4018/IJOPCD.2017040102>

Davenport E. C., Davison, M., **Liou, P.-Y.**, & Love, Q. U. (2016). Easier said than done: Rejoinder on Sijtsma and on Green and Yang. *Educational Measurement: Issues and Practice*, 35(1), 6–10. <https://doi.org/10.1111/emip.12106>

Liou, P.-Y.* (2015). Developing an instrument for assessing students' concepts of the nature of technology. *Research in Science & Technological Education*, 33(2), 162–181. <https://doi.org/10.1080/02635143.2014.996542>

Liou, P.-Y.*, & Hung, Y.-C. (2015). Statistical techniques utilized in analyzing PISA and TIMSS databases in science education from 1996 to 2013: A methodological review. *International Journal of Science and Mathematics Education*, 13(6), 1449–1468. <https://doi.org/10.1007/s10763-014-9558-5>

Liou, P.-Y.*, & Liu, E. Z. F. (2015). An analysis of the relationships between Taiwanese eighth and fourth graders' motivational beliefs and science achievement in TIMSS 2011. *Asia Pacific Education Review*, 16(3), 433–445. <https://doi.org/10.1007/s12564-015-9381-x>

Davenport, E. C., Davison, M., **Liou, P.-Y.**, & Love, Q. U. (2015). Reliability, dimensionality, and internal consistency as defined by Cronbach: Distinct albeit related concepts. *Educational Measurement: Issues*

and Practice, 34(4), 4–9. <https://doi.org/10.1111/emip.12095>

- Liou, P.-Y.*** (2014). Examining the big-fish-little-pond effect on students' self-concept of learning science in Taiwan based on the TIMSS databases. *International Journal of Science Education*, 36(12), 2009–2028. <https://doi.org/10.1080/09500693.2014.889331>
- Liou, P.-Y.*** (2014). Investigation of the big-fish-little-pond effect on students' self-concept of learning mathematics and science in Taiwan: Results from TIMSS 2011. *Asia-Pacific Education Researcher*, 23(3), 769–778. <https://doi.org/10.1007/s40299-013-0152-3>
- Liou, P.-Y.*** (2014). Evaluating measurement properties of attitudinal items related to learning science in Taiwan from TIMSS 2007. *Journal of Baltic Science Education*, 16(3), 856–869.
- Liou, P.-Y.***, & Kao, P.-J. (2014). Validation of an instrument to measure students' motivation and self-regulation towards technology learning. *Research in Science & Technological Education*, 32(2), 79–96. <https://doi.org/10.1080/02635143.2014.893235>
- Liu, E. Z. F., Lin, C. H., **Liou, P.-Y.**, Feng, H.-C., & Hou, H.-T. (2013). An analysis of teacher-student interaction patterns in a robotics course for kindergarten children: A pilot study. *Turkish Online Journal of Educational Technology*, 12(1), 9–18.
- Lin, C. H., Liu, E. Z. F., Chen, Y. L., **Liou, P.-Y.**, Chang, M., Wu, C. H., & Yuan, S. M. (2013). Game-based remedial instruction in mastery learning for upper-primary school students. *Educational Technology & Society*, 16(2), 271–281.
- Liu, E. Z. F., Lin, C. H., Jian, P. S., & **Liou, P.-Y.*** (2012). The dynamics of motivation and learning strategy in a creativity-supporting learning environment in higher education. *Turkish Online Journal of Educational Technology*, 11(1), 172–180.
- Liou, P.-Y.***, & Lawrenz, F. (2011). Optimizing teacher preparation loan forgiveness programs: Variables related to perceived influence. *Science Education*, 95(1), 121–144. <https://doi.org/10.1002/sci.20409>
- Liou, P.-Y.***, Kirchoff, A., & Lawrenz, F. (2010). Perceived effects of scholarships on STEM majors' commitment to teaching in high needs schools. *Journal of Science Teacher Education*, 21(4), 451–470. <https://doi.org/10.1007/s10972-010-9191-2>
- Liou, P.-Y.***, Desjardins, C., & Lawrenz, F. (2010). Influence of scholarships on STEM teachers: Cluster analysis and characteristics. *School Science and Mathematics*, 110(3), 128–143. <https://doi.org/10.1111/j.1949-8594.2010.00016.x>

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CONFERENCE PRESENTATIONS

- Kim, S., Myoung, E., Kim, J. A., Kim, S., Lee, S. H., **Liou, P.-Y.**, & Bong, M. (2023, April). *Calibration matters for the relationships of self-efficacy with motivation and achievement*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Chicago, IL.
- Chen, S., Huang, S.-C., & **Liou, P.-Y.** (2022, March). *A longitudinal study of middle school students' science task values*. Paper presented at the annual international conference of the National Association for Research in Science Teaching (NARST), Vancouver, Canada.
- Myoung, E., & **Liou, P.-Y.** (2021, November). *A systematic review of empirical studies based on International Civic and Citizenship Education Study data*. Paper presented at the 9th IEA International Research Conference, Dubai, UAE.
- Liou, P.-Y.**, & Wang, C.-L. (2019, October). *The effects of differential students' perceived instructional*

practices on attitudes toward science and science achievement. Paper presented at the third International Conference on Educational Measurement, Evaluation and Assessment, Abu Dhabi, UAE.

Lin, Y.-M., & **Liou, P.-Y.** (2019, August). *Gender differences in students' motivational beliefs in mathematics learning and relations with achievement across grades.* Poster section presented at the World Education Research Association (WERA) 2019 focal meeting, Tokyo, Japan.

Lin, Y.-M., Chen, J.-J., & **Liou, P.-Y.** (2019, March). *Relations between motivational beliefs in mathematics learning and mathematics achievement in cognitive domains across grades in Taiwan.* Poster section presented at the 2019 National Academy for Educational Research (NAER) educational conference: the Reflection and Prospect on Asian Education Reform, Taipei, Taiwan. (in Chinese)

Lin, J. H., **Liou, P.-Y.**, & Cheng, P. C. R. (2018, May). *Assessing knowledge growth of applicants from different entrance channels.* Poster session presented at the annual meeting of the Association of Institutional Research Forum (AIR), Orlando, FL.

Liou, P.-Y., & Lin, J. H. (2017, September). *Grade cohort and gender differences of students' motivational beliefs in science learning in Taiwan.* Poster session presented at the 9th Self-concept Enhancement and Learning Facilitation (SELF) biennial international conference, Melbourne, Australia.

Liou, P.-Y. (2017, August). *Students' motivational beliefs in science learning and association with achievement at an international scope.* Paper presented at the European Science Education Research Association conference (ESERA), Dublin, Ireland.

Liou, P.-Y., Lin, J. H., & Chen, G.-D. (2017, May). *Students' academic performance from multiple college entrance channels.* Poster session presented at the annual meeting of the Association of Institutional Research Forum (AIR), Washington, D.C.

Liou, P.-Y. (2017, April). *An investigation of the relationship between student science achievement and school-level variables in the U.S. and five high-achieving Asian countries.* Poster session presented at the annual meeting of the American Educational Research Association (AERA), San Antonio, TX.

Wang, C.-L., & **Liou, P.-Y.** (2017, April). *Motivational beliefs in science learning and school motivational contexts: Evidence of Taiwanese TIMSS eighth-grade data.* Paper presented at the annual international conference of the National Association for Research in Science Teaching (NARST), San Antonio, TX.

Wang, C.-L., & **Liou, P.-Y.** (2017, April). *Cross-cultural comparison between the function of social support through task value in students' science learning.* Poster session presented at the annual international conference of the National Association for Research in Science Teaching (NARST), San Antonio, TX.

Wang, C.-L., & **Liou, P.-Y.** (2016, December). *The determinants of Taiwanese students' intrinsic motivation in science learning based on the self-determined theory.* Paper presented at the 2nd international conference for Personal Epistemology and Learning (PEL), Taipei, Taiwan.

Wang, C.-L., & **Liou, P.-Y.** (2016, December). *Opportunities to learn science within the school context: The outlook of high-achieving Asian countries.* Paper presented at the annual international conference of the Association of Science Education Taiwan (ASET), Taichung, Taiwan.

Liou, P.-Y., & Wang, C.-L. (2016, June). *A content analysis of PISA and TIMSS studies from 1996 to 2015: The nexus of ILSAs and science education.* Paper presented at the 47th annual Australasian Science Education Research Association conference (ASERA), Canberra, Australia.

Liou, P.-Y. (2016, April). *Gender differences of motivational beliefs and science achievement in 26 countries.* Paper presented at the annual international conference of the National Association for Research in Science Teaching (NARST), Baltimore, MD.

Wang, C.-L., & **Liou, P.-Y.** (2016, April). *Taiwanese adolescents' motivational beliefs and science achievement: Evidence of TIMSS 2011.* Paper presented at the annual international conference of the

National Association for Research in Science Teaching (NARST), Baltimore, MD.

- Liou, P.-Y.**, & Bulut, O. (2016, April). *Item format, cognitive domain, and gender interaction in TIMSS 2011 science results*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Washington, DC.
- Wang, C.-L., & **Liou, P.-Y.** (2015, December). *Different patterns of motivational beliefs in science learning of the high and low performing students: Evidence of Taiwanese TIMSS 2011 data*. Paper presented at the annual international conference of the Association of Science Education Taiwan (ASET), Kenting, Pingtung, Taiwan.
- Liou, P.-Y.** (2015, April). *Students' affective factors and science achievement: TIMSS 2011 Taiwanese data*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Chicago, Illinois.
- Liou, P.-Y.** (2015, April). *Profiles of adolescents' motivational beliefs of science in 26 countries: Results from TIMSS 2011 data*. Poster presented at the annual meeting of the American Educational Research Association (AERA), Chicago, Illinois.
- Davenport, E. C., Davison, M., **Liou, P.-Y.**, & Love, Q. U. (2015, April). *Reliability, dimensionality, and internal consistency as defined by Cronbach: Distinct albeit related concepts*. Paper presented at the annual meeting of the National Council on Measurement in Education (NCME), Chicago, Illinois.
- Liou, P.-Y.** (2015, April). *Gender differences in students' motivational beliefs and science achievement over grades in Taiwan*. Poster presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Chicago, Illinois.
- Wang, C.-L., & **Liou, P.-Y.** (2014, October). *A content analysis of PISA and TIMSS studies: Taiwan Science Education*. Poster presented at the 30th conference of the Association of Science Education Taiwan (ASET), National Taiwan Normal University, Taipei, Taiwan. (in Chinese)
- Chang, P.-J., Liu, E. Z. F., **Liou, P.-Y.**, Chen, T.-H., Huang, Y.-Y., & Lin, C.-H. (2014, May). *A correlation analysis on background experience, motivation, strategies, and achievement in robotics learning: Examination on the sixth grade students*. Paper presented at the 18th Global Chinese Conference on Computers in Education (GCCCE), East China Normal University, China. (in Chinese)
- Liou, P.-Y.**, & Hung, Y.-C. (2014, April). *Statistical techniques utilized in analyzing PISA and TIMSS data in science education from 1996 to 2012: A methodological review*. Poster presented at the annual meeting of the American Educational Research Association (AERA), Philadelphia, Pennsylvania.
- Ho, J. H. N., & **Liou, P.-Y.** (2014, April). *Differential relations of instructional practices to students' learning motivation and science achievement: Results from TIMSS 2007*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Philadelphia, Pennsylvania.
- Liu, E. Z. F., Chang, W.-L., Lin, Y.-H., **Liou, P.-Y.**, Chang, C.-Y., & Chiou, S.-Y. (2013, December). *Introduction to the project, Online Tutoring for Learning after School: A case study from the Second Northern Center*. Paper presented at the 9th International Conference on Digital Content, National Ilan University, Ilan, Taiwan. (in Chinese)
- Liou, P.-Y.**, & Hung, Y.-C. (2013, October). *Statistical techniques utilized in analyzing PISA and TIMSS databases in science education: a methodological review*. Paper presented at International Conference on the Construction and Utilization of Education Databases, National Taiwan Normal University, Taipei, Taiwan. (in Chinese)
- Liou, P.-Y.**, & Kuo, P.-J. (2013, August). *The development and validation of a questionnaire to measure students' concepts about technology*. Poster presented at Taiwan Educational Research Association & Pacific Rim Objective Measurement Symposium 2013 (TERA & PROMS 2013), Kaohsiung, Taiwan.

- Liou, P.-Y.** (2013, June). *Evaluating measurement properties of attitudinal items related to learning science in Taiwan from TIMSS 2007*. Paper presented at the 5th International Association for the Evaluation of Educational Achievement (IEA) International Research Conference, Singapore.
- Liou, P.-Y., & Hung, Y.-C.** (2013, June). *Statistical techniques utilized in analyzing TIMSS databases in science education from 1996 to 2012: A methodological review*. Paper presented at the 5th International Association for the Evaluation of Educational Achievement (IEA) International Research Conference, Singapore.
- Hung, Y.-C., & Liou, P.-Y.** (2013, June). *Examining the relationship between student academic achievement and self-concept in the I/E, BFLPE, and combined models - Evidence from East Asia countries data in TIMSS 2007*. Paper presented at the 5th International Association for the Evaluation of Educational Achievement (IEA) International Research Conference, Singapore.
- Lin, Y.-H., Huang, Y.-Y., Liu, E. Z. F., & Liou, P.-Y.** (2013, May). *Trend analysis of the application of robots in educational contents: Review of theses and dissertation from the national digital library database in Taiwan*. Paper presented at Global Chinese Conference on Computers in Education (GCCCE), Pecking University, China. (in Chinese)
- Yang, S.-S., Chang, W.-L., Liu, E. Z. F., Liou, P.-Y., Chang, C.-Y., & Chiou, S.-Y.** (2013, May). *Effects of the pre-education training on developing teachers' capacities to teach online: A case study of Online Tutoring for Learning after School*. Paper presented at Global Chinese Conference on Computers in Education (GCCCE), Pecking University, China. (in Chinese)
- Liu, E. Z. F., Liou, P.-Y., Yang, S.-S., Chang, W.-L., Chang, C.-Y., & Chiou, S.-Y.** (2013, May). *Examination of the differences between secondary students' attitude for learning mathematics in online tutoring environments and in actual classrooms*. Paper presented at Global Chinese Conference on Computers in Education (GCCCE), Pecking University, China. (in Chinese)
- Liou, P.-Y., & Hung, Y.-C.** (2013, April). *Examining the big-fish-little-pond effect on student self-concept toward science: TIMSS Taiwan sample*. Paper presented at International Symposium on Education and Psychology, Kitakyushu, Japan.
- Kuo, P.-J., & Liou, P.-Y.** (2013, April). *The development of scales to measure students' learning attitudes toward technology*. Paper presented at International Symposium on Education and Psychology, Kitakyushu, Japan.
- Huang, Y.-Y., Liu, E. Z. F., Liou, P.-Y., & Lin, Y.-H.** (2012, December). *Development of a questionnaire to measure e-tutors' service – a perspective from a counseling center*. Paper presented at the 8th International Conference on Digital Content, National University of Tainan, Tainan, Taiwan. (in Chinese)
- Huang, C.-W., Liu, E. Z. F., Liou, P.-Y., Chang, C.-Y., & Chiou, S.-Y.** (2012, December). *A case study of an English vocabulary strategy for distance education*. Paper presented at the 8th International Conference on Digital Content, National University of Tainan, Taiwan. (in Chinese)
- Hung, Y.-C., & Liou, P.-Y.** (2012, December). *Examining the relationship between student academic achievement and self-concept in the I/E, BFLPE, and combined models—Evidence from TIMSS Taiwanese data*. Poster presented at the annual international conference of the Association of Science Education Taiwan (ASET), Taipei, Taiwan.
- Kuo, P.-J., & Liou, P.-Y.** (2012, December). *Examining the relationships between learning attitude toward technology and epistemological beliefs of high school students in Taiwan*. Poster presented at the annual international conference of the Association of Science Education Taiwan (ASET), Taipei, Taiwan.
- Hung, Y.-C., & Liou, P.-Y.** (2012, October). *Student-oriented vs. teacher-oriented pedagogy and student*

science achievement—Evidence from TIMSS 2007 Taiwanese data. Paper presented at the 4th Asian Conference on Education, Osaka, Japan.

Kuo, P.-J., & **Liou, P.-Y.** (2012, October). *Investigation of factors related to high school students' learning attitude toward technology in Taiwan - A pilot study.* Poster presented at the 4th Asian Conference on Education, Osaka, Japan.

Liou, P.-Y., Kuo, P.-J., Chen, S.-H., Hung, Y.-C., & Liu, T.-C. (2012, August). *The development of a questionnaire to measure students' concepts about the nature of technology: A pilot study.* Paper presented at the 19th International Conference on Learning, London, UK.

Huang, Y.-Y., Liu, E. Z. F., & **Liou, P.-Y.** (2012, April). *The survey study of learning motivation and strategies in robotics for Taiwan adolescent students in the WRO competition.* Paper presented at International Science and Technology Conference (ISTEC), Dubai, UAE.

Liou, P.-Y. (2012, April). *Revisiting the relationship between student achievement and self-concept toward learning mathematics in TIMSS 2007.* Poster presented at the annual meeting of the American Educational Research Association (AERA), Vancouver, Canada.

Liou, P.-Y. (2011, June). *An investigation of the relationship between reading attitude and achievement within and between countries using PISA 2009.* Poster presented at the International Conference on Reading Instruction, Taipei, Taiwan.

Liou, P.-Y., & Lawrenz, F. (2010, May). *Variables affecting perceived impact of loan forgiveness policies on encouraging teaching in high need areas.* Poster presented at the annual meeting of the American Education Research Association (AERA), Denver, Colorado.

Liou, P.-Y. (2009, April). *A model comparison for count data with a positively skewed distribution with an application to the number of university mathematics courses completed.* Paper presented at the annual meeting of the American Education Research Association (AERA), San Diego, California.

Liou, P.-Y., Lawrenz, F., Madsen, C., Braam, M., & Medhanie, A. (2009, April). *Using factor analysis and hierarchical linear modeling to analyze STEM majors' perception to commit teaching in high needs schools survey.* Paper presented at the annual meeting of the American Education Research Association (AERA), San Diego, California.

Kirchhoff, A., **Liou, P.-Y.**, Lawrenz, F., & Madsen, C. (2009, April). *Perceived effects of scholarships on STEM majors' commitment to teaching in high needs schools.* Paper presented at the annual meeting of the American Education Research Association (AERA), San Diego, California.

Liou, P.-Y., & Liu, X. (2009, April). *Evaluating cross-lingual equating in performance assessment with an application of DIAL-4.* Poster presented at the annual meeting of the National Council on Measurement in Education (NCME) Graduate Student Poster Session, San Diego, California.

Davenport, E. C., & **Liou, P.-Y.** (2009, April). *Internal consistency: A concept whose time has come.* Paper presented at the annual meeting of the National Council on Measurement in Education (NCME), San Diego, California.

Liou, P.-Y., & Bielinski, J. (2009, February). *Item parameter recovery of the WINSTEPS program using concurrent estimation in the common-item nonequivalent group design.* Poster presented at the Educational Psychology Graduate Student Research Days, Minneapolis, MN.

Liou, P.-Y., Kirchhoff, A., Lawrenz, F., & Madsen, C. (2009, January). *The effects of the scholarships to recruit STEM majors to teach in high need schools.* Presentation at the annual meeting of the Association for Science Teacher Education (ASTE), Hartford, Connecticut.

Liou, P.-Y., Desjardins, C., & Lawrenz, F. (2009, January). *Cluster analysis on perceived effects of scholarships on STEM majors' commitment to becoming teachers versus teaching in high needs schools.*

Paper presented at the Hawaii International Education Conference, Honolulu, Hawaii.

- Chang, C.-L., & **Liou, P.-Y.** (2009, January). *Principles for improving map design elements of senior high school regional geography textbooks in Taiwan*. Poster presented at the Hawaii International Education Conference, Honolulu, Hawaii.
- Lawrenz, F., **Liou, P.-Y.**, Madsen, C., Desjardins, C., & Kirchhoff, A. (2008, June). *Interaction with and reflection on the Noyce Program evaluation data*. Presentation at Robert Noyce Scholarship Program annual PI meeting, Washington, DC. Invited Speaker.
- Lawrenz, F., **Liou, P.-Y.**, Madsen, C., Desjardins, C., & Kirchhoff, A. (2008, June). *Data from the Noyce Scholarship Evaluation*. Presentation at Robert Noyce Scholarship Program annual PI meeting, Washington, DC. Invited Speaker.
- Lawrenz, F., Fleming, M., **Liou, P.-Y.**, Madsen, C., & Hofstad-Parkhill, K. (2007, December). *Noyce Program Evaluation Conference*. Presentation at Robert Noyce Scholarship Program PI meeting, Phone Conference.
- Lawrenz, F., Bullitt Bequette, M., **Liou, P.-Y.**, Sande, M., & Kirchhoff, A. (2007, June). *Noyce Scholarship Program Evaluation*. Presentation at Robert Noyce Scholarship Program annual PI meeting, Washington, DC.
- Bullitt Bequette, M., Lawrenz, F., Wassenberg, D., Appleton, J., **Liou, P.-Y.**, & Wanjugi, C. (2007, April). *Preliminary analyses of a nationwide STEM teacher recruitment and retention Program*. Poster presented at the annual international conference of the National Association of Research in Science Teaching (NARST), New Orleans, LA.

RESEARCH REPORTS AND OTHER PUBLICATIONS

- Liou, P.-Y.** (2019). *Differential relations of instructional practices to students' motivations and science achievement in Taiwan: Evidence from PISA 2015*. Research report (No: 107-2511-S-008-012-) to Ministry of Science and Technology, Taiwan.
- Liou, P.-Y.** (2018). *Motivational beliefs in science learning: Their relationships with non-cognitive, cognitive, and environmental factors in PISA 2015*. Research report (No: 106-2511-S-008-011-) to Ministry of Science and Technology, Taiwan.
- Liou, P.-Y.** (2017). *Investigations of students' motivational beliefs in learning science and their achievement in Taiwan, East Asian countries, and other countries: Results from TIMSS 2011*. Research report (No: 104-2628-S-008-001-MY2) to Ministry of Science and Technology, Taiwan.
- Liou, P.-Y.**, & Lin, J. J. H. (2017). *NCU students' academic performance and multiple college entrance channels: A longitudinal analysis*. Research report (No: 105G701-1-1HD10603) to National Central University, Taoyuan, Taiwan.
- Liou, P.-Y.** (2016). *Gender differences in item formats, content domains, and cognitive domains: Results from TIMSS 2011*. Research report (No: 104-2629-S-008-001-) to National Science Council, Taiwan.
- Liou, P.-Y.** (2016). *An investigation of relationships between NCU undergraduates' demographic characteristics and academic performance*. Research report (No: 105G804-3) to National Central University, Taoyuan, Taiwan.
- Liou, P.-Y.** (2015). *Profiles of adolescents' motivational beliefs of science in 26 countries: Results from TIMSS 2011*. Research report (No: 104-2-3-24-06) to Academia Sinica, Taipei, Taiwan.
- Liou, P.-Y.** (2015). *Investigations of students' self-concepts of learning science, mathematics and reading and their relationships with achievement in East Asia and other countries: Evidence from TIMSS and PIRLS*

2011. Research report (No: 103-2511-S-008-013-) to National Science Council, Taiwan.

Liou, P.-Y. (2014). *The role of item formats on gender differences in TIMSS 2011 Taiwanese student science data*. Research report to Research Institute for the Humanities and Social Sciences, Ministry of Science and Technology, Taiwan.

Liou, P.-Y. (2014). *Relationships among student perceived instructional practices, learning motivation and science achievement in Taiwan: Results from TIMSS data*. Research report (No: 102-2511-S-008-021-) to National Science Council, Taiwan.

Liou, P.-Y. (2014). *Statistical techniques utilized in analyzing PISA and TIMSS databases in science education: A methodological review*. Research report (No: 102-2410-H-008-060-) to National Science Council, Taiwan.

Liou, P.-Y. (2013). *Examining measurement properties of student attitudinal factors and items related to learning mathematics and science in Taiwan and other East Asian countries in TIMSS 2007*. Research report (No: 101-2410-H-008-049-) to National Science Council, Taiwan.

Liou, P.-Y. (2012). *Revisiting the paradoxical relationship between student science achievement and self-concept toward learning science in international large-scale data from the perspective of quantitative methods*. Research report (No: 100-2511-S-008-021-) to National Science Council, Taiwan.

Lawrenz, P., Bowe, A., Braam, M., Kirchhoff, A., & **Liou, P.-Y.** (2010). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Evaluation highlights*. University of Minnesota, Minneapolis.

Liou, P.-Y., & Lawrenz, P. (2009). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Final report section four: The influence of scholar and program level variables on scholar perceptions of the effect of the Noyce Funding*. University of Minnesota, Minneapolis.

Bowe, A., **Liou, P.-Y.**, & Lawrenz, P. (2009). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Final report section five: Combined analysis of the Robert Noyce Teacher Scholarship Program using ORC Macro and UMN Evaluation Data*. University of Minnesota, Minneapolis.

Lawrenz, P., Bowe, A., Braam, M., Kirchhoff, A., **Liou, P.-Y.**, & Madsen, C. (2009). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Final summary report*. University of Minnesota, Minneapolis.

Liou, P.-Y. (2008). *A model comparison for count data with a positively skewed distribution with an application to the number of university mathematics courses completed* (Unpublished master's thesis). University of Minnesota, Minneapolis.

Liou, P.-Y., & Lawrenz, P. (2008). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Final report section two: Factor analysis of Robert Noyce Scholarship Program evaluation questionnaire*. University of Minnesota, Minneapolis.

Lawrenz, P., Appleton, J., Bullitt Bequette, M., Desjardins, C., **Liou, P.-Y.**, Madsen, C., & Ooms, A. (2008). *University of Minnesota Evaluation of the Robert Noyce Teacher Scholarship Program, Final report section one: Planning and survey data Noyce Program evaluation*. University of Minnesota, Minneapolis.

RESEARCH GRANTS

Principal Investigator (PI):

External funding:

- Gender Differences in Uses and Attitudes of ICT and Their Relationships with Science Literacy and Career Expectation: Evidence from PISA 2015
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2019/08/01~2020/07/31; Declined due to a job change
- Reexamination of Associations between Instructional Practices in Science Classroom and Student Educational Outcomes: Reflections on Levels of Analysis and Data Sources in ILSA
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2019/08/01~2020/07/31; Declined due to a job change
- Differential Relations of Instructional Practices to Students' Motivations and Science Achievement in Taiwan: Evidence from PISA 2015
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2018/08/01~2019/07/31
- Motivational Beliefs in Science Learning: Their Relationships with Non-cognitive, cognitive, and Environmental Factors in PISA 2015
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2017/08/01~2018/07/31
- Investigations of Students' Motivational Beliefs in Learning Science and Their Achievement in Taiwan, East Asian Countries and Other Countries: Results from TIMSS 2011
*Outstanding Young Scholar Research Project Award
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2015/08/01~2017/07/31
- Gender Differences in Item Formats, Content Domains, and Cognitive Domains: Results from TIMSS 2011
Funding agent: National Science Council, Taiwan; Funding Period: 2015/08/01~2016/07/31
- Profiles of Adolescents' Motivational Beliefs of Science in 26 Countries: Results from TIMSS 2011 Data
Funding agent: Academia Sinica, Taiwan; Funding Period: 2015/07/01~2015/09/18
- Investigations of Students' Self-concepts of Learning Science, Mathematics and Reading and Their Relationships with Achievement in East Asia and Other Countries: Evidence from TIMSS and PIRLS 2011
Funding agent: Ministry of Science and Technology, Taiwan; Funding Period: 2014/08/01~2015/07/31
- The Role of Item Formats on Gender Differences in TIMSS 2011 Taiwanese Student Science Data
Funding agent: Research Institute for the Humanities and Social Sciences, Ministry of Science and Technology;
Fund Period: 2014/06/01~2014/09/30
- Relationships among Student Perceived Instructional Practices, Learning Motivation and Science Achievement in Taiwan: Results from the TIMSS Data
Funding agent: National Science Council, Taiwan; Funding Period: 2013/10/01~2014/09/30
- Statistical Techniques Utilized in Analyzing PISA and TIMSS Databases in Science Education: A Methodological Review
Funding agent: National Science Council, Taiwan; Funding Period: 2013/08/01~2014/07/31
- Examining Measurement Properties of Student Attitudinal Factors and Items Related to Learning Mathematics and Science in Taiwan and Other East Asian Countries in TIMSS 2007
Funding agent: National Science Council, Taiwan; Funding Period: 2012/08/01~2013/07/31
- Revisiting the Paradoxical Relationship between Student Science Achievement and Self-concept toward Learning Science in International Large-scale Assessment Data from the Perspective of Quantitative Methods
Funding agent: National Science Council, Taiwan; Funding Period: 2011/12/01~2012/11/30

Internal funding:

- Teacher-perceived Science Inquiry-based Instructional Practice on Student Achievement and Motivational Beliefs in Classroom Context
Funding agent: College of Education, Korea University, Korea; Funding Period: 2023/03/01~2024/02/28
- Systematic Review of Empirical Studies on International Large-scale Assessments of Civic and Citizenship Education
Funding agent: College of Education, Korea University, Korea; Funding Period: 2022/03/01~2023/02/28
- Developmental Trajectories of Adolescents' Task Values by Gender and Domains: A Latent Growth Curve Modeling Approach
Funding agent: Korea University, Korea; Funding Period: 2022/03/01~2022/08/31
- Longitudinal Relations among School Burnout, Compulsive Internet Use, and Academic Decrement
Funding agent: Korea University, Korea; Funding Period: 2021/11/29~2022/02/28
- Reexamination of Associations between Instructional Practices in Science Classroom and Student Educational Outcomes: Reflections on Levels of Analysis and Data Sources in ILSA
Funding agent: College of Education, Korea University, Korea; Funding Period: 2020/03/01~2021/02/28
- Measurement Invariance of Students' Science Motivational Beliefs Across Grade Level and Gender: Utilization of the Trends in International Mathematics and Science Study Data
Funding agent: College of Education, Korea University, Korea; Funding Period: 2020/03/01~2021/02/28
- NCU Students' Academic Performance and Multiple College Entrance Channels: a Longitudinal Analysis
*Institutional Research
Funding agent: National Central University, Taiwan; Funding Period: 2016/12/01~2017/07/31
- An Investigation of Relationships between NCU Undergraduates' Demographic Characteristics and Academic Performance
*Institutional Research
Funding agent: National Central University, Taiwan; Funding Period: 2016/01/01~2016/06/30
- Examining Measurement Properties of Attitudinal Factors and Items Related to Learning in Taiwan from TIMSS 2007
Funding agent: National Central University, Taiwan; Funding Period: 2012/01/01~2012/12/31

Co-PI:

- Distant After-School Tutoring for Disadvantaged Areas: Exploration and Evaluation of the Relationship among Instructional Strategies, Characteristics of Instructors and Students, and Learning Environments
PI: Liu, Eric Zhi-Feng
Funding agent: National Science Council, Taiwan; Funding Period: 2013/08/01~2016/07/31
- High Scope Sole Integrated Project (NCU) - Emerging Technologies Curriculum Development and Assessment Project (1/3) (2/3) (3/3)
PI: Lii, Kwang-Hwa
Funding agent: National Science Council, Taiwan; Funding Period: 2011/11/01~2014/07/31

COURSES OFFERED

Korea University

- ANOVA and Regression (Graduate level)
- Multilevel Modeling (Graduate level)

- Scale Development (Graduate level)
- Comparative and International Education (Undergraduate level)
- Program Evaluation (Undergraduate level)
- Asian Educational Leader (Graduate level)
 - Comparative Education: Issues from International Large-scale Assessments
 - Utilization of International Large-scale Assessment Data for Education Research (plan to be offered during the summer of 2025)

National Central University

- Seminar in Application of Large-scale Databases and Survey Data Analysis (Graduate level)
- The Study of Educational Survey (Graduate level)
- Research Methods (I) – Statistics in Education and Psychology (Master program level)
- Advanced Statistics (Ph.D. program level)
- Learning & Evaluation (Undergraduate level)
- Educational Psychology (Undergraduate level)
- Career Planning (Undergraduate level)
- Comparative Education (Undergraduate level)
- Methods for Educational Research (Undergraduate level)

PROFESSIONAL SERVICE

Ad Hoc Review for Journal Article

2023.9	Addiction Research & Theory
2021.11	Applied Cognitive Psychology
2018.3~	Asia Pacific Journal of Education
2021.6~	Assessment in Education: Principles, Policy & Practice
2023.10	British Educational Research Journal
2023.8	British Journal of Educational Psychology
2015.10	Compare: A Journal of Comparative and International Education
2014.5~	Computers & Education
2013.9~	Educational Psychology
2021.9	Educational Measurement: Issues and Practice
2022.2~	Educational Review
2016.1~	Educational Sciences: Theory & Practice
2020.3~	Educational Studies
2023.11	European Journal of Education
2023.8	Ethics & Behavior
2016.10~	Eurasia Journal of Mathematics, Science and Technology Education
2024.2	European Journal of Personality
2020.1~	Frontiers in Psychology
2022.7	High Ability Studies
2021.5~	International Journal of Comparative Education and Development
2021.6	International Journal of Educational Development
2023.12	International Journal of Educational Research
2019.1~	International Journal of Psychology

*One of the top reviewers in 2019

2022.4 International Journal of Testing

2011.7~ International Journal of Science Education
*Reviewer of Excellence in 2020

2013.7~ International Journal of Science and Mathematics Education
*Outstanding Reviewer Award in 2018

2017.2~ Journal of Adolescence
*Outstanding Reviewer Award in 2017

2024.2 Journal of Adolescent Research

2018.8 Journal of Computer Assisted Learning

2020.12 Journal of Mathematics Teacher Education

2023.10 Journal of Psychoeducational Assessment

2022.9 Journal of the Asia Pacific Economy

2020.7~ Journal of Research in Science Teaching

2024.2 Journal of Youth and Adolescence

2021.1 Korea Observer

2022.5 Language Assessment Quarterly

2015.7~ Learning and Individual Differences

2022.10 Nordic Psychology

2021.7~ Psychology in the Schools

2017.1~ Research in Science & Technological Education

2017.11~ Scandinavian Journal of Educational Research

2011.9~ Science Education

2023.10 Stress & Health

2019.1~ Studies in Educational Evaluation

2016.7~ Studies in Higher Education

2023.6~ Teachers College Record

2022.9~ The Asia-Pacific Education Researcher

2019.7~ The Journal of Experimental Education

2022.7~ The Journal of Educational Research

2021.8~ Urban Education

2024.2 Youth & Society

2022.10 Educational Assessment

2022.9 Canadian Journal of Science, Mathematics, and Technology Education

2011.8~ Turkish Online Journal of Educational Technology

2015.10 Educational Research and Evaluation

2012.6 Education Research International

2021.11 ECNU Review of Education

2019.6 Higher Education Evaluation and Development

2015.12 Open Review of Educational Research

2018.6~ Bulletin of Educational Psychology

2019.8 Bulletin of Educational Research (in Chinese)

2015.8~ Chinese Journal of Science Education (in Chinese)

2012.11~	Journal of Research in Education Sciences (in Chinese)
2012.6	Journal of Education & Psychology (in Chinese)
2017.6	International Journal on Digital Learning Technology (in Chinese)
2014.4	NTTU Educational Research Journal (in Chinese)
2012.10	Formosan Education and Society (in Chinese)
2014.10	Journal of Educational Research and Development (in Chinese)
2015.8	Journal of Taipei Municipal University of Education: Education (in Chinese)
2017.3	Psychological Testing (in Chinese)
2014.4	SAGE Open article editor

Conference Paper Peer Review

2016	The Hong Kong Association for Educational Communications and Technology (HKAECT) and the Association for Educational Communications and Technology (AECT) 2017 Summer Research Symposium International Program Committee
2014	HKAECT 2014 International Conference Organizing Committee Member
2013	Taiwan E-learning Forum (TWELF)
2012/2013	The Globe Chinese Conference on Computers in Education Workshop
2011	Annual meeting of the International Educational Technology Conference
2013	Annual meeting of the National Association of Research in Science Teaching
2010	Annual meeting of the National Council on Measurement in Education National Meeting
2010/2011/2013	Annual meeting of the American Education Research Association Meeting

CERTIFICATIONS

Certifications for Associate Professor and Assistant Professor. Ministry of Education, Taiwan.

Certifications for History Teacher for senior high school and Social Studies Teacher for junior high school. Ministry of Education, Taiwan.

HONORS/AWARDS

2016/2017/2019	Award for Research Excellence, National Central University
2015~2017	Project for Excellent Junior Research Investigators, Ministry of Science and Technology (MOST)
2015/2016	National Association for Research in Science Teaching (NARST) Annual International Conference International Scholarship
2012~2017	Excellence Award of College of Liberal Arts, National Central University
2014~2016	The China Foundation for the Promotion of Education and Culture International Conference Grants
2010	Selected participant for the International Databases for Research and Policy Seminar sponsored by National Center for Education
2010	Selected participant for Quasi-Experimental Design and Analysis in Education Workshop sponsored by the Institute for Policy Research at Northwestern University, the Institute of Education Sciences, and the U.S. Department of Education

2010 Don Conlan Scholarship from Pardee RAND Graduate School
2010 AERA Division L Travel Stipends for Students and New Scholars
2009 Department of Educational Psychology at the University of Minnesota Travel Stipends for Students
2009 National Summer Data Policy Institute Fellowship from the Association for Institutional Research (AIR)
2008~2009 John P. Yackel/Pearson Graduate Internship from Pearson and the Department of Educational Psychology at the University of Minnesota

(updated Feb 2024)