Ye (Agnes) Luo, PhD, LPC, NCC

1979 N Dixie Avenue	Aluo@tntech.edu
Cookeville, TN 38501	940-205-3929
EDUCATION	
Ph.D. in Counselor Education Texas A&M University-Corpus Christi (CACREP Accredited) Dissertation title: The Development and Initial Validation of a Social Media Dis	2019 stress Scale
M.Ed. in Community Counseling University of Mississippi (CACREP Accredited)	2015
B.S. in Applied Psychology Changzhi Medical College	2012
LICENSURE, CREDENTIALING, AND CERTIFICATION	
Tennessee Licensed Professional Counselor (#6163) Texas Licensed Professional Counselor (#78256) National Certified Counselor Level 1 Certificate of Gottman Method Couples Therapy Certificate of Best Practices for Online Course Design	2022 2020 2015 2018 2018
HONORS AND AWARDS	
Edwin L. Herr Fellowship for Excellence, Chi Sigma Iota Emerging Leader, Association for Assessment and Research in Counseling Doctoral Teaching/Researching Assistantship, Texas A&M University-Corpus Christi Doctoral Graduate Assistantship, Texas A&M University-Corpus Christi Graduate Student Scholarship, Texas A&M University-Corpus Christi Outstanding Doctoral Student, Texas A&M University-Corpus Christi Poster Competition Award, TACES Mid-Winter Conference, Austin, TX Phi Kappa Phi Chapter 328, Texas A&M University-Corpus Christi	2022-2023 2019-2020 i 2016-2017 2017-2019 2016-2018 2018 2017 2018
AREAS OF EXPERTISE	
Instrument Development, Translation, & Validation	

Instrument Development, Translation, & Validation

Systemic Review and Meta-Analysis

Bilingual & Multicultural Counseling

Asian Racial & Cultural Identities

Technology Use in Counseling & Counselor Education

PUBLICATIONS AND PAPERS

Refereed Publications

- Luo, Y., Chen, H., Hecht, L., Fan, S., & Lai, Y. (2023). Experiences of East Asian International Counseling Students during the COVID-19 Pandemic. *Journal of Asia Pacific Counseling*. *13*(1), 15-34. http://doi.org/10.18401/2023.13.1.2

 Effort/role: 35% (conceptualization/development of manuscript & research)
- Luo, Y., Cartwright, A.D., Hecht, L., Morris, H., & Quinn, C. (2022). The counselor education experiences of foreign-born faculty: Teaching multicultural counseling. *Counselor Education and Supervision*. 61(4), 310-321. https://doi.org/10.1002/ceas.12246
 Effort/role: 40% (conceptualization/development of manuscript, research & managing publication process)
- Ermis-Demirtas, H., **Luo, Y.**, & Huang, Y. (2022). The trauma of COVID-19-fueled discrimination: Posttraumatic stress in Asian American adolescents. *Professional School Counseling*. 26(1b), 1-13. https://doi.org/10.1177/2156759X221106814 **Effort/role**: 35% (conceptualization/development of manuscript & research)
- Ermis-Demirtas, H., **Luo**, Y., & Huang, Y. (2022). The impact of COVID-19-associated discrimination on anxiety and depression symptoms in Asian American adolescents. *International Perspectives in Psychology: Research, Practice, Consultation*. *11*, 153-160. https://doi.org/10.1027/2157-3891/a000049 **Effort/role**: 35% (conceptualization/development of manuscript & research)
- Ermis-Demirtas, H., **Luo, Y.**, Wu, J. (2022). Trauma-informed school counseling practices to address COVID-19-fueled discrimination and racial trauma in Asian-American youth: A multitiered system of support. In Powell, A. (Ed.), *Best Practices for Trauma-Informed School Counseling* (pp. 175-203). IGI Global. https://doi.org/10.4018/978-1-7998-9785-9.ch009

Effort/role: 40% (conceptualization/development of manuscript & research)

Luo, Y., Watson, J., & Lenz, A. S. (2021). Development and initial validation of Social Media Identity Distress Scale among emerging adults. *Measurement and Evaluation in Counseling and Development*. *54*, 141-155.

https://doi.org/10.1080/07481756.2020.1827435

Effort/role: 85% (conceptualization/development of manuscript, research, & managing publication process)

- Lenz, A. S., & Luo, Y (2019). Differences between mean effect size estimates for clinician-administered versus self-reported outcomes of PTSD treatment. *Journal of Counseling and Development*. 97(1), 3-14. https://doi.org/10.1002/jcad.12230

 Effort/role: 35% (conceptualization/development of manuscript & research)
- Lenz, A. S., Watson, J. C., Luo, Y., Norris, C., & Nkyi, A. (2017). Cross-cultural validation of four positive psychology assessments for use with a Ghanaian population.

International Advancement of Counselling. 40, 148-161. doi:10.1007/s10447-017-9317-8 **Effort/role**: 20% (conceptualization/development of manuscript & research)

Non-Refereed Publication

Sheperis, D.S. & Luo, Y. (2020). Review of the Jail Screening Assessment Tool. In Carlson, J.F., Geisinger, K.F., & Jonson, J.L. (Eds.). *The 21st edition mental measurements yearbook [electronic version]*. Retrieved from the Burros Institute's Mental Measurements Yearbook online database.

Effort/role: 45% (conceptualization/development of manuscript)

Manuscripts Under Review

Su, Y., & Luo, Y. Systematic Review of Using Mindfulness in Helping Professional Training Programs.

Effort/role: 40% (conceptualization/development of manuscript & research)

Manuscripts in Preparation

Luo, Y. Integrating Social Justice Advocacy into Counseling Ethics.

Effort/role: 100% (conceptualization/development of manuscript & research)

Luo, Y., Zhang, Y., & Watson, J. Development and Evaluation of Chinese Language Version of Inventory of New College Student Adjustment Scale.

Effort/role: 35% (conceptualization/development of research & manuscript)

Watson, J., Luo, Y., Vashisht, K. The Effect of Self Esteem, Mattering, and Relational Health on Life Satisfaction of Ghanaian College Students.

Effort/role: 35% (conceptualization/development of manuscript & corresponding author)

Luo, Y., Liu, W., & Pester, D. *Integrating Social Justice Advocacy into Counseling Ethics Class for Master's Counseling Students*.

Effort/role: 50% (conceptualization/development of manuscript & corresponding author)

Projects In Development

Luo, Y., Stice, B., & Lenz, A. S. Efficacy of Mental-Health-Promoting Mobile Application in Decreasing Mental Health Symptoms.

Current stage: data analysis

GRANTS

- **Luo, Y.** (2022). *Implementation of Social Justice and Advocacy Interventions in a Master's Level Ethics Class: A Single Case Study*. Grant proposal submitted to the Chi Sigma Iota. (**Funded** at \$250.00).
- Watson, J. C., **Luo**, **Y.**, & Zhang, Y. (2021). Development and Evaluation of Chinese Language Version of Inventory of New College Student Adjustment Scale. Grant proposal submitted to the Association for Assessment and Research in Counseling. (**Funded** at \$4988.00).

Luo, Y. (2018). Development and Initial Validation of a Social Media Identity Distress Scale. Grant proposal submitted to the Texas Counseling Association. (**Funded** at \$500.00).

PROFESSIONAL PRESENTATIONS

International

Chandrika Prasanna Kumaran, A., Ratanavivan, W., & Luo, Y. (2022, December). Counseling globally: Information and implications. Webinar presented at NBCC Foundation Building a Global Counseling Community Virtual Conference.

National

- Wiley, J., **Luo, Y.,** Brown, C., & Avila, D.S. (2023, October). Rural clinical supervision: Recommendations for counselor educators and supervisors. Roundtable session accepted to present at Association for Counselor Education and Supervision Conference, Denver, CO.
- Hecht, L., Chen, H., & Luo, Y., (2023, October). Helping east Asian international counseling students thrive while in the graduate programs. Content session accepted to present at Association for Counselor Education and Supervision Conference, Denver, CO.
- Watson, J. C., **Luo, Y.,** Zhang, Y. (2022, September). *Development and evaluation of Chinese language version of inventory of New College Student Adjustment Scale*. Content session presented at Association for Assessment and Research in Counseling Conference, St. Louis, MO.
- Ermis-Demirtas, H., **Luo**, Y., Huang, Y. (2022, September). *COVID-19-associated discrimination, anxiety, and depression in Asian American adolescent.* Poster session presented at Association for Assessment and Research in Counseling Conference, St. Louis, MO.
- **Luo, Y.**, Morris, H., & Sheperis, D.S. (2021, October). *Integrating social justice, advocacy, and personal values into counseling ethics*. Content session presented at Association for Counselor Education and Supervision Conference, Atlanta, GA.
- **Luo, Y.**, & Quinn, C. (2021, October). Foreign-born faculty teaching a multicultural counseling course: Experiences and strategies. Content session presented at Association for Counselor Education and Supervision Conference, Atlanta, GA.
- Luo, Y., & Chen, H. (2021, September). *East Asian international counseling students during the pandemic: Experiences and implications*. Content session presented at Association for Assessment and Research in Counseling Conference, Cincinnati, OH.
- Ermis-Demirtas, H., & Luo, Y. (2021, September). *The Trauma of COVID-19 fueled discrimination: posttraumatic stress in Asian American adolescents.* Content session presented at Association for Assessment and Research in Counseling Conference, Cincinnati, OH.

- Weaver, J. L., Adams, C., Austin, J., Dennis, F., **Luo, Y.**, & Williams, N. (2020, March). *What can AARC do for graduate students and new professionals?* Poster session scheduled at the annual conference for the American Counseling Association, San Diego, California. [Conference Cancelled]
- **Luo, Y.** (2019, October). *Development and initial validation of a Social Media Identity Distress Scale*. Poster session accepted at Association for Counselor Education and Supervision Conference, Seattle, WA.
- Luo, Y., & Pester, D. (2019, September). *Development and initial validation of a Social Media Identity Distress Scale*. Poster session presented at Association for Assessment and Research in Counseling Conference, San Antonio, TX.
- **Luo, Y.,** & Pester, D. (2019, September). *Instrument development for first-timers:*Reflections and suggestions from new developers. Roundtable session presented at Association for Assessment and Research in Counseling Conference, San Antonio, TX.
- Pester, D., & Luo, Y. (2019, September). *The Development and evaluation of the Intersectional Privilege Screening Inventory*. Poster session presented at Association for Assessment and Research in Counseling Conference, San Antonio, TX.
- Adams, C., Austin, J., Dennis, F., **Luo, Y.** (2019, September). *Come one, come all: A gathering space for graduate students and new professionals*. Content session presented at Association for Assessment and Research in Counseling Conference, San Antonio, TX.
- Nelson, K., & Luo, Y. (2019, March). *Investigating childhood sexual abuse and sexual identity development using SEM*. Poster session presented at American Counseling Association Conference, New Orleans, LA.
- Watson, J., Luo, Y., & Nelson, K. (2018, September). *Translation and cross-cultural adaptation of assessments: A primer for counseling researchers*. Content session presented at Association for Assessment and Research in Counseling Conference, Richmond, VA.
- **Luo, Y.**, & Nelson, K. (2017, October). *The use of technology in marriage and family therapy*. Forum session presented at American Association for Marriage and Family Therapy Annual Conference, Atlanta, GA.
- **Luo, Y.,** & Lenz, A. S. (2017, September). *Does it matter who measures treatment success?*A meta-analysis of self-report versus clinician-administered PTSD assessments across 17 randomized trials. Poster session presented at Association for Assessment and Research in Counseling Conference, Phoenix, AZ.
- **Luo, Y.**, & Nelson, K. (2017, February). *The use of technology in marriage and family therapy*. Roundtable session presented at International Association of Marriage and Family Counseling Conference, New Orleans, LA.
- Smith, R. L., Nelson, K., Oyeniyi, O. F., & Luo, Y., (2017, February) *Teaching and conducting research in marriage and family counseling courses*. Roundtable session

presented at International Association of Marriage and Family Counseling Conference, New Orleans, LA.

Regional

- Luo, Y., Pester, D., Rodriguez, A., & Mincey, K. (2018, October). *Addressing equity with counseling students in clinical supervision*. Roundtable session accepted at Southern Association for Counselor Education and Supervision Conference, Myrtle Beach, SC.
- Espinoza, J., Luo, Y., & Nelson, K. (2018, October). Special attention: Helping student parents succeed in counseling programs. Roundtable session accepted at Southern Association for Counselor Education and Supervision Conference, Myrtle Beach, SC.

State

- **Luo, Y.**, Wiley., J., Hermann-Turner, K., & Avila, D.S. (2023, June). Distance counseling: Information, demonstration, and discussion. Content session presented at Tennessee Licensed Professional Counselors Association, Nashville, TN.
- Wiley, J., Luo, Y., Avila, D.S., & Brown, C. (2023, June). Rural clinical supervision: Best practices for a changing professional landscape. Content session presented at Tennessee Licensed Professional Counselors Association, Nashville, TN.
- Cade, R., Ali, A., & Luo, Y. (2023, March). *Publishing in the Journal of Professional Counseling*. Content session accepted at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Georgetown, TX.
- Luo, Y., Pester, D., & Watson, J. (2018, March). *Implementing technology into counselor education: A creative teaching method*. Content session presented at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Austin, TX.
- Pester, D., Luo, Y., & Oliver, M. (2018, March). *Using supervision to develop Multicultural and Social Justice Counseling Competencies in counselors in training.* Content session presented at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Austin, TX.
- **Luo, Y.**, Pester, D., & Nelson, K. (2017, November). *High tech counseling: Information, demonstration, and discussion*. Content session presented at 61st Annual Texas Counseling Association Professional Growth Conference, Galveston, TX.
- **Luo, Y.**, & Pester, D. (2017, March). A review of the association between acculturation level and counseling self-efficacy among international counseling students. Poster session presented at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Austin, TX.
- Pester, D., & Luo, Y. (2017, March). Addressing privilege with counselor trainees: information and tools for counselor educators. Content session presented at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Austin, TX.

Smith, R. L., **Luo, Y.**, Oyeniyi, O. F., Vashisht, K., & Dell'Aquila, J. & Nelson, K. (2017, March). *International voices: Creating healthy communities in our counseling programs*. Content session presented at Texas Association for Counselor Education and Supervision Mid-Winter Conference, Austin, TX.

Local

Luo, Y. (2017, February). *An overview of the theoretical basis and empirical status of Relational-Cultural Theory*. Content session presented at Gulf Coast Counseling Association 3rd Annual Conference, Corpus Christi, TX.

Invited Presentation

Luo, Y. (2021, October). *Instrument development for first-timers: Reflections and suggestions*. Zoom presentation in Advanced Quantitative Research Course, Tennessee Tech University, Cookeville, TN.

PUBLICITY/INTERVIEWS/MEDIA APPEARANCES

Wanted: Bilingual and Bicultural Counselors, Interviewed by L. Philips. *Counseling Today*, American Counseling Association, February 2021. [Magazine Article]

https://ct.counseling.org/2021/02/wanted-bilingual-and-bicultural-counselors/?fbclid=IwAR3aNon9FsWnjCPegNo57oF52bYxReA0OzABYZvF6DzqUVNF0Rav2KqMOuo

Why Taking a Break from Social Media is Good for Your Mental Health, Interviewed by *KRIS Channel 6*. April 2019. [News Article and Video]

https://www.kristv.com/news/2019/04/24/why-taking-a-break-from-social-media-is-good-for-your-mental-health/

ACADEMIC EXPERIENCE

TEACHING

Tennessee Tech University (Assistant Professor, Tenure-track)

PSY 6310 Educational Statistics

Summer 2023

PSY 7310 Advanced Educational Statistics

Spring 2023

COUN 7700: Advanced Multicultural Counseling: Leadership and Advocacy

Spring 2023

COUN 6800: Practicum

Spring 2023

COUN 6362: Counseling Theories and Techniques

Fall 2022

COUN 7400: Advanced Counseling Theories and Practicum

Fall 2022

University of North Texas (Assistant Professor, Tenure-track)

COUN 5480: Diagnosis and Treatment Planning in Counseling

Summer 2021, Spring 2021

COUN 5680: Essential Skills in Counseling

Fall 2021, Spring 2021, Fall 2020

COUN 5290: Ethical, Legal, and Professional Issues in CMHC

Spring 2022, Fall 2021, Fall 2020, Spring 2020, Fall 2019

COUN 5790: Counseling Culturally Diverse Clients

Fall 2019

COUN 5300: Systems, Leadership, and Program Development in Clinical Mental

Health Counseling

Spring 2022

Texas A&M University-Corpus Christi (Teaching Assistant, Co-taught)

CNEP 5304: Introduction to Counseling.

Spring 2017

CNEP 5308: Counseling Theories

Fall 2016

CNEP 5384: The Counseling Process

Fall 2018

CNEP 5375: Clinical Mental Health Counseling Strategies

Fall 2016

CNEP 5354: Developmental Issues in Personality and Behavior

Spring 2017

CNEP 6370: Doctoral Quantitative Statistics

Spring 2018

CNEP 6360: Doctoral Research Design and Statistics

Fall 2017

University of Mississippi (Instructor, Under Supervision)

EDHE 202: Fundamentals of Active Learning

Spring 2015

SUPERVISION

University of North Texas (Assistant Professor, Tenure-track)

Supervised a doctoral student providing counseling in Chinese via tele-mental health.

Facilitated professional growth and multicultural competency of the student using the supervision style grounded in the cultural relational theory model.

Texas A&M University-Corpus Christi

CNEP 5397: Practicum (Doctoral Student Supervisor)

Supervised master's students completing their practicum in counseling. Facilitated professional growth of students using open, flexible, and collaborative style within the framework of the solution-focused model.

Spring, Summer, and Fall 2017; Fall 2018

CNEP 5698: Internship (Doctoral Student Supervisor)

Dr. Yvonne Castillo (site supervisor)

Supervised master's students completing their internship in the Counseling and Training Clinic. Facilitated professional growth of students using open, flexible, and collaborative style within the framework of solution-focused model.

Summer 2017

DISSERTATION COMMITTEES

Tennessee Tech University

Co-Chair

Avila, S. Dessie, ABD, Counseling and Supervisor, Spring 2023-Spring 2024 Avila, S.D. (in progress). *Title not yet established*.

Committee Member

Schlatter, T, ABD, Counseling and Supervision, Spring 2023-Spring 2024

Schlatter, T. (in progress). Title not yet established.

Karlosky, S, Graduated, Counseling and Supervision, Fall 2022-Spring 2023

Karlosky, S. (2023). Early childhood attachment, impulsivity, and substance use: The role of adverse and benevolent childhood experiences.

Philips, B, Graduated, Counseling and Supervision, Fall 2022-Spring 2023

Philips, B. (2023). Examining the relationship among ecowellness, childhood experiences, depression, anxiety, and demographics.

ACADEMIC ADMINISTRATION

Texas A&M University-Corpus Christi

College of Graduate Studies

Graduate assistant working in the Graduate Resource and Opportunity Workspace (GROW). Major job duties include taking a leading position in program development, events coordination (e.g., Graduate Appreciation Week, Outstanding Award Nominations, Graduate Awards Luncheon, Graduate Council meetings), budgeting, and supervising

undergraduate student workers in an effort of cultivating a culture of graduate education on campus.

CLINICAL EXPERIENCE

Counselor (pro bono)

C2 Counseling, Corpus Christi, TX

2017-present

- Provide in-person and distance counseling sessions for individuals including children, adolescents, and adults with emotional and behavioral issues in a private practice setting with an emphasis on personal development
- Conduct intake interviews and composed treatment plans tailored to the needs of clients
- Complete case notes for continuity of care in a timely manner

Adult Mental Health Clinician (paid)

Gulf Coast Mental Health Center, Gulfport, MS

2015-2016

- Provided individual therapy for adults struggling with moderate and persistent mental disorders in an outpatient mental health setting within a CBT framework
- Completed initial assessments and establish treatment plans with clients and caregivers
- Assisted to provide medication monitoring for long-term mental disordered clients
- Maintained medical records for a caseload of two hundred clients according to state, federal, and center regulations in a timely manner

Therapist-Graduate Intern

Child Advocacy and Play Therapy Institute, *University, MS*

2014-2015

- Provided individual sessions for troubled children and adolescents using Child-Centered Play Therapy (CCPT) approach and Expressive Art techniques
- Conducted Child-Parent Relationship Therapy (CPRT) sessions with parents
- Administered, scored, and analyzed Child Behavior Checklist (CBCL) for clients
- Maintained session summary and progress notes using the BASK model for intensive review and continuity of care

PROFESSIONAL SERVICE

Editorial Review Board

Associate Editor

Journal of Professional Counseling: Practice, Theory, and Research

2021-present

Reviewer

Journal of Counseling and Development

2019-present

Reviewer

Association for Counselor Education and Supervision Teaching Practice Brief 2022-present

Reviewer	
Journal of Technology in Counselor Education and Supervision	2020-present
Editorial Assistant	
Journal of Professional Counseling: Practice, Theory, and Research	2017-2019
Program Proposal Reviewer	
Proposal Reviewer	
Association for Assessment and Research in Counseling Conference	2023, 2021
Proposal Reviewer & Discussant Counselor Education Distance Learning Conference	2020
Proposal Reviewer	
Association for Counselor Education and Supervision Conference	2019
Proposal Reviewer	
Southern Association for Counselor Education and Supervision Conference	2018
Counseling Association Committees	
Chair	
Association for Assessment and Research in Counseling Website	2020-2022
Co-Chair	2010 2022
Association for Assessment and Research in Counseling Social Media Committee	2019-2023
Member	2022
Association for Assessment and Research in Counseling Conference Committee	2023
Member Texas Association for Counselor Education and Supervision Awards Committee	2020-2022
Member	2020-2022
Association for Assessment and Research in Counseling Awards Committee	2019-2021
Member	_017 _0_1
Association for Multicultural Counseling and Development Social Media Committee	2019-2020
Member	
Texas Counseling Association Research Committee	2018-2019
Vice-President	
Chi Sigma Iota - Chapter Epsilon Mu	2014-2015
Other Professional Service Activities	
Emerging Leader Program Mentor	
Association for Assessment and Research in Counseling 2021-2022	2, 2022-current
Volunteer	
Central China Normal University COVID-19 Mental Health Crisis Hotline	2020

Events Coordinator College of Graduate Studies, Texas A&M University-Corpus Christi	2017-2019
Conference Volunteer	
American Counseling Association	2015, 2019
FACULTY SERVICE	
Tennessee Tech University	
Co-Chair	
Graduate Assistant Search Committee	2023
Co-Faculty Advisor	
Chi Sigma Iota – Tau Tau Upsilon	2022-present
Member	
School Counseling Assistant Professor Search Committee	2022
University of North Texas	
Chair	
CACREP Liaison and License Coordinator	2020-2022
Co-Faculty Advisor	
Chi Sigma Iota – Rho Kappa	2020-2022
Chair	
Internal Relations Committee	2020-2022
Member	
Master's Admission Committee	2021-2022
Member	
Master's Degree Advisement - CMHC Committee	2020-2022
Member	
Assessment and Evaluation Committee	2019-2020
ADVANCED TRAINING	
D2L Level 1 Training	
Center for Innovation in Teaching & Learning, TTU	2022
Comprehensive Meta-Analysis	
Biostat, Inc.	2021
Anti-Bias & Cultural Awareness	
Faculty Success, UNT	2020-2022
Telehealth Certification Training for Mental Health Professionals	
Pesi, Inc.	2020

Grantsmanship Workshop

Research & Innovation, UNT	2020
Faculty First Flight Program	
Center for Learning, Experimentation, Application, and Research, UNT	2019-2020

Level 1 Certificate of Gottman Method Couples Therapy

Gottman Institute 2018

Best Practices in Online Course Design, Professional Certification

Distance Education and Learning Technologies, TAMUCC 2018

PROFESSIONAL AFFILIATIONS (active)

Chi Siga Iota	2014-present
American Counseling Association	2014-present
Association for Assessment and Research in Counseling	2017-present
Association for Counselor Education and Supervision	2018-present
Southern Association for Counselor Education and Supervision	2018-present
Texas Counseling Association	2016-present
Texas Association for Counselor Education and Supervision	2016-present

PROFESSIONAL SKILLS

Technology

Microsoft Office Suite

Statistical Package for the Social Sciences (SPSS)

Comprehensive Meta-Analysis (CMA)

Jeffreys's Amazing Statistics Program (JASP)

D2L Learning Manage System

Canvas Learning Managing System

Blackboard Learning Managing System

Writing

Proficient APA style writer

Language

Chinese Mandarin (native proficiency)