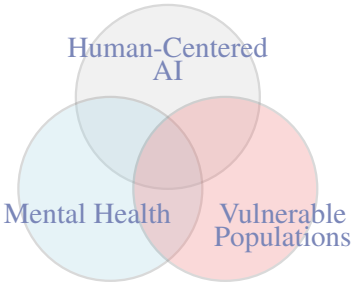
Jiaying "Lizzy" Liu

RESEARCH STATEMENT

Artificial-intelligence systems and **multimodal media**—such as social video platforms and AI companions—now mediate emotional support, vulnerability disclosure, and connection within healthcare. These technologies do not simply expand access; they reconfigure visibility, credibility, and how intimacy is produced. Without careful design and governance, these systems can misread distress, amplify social bias and stigmas, and prioritize engagement over care, creating new forms of surveillance and oppression that undermine trust and harm vulnerable populations.

In pursuit of ***human flourishing*** and ***social justice***, I aim to build **human-centered AI** that fosters *individual identity* and strengthens *human connection*. My research examines how individuals seek health care and support across digital and everyday contexts, uncovering the *societal* and *ethical* implications of multimodal and AI-mediated communication. It further advances the design of *equitable*, *care*-centered AI systems that enhance—rather than replace—human relationships. As an interdisciplinary researcher, I draw on psychology, media studies, and science and technology studies. My previous work made three major contributions to Health Behavior, Information Science, Human-Computer Interaction, and Computational Social Science:

- **Revealing new forms of disparities of sensitive disclosure on video-based social media** [7], through LLM-assisted computational analysis of videos [8, 15] informed by self-presentation theory and semiotics [11, 10].
- **Identifying *care encounters* as moments of change in real-world health behaviors**, through in-depth interviews with marginalized young adults about mental health help-seeking [16, 9].
- **Informing human-centered AI for mental well-being and emotional support**, by developing ethical design guidelines for emotion AI that preserve human care [13] and strengthen peer support [4].



My research has resulted in 12 first-author publications in my core area of HCI and health. I have coauthored 5 additional publications in collaboration with scholars across computer science, communication, and psychology. I have received 4 research awards, including two Best Paper Awards from *ASIS&T* and two Honorable Mentions from *iConference* and *IEEE International Conference on Health Informatics*. I won dissertation funding from UT Austin Graduate School ($52,000) and Berkeley Center for New Media ($2,500), and contributed to a funding application to the Institute of Museum and Library Services led by my doctoral advisor ($150,000).

My academic training has equipped me with a robust methodological foundation to bridge technical and social perspectives and collaborate across disciplinary boundaries. I utilize qualitative methods, including interviews [9], grounded theory [16], and content analysis [11, 19]; quantitative approaches such as user questionnaires [14], natural language processing, and statistical modeling [7]; and participatory design methods [18, 6] informed by design justice.

Unpacking Disparity in Video-Mediated Health Communication Using LLMs

My work reveals how **video affordances and affective needs** are entangled in shaping health communication in increasingly multimodal environments. Extending health communication research beyond text-based platforms, I examine how video mediates consumption, production, and algorithmic visibility (Figure 1). Interviews with 18 participants show that health video engagement is driven not only by informational needs but also by affective ones—seeking comfort, resonance, and emotional stimulation [10]. On the creator's side, my content analysis of 200 YouTube vlogs on schizophrenia demonstrates how creators leverage video affordances to

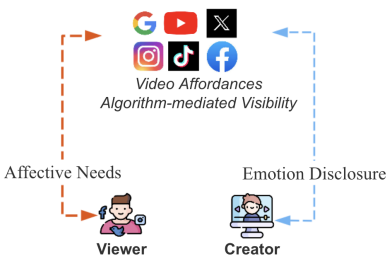


Figure 1. Video viewers and creators, motivated by emotional factors, strategically navigate across multiple online platforms and algorithmic systems.

express stigmatized emotions such as sadness and fear. Together, these findings show how affective needs motivate practices of watching and making videos, shape perceptions of credibility and persuasion [12], and ultimately drive the affective logics of the video ecosystem [14].

However, **new forms of disparity** in attention and expression emerge in video-mediated communication, yet research has largely focused on linguistic features [5], leaving the role of **visual language** in algorithmic platforms underexplored. Drawing on Goffman's self-presentation theory and semiotic analysis, my content analysis of videos identifies strategies such as *visual staging* and *visual grammar*. Building on this, I developed a novel **LLM-assisted workflow for automating visual feature analysis** in videos [8, 15, 1]. By extracting features such as aesthetic style and color palette, I examine engagement disparities in mental health videos and uncover a "visual disparity," where particular aesthetic choices receive more views, likes, and comment support [7]. This research contributes a theory-informed computational framework for analyzing visual language in video-mediated health communication and enables future algorithm auditing on video-sharing platforms, exposing systematic inequities in how health narratives are circulated and accessed in digital information environments.

Examining Real-World Health Behavior Changes of Vulnerable Community

Beyond online platforms, mental health care-seeking unfolds across diverse formats and contexts. Informed by social-ecological theory, I conceptualize this as a *sociotechnical ecosystem of care* to systematically analyze individuals' **real-life care-seeking pathways**. Applying this framework to 18 in-depth interviews, I identify how some resources are perceived as unreachable, unrelatable, or untrustworthy by marginalized young adults [9]. For example, identity-based factors, such as therapists' cultural backgrounds, shape perceptions of trust and safety, thereby influencing care-seeking decisions. These findings underscore the importance of designing health services that address identity-specific needs.

More importantly, understanding behavior change is essential for health intervention. My work identifies **"moments of change"** in the mental health care-seeking journey using interviews with visual elicitation techniques. I illustrate the mechanisms of ***care encounters***—serendipitous information interactions that occur when individuals are not actively seeking support [16]. These encounters act as turning points, catalyzing shifts from passive to proactive care-seeking (Figure 2). Conceptually, this work extends traditional motivation-based models of health behavior by highlighting the infrastructural and serendipitous processes that shape access to mental health support. Practically, by analyzing both successful encounters and "aspiration breakdowns," I generate insights for designing and embedding technology-mediated interventions within individuals' life contexts.

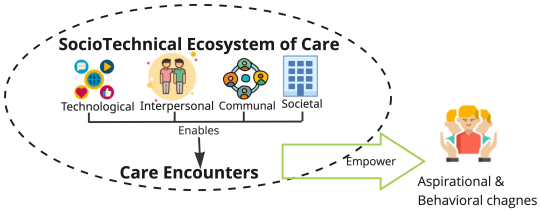


Figure 2. Sociotechnical system of care that facilitates care encounters, leading to aspirational and behavioral change from non-care-seeking to care-seeking.

Designing Human-Centered AI for Emotional Wellbeing

In health contexts and beyond, Emotion AI—algorithms that recognize, interpret, and influence human emotions—has been widely deployed without sufficient ethical frameworks. My scoping review of emotion intervention technologies identifies critical **ethical gaps**, revealing that prevailing designs overwhelmingly emphasize emotional "regulation," often producing artificial care rather than supporting authentic expression [13]. Drawing from *critical theories* such as **design justice**, I propose a support-centered approach that reimagines AI's role in emotional wellbeing, prioritizing non-judgmental engagement and giving users time and space to authentically respond to life's challenges. These insights inform a novel framework that shifts Emotion AI from surveillance-based to support-centered design [3].

Implementing this approach, part of my dissertation addresses a critical gap in AI-human interaction by demonstrating how artificial intelligence can **amplify authentic human connection** rather than diminish it. Through 12 in-depth interviews with individuals seeking peer support on online forums, I examine what drives successful versus failed connection attempts during emotionally vulnerable moments. My preliminary findings reveal that identity

alignment—rather than traditional demographic matching—serves as the primary driver of meaningful peer connections [16]. Specifically, I identify three key factors that should inform AI-driven peer matching systems: emotional expression patterns, shared experiential contexts, and complementary support styles [13]. These findings contribute to the development of **narrative-based compatibility metrics** that enable story-aware AI systems to facilitate authentic connections while preserving the essential human elements that make peer support effective.

Future Research Directions

My future agenda aims to contribute to the department through community impact and student engagement. I will pursue funding through internal and external programs, including the National Science Foundation (NSF) Human-Centered Computing and CAREER awards, the Institute of Museum and Library Services (IMLS), and the National Institutes of Health (NIH).

1. AI as New Media: Critical Literacy of Human-AI Intimacy. As emotionally responsive AI normalizes companionship and fuels one-way attachments that can harden into harmful dependence, this project will contribute to a *conceptual mapping* of human–AI attachment, parasocial relations, and intimacy formation: interviews will probe attachment processes, trust, perceived reciprocity, boundary negotiation, and parasocial dynamics across text-, voice-, and avatar-based interactions; analyses will develop a taxonomy of intimacy trajectories and identify vulnerability points (e.g., loneliness, cultural norms of emotional expression) that shape these relations; and findings will be translated into *critical literacy* resources—norms for bounded use, boundary-setting heuristics and reflective prompts.

Community Impact & Student Involvement. Partnering with schools and libraries, students will lead co-design sessions and prototype toolkits—producing deployable resources for educators, librarians, and designers.

2. Auditing Algorithm-Mediated Visual Communication with LLMs. In today's information environment, visuals moderate interaction—steering attention, signaling authority and belonging, and shaping what people post, believe, and share. I study how algorithm-mediated visual information—from short-video platform feeds to generative image systems—governs who and what gets seen online, and with what consequences for representation and public discourse. (1) I will audit video-platform recommenders with large-scale multimodal pipelines (video, audio, text, metadata) [8, 15] to trace how health and political content is prioritized, circulated, or suppressed, revealing systemic patterns that structure credibility and influence. (2) I will audit generative image models (e.g., DALL·E, Midjourney, Stable Diffusion) for representational harm, benchmarking depictions of demographic and intersectional groups (race, gender, disability, culture) to identify stereotyping, omission, and misrepresentation.

Community Impact & Student Involvement: Partnering with civic groups, I'll turn short-video recommender audits and generative-image bias evaluations into accessible dashboards and policy playbooks for marginalized communities, with students building pipelines, running perception studies, and computing bias metrics.

3. Responsible AI for Mental Wellbeing of Vulnerable Community. Individuals increasingly turn to chatbots and generative AI for emotional support—drawn by AI's availability and perceived neutrality, though often because human care remains inaccessible due to cost, stigma, or systemic barriers. As mental health crises intensify and structural barriers persist for marginalized populations, AI-based interventions hold promise only if designed *with and for* those most affected, so as not to reproduce existing harms. Building on prior work [4, 17, 2], this agenda advances three linked directions: (1) co-developing culturally grounded AI support systems that center diverse healing traditions and epistemologies through community partnership; (2) deploying art-therapy–informed generative AI [13] to facilitate creative expression and reflective emotional processing; and (3) prototyping proactive chatbots that recognize emerging distress and provide bounded support with robust ethical safeguards and pathways to human care.

Community Impact & Student Involvement: This work will expand accessible and culturally responsive mental health resources in underserved communities through co-designed AI tools. Students will collaborate with community partners to prototype these systems, gaining experience in participatory design, ethical AI development, and community-

engaged research.

References

[1] Zihan Gao, **Jiaying "Lizzy" Liu**, Yifei Xu, and Jacob Thebault-Spieker. From clips to communities: Fusing social video into knowledge graphs for localness-aware llms. In *CSCW Companion '25*, 2025.

[2] Emma S. Gueorguieva, Jina Suh, Hongli Zhan, **Jiaying Liu**, Katie Yan, Javier Hernandez, Tatiana Lau, J. Jessy Li, and Desmond C. Ong. Ai generated empathy is homogenous. *Nature Human Behavior*, 2024. Working in progress.

[3] JaeWon Kim, **Jiaying "Lizzy" Liu**, Lindsay Popowski, Cassidy Pyle, Ahmer Arif, Gillian R Hayes, Alexis Hiniker, Wendy Ju, Florian Mueller, Hua Shen, et al. Design for hope: Cultivating deliberate hope in the face of complex societal challenges. In *CSCW Companion '25*, 2025.

[4] **Jiaying Liu**. Designing identity-affirming generative ai for visual emotional expression: Empowering marginalized young adults. In *CSCW DC 2025*, 2025.

[5] **Jiaying Liu**, Shijie Song, and Yan Zhang. Linguistic features and consumer credibility judgment of online health information. In *iConference '21*, 2021. Best Poster Honorable Mention.

[6] **Jiaying Liu**, Shijie Song, and Yan Zhang. Implications of a real-time assistive tool for online health information credibility evaluation. In *IEEE ICHI '24 Doctoral Consortium*, Orlando, FL, USA, 2024. Best PhD Project Honorable Mention.

[7] **Jiaying Liu**, Yunlong Wang, Allen Jue, Yao Lyu, Yiheng Su, Shuo Niu, Nathan TeBlunthuis, and Yan Zhang. Ai-supported multimodal analysis of visual rhetoric in mental health narratives: Aesthetics, disparity, and peer support in youtube vlogs. *Social Media + Society*, 2024. under review.

[8] **Jiaying Liu**, Yunlong Wang, Yao Lyu, Yiheng Su, Shuo Niu, Xuhai" Orson" Xu, and Yan Zhang. Harnessing llms for automated video content analysis: An exploratory workflow of short videos on depression. In *Companion Publication of the 2024 Conference on Computer-Supported Cooperative Work and Social Computing*, pages 190–196, 2024.

[9] **Jiaying Liu** and Yan Zhang. Exploring young adults' mental health help-seeking journey: Preliminary findings on resource navigation behavior. *Proceedings of the Association for Information Science and Technology*, 61(1):570–575, 2024. Best Paper Award by ASIS&T SIG USE & HLTH.

[10] **Jiaying Liu** and Yan Zhang. Modeling health video consumption behaviors on social media: Activities, challenges, and characteristics. *Proceedings of the ACM on Human-Computer Interaction*, 8(CSCW1):1–28, 2024.

[11] **Jiaying Liu** and Yan Zhang. Video-mediated emotion disclosure: A study of mental health vlogging by people with schizophrenia on youtube. In *Association for Information Science & Technology Annual Meeting (ASIS&T '25)*, page 10 pages, Washington DC, USA, November 14-18 2025.

[12] **Jiaying Liu**, Yan Zhang, and Yeolib Kim. Consumer health information quality, credibility, and trust: an analysis of definitions, measures, and conceptual dimensions. In *Proceedings of the 2023 conference on human information interaction and retrieval*, pages 197–210, 2023.

[13] **Jiaying Liu**, Shuer Zhuo, Xingyu Li, Andrew Dillon, Noura Howell, Angela DR Smith, Yan Zhang, et al. From regulation to support: Centering humans in technology-mediated emotion intervention in care contexts. *CSCW '25*, 2025. To appear.

[14] **Jiaying Lizzy Liu**, Sierrah Bessler, Yan Zhang, Midori McKay Komi, and Annie T Chen. Changes of information needs and emotions during covid-19: A longitudinal view. *Library & Information Science Research*, 47(3):101367, 2025.

[15] **Jiaying "Lizzy" Liu**, Yiheng Su, and Praneel Seth. Can large language models grasp abstract visual concepts in videos? a case study on youtube shorts about depression. In *Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems*, CHI EA '25, New York, NY, USA, 2025. Association for Computing Machinery.

[16] **Jiaying "Lizzy" Liu** and Yan Zhang. "when i lost it, they dragged me out": How care encounters empower marginalized young adults' mental health care-seeking. In *Proceedings of the 2025 ACM Conference on Computer-Supported Cooperative Work and Social Computing*, CSCW '25, 2025. To appear.

[17] Katie Trainum, **Jiaying Liu**, Elliott Hauser, and Bo Xie. Nursing staff's perspectives of care robots for assisted living facilities: systematic literature review. *JMIR aging*, 7:e58629, 2024.

[18] Yan Zhang, **Jiaying Liu**, and Shijie Song. The design and evaluation of a nudge-based interface to facilitate consumers' evaluation of online health information credibility. *Journal of the Association for Information Science and Technology*, 74(7):828–845, 2023.

[19] Shuer Zhuo and **Jiaying "Lizzy" Liu**. Digital boundaries of time: Exploring how calendar app designs mediate time perceptions and boundary management. In *CSCW Companion '25*, 2025.