Measuring and Designing for Engagement in Digital Therapeutics—A Multi-Faceted Approach

Robyn Hussa-Farrell[1]*, Resiliency Technologies, Inc. – San Diego, CA, USA, rfarrell@sharpenminds.com

TIM FARRELL, RESILIENCY TECHNOLOGIES, INC. – SAN DIEGO, CA, USA, TFARRELL@SHARPENMINDS.COM

VICTORIA COSGROVE, STANFORD UNIVERSITY – STANFORD, CA, USA, VEILEEN@STANFORD.EDU

DUKE BIBER, JAMES MADISON UNIVERSITY – HARRISONBURG, VA, USA, BIBERDD@JMU.EDU

ACM Reference Format:
Robyn Hussa-Farrell, Tim Farrell, Victoria Cosgrove, and Duke Biber. 2026. Measuring and Designing for Engagement in Digital Therapeutics- A Multi-Faceted Approach. Design. In Proceedings of Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26). ACM, New York, NY, USA,

1. CONTEXT AND USE CASE

Over 20 years, we developed Sharpen® DTX, a care coordination and digital therapeutic platform for behavioral health, by placing engagement at the center of our design philosophy. Our work demonstrates that understanding engagement requires (1) community-driven content development, (2) rigorous measurement across diverse populations, and (3) continuous refinement and improvement. This use case presents our approach to defining, measuring, and designing for engagement across three distinct contexts: (A) medical education with statistically significant engagement outcomes, (B) clinical waitlist management in a pediatric clinic, and (C) real-world clinical implementation with 522 college athletes. Our multi-dimensional definition emerged from 20 years of community-based work, including 50,000+ post-program surveys that identified the 160 most asked mental health questions from adolescents, parents, educators and clinicians.

1.1 TARGET POPULATIONS AND INTERVENTIONS

We report findings from three separate studies and populations in which the Sharpen DTX was implemented.

- **Population #1:** Medical students (N=54) in the United States who completed the self-guided 5-hour course for osteopathic medical students.
- **Design #1:** Asynchronous, self-paced modules within the Sharpen toolkit featuring peer documentary storytelling (medical students and physicians speaking about mental health topics and health worker resiliency)
- **Population #2:** Adolescent patients (ages 10-17) awaiting eating disorder treatment in the United States (Pediatric Eating Disorder Clinic, N=37)
- **Design #2:** Clinician-prescribed interventions via EHR integration, no dashboard access
- **Population #3:** United States Division 1 Athletes completing mandatory concussion and mental health screening (N=522)
- **Design #3:** Computer-adaptive screening (CAT-MH) followed by immediate access to tailored interventions, along with dashboard access

2. CONCEPTUALIZATION OF ENGAGEMENT

We defined engagement as a constellation of interconnected behaviors and outcomes that include:

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- **Behavioral Engagement Metrics** such as initial activation (first module access), session frequency and duration, return visits and module completion, interaction with interactive CBT and MBSR activities.
- **Clinical Engagement Outcomes** that include risk identification and safety planning activation, connection to treatment services, provider utilization of platform decision-making tools, sustained behavior change indicators, decreased stigma, increased mental health literacy, improved access to care.
- **Community Engagement Foundations** such as direct participation in content co-creation, relatability and cultural resonance ratings, post-program survey feedback, continuous improvement, peer and patient recommendation rates.

2.1 HOW ENGAGMENT WAS MEASURED

Across the three studies and populations, engagement was measured using intervention-specific approaches:

- **Medical Student Mental Health Literacy:** course completion rate, pre- and post-intervention effects and participation rate, acceptability ratings, and satisfaction based on open-ended feedback
- **Clinical Waitlist Management:** voluntary and active engagement rate, total and average session engagement, total platform time, return post-completion, and longest active session
- **Preventive Mental Health Screening for US College Athletes:** screening completion rate, average screening duration, platform sessions post-screening, aggregate minutes and longest sessions, and crisis identification/referral rate

2.2 PRELIMINARY FINDINGS AND OUTCOMES

Initial findings exhibited high engagement rates across all three populations and studies. Medical studies had 100% course completion rate, improvements in mental health literacy from pre-to-post intervention, and high acceptability and satisfaction ratings. Adolescent clinical waitlist patients exhibited voluntary engagement rate of 59.4% with an average duration of 6 minutes per session and return rate of 37.5%. Lastly, Division 1 athletes had an 83.7% screening completion rate in an average of 7.8 minutes, with 5% being flagged for enhanced support and 2% for immediate suicide protocols, resulting in a 100% high-risk case management success rate.

- **Medical Student Mental Health Literacy:** Documentary-style peer narratives drove sustained engagement even in self-guided formats. Medical students specifically valued the authentic voices of peers discussing mental health challenges.
- **Clinical Waitlist Management**: Even without gamification or dashboard features, clinically relevant content drove meaningful engagement. Adolescents ages 14-17 showed highest engagement.
- **Preventive Mental Health Screening for US College Athletes:** Immediate interventions along with dashboard access and risk-tailored content recommendations significantly increased sustained engagement beyond mandatory screening. Immediate clinical utility (crisis identification) drove provider adoption and competence.

Our real-world data shows average session durations of 6-10 minutes with high completion, and the most engaging content are the peer story modules. Further, engagement was possible via seamless clinical integration, in which EHR-integrated SMART-on-FHIR deployment removed technological barriers. Lastly, Sharpen DTX has immediate clinical utility, in which crisis screening, safety planning, and risk alters ensured provider adoption and improved decision-making capabilities.

3 LESSONS LEARNED

This work highlights that Community-Based Participatory Research (CBPR) is at the foundation of engagement. Content development process begins with deep community listening, such as:

- Unscripted interviews with adolescents, families, clinicians, and community members provide authentic voices that become the foundation of our 4,000+ video library and 700 modular library. Research shows

documentary film-based health education significantly changes attitudes and increases behavior change intention.

- Community members participate in analyzing modules to ensure cultural resonance and to address the specific questions communities want answered.
- Multiple studies demonstrate our approach builds mental health literacy (Biber, 2023; Biber & Rothman, 2023), decreases stigma (Levy et al., 2025), and improves engagement with treatment services.

4 Open Questions for Workshop Discussion

This case invites discussion around several unresolved issues:

- How should engagement be redefined for digital therapeutics that are episodic, safety-critical, or informational, rather than habit-forming?
- How does high behavioral engagement (e.g., clicks, time spent) necessarily reflect meaningful clinical engagement or impact?
- How can we better distinguish between passive exposure and active therapeutic engagement?
- How can digital therapeutics balance scalability with culturally responsive, community-driven content?

5 Contribution to the Workshop

This use case advances the field of digital therapeutics by proposing a multi-dimensional, context-sensitive framework for engagement that integrates behavioral metrics, clinical outcomes, and community-driven design. Drawing on real-world implementation across diverse populations, it highlights how community-based participatory approaches and seamless clinical integration can produce meaningful, scalable engagement with measurable impact.

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