Presentation Outline

- History of Mental Health Computing
- Rationale for Using Cell Phones in Clinical Practice
- Review of Current Research
- Discussion of Issues of Ethics and Security
- Hands-on Demonstrations
- Future Directions
Introduction

Who Am I?

Why Am I Qualified?
Introduction

Early Work in Mental Health Computing
Introduction

Post Doctoral Experience
Introduction

NIDA Funding
Introduction

From Eliza to Internet: A Brief History of Computerized Assessment (1)
Mental Health Computing

Computer-Assisted Interviewing (1)

• Tools To Solicit Clinical Data from Humans

• Critiques:
  • Not Flexible Enough

• Advantages
  • Convenience, Efficacy, User-Acceptance

• New Advances
  • Speech Recognition & AI
Mental Health Computing

Computer-Assisted Testing (1)
- Tools To Administer & Score Psychological Tests
- Critiques:
  - Lack of Equivalency, Superfluous Factors
- Advantages
  - Increased Honesty
- New Advances
  - Adaptive Testing Algorithms
Computerized Psychotherapy

- Computers Delivering Psychotherapeutic Interventions
- Critiques:
  - Not as Flexible as a Human Being
  - Cannot Capture Depth of Human Interaction
  - Will Lead to Weaker Therapeutic Alliances
  - Will Lead to Poorer Therapeutic Outcomes
Mental Health Computing

Computerized Psychotherapy

• Use:
  • 1970s, Systematic Desensitization (35)
  • Irritable Bowel Syndrome (9)
  • Depression (10, 11)
  • Bulimia (13)
  • Anxiety (12)
Mental Health Computing

Computerized Psychotherapy

- Outcomes:
  - As Effective as Face-To-Face Therapy (12, 18)
  - Results in Less Health-Care Consumption (8)
  - End-Users Enjoy the Experience (7)
    - convenient
    - nonjudgmental
Mental Health Computing

A Decade of Changes

Increased Power

New Capabilities

(314) 827-6436
Cell Phone Use in the U.S.

Mobile Telephony

- Single most rapidly embraced technology in world history (17)
Smart Phones - A Brief History

- First shipped in 1999 (51)
- Widespread market penetration in 2003 (52)
  - Nokia’s 6600
  - Two-million units in four months (53)
- iPhone (54)
  - 1st to offer multi-touch interface in 2007
  - 18.65 M sold in 2nd quarter of 2011
  - Five-year sales: 72M units; $47 billion revenue
Cell Phone Use in the U.S.

Smart Phones - What Makes Them Smart? (2, 4, 51)

- Internet Connectivity
- Taking/Sending Pictures and/or Video
- Listening to Music
- Messaging
  - Email, Text, Multimedia
- Advanced Sensors
  - GPS, Accelerometers
- Advanced Computing (apps)
  - Playing Games, Running Utilities, etc.
Cell Phone Use in the U.S.

Penetration of Mobile Telephony Technology* (3)

- 46% Smartphone
- 42% Standard Cell
- 12% No Cell

*percentage of adults in the United States
Cell Phone Use in the U.S.

Smartphone Ownership by Race (3)

- African American: 49%
- Latino: 49%
- White: 45%
Cell Phone Use in the U.S.

Smartphone Use by Geographic Area (3)

- Urban: 50%
- Suburban: 46%
- Rural: 34%
Cell Phone Use in the U.S.

Smartphone Use by Gender

Male: 49%
Female: 44%
Cell Phone Use in the U.S.

Smartphone Use In Youth

- More immersed in technology than any other generation (5)
- Have new ways of thinking about social connections (6)
- 34% own an iPhone; 40% want one (35)
Cell Phone Use in the U.S.

Smartphones as an “Equalizing Technology” (4)

- African American Community
  - Low Levels of Computer Ownership
  - Low Levels of Internet Connectivity
  - High Penetration of Cellphone Ownership
- Homeless Cellphone Ownership at 62% (6)
- An Elimination of the “Digital Divide”
Why Cellphones Should be in Clinical Practice

- Low Cost
- Convenient
- Wide Acceptance
- Beneficial
Cell Phones In Clinical Practice

Advantages of Using Cellphones in Clinical Practice

- Easing Clinician Burden
- Assess Past & Current Functioning
- Facilitate Individualization of Therapy
- Extend Therapy Outside Sessions
- Assess Treatment Progress
- Provide Behavioral Rehearsal
- Provide Treatment to All
Cell Phones In Clinical Practice

Easing Clinician Burden (33, 34)

• Hamilton County, OH
• Surrey County, UK
Cell Phones In Clinical Practice

Assess Past & Current Functioning (39, 44)

- Administration & Delivery
- DOD app
Cell Phones In Clinical Practice

Facilitate Individualization of Therapy (36)

- Personalized Scripts
Cell Phones In Clinical Practice

Extend Therapy Outside of Sessions (14, 36, 39)
- Failure To Practice Leads To Relapse
  - Audio Recordings
  - Whiteboard Pictures
  - Virtual Coaches
Cell Phones In Clinical Practice

Assess Treatment Progress (36)

- Photo Essay
Cell Phones In Clinical Practice

Provide Behavioral Rehearsal
- Delivering a Speech
- Rehearsing a Talk with Significant Other
- Exposure Trials
Cell Phones In Clinical Practice

Provide Treatment For Those Who Might Not Otherwise Have Access (11, 23, 29)

- Post-surgery App Training
- Text Messaging As Therapy Adjunct
Cell Phones In Clinical Practice

Caveats (11, 16, 29, 39)

- The Good News:
  - Broadens Access
  - Improves Outcomes
  - Increases Homework Adherence
  - Well Received

- The Bad News
  - Little Formal Assessment
Examples of Previous Research

- Health Care
  - Hypertension (15)
  - Asthma (15)
  - Diabetes (25)
  - Cancer (49)
- Substance Abuse (41)
Cell Phone Research

Non-app Based Telephone Support

- Telephone Support for Increasing Physical Activity and Mental Health (24)
- Text Messaging as Adjunct to CBT (30)
- Telephone Delivery of CBT (28)
Cell Phone Research

App Based Telephone Support
• DBT Coach (21)
• CBT App for Irritable Bowel Syndrome (27)
• Depression Prevention for Adolescents (19)
• Smoking Cessation (20)
Cell Phone Research

Limitations

- Costs
- Technology
- Research Design
Limitations

• Costs
  • Start-up and Development
  • Equipment (25, 26)
  • Participant Costs (29)
Cell Phone Research

Limitations

- Technology
  - Rapidly Changing (25, 26)
  - Quickly Becoming Obsolete (31, 41)
  - Research Findings are Dated by the time they are published
Cell Phone Research

Limitations

- Small Sample Sizes (29)
- Feasibility/Efficacy Trials Only (36)
- Few Randomized Controlled Trials (41)
Issues of Using Cell Phones

Good News

• Increased Security
• SMS Data Availability
• Industry’s Growing Realization of Problem
Issues of Using Cell Phones

Bad News

• Inherent lack of Security
• Email & SMS are Virtual Postcards
• Tracking of Data, Location, Habits
• Roving Bugs
Issues of Using Cell Phones

Bad News Gets Worse

• User Behavior Exacerbates Security Issues
• No Password Protection
• Displaying Confidential Information
• Cell Phone Loss
Issues of Using Cell Phones

App Problems

• No quality control
• Anyone can build them
• Not based on best-practices
Issues of Using Cell Phones

Ethics

- Licensing Jurisdiction
- Literacy
- Boundaries
- Confidentiality
- Liability
Issues of Using Cell Phones

Boundaries

• Which Technologies Are Acceptable
• Should Use Be Billed
• Expectations
Issues of Using Cell Phones

Confidentiality
- Personal vs. Professional Devices
- Who has Access
- In-patient Use
Issues of Using Cell Phones

- Liability
  - Recommending Apps
  - Client Reliance
  - Iatrogenic Effects
Issues of Using Cell Phones

Ethical Standards
- Not Specifically Addressed by APA or SCOP (65, 66)
- Directed to General Standards
  - Emerging Areas
- Privacy and Confidentiality
Issues of Using Cell Phones

Recommendations

• Discuss Issues with Clients
• Become More Technologically Savvy
• Create Use-Policy
Issues of Using Cell Phones

Discuss Issues with Clients

- Clients Are Actively Searching Online
- Clients Want To Use Technology
- Therapists Should Discuss These Issues
Issues of Using Cell Phones

Become More Technologically Savvy
- Understand Professional Guidelines
- Learn Chosen Technology
  - Security Settings
  - Password Protection
- Use Secure Communications When Possible
- Set Up Clear Policy Statement
Issues of Using Cell Phones

Create a Technology-Use Policy

• Have Open, Frank, Honest Discussions
• Clarify Expectations
  • What Will Be Used
  • Turn-Time
• Billing
• Client-Education
  • Security, Content, Confidentiality
App Demonstrations

Types of Apps
- For Clients
- For Clinicians
Future Directions

Guidelines for Future App Development

• More Randomized Controlled Trials
• Games As Therapy
• Social Networking
Future Directions

Guidelines for Future App Development

• Adopt Set of Industry Standards
• Usability & Acceptability
• Quality & Safety
• Data Security & Privacy
• Continuing Innovation
• Professional Organization Clearinghouse
Future Directions

Advanced Sensing and Computing

• Mobilyze (26)
  • Based on Machine Learning
  • Collects Data from 38 On-board Sources
  • Learns What The Data Means
  • Predicts Users’ Mood States
  • Prompts Users To Action
One More Thing...

Something A Little Less Hi-Tech...
Thank You

joel.epstein@mimh.edu


References


Apps - For Clients

Afraid of Spiders

SmallTalk Aphasia

Pillboxie

Lose It!

Mood Kit

DBT Diary Card Skills Coach

PTSD Coach

Pain Retreat
Apps - For Clinicians

Pocket CPR

Epocrates

NEJM

Medscape

Qx Calculate

EMR Mobile

iCE

Stress Relief: Smash Edition