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Overview

- “Hidden thought processes”
  - Nonconscious or implicit cognitive processes
  - Dual process models
- Health disparities and implicit processes
- Implicit assessments and interventions
Dual process theory of thought

**System 1**
- Fast / Automatic
- Emotional
  - Impulses / Drives
  - Habits
  - Beliefs

**System 2**
- Slow / Effortful
- Logical
  - Reflection
  - Planning
  - Problem solving

@BehaviourDesign
System 1
- Intuitive, well-learned associations
- Automatic, nonconscious/implicit
- Fast, effortless
- Vulnerable to error
- Highly affected by context
- High emotional involvement

System 2
- Analytical, systematic
- Deliberate, conscious/explicit
- Slow, effortful
- Less prone to error
- Less affected by context
- Low emotional involvement
Dual Process Models: System 1 vs. System 2

**Reflective processes**
- Personal standards
- Attitudes
- Expectancies
- ...

**Boundary conditions**
- Motivation to self-control
- Self-control strength
- Working memory capacity
- Inhibition

**Impulsive processes**
- Automatic associations
- Attentional biases
- Approach-avoidance tendencies

**Health-related behavior**
Using System 2 boosts every area of our life.

- System 1 can only be considered reliable in stable and predictable situations.
- System 2 and the self-control it makes possible is critical.
- Acting on your rational thoughts opposed to simply your intuition means you’re using System 2.
- Without an active System 2, your success is entirely a matter of chance or luck.
Who cares about cognitive burden?
Daniel Kahneman does...

System 1 Fast
Intuition
Emotions

VS

System 2 Slow
Rational thinking
Critical mind
Cognitive Load

Amount of Thought Required

Number of Choices I Have

What I Want
Social-Cognitive/Affective Models

– Classic self-regulation & social cognitive models
  • Goals, values, behavioral dispositions and behavioral self-regulation
  • Self-efficacy
  • Health protection motivation
    – Perceived vulnerability
    – Outcome expectancies
    – Efficacy expectancies

• “Affect as information”, self-regulation
  – Dual Process models
    • Affect v. cognitions → Impulse and Self-Control
    • Cognitive capacity and self-regulation of impulse
Dual Process Models

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MULTIDIMENSIONAL ASSESSMENT

An individualized assessment procedure designed to identify both conscious and nonconscious cognitive processes that affect treatment engagement.
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An individualized assessment procedure designed to identify both conscious and nonconscious cognitive processes that affect treatment engagement.

1. Elicitation interview
2. Identification and listing of thoughts
3. Multiple domains
4. Finalizing
Please rate how similar these two statements are:

- doing something that makes me feel nauseous.

and

- improving my immune system

Not at all similar

- 1
- 2
- 3
- 4

Very similar

- 6
- 7

35 of 66
Please rate how similar these two statements are:

- taking pills with water

- remembering how I became infected

Not at all similar: 1, 2, 3, 4, 5, 6, Very similar: 7
MULTIDIMENSIONAL ASSESSMENT

Assessing treatment motivation among patients receiving antiretroviral therapy: A multidimensional approach

Eric Houston, David J. McAlpin, Daniel Cervone, Matthew S. Johnson, and Tyra G.M. Sandfort

Assessing Implicit Cognition Among Patients Lost to Follow-up For HIV Care: A Preliminary Study

Eric Houston, Thomas Lyons, Brenda Wolfe, Norma Rolfsen, Maryanne Williams, Monique Rucker, and Nancy Glick

An individualized assessment procedure designed to identify both conscious and nonconscious cognitive processes that affect treatment engagement.

Using multidimensional scaling (MDS), the authors analyzed patient conceptualizations of treatment motivation, compared with theoretically based assumptions and current assessment approaches. Patients undergoing antiretroviral therapy (ART) showed MDS analyses that revealed patient perceptions of intrinsic and extrinsic motivations, often differing from those based on definitions derived from common interpretations of self-determination theory. Findings also showed that patients reported motivations for avoiding treatment when they associated their medication regimens with side effects and other negatively valued outcomes. The study describes new applications of MDS in assessing the relationship between treatment behaviors and specific forms of motivation, including intrinsic and extrinsic motivations. In addition, the study suggests how MDS may be used to develop interventions aimed at helping patients follow their regimens consistently by identifying treatment conceptualizations and contexts that facilitate or impede adherence.

Keywords: HIV/AIDS; antiretroviral; adherence; motivation; psychometrics/statistics; numerical data

Introduction

Motivation has long been viewed as a critical factor in predicting treatment outcomes among patients undergoing antiretroviral therapy (ART; Griney, Bunting, & Russell, 2003; Kalichman et al., 2001; Södergård et al., 2006). ART patients often must tolerate side effects and meet adherence levels of 95% or greater to achieve virological control and improve immune functioning (Barthol, 2002; Chesney, Farmer, Lemaire, Malke, & Staree, 2003). Estimates indicate that...
Study Objectives

- To examine the feasibility and acceptability of automated, web-based MDS assessment in clinical settings
- Explore viability of program for intervention purposes
  - How could it be used to improve treatment adherence and engagement with care?
Participants

- **Sample (n= 33)**
  - Diagnosed with HIV/AIDS
    - Lost to follow up
    - Suboptimal adherence (M=58%)
  - African American
  - 67% males (n=22)
  - Ages 16 – 65 years old
    - Median age = 31 years
  - 36% gay/bisexual
Participants

- Most reported psychosocial stressors:
  - Poverty
  - HIV stigma
  - Fears of serostatus disclosure
  - Internalized homophobia
  - Perceived racism/discrimination
  - Community violence
  - Histories of abuse

- Depressive and anxiety symptoms
Treatment-related Cognitions

- It’s helping my immune system
- My children need me around
- I want to start so that I can tell other people it’s not that bad
- It improves my health
- If I take medication, it’s not a death sentence
- Keeping my viral load down
- Remaining undetectable
- Being able to survive and be happy
- Feeling that I have control over HIV
- Doing something to be in a good mood
- I’m doing it to prove my old doctors wrong
- I take it so my parents won’t feel ashamed
- Having fears of choking and swallowing
- Having horrible dreams
- Feeling tired
- Having memories of how I might have been infected
- Being dependent on this one pill
- Doing something that is irritating to me
- I wouldn’t want others to learn that I’m taking HIV medications
- Hide my medications when the house gets full
- It makes me have diarrhea
- The medication gives me a paunch
- It’s something I have to hide
- Swallowing a pill
- Makes me dizzy

Houston, Lyons, Wolfe, Rolfsen, Williams, Rucker, & Glick, 2016.
Results

• Participants reported very positive personal reactions to the program (M = 6.42; SD = 0.66).

• Believed program would be “extremely” helpful to them (72%).
## Results

<table>
<thead>
<tr>
<th>Measure</th>
<th>Sample (n=33)</th>
<th>Assessment (n=18)</th>
<th>Control (n=15)</th>
<th>Test Statistic</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change intentions</td>
<td>8.7 (2.4)</td>
<td>9.6 (1.3)</td>
<td>7.6 (3.1)</td>
<td>2.44</td>
<td>0.02*</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>6.6 (0.8)</td>
<td>6.7 (0.6)</td>
<td>6.4 (0.9)</td>
<td>0.81</td>
<td>0.43</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>4.2 (0.8)</td>
<td>4.1 (1.4)</td>
<td>4.2 (1.6)</td>
<td>-0.13</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note. The p values are based on independent samples t-tests. Motivation and change intention scores were transformed before conducting statistical tests to account for skewed distributions. Mean values are presented in original units.
Results: “It made me more aware”
Participant Reactions

• “The process of doing this [made me] knowledgeable of myself and some of the things I wasn’t knowing all the time came out … it let’s me know what areas I really need to work on… [I]t made me aware of how much of the negative I feel… Sometimes I get angry and sometimes I have flashbacks.”

– 50-year-old female participant
Participant Reactions

• “I didn’t realize that the dreams and trying to avoid different things [were] half the reason why I don’t want to take (the medication). I didn’t realize that. Honestly, I didn’t realize that I think so much more about my family than I think about myself. …It seems like I care more about hurting them than hurting myself.”

– Male participant, early 20s
Self-Regulation and Cognitive Load
Psychosocial Stressors: Impact on Cognitive Processing

- Attention control
  - Attention bias
  - Attention focus

- Cognitive flexibility
  - Disengagement from negative or maladaptive cognitions
  - Engagement with positive or adaptive cognitions

- Inhibitory control
Attention Bias Modification Training

- Attention Bias Modification (ABM) Training:
  - A type of cognitive training
  - Promotes self-regulation of attention
  - Health behaviors: smoking, problem drinking, substance abuse, eating disorders, overweight and obesity
  - Psychological disorders: depression, anxiety
  - Brief sessions and treatment duration
  - Delivered via computer or mobile device
Web-based application
STEPS TOWARD EMBODYING POSITIVITY

Click here to check out our BLOG!
Future Plans: Specific Projects

- Cognitive training
- Attention bias modification (ABM)
- Useful in reaching patients low in motivation
- Interventions using "if-then" implementation intentions (Sheeran, Gollwitzer, & Bargh, 2013)
- Use to address cognitive processes related to treatment avoidance based on MDS maps
- Strengthen mindfulness skills
- Patient motivation promotion
- Tool for health providers
Introduction

Depressive symptoms have long been associated with a range of poor health behaviors, including drug and alcohol abuse, increased smoking, and either overeating or restricting food intake [1-3]. In the context of HIV, research suggests a strong link between depressive symptoms and sexual behaviors that put individuals at risk for infection [4-6]. In addition, for many people diagnosed with HIV, depressive symptoms represent a major factor in delayed treatment initiation, suboptimal adherence, and inconsistent engagement with medical care [7-10]. Thus, targeting and reducing depressive symptoms in vulnerable populations has substantial potential for improving a number of HIV-related outcomes.

Cognitive theories of depression propose that an individual's risk for depression and depressive symptoms is heightened by a tendency to selectively attend to and process negative stimuli [11-14]. Attention training, such as attention bias modification (ABM), has shown much promise as an approach for altering attention bias associated with negative mood states [15-18]. In ABM training, participants are presented with a modified dot-probe task composed of numerous, repetitive trials. In each trial participants are asked to watch a fixation cross situated in the center of a computer screen for a very brief period (e.g., 500 ms). The fixation cross is immediately followed by a screen depicting two emotionally-valenced or neutral stimuli (words, images, or faces). Stimuli appear simultaneously on opposite sides of the screen for a short duration, typically 500–1000 ms, before a subsequent screen showing only the probe in the location that had been occupied by one of the stimuli. At this time, participants must indicate the location of the probe as quickly as possible.

In ABM, the probe appears in the location of neutral or emotionally positive stimuli nearly always (e.g., 90% of the time), thereby training participants to learn to shift their attention toward these types of stimuli. As a result, reaction
How Does ABM Affect Outcomes?
ABM: Attention Control Theory

- Attention Control
  - Lateral Prefrontal Cortex (Set switching)
    - Negative, avoidance-oriented cognitions
      - Suboptimal adherence
    - Positive, approach-oriented cognitions
      - Optimal adherence
Preliminary Results

HIV and Depression: A Potential Role for Attention Training in Prevention and Treatment

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Preliminary Results

- **Adherence (ACTG)**
  - Adherence rates*
  - Days missed all doses*
  - Followed dosage timing requirements
  - Missed weekend doses

- **Participant reactions**
Conclusion
Conclusion

- Implicit cognitive processes
  - Health behaviors
  - Health disparities

- Gaps in research and clinical practice
  - Assessments needed at the level of the phenomenon
  - Interventions needed that integrate explicit and implicit processes
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