Predicting and Influencing Patient Adherence to Voice Therapy

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Motor learning includes practice and generalization

Acknowledgments

- Nadine Connor, PhD
  – University of Wisconsin
- Glen Leversen, PhD
  – University of Wisconsin
- David Bradley Foundation
- NIH F31DC009526-02

When patients don’t adhere (enough)

I Didn’t Do My Homework Because...

1/1
Common Barriers

van Leer & Connor, 2008

Who’s to blame?

patient motivation

clinician skill / Tx approach

Previous literature

- Attendance studies:
  - Typical clinic/chart data
  - Smith et al:
    - No predictor for attendance
  - Hapner et al:
    - 50% drop out
    - No known predictor at session 1:
      - Complete to session 3: complete to session 4.2

Outside literature: predictors of adherence

- Self-efficacy (Bandura)
- Goal Characteristics & Commitment (Locke & Latham)
- Therapeutic Alliance (Borden)

Theory and Evidence:
Beliefs can be influenced
Thus, behavior can be influenced
Theoretical Model: Social Cognitive Theory (Bandura, ’87)

- External factors
- Internal factors
- Behavioral factors

A theory-driven intervention

Previous literature: van Leer & Connor, in press

- Adherence: practice
  - R Crossover Trial
  - SOC vs MP4 support
  - MP4 condition:
    - Practice
    - Self-efficacy for practice
    - Commitment to practice
    - “got it” “normal”
  - Limitations:
    - Generalization? Prediction? Outcome?

Can we predict adherence?
Can we improve adherence?
New Study (Diss)

- **Subjects:**
  - 40-5, Control 14F 4M, Mean age 42.8 (14)
  - Video 12F 5M, mean age 41.1 (12)
  - Hyperfunction/benign lesion; stimulable

- **Design:**
  - RCT of SOC vs MP4, 4 sessions

- **Measures:**
  - SE, GC, Alliance (weekly)
  - Adherence (practice freq, % generalization)
  - VHI, BORG, CAPE-V severity ratings

Question 1: prediction?

- Do social-cognitive (motivation) variables predict:
  - Adherence?
    - Practice
    - % generalization
  - Outcomes?
    - VHI
    - BORG
    - CAPE-V severity

Question 2: Tx efficacy?

- Does video support improve:
  - Social-cognitive variables (motivation)
    - SE, GC, Alliance measurement scales
  - Adherence
    - Practice & generalization self-report
  - Outcomes
    - VHI, BORG, CAPE-V severity

iTherapist

Clinician, self, and peer videos
Barrier Self-Efficacy predicts practice

Therapeutic Alliance predicts Generalization

VHI and Therapeutic Alliance predict outcome VHI

VHI and Therapeutic Alliance predict outcome VHI
BTW...

- VHI does NOT predict adherence.
- Goal Commitment poorer predictor than Self-efficacy

Question 2: Does MP4 support improve motivation, adherence, outcome?

- Positive results ($p \leq .05$):
  - Motivation:
    - Overall self-efficacy for generalization
    - Therapeutic alliance
  - Adherence:
    - Generalization
    - *NOT practice!*  
  - Outcome
    - Trend, but no significant differences

**Generalization**

Control mean = 58.39% (23.90)  Video Mean = 74.76%

**Self-Efficacy for Generalization**

Control mean = 6.78 (2.10)  Video Mean = 8.00 (1.37)
Slide 22

NPC3  Need to show some data here
Nadine Connor, 10/5/2010

Slide 23

NPC5  Need to show some data here
Nadine Connor, 10/5/2010

Slide 24

NPC7  Need to show some data here
Nadine Connor, 10/5/2010
Therapeutic Alliance

- Control Mean = 9.26 (.60), Video mean = 9.74 (.37)

Interaction effect!

- Self-efficacy X Treatment condition
  - Barrier self-efficacy predicts generalization in controls only!
  - Low barrier self-efficacy: more generalization in video group

Qualitative Results

- Helpful (16/17)
  - Clinician videos:
    - Accuracy: "reminds you of the mouth position"
    - Encouraging: "my therapist is always with me"
  - Self:
    - Normalizing: "not as extreme as I thought"
    - Accuracy: "it's indelible to see yourself"
  - Peer models
    - Normalizing: "they were frustrated too"
    - Encouraging: "can you teach me what she did?"

Implications

- Motivation is relevant
- We can influence
  - Adherence behavior
  - Motivation
- If patients need help:
  - Use popular technology
  - Use peer support
  - Make task concrete
  - The Match Matters!
Future Directions

Intervention approach: videos

- Clinician Model
  - Increase accuracy
- Self-as-Model
  - Self-critique
  - Normalizing
- Peer Model
  - Normalizing
  - Encouraging

Voice Therapy...

Subjects

- 35 voice patients (+5 drop outs)
- 14 Female & 4 male controls
  - age 42.8 (14)
- 12 Female & 5 male video
  - age 41.1 (12.7)
- hyperfunction
- stimulable for improved voice
Social-Cognitive Measures

- Self-Efficacy
  - Overall (Readiness Ruler item 1)
  - Barrier (Voice Therapy Self-Efficacy Scale)
- Goal Commitment
  - Readiness Ruler item 2 & 3
  - Goal Commitment Scale
- Therapeutic Alliance
  - Session Rating Scale

Discussion Points

- Practice frequency
  - Accuracy
  - Compare people with self in behavior research
- Limitations: Self-report of adherence

Therapeutic Alliance Measure

<table>
<thead>
<tr>
<th>Anchor</th>
<th>Dimension and Visual Analog Line</th>
<th>Anchor</th>
</tr>
</thead>
<tbody>
<tr>
<td>I did not feel heard, understood, and respected</td>
<td>I-------------------------------</td>
<td>I felt heard, understood, and respected.</td>
</tr>
<tr>
<td>We did not work on or talk about what I wanted to work on and talk about.</td>
<td>I-------------------------------</td>
<td>We worked on and talked about what I wanted to work on and talk about.</td>
</tr>
<tr>
<td>The therapist's approach is not a good fit for me</td>
<td>I-------------------------------</td>
<td>The therapist's approach is a good fit for me</td>
</tr>
<tr>
<td>There was something missing in the session today.</td>
<td>I-------------------------------</td>
<td>Overall, today’s session was right for me.</td>
</tr>
</tbody>
</table>

Adherence Measures

- Practice count (counters)
- % of time generalization
MP4 Video Model enhanced treatment improves generalization, self efficacy, normalization & therapeutic alliance

Self-Efficacy measures

Goal 1. How certain are you that you are capable of practicing your voice exercises daily:

<table>
<thead>
<tr>
<th>Item</th>
<th>How certain are you that you are capable of practicing your voice exercises daily:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>When you have time to yourself (e.g. car)</td>
</tr>
<tr>
<td>2</td>
<td>When you are busy</td>
</tr>
<tr>
<td>3</td>
<td>When you are tired</td>
</tr>
<tr>
<td>4</td>
<td>When you are traveling (vacation, business)</td>
</tr>
<tr>
<td>5</td>
<td>When you don’t have time alone</td>
</tr>
<tr>
<td>6</td>
<td>When other people can hear you practice</td>
</tr>
<tr>
<td>7</td>
<td>When people around you are unsupportive</td>
</tr>
<tr>
<td>8</td>
<td>When the exercises are silly</td>
</tr>
<tr>
<td>9</td>
<td>When you’re not sure if you’re practicing correctly</td>
</tr>
<tr>
<td>10</td>
<td>When you just don’t feel like it</td>
</tr>
</tbody>
</table>

Goal 2: How certain are you that you can use your voice correctly:

<table>
<thead>
<tr>
<th>Item</th>
<th>Where can you use your voice correctly:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>During voice therapy (in the voice clinic)</td>
</tr>
<tr>
<td>2</td>
<td>At work</td>
</tr>
<tr>
<td>3</td>
<td>In a professionally demanding situation</td>
</tr>
<tr>
<td>4</td>
<td>On the phone</td>
</tr>
<tr>
<td>5</td>
<td>In a loud environment</td>
</tr>
<tr>
<td>6</td>
<td>With people who are unsupportive of your voice problem</td>
</tr>
<tr>
<td>7</td>
<td>With your significant other</td>
</tr>
<tr>
<td>8</td>
<td>With your family</td>
</tr>
<tr>
<td>9</td>
<td>When you raise your voice or shout</td>
</tr>
<tr>
<td>10</td>
<td>When you are socializing</td>
</tr>
<tr>
<td>11</td>
<td>When you are under stress</td>
</tr>
<tr>
<td>12</td>
<td>When you are tired</td>
</tr>
<tr>
<td>13</td>
<td>When you are relaxed</td>
</tr>
<tr>
<td>14</td>
<td>When you are excited</td>
</tr>
<tr>
<td>15</td>
<td>When you can’t concentrate on your voice</td>
</tr>
<tr>
<td>16</td>
<td>When people push your buttons</td>
</tr>
<tr>
<td>17</td>
<td>When you’re talking to strangers (people who don’t know you)</td>
</tr>
</tbody>
</table>

How can we influence our patient at all times?
Goal Commitment

| Goal 1: Practice voice exercises at least 3 to 5 times per day |
| Goal 2: Use your best voice throughout the day |
| Item 1 | How confident are you that you can achieve this goal? |
| Item 2 | How committed are you to this goal? |
| Item 3 | How important is this goal compared to other things you have to do this week? |

| Goal 1: Practice voice exercises at least 3 to 5 times per day |
| Goal 2: Use your best voice throughout the day |
| Item 1 | It’s hard to take this goal seriously. |
| Item 2 | Quite frankly, I don’t care if I achieve this goal or not. |
| Item 3 | I am strongly committed to pursuing this goal. |
| Item 4 | It wouldn’t take much to make me abandon this goal. |
| Item 5 | I think this is a good goal to shoot for. |

Goal Commitment

| Goal 1: Practice voice exercises at least 3 to 5 times per day |
| Goal 2: Use your best voice throughout the day |
| Item 1 | You have a certain kind of voice and you really can’t do much to change it. |
| Item 2 | Your voice is something you can’t change very much. |
| Item 3 | You can learn to do some new things with your voice, but you can’t really change your voice. |

Influencing patients

- Sources of self-efficacy
  - Mastery
  - Vicarious
  - Verbal persuasion
  - Psycho/physiological states

- Goal Characteristics
  - proximal, concrete, measurable

- Video Modeling

Skill Attribution measure

| Theory of Vocal Ability Questionnaire |
| Item 1 | You have a certain kind of voice and you really can’t do much to change it. |
| Item 2 | Your voice is something you can’t change very much. |
| Item 3 | You can learn to do some new things with your voice, but you can’t really change your voice. |

What predicts practice?

- Question 1
- Practice:
  - Barrier self-efficacy predicted practice

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy Scale Score</td>
<td>1.976</td>
<td>.661</td>
<td>.462**</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.213</td>
<td>8.948</td>
<td></td>
</tr>
<tr>
<td>$F$ for change in $R^2$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What predicts generalization?

- **Question 1**
  - % Generalization
    - Session Rating Scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model: predicting practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
</tr>
<tr>
<td>Session Rating Scale Score</td>
<td>17.02</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.451</td>
</tr>
<tr>
<td>$F$ for change in $R^2$</td>
<td>18.89</td>
</tr>
</tbody>
</table>

Results: Question 1

- **Voice outcome: VHI scores**
  - Therapeutic alliance (SRS) predicted VHI
  - Baseline VHI scores predicted VHI

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Voice Handicap Index</td>
<td>.674</td>
<td>.113</td>
</tr>
<tr>
<td>Session Rating Scale</td>
<td>-6.09</td>
<td>2.93</td>
</tr>
</tbody>
</table>

| $R^2$                         | .534 | .592 |
| $F$ for $R^2$                 | 38.53*** | 4.29* |