Modeling Implementation and Knowledge Translation Strategies Using Discrete Choice Conjoint Experiments

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Goals of the Talk

☐ Brief Introduction to Preference Modelling
  ■ Discrete Choice Experiments

☐ Highlights from Studies of KTE Preferences
  ■ Addiction Professionals
  ■ Children’s Mental Health Professionals
  ■ Educators

☐ Implications?
Why Study Implementation?

“Multiple studies across differing treatments found that training (workshop, manual, and supervision) was not enough to produce proficient change in therapist adherence, competence, and skill. In turn, Therapists were not necessarily able to engender client change.”

For treatments to be effective and sustained in practice settings, treatment developers should consider design features that increase the appeal to the therapists who are ultimately responsible for using them.

Source: Journal of Consulting and Clinical Psychology, 2013, 81, 6, 999-1009,
Modeling the Implementation of School-based Mental Health Strategies
CIHR Team in Access to Children’s Mental Health Services

- **Principal Investigator**
  - Melanie Barwick (University of Toronto)

- **Co-Investigators (Selected)**
  - Kathy Short (Hamilton-Wentworth District School Board)

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  - Yvonne Chen (McMaster HRM Program)

- **Funding**
  - Canadian Institutes of Health Research
  - Jack Laidlaw Chair in Patient-Centred Health Care
Discrete Choice Conjoint Survey

- Sample Size = 1010 Educators
- Return Rate = 82%
- 17 4-Level KT Attributes
- Partial Profile Design
- 17 Choice Tasks Per Informant
- 999 Near Orthogonal Versions of the Survey

Source: Cunningham, Barwick et al. School Mental Health (2014)
Assume you are considering changing your teaching practice to improve the behavioral and emotional outcomes of students:

Click below the practice change strategy you would prefer:

**Strategy 1**
- Learning requires 2 days
- My colleagues endorse this 67%
- Other schools say this strategy works

**Strategy 2**
- Learning requires 1 day
- My colleagues endorse this 100%
- This strategy is promising but unproven

**Strategy 3**
- Learning requires 3 days
- My colleagues endorse this 33%
- Research says this strategy works

Note: 999 versions – 1 randomly assigned to each participant
Partial Profile Designs

- Reduce Effect of Dominant Attributes
- Reduce Response Error
- Reduce Total Design Error
- Produce Similar Utility Coefficients
- Improve Predictive Validity of Simulations (Reduce MAE)

Data Analysis

- Hierarchical Bayes or Conditional Logit
  - Importance Scores (Relative Influence on Choices)
  - Zero Centered Utility Coefficients (Strength of Preference)
- Latent Class Analysis
- Multi-level Latent Class Analysis
- Randomized First Choice Simulations

Why Use Discrete Choice Experiments?

- Approximate Complexity of Real World Choices
- Each Level Experimentally Manipulated
- Each Attribute in the Context of Others
- Complexity Activates Decision Making Heuristics
- Users Inform Implementation Planning Tradeoffs
- Reduce Influence of Social Desirability Biases
Segments with Different Preferences?
Latent Class Segmentation Analysis

Demand Sensitive (23%)

Change Ready (77%)

Source: Cunningham, Barwick et al., School Mental Health (2014)
Covariates in Latent Class Analysis

- Can be Linked to Latent Class Membership
- Can be Included in the Formation of Latent Classes
  - Improve Model Fit
  - Enhance the Interpretation of Segment Membership
  - But - Increase Number of Parameters Estimated
What Attitudes Distinguish Change Ready vs Demand Sensitive Segments?

**Change Ready Educators:**
- Anticipate More Benefits to Practice Change
- Find the Social Context to be More Influential
- Report Higher Change Self Efficacy
- More Intent on Participating
Relative Importance of KT Design Attributes

Attributes of the Implementation Process

Importance = Variation In Each Attribute’s Utility/Total Utility Variation

Sensitivity to Variation in an Attribute’s Levels

Relative Importance
Attributes of the *Social Context* Influencing the Decision to Adopt Mental Health Practice Changes
Relative Importance of KT Attributes: Colleague Support for Change

Support of Colleagues for Change Exerts an Important Influence

Source: Cunningham, Barwick et al. School Mental Health (2014)
Colleague Support

Both Segments Prefer Programs Supported by 100% of Colleagues

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Design Attributes: Administrative Support

Source: Cunningham, Barwick et al., School Mental Health (2014)
Support by Administrators

KT Choices of Both Segments Sensitive to Administrative Support

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Design Attributes: Union Endorsement

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Union Endorsement

Source: Cunningham, Barwick et al. School Mental Health (2014)
Attributes of *Mental Health Practices* that Influence Implementation Decisions
Relative Importance of KT Attributes: Compatibility with Practice

Source: Cunningham, Barwick et al. School Mental Health (2014)
Compatibility with Teaching Practice

Educators More Likely to Choose Mental Health Practices Consistent with Teaching Practice

Source: Cunningham, Barwick, et al., School Mental Health (2014)
Relative Importance of KT Design Attributes: Supporting Evidence

Source: Cunningham, Barwick et al. School Mental Health (2014)
Supporting Evidence

Both Segments Prefer Options Based on Research + Experience of Other Schools

Demand Sensitive Educators Value Experience of Other Schools vs Research

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Attributes: Provincial Curriculum Links

Source: Cunningham, Barwick et al. School Mental Health (2014)
Links to Provincial Curriculum

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Attributes of the Implementation Process that Influence Decisions
Relative Importance of KT Design Attributes: Qualities of Presenters

Relative Importance

Qualities of Presenters

Colleague Support
Compatibility
Administrative Support
Union Endorsement
Coaching
Supporting Evidence
Provincial Curriculum Links
Workshop Size
Skills vs Knowledge
Follow-up Support
Observability Trialability
Training Time Demand
Selection Process
Universal vs Targeted
Internet Options

Source: Cunningham, Barwick et al. School Mental Health (2014)
Qualities of the Presentor

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Relative Importance of KT Attributes: Coaching to Support Implementation

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Coaching Support to Improve Skills

- Change Ready
- Demand Sensitive

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Relative Importance of KT Attributes: Workshop Size

Source: Cunningham, Barwick et al. School Mental Health (2014)
Workshop Group Size

Both segments prefer information delivered in small groups of 10.

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Attributes: Training Time Demands

Source: Cunningham, Barwick et al. School Mental Health (2014)
Training Time Demands

Both Segments prefer 1 day workshops

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Attributes: Follow-up Support

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Follow-up Support

Demand Sensitive
Educators Prefer No
Follow-up Support

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Design Attributes: Selection Process

Source: Cunningham, Barwick et al. School Mental Health (2014)
KT Selection Process

Source: Cunningham, Barwick et al. School Mental Health (2014)
Relative Importance of KT Design Attributes: Internet Options

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Internet Training Options

Utility Value

- Change Ready
- Demand Sensitive

Limited Interest in Internet Options

Source: Cunningham, Barwick et al. School Mental Health (2014)
Randomized First Choice Simulation

- **Standard Dissemination**
  - 1 Day Large Group (N=50)
  - No Internet
  - 67% Focus on Knowledge
  - No Coaching or Follow-up

- **Enhanced Dissemination**
  - 3 Day Small Group (N=10)
  - No Internet
  - 67% Focus on Skills
  - Coaching and 3 One Hour Follow-ups

- **Internet Dissemination**
  - 3 Day Individual Learning
  - Internet Learning and Moderated Discussion
  - 67% Focus on Skills
  - No Coaching but 3 Internet Follow-up Sessions

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Randomized First Choice Simulation

Source: Cunningham, Barwick et al. *School Mental Health* (2014)
Multi-Stage Implementation Decisions

Is this Initiative Supported by My Principal, Colleagues, and Union?

Is this Compatible with My Practice & Consistent with Provincial Curricula?

What is the Evidence that This Works?
Does this Work for Other Schools?
Is It Supported by Research?

Is the Presenter an Engaging Expert?

Is this Consistent with My Learning Preferences
1 Day, Small Group (n=10), Skill Focused, Supported by Coaching, 1 to 2 Follow-ups
Modeling Evidence-based Practice Dissemination in Addiction Agencies Serving Women
SELECTED PROJECT PARTNERS

- Members of Research Team
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  - Ainsley Smith

- Research Support
  - Canadian Institutes of Health Research
  - Jack Laidlaw Chair in Patient-Centred Health Care
Discrete Choice Conjoint Survey

- Sample Size = 1379
- Return Rate = 60%
- 16 4-Level KT Attributes
- 20 Choice Tasks Per Informant
- 999 Versions of the Survey

Latent Class Segmentation Analysis

- Process Sensitive (30%)
- Outcome Sensitive (52%)
- Demand Sensitive (18%)

Relative Importance of Knowledge Translation Attributes

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Relative Importance of Knowledge Translation Attributes

Participants Sensitive to the Support of Colleagues & Administrators

Relative Importance of Knowledge Translation & Exchange Attributes to Professionals

Attributes of the KT Process Exerted Less Influence on Choices

Relative Importance of Knowledge Translation & Exchange Attributes to Professionals

Participants Prefer Local Collaborative Content Selection

Relative Importance of Knowledge Translation Attributes: KT Presenter

Participants Prefer Presenters Who are Clinicians vs Researchers

Simulating Response to KT Options
Standard KT

- 1-Day Time Commitment
- Large Group Format
- Focus is 67% Knowledge 33% Skill
- Easy to Apply
- No Review Questions or Practice
- No Implementation Follow-ups

Enhanced KT

- 4-Day Time Commitment
- Small Group Format
- Focus is 67% Knowledge 33% Skill
- Difficult to Apply
- Review Questions and Practice
- 3 Implementation Follow-ups

Simulating Practice Change Options

Share of Preference is the Percentage of Participants Predicted to Prefer the Standard or Enhanced KT Strategies

Percent Predicted to Prefer Enhanced KT

Modeling Implementation of EBPs in Children’s Mental Health Agencies
CIHR Team in Access to Children’s Mental Health Services

- **Principal Investigator**
  - Melanie Barwick (University of Toronto)

- **Selected Research Staff**
  - Heather Rimas
  - Stephanie Mielko
  - Yvonne Chen (McMaster HRM Program)
  - Raluca Barac

- **Funding**
  - Canadian Institutes of Health Research
  - Jack Laidlaw Chair in Patient-Centred Health Care
Discrete Choice Conjoint Survey

- Sample Size = 563 Mental Health Service Providers
- 31 Agencies
- 14 4-Level KT Attributes
- 18 Choice Tasks Per Informant
- Partial Profile Design
- 999 Versions of the Survey

Source: Cunningham, Barwick et al., Administration and Policy in Mental Health (2018).
Segments with Different Preferences?
Latent Class Segmentation Analysis

Accelerated Adopters (12%)

Gradual Adopters (88%)

Source: Cunningham, Barwick et al., Administration and Policy in Mental Health (2018).
Attributes of the *Social Context* Influencing the Decision to Adopt Mental Health Practice Changes
Relative Importance of KT Design Attributes: Supervisor Support

Source: Cunningham, Barwick et al. Administration and Policy in Mental Health (2018)
Relative Importance of KT Design Attributes: Trainer Qualities

Source: Cunningham, Barwick et al. Administration and Policy in Mental Health (2018)
Trainer Qualities

Source: Cunningham, Barwick et al., *Administration and Policy in Mental Health* (2018).
Attributes of the Implementation Process that Influence Decisions
Relative Importance of KT Design Attributes: Initial Training Time

Source: Cunningham, Barwick et al. Administration and Policy in Mental Health (2018)
Initial Training Time

Source: Cunningham, Barwick et al., *Administration and Policy in Mental Health* (2018).
Relative Importance of KT Design Attributes: Initial Internet Training

Source: Cunningham, Barwick et al. Administration and Policy in Mental Health (2018)
Initial Internet Training

Source: Cunningham, Barwick et al., Administration and Policy in Mental Health (2018).
Relative Importance of KT Design Attributes: Initial Training Time

Source: Cunningham, Barwick et al. Administration and Policy in Mental Health (2018)
Both Segments Prefer

- 100% Support of Supervisors and Colleagues for EBP Changes
- EBP Changes Benefiting All Patients
- Proven in Research and Other Agencies
- Trainers Who are Engaging Experts
- Selected by Individual Programs within Agencies (Rather than Ministries)
- Focus on 33% Knowledge 67% Skills
- Observational Learning, Practice, and Feedback
Mental Health Professionals

- **Accelerated Adopters 12%**
  - Greater Intent to Participate
  - 100% of Initial Training on Line
  - Devote More Time (4 Days) to Initial Training
  - Would Make More Changes to Their Practice
  - Introduce only Minor Modifications to EBPs

- **Gradual Adopters 88%**
  - Lower Intent to Participate
  - 33% of Initial Training on Line
  - Devote Less Time (2 Days) to Initial Training
  - Would Make Fewer Changes to Practice
  - Preferred More Follow-up Training
  - Introduce Moderate Modifications to EBP
Randomized First Choice Simulation

- **Basic Dissemination**
  - 2 Days of Initial Training
  - 2 Days of Follow-up Training
  - 33% Skills 67% Knowledge
  - 25% Change in Practice

- **Enhanced Dissemination**
  - 4 Days of Initial Training
  - 4 Days of Follow-up Training
  - 67% Skills 33% Knowledge
  - 50% Change in Practice

Source: Cunningham, Barwick Administration and Policy in Mental Health (2018)
Randomized First Choice Simulation: Basic vs Enhanced

Source: Cunningham, Barick Administration and Policy in Mental Health (2018)
Randomized First Choice Simulation: Basic vs Enhanced + 67% Supervisor Support

Source: Cunningham, Barwick Administration and Policy in Mental Health (2018)
Selected Implications

- **Segments with Different KT Design Preferences**
  - Change Ready versus Demand Sensitive
  - Outcome Sensitive vs Process Sensitive vs Demand Sensitive
  - Accelerated Adopters vs Gradual Adopters

- **Different Pattern of Preferences Across Professional Groups**

- **Social Context Exerts More Influence Than Evidence Base**
  - Administrators, Supervisors, Principals
  - Colleagues
  - Unions

- **Most Prefer Learning in a Small Group (N=10 Social Context)**

- **An Engaging Expert Facilitator Important**

- **Interest in Internet Options Varies Across Professional Groups**
  - Highest in Mental Health Professionals in Accelerated Adopters Segment
Merci!