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."

Source: Biedas and Kendall *(2010).* Training Therapists in Evidence-Based Practice: A Critical Review of Studies From a Systems-Contextual Perspective. *Clinical Psychology Science and Practice* 17, 1-30.

Balancing Effectiveness With Responsiveness: Therapist Satisfaction Across Different Treatment Designs in the Child STEPs Randomized Effectiveness Trial

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University of California, Los Angeles

Priya Korathu-Larson,
Charmaine K. Higa-McMillan, and
Brad J. Nakamura
University of Hawaii

John R. Weisz
Harvard University

Jennifer Krull
University of California, Los Angeles

The Research Network on Youth Mental Health
Chicago, IL

Objective: To investigate the association between protocol design and therapist satisfaction in the Child STEPs ess Trial (Weisz et al., 2012). ***Method:*** Therapist report was obtained at the close of ts, each of whom was randomized to a Standard evidence-based treatment (EBT), UC) condition. ***Results:*** Analysis of satisfaction items revealed 2 correlated effectiveness and perceived responsiveness of the treatments. Therapist total cantly higher for cases in the modular condition than for those in the standard gard to specific dimensions, the modular and UC cases were rated significantly on the Responsiveness scale, whereas modular and standard EBT cases were UC on the Effectiveness scale. Finally, increases in Effectiveness scores from icantly larger for Modular cases than for cases in both other study conditions, nd case in Total Satisfaction scores were significantly larger for modular cases : Therapist satisfaction with a treatment approach has independent dimensions, f the protocol design. By virtue of being perceived as more effective than UC ndard EBTs, the modular protocol design was also viewed as more overall lary analysis suggested that these results were not due to mere first impressions

ignificance of this article?

apist satisfaction with using a treatment protocol varied as a function of signed. Therapists valued both effectiveness and responsiveness of treat- were best balanced using a modular treatment design with an intermediate level of flexibility. 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.

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
- *Research Staff*
  - Heather Rimas
  - Stephanie Mielko
  - Jenna Ratcliffe
  - Cathy Campbell (Team Secretary)
  - 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 Educataors
- 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	*Strategy 2*	*Strategy 3*
Learning requires 2 days *My colleagues endorse this 67%* *Other schools say this strategy works*	*Learning requires 1 day* *My colleagues endorse this 100%* *This strategy is promising but unproven*	*Learning requires 3 days* *My colleagues endorse this 33%* *Research says this strategy works*
○	○	○

Next

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)

Source: Chrzan, K. (2010). Using partial profile choice experiments to handle large numbers of attributes. *International Journal of Market Research, 52,* 827-840.

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

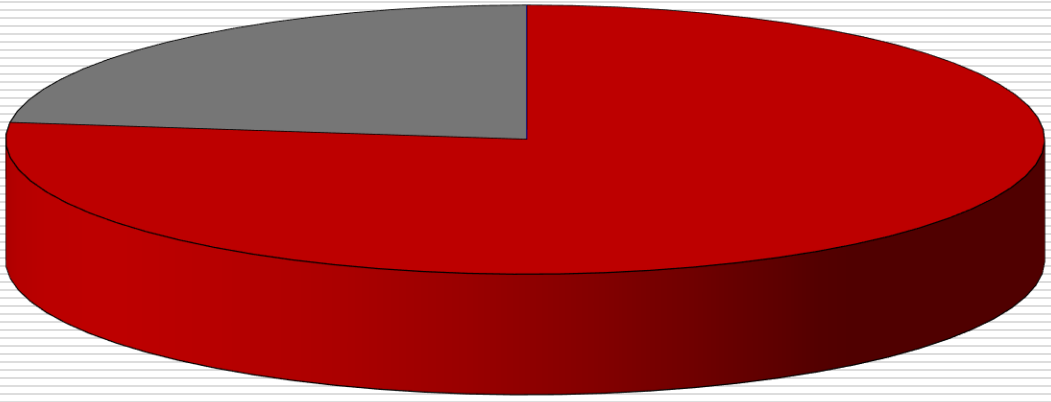
Source: Hauber, B., Gonzalez, J., Groothuis-Oudshoorn, C., Prior, T., Marshall, D.,Cunningham, C., . . . Bridges, J. (2016). Statistical methods for the analysis of discrete-choice experiments: A report of the ISPOR conjoint analysis good research practices task force. *Value in Health, 1*9(4), 300-315.

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

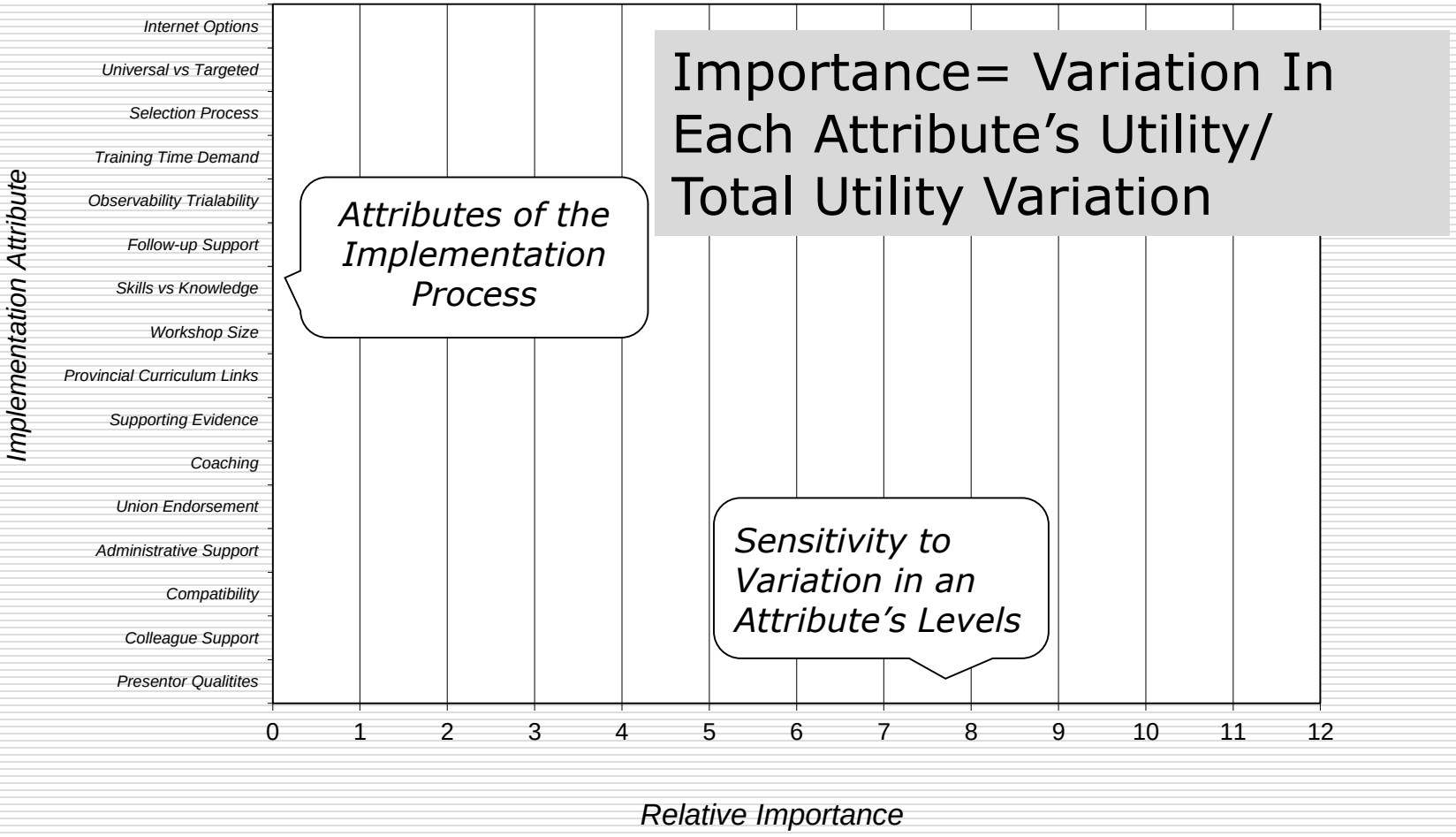
- *Can be Linked to Latent Class Membership*
- *Can be Included in the Formation of Latent Classes*
  - *Improve Model Fit*
  - *Enhance the Interpretation of Segment Membership*
  - *But - Increase Number of Parameters Estimated*

What Attitudes Distinguish Change Ready vs Demand Sensitive Segments?

Change Ready Educators:

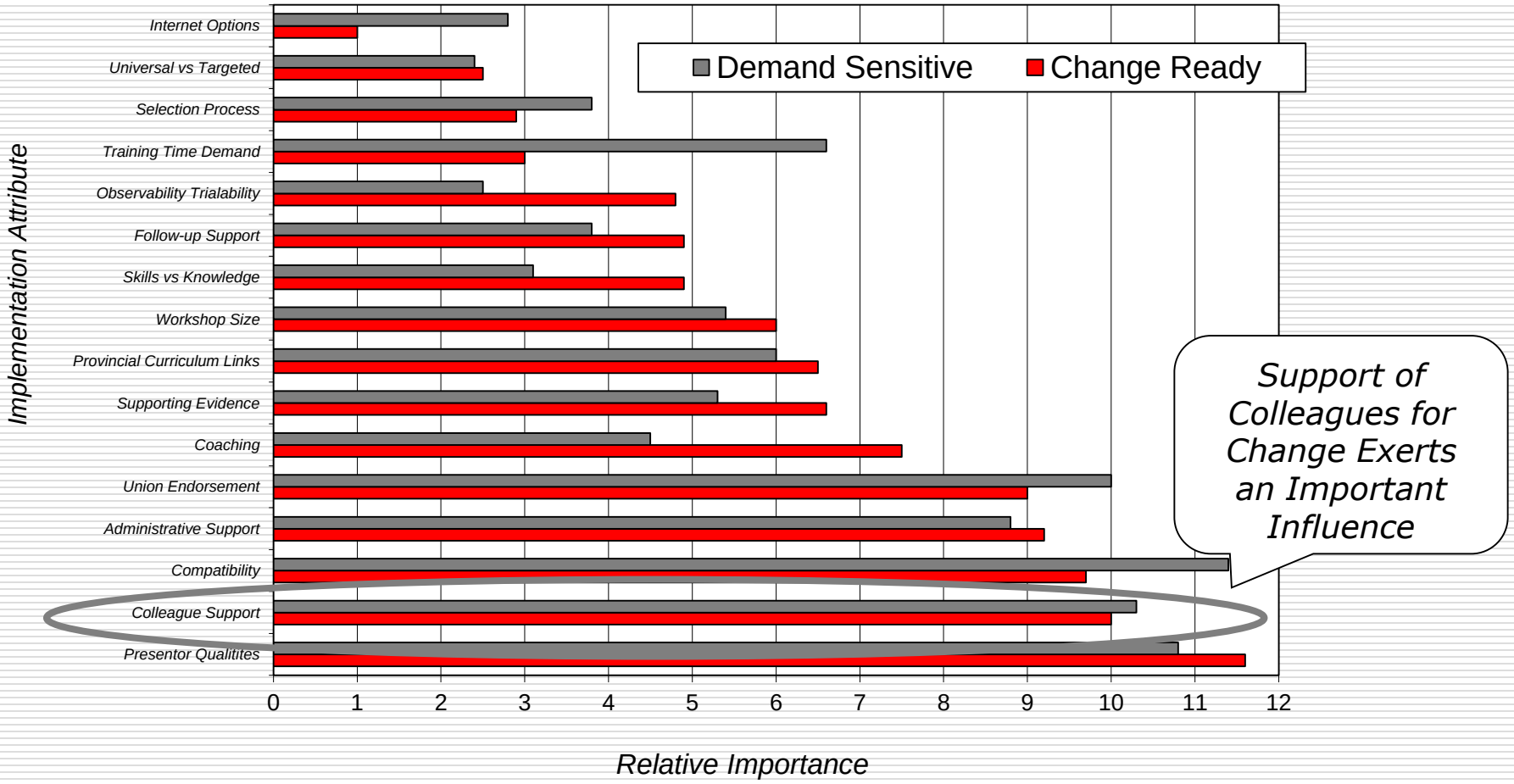
- *Anticipate More Benefits to Practice Change*
- *Find the Social Context to be More Influential*
- *Report Higher Change Self Efficacy*
- *More Intent on Participating*

Relative Importance of KT Design Attributes



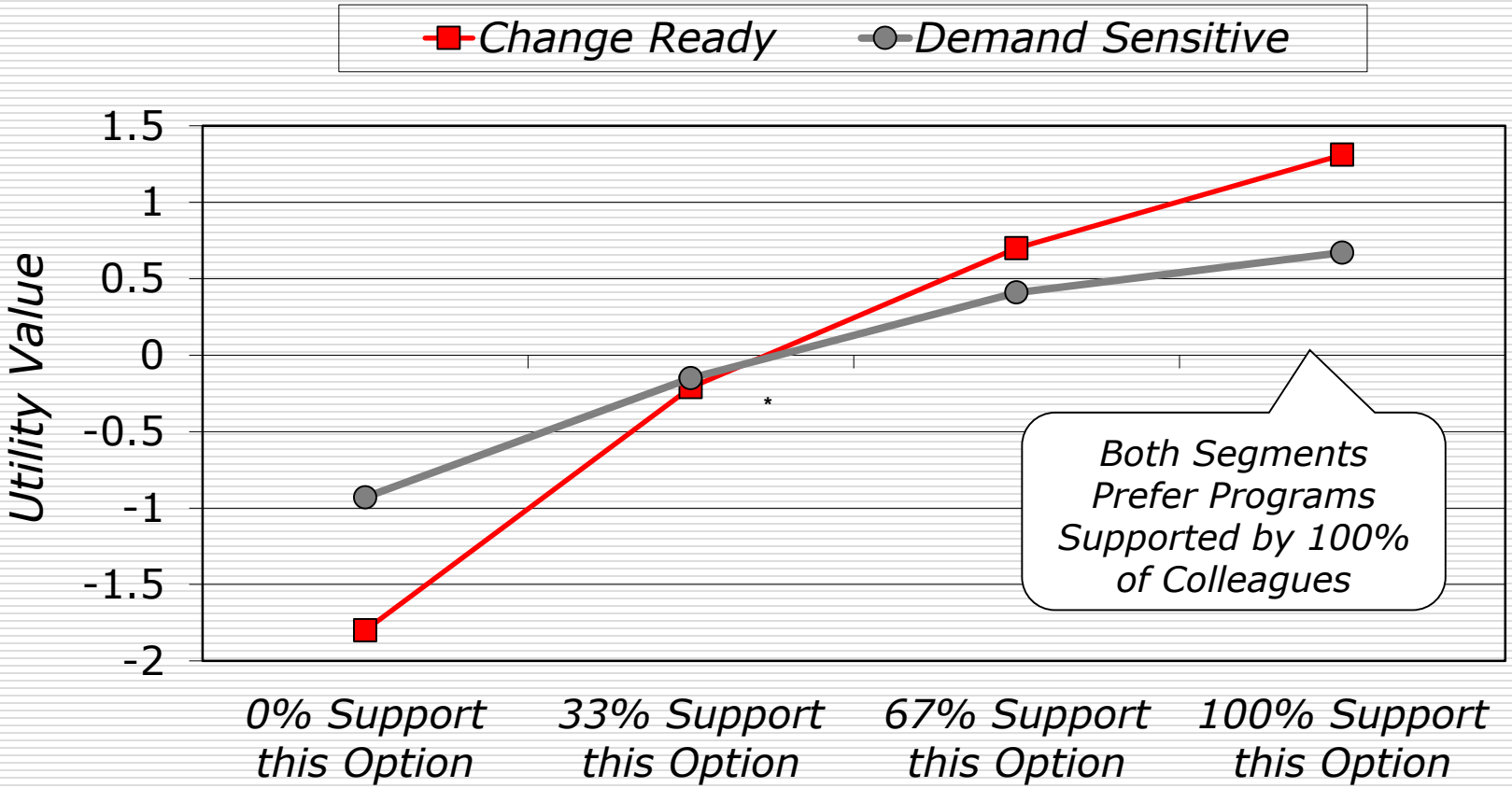
Attributes of the *Social Context* Influencing the Decision to Adopt Mental Health Practice Changes

Relative Importance of KT Attributes: Colleague Support for Change



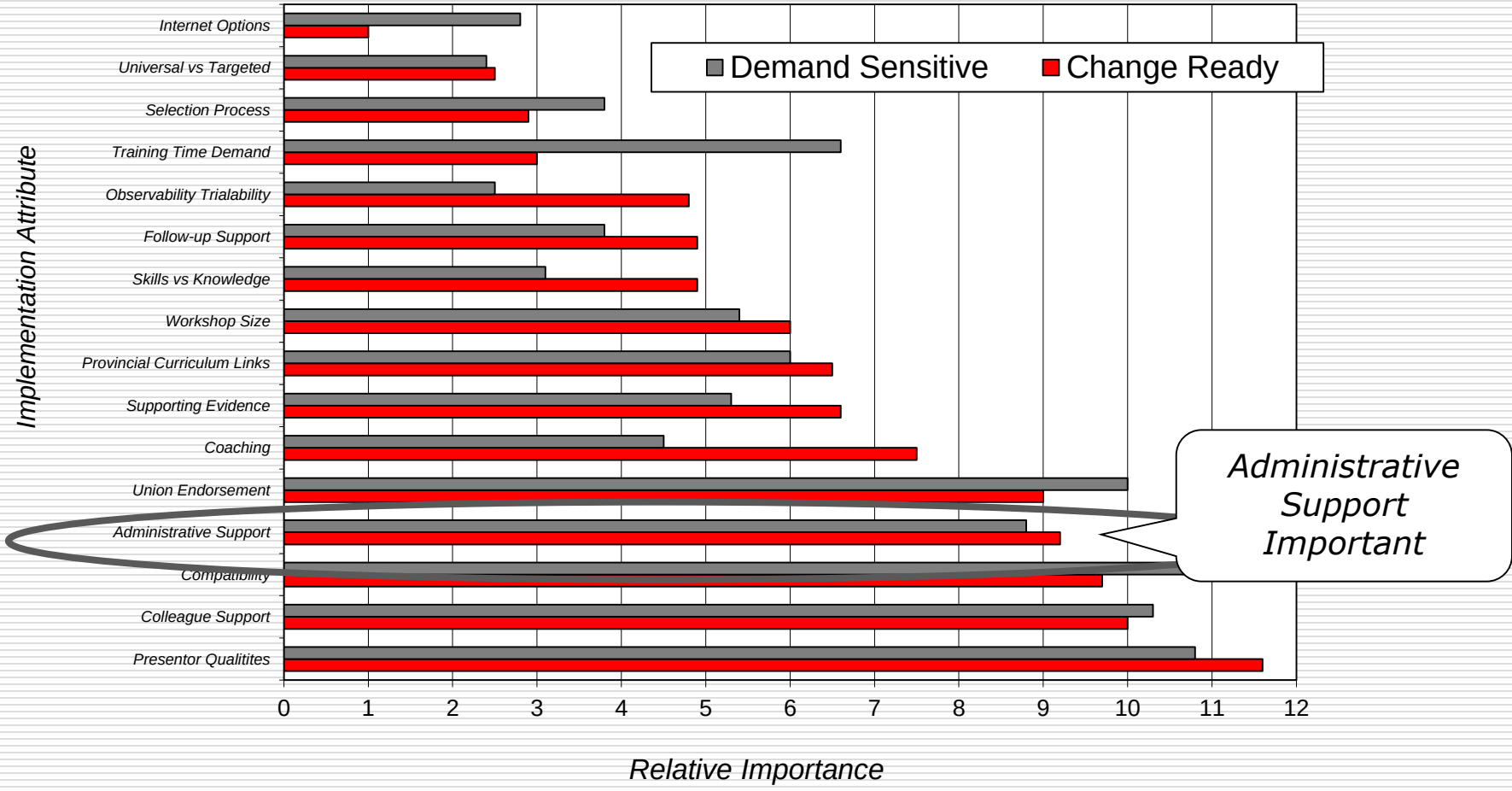
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Colleague Support



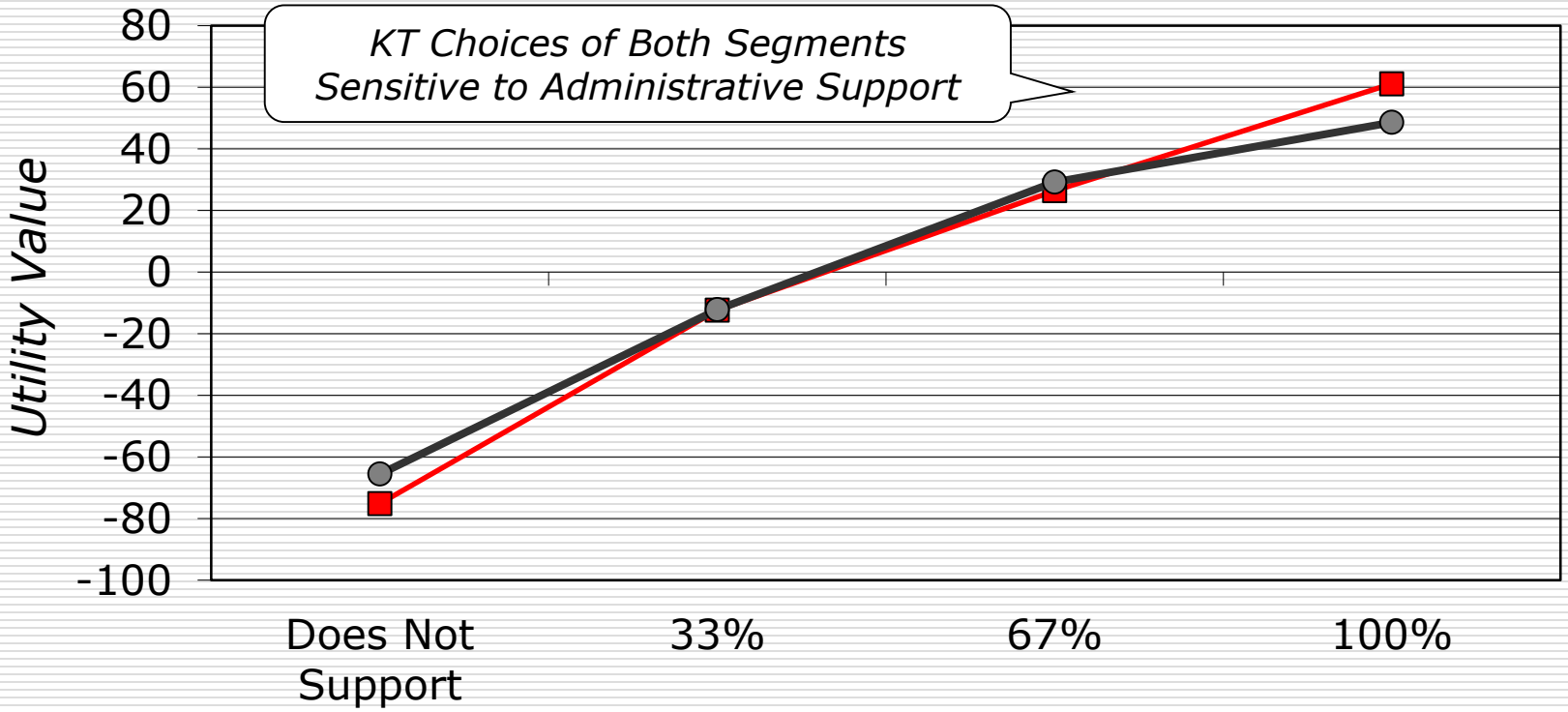
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Relative Importance of KT Design Attributes: Administrative Support



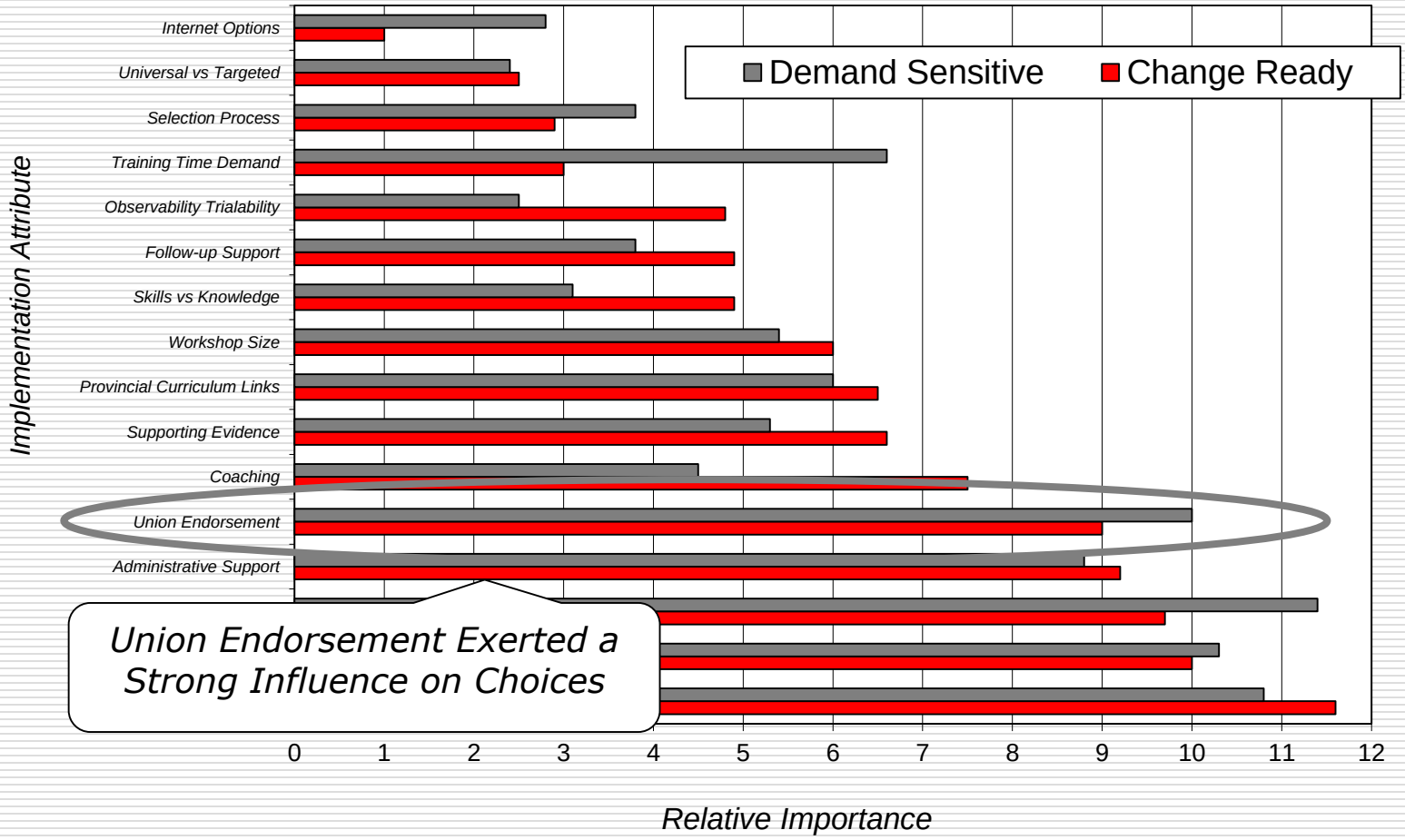
Source: Cunningham, Barwick et al., *School Mental Health (2014)*

Support by Administrators



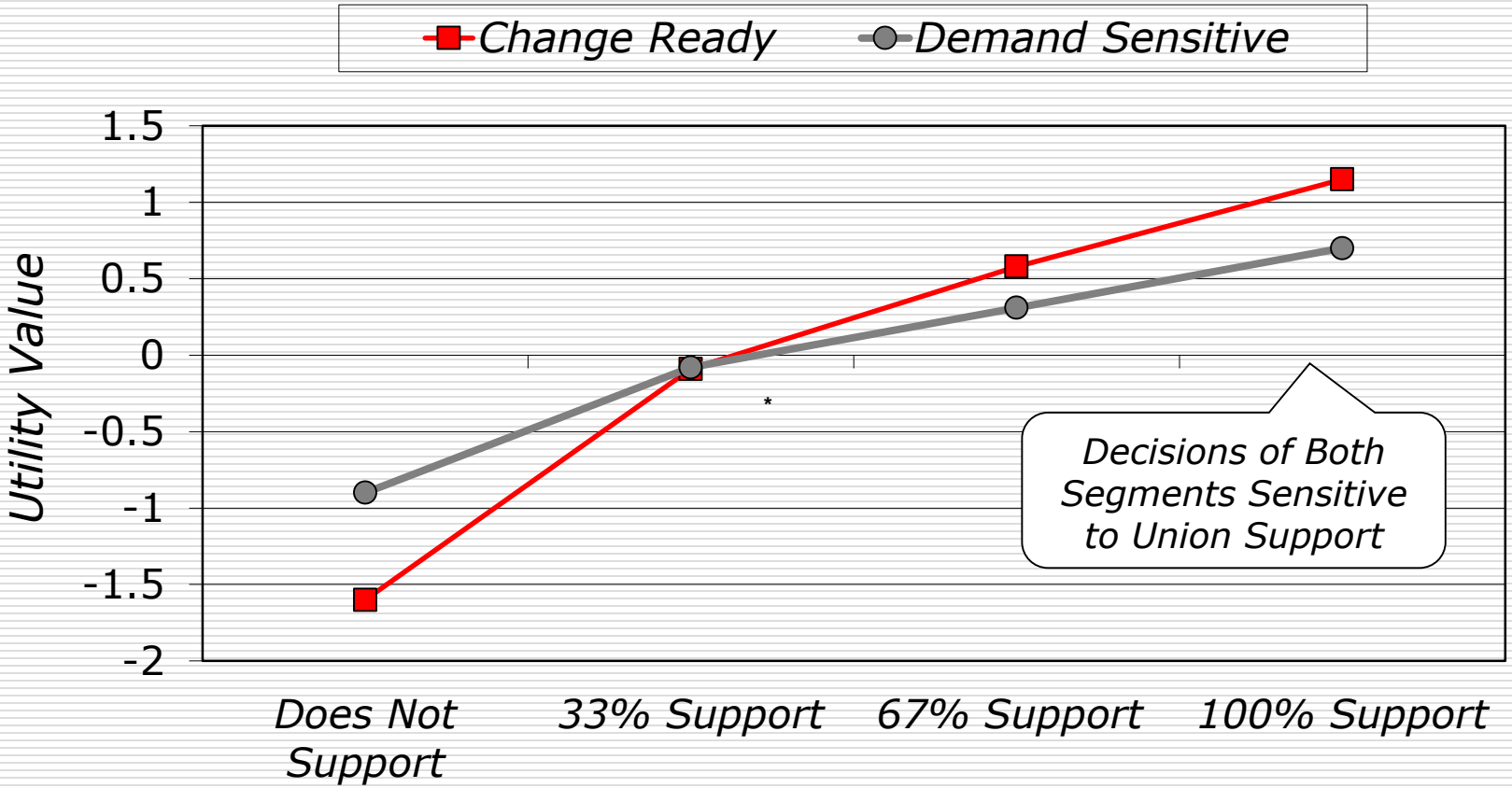
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Relative Importance of KT Design Attributes: Union Endorsement



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

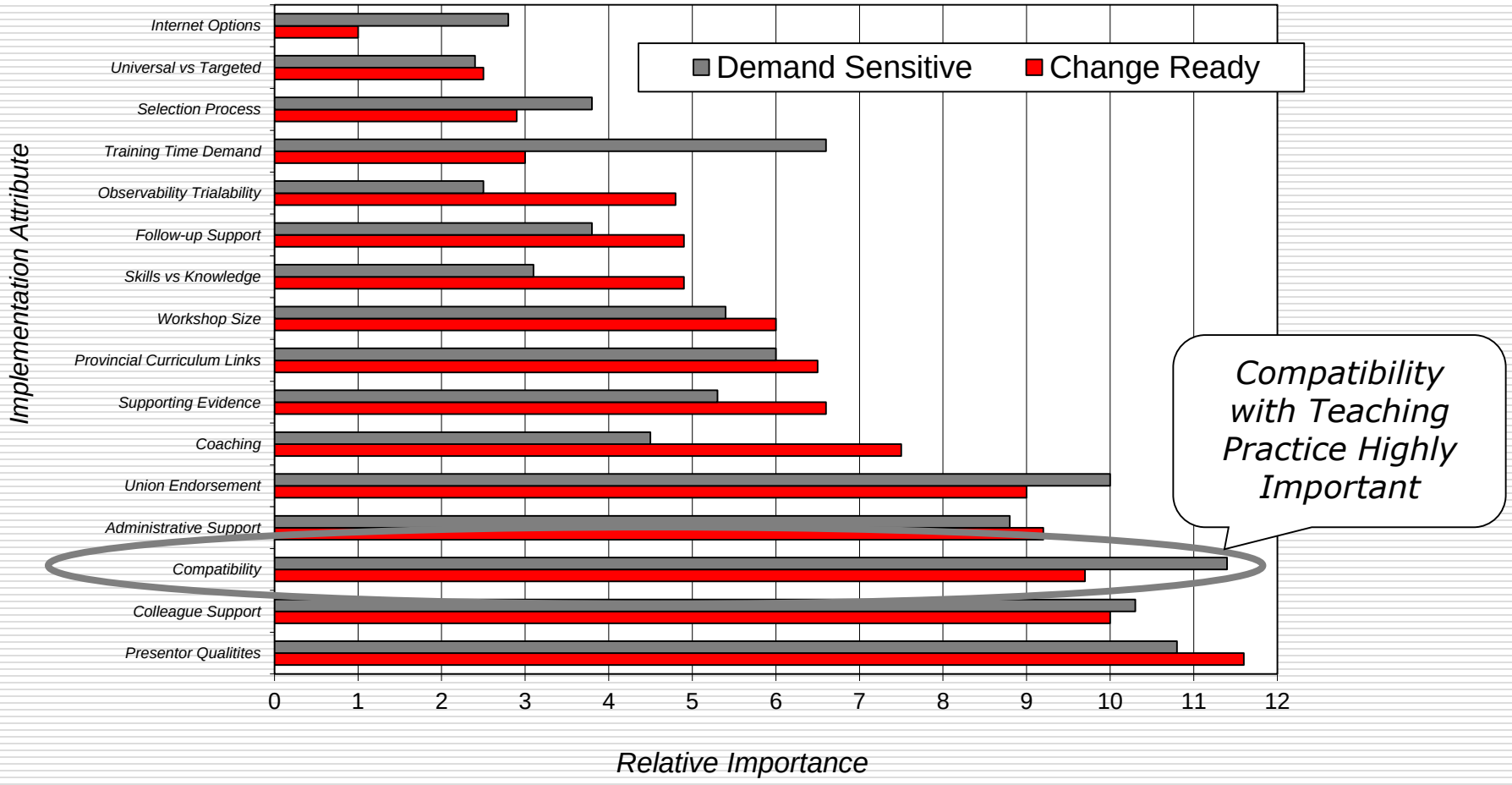
Union Endorsement



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

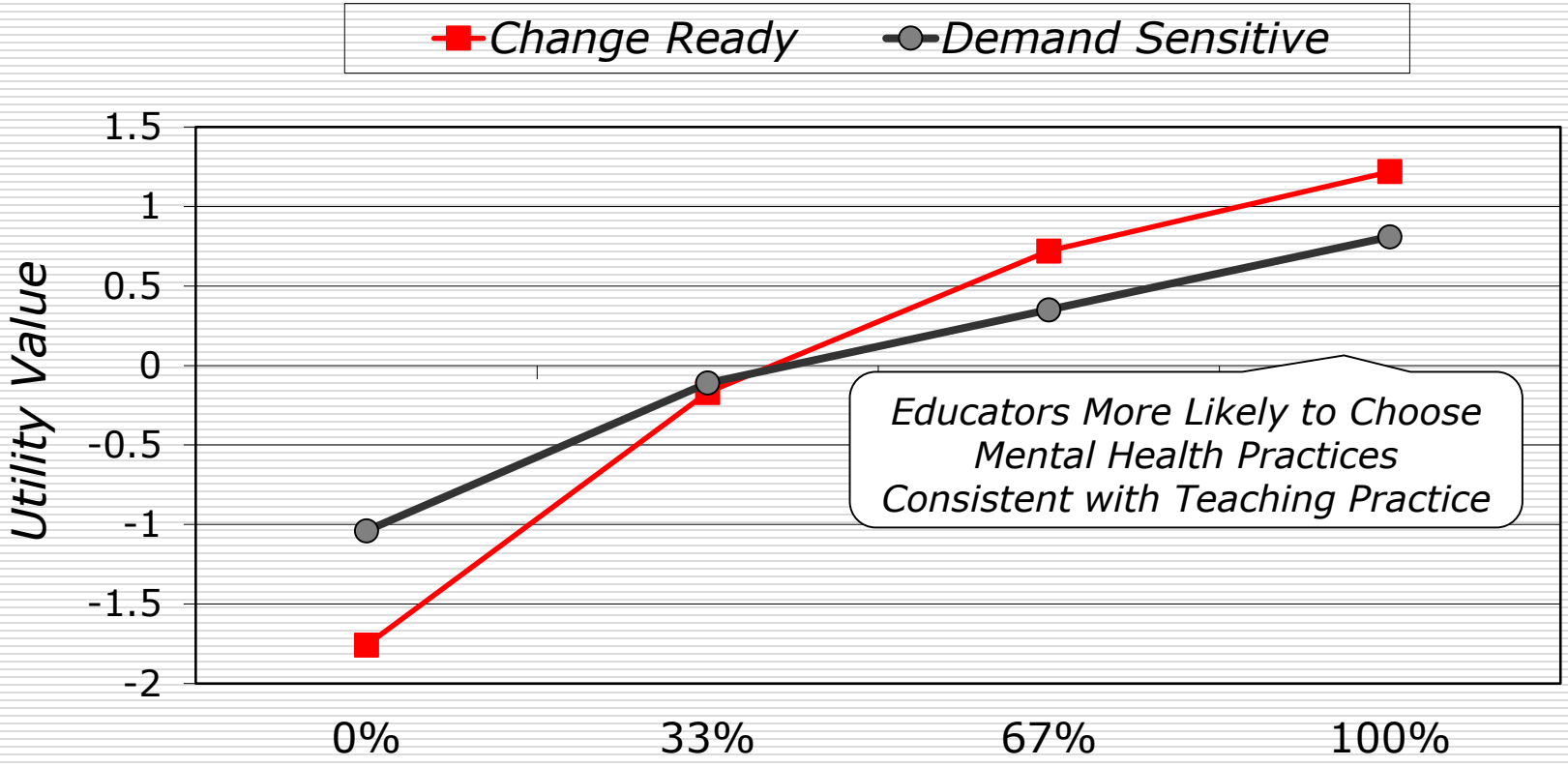
Attributes of *Mental Health Practices* that Influence Implementation Decisions

Relative Importance of KT Attributes: Compatibility with Practice



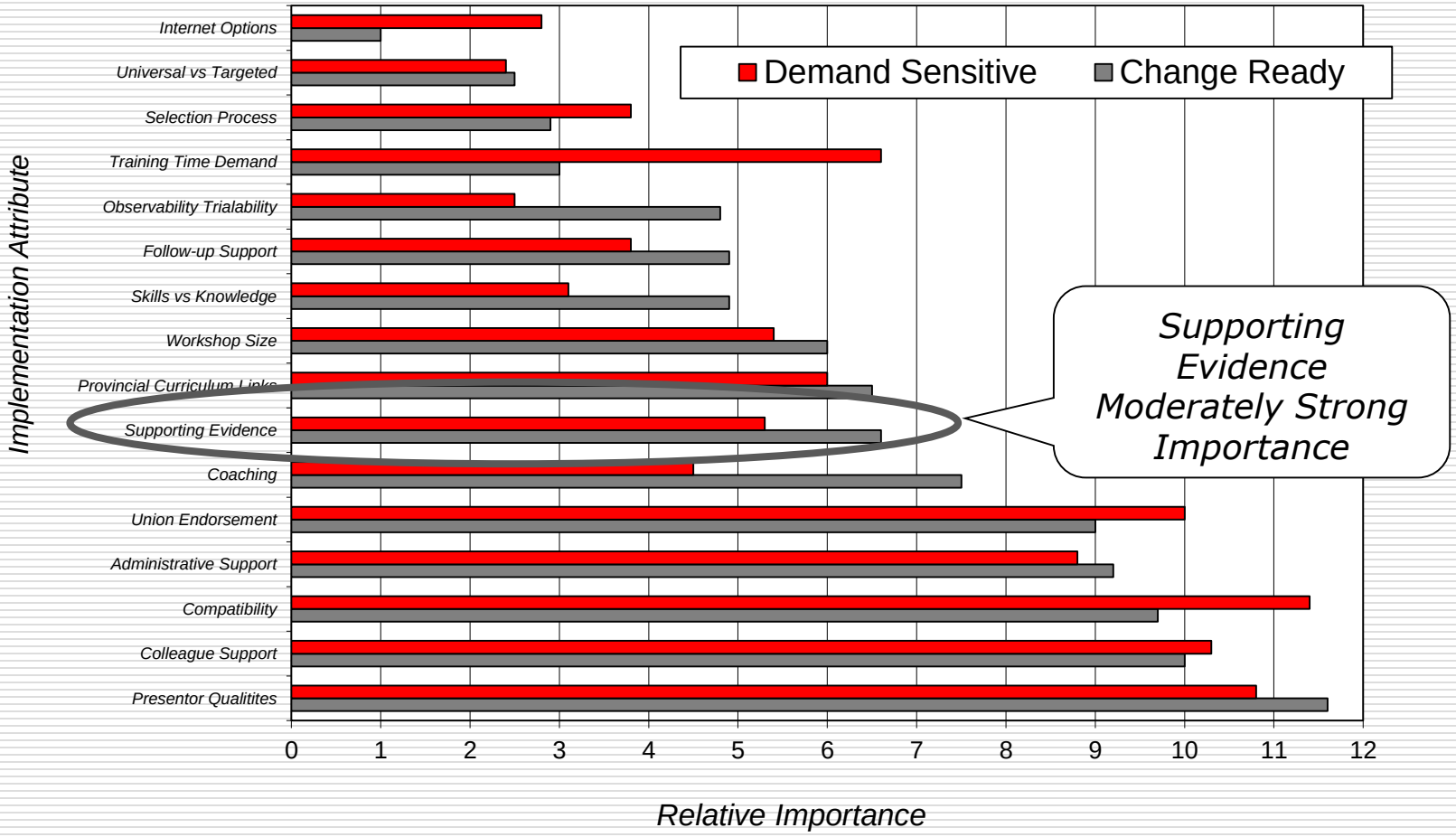
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Compatibility with Teaching Practice



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

Relative Importance of KT Design Attributes: Supporting Evidence



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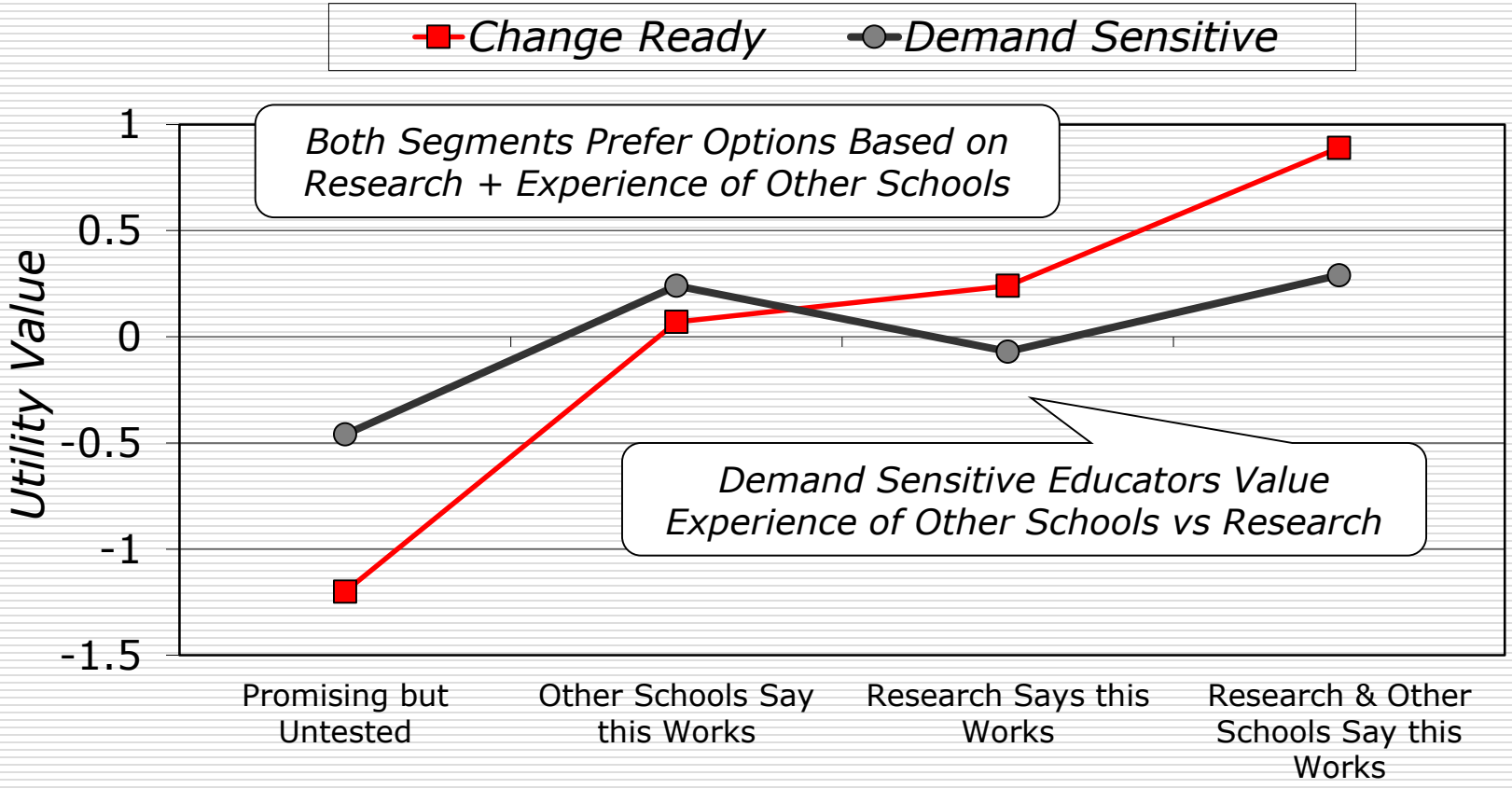
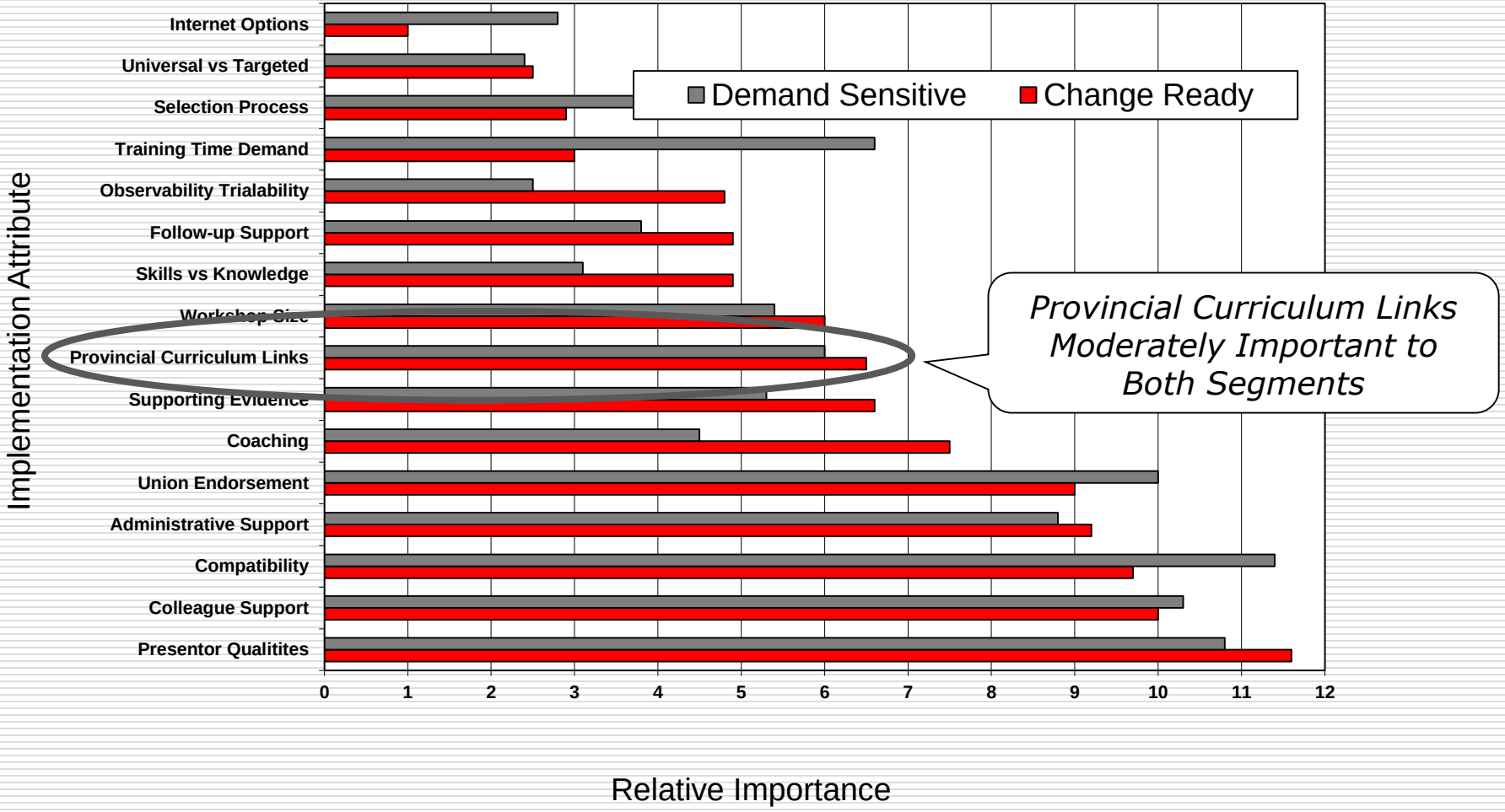
Supporting Evidence



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

Relative Importance of KT Attributes: Provincial Curriculum Links



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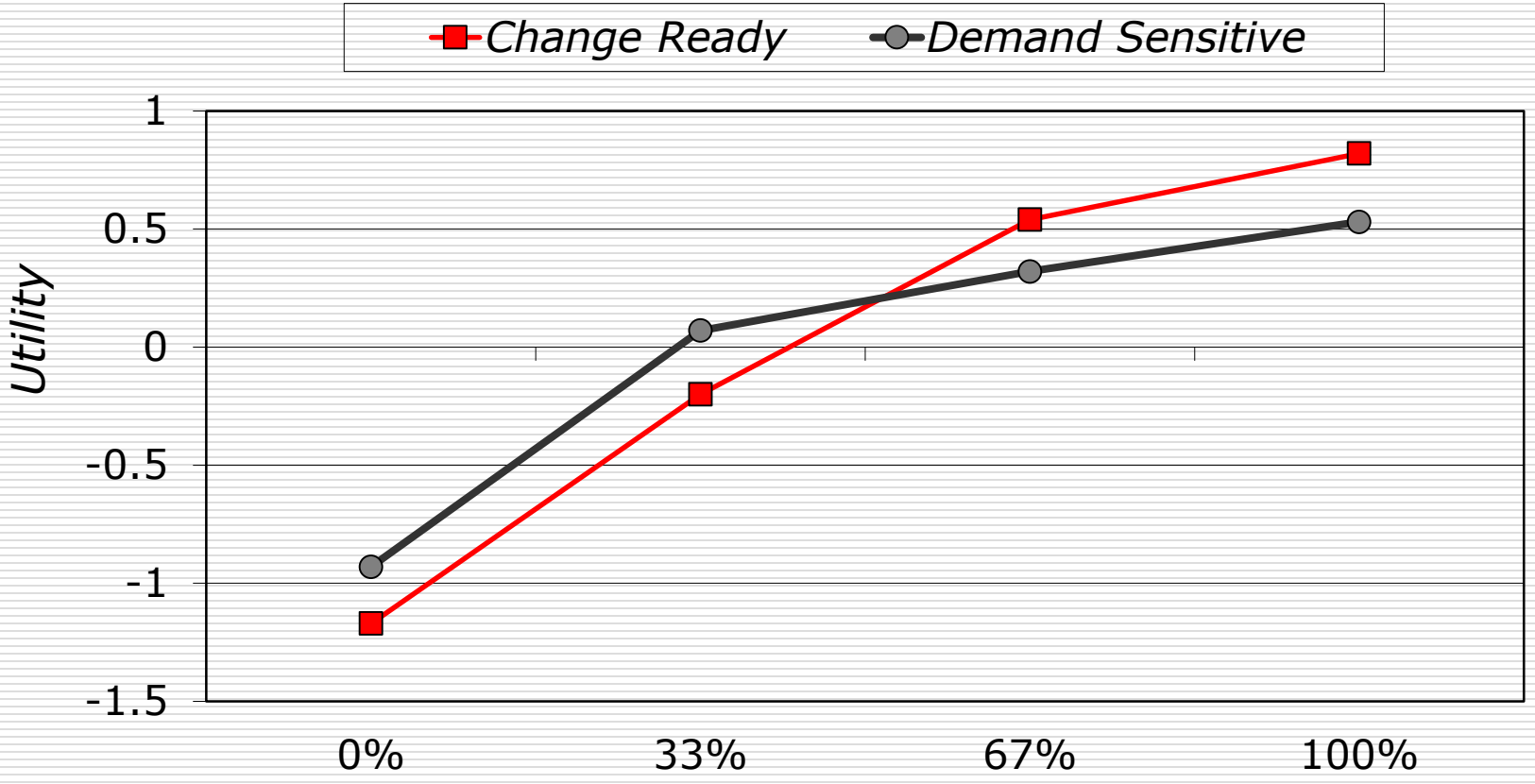
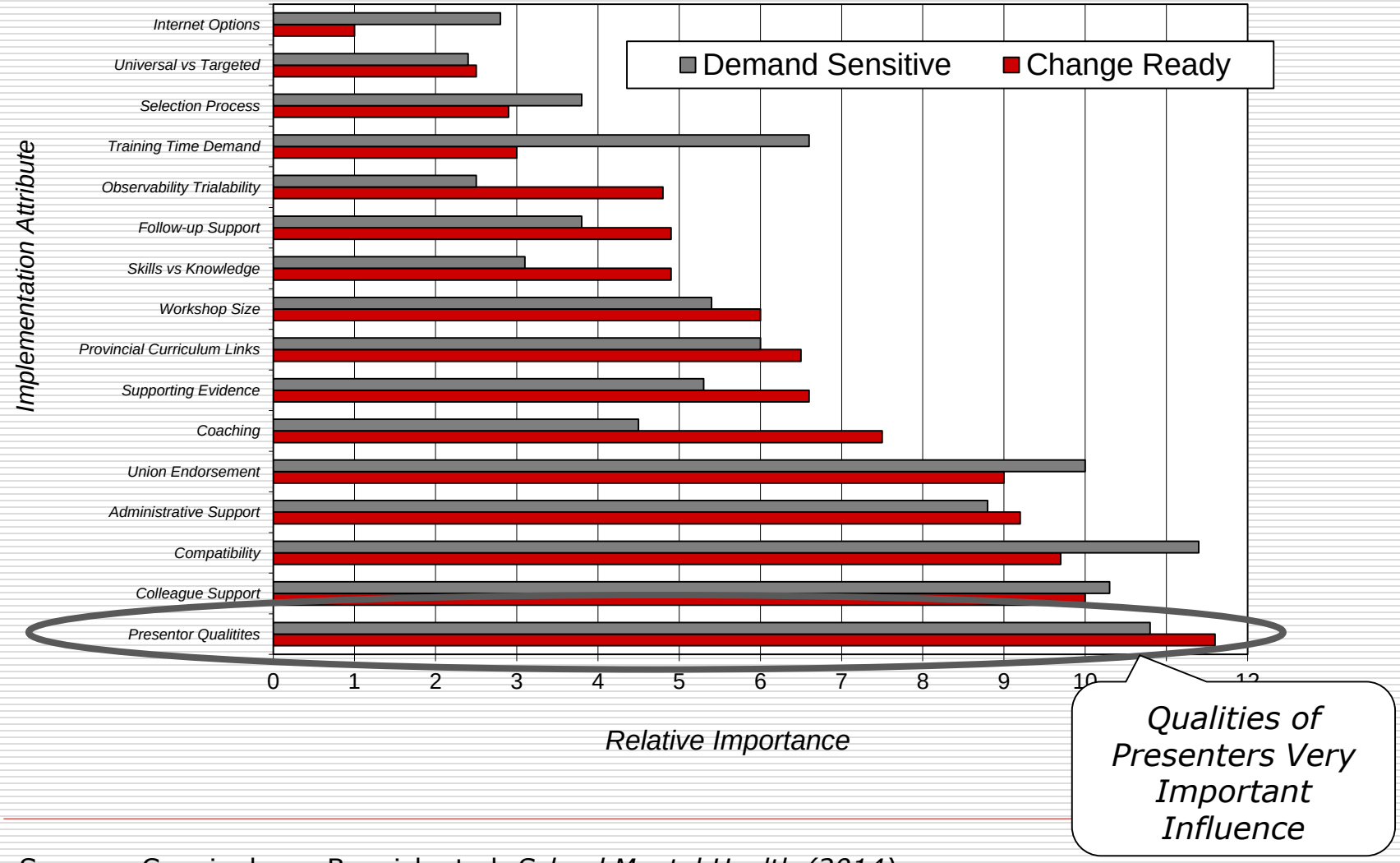
Links to Provincial Curriculum



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

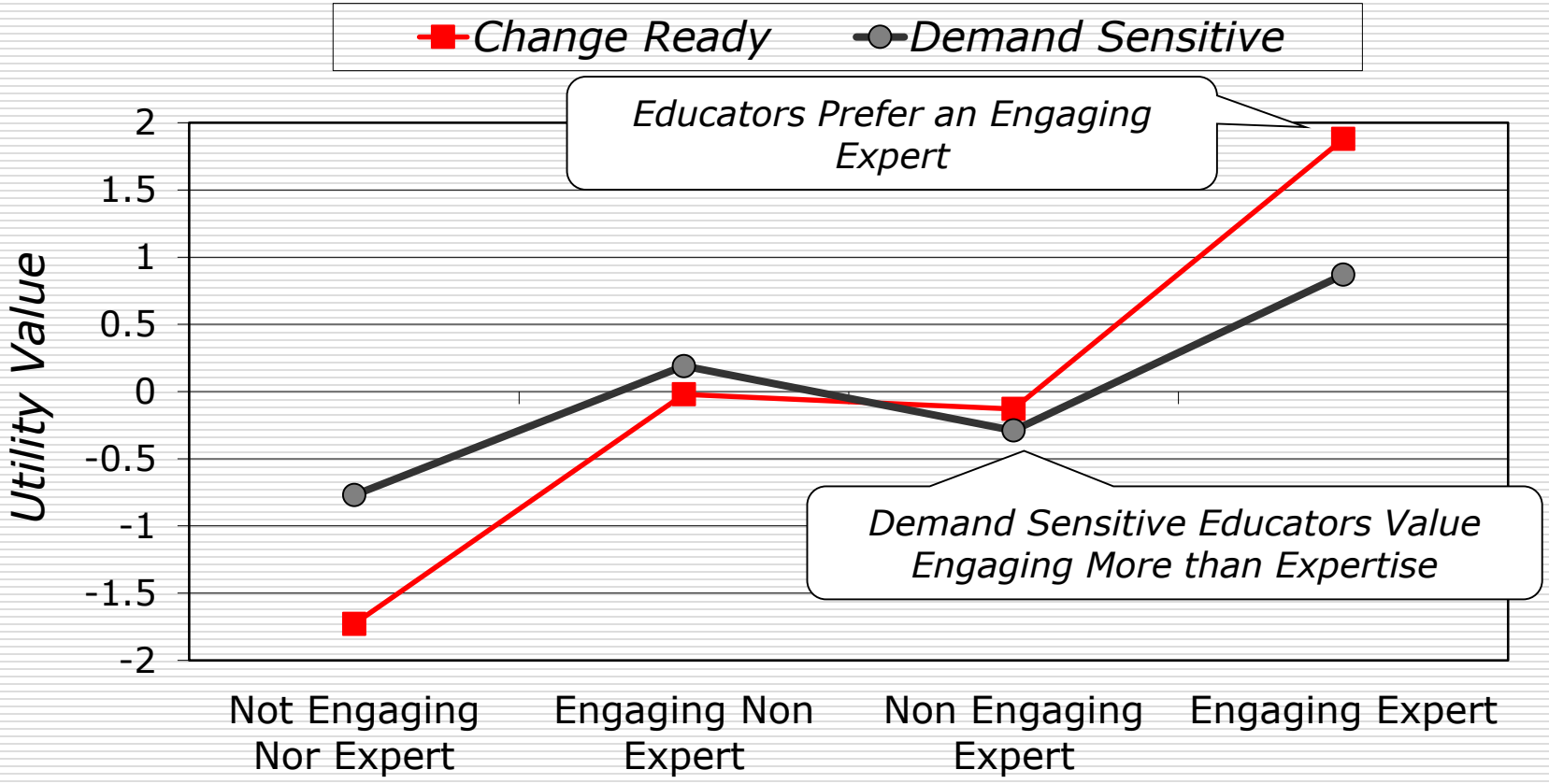
Attributes of the Implementation *Process* that Influence Decisions

Relative Importance of KT Design Attributes: Qualities of Presenters



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

Qualities of the Presentor



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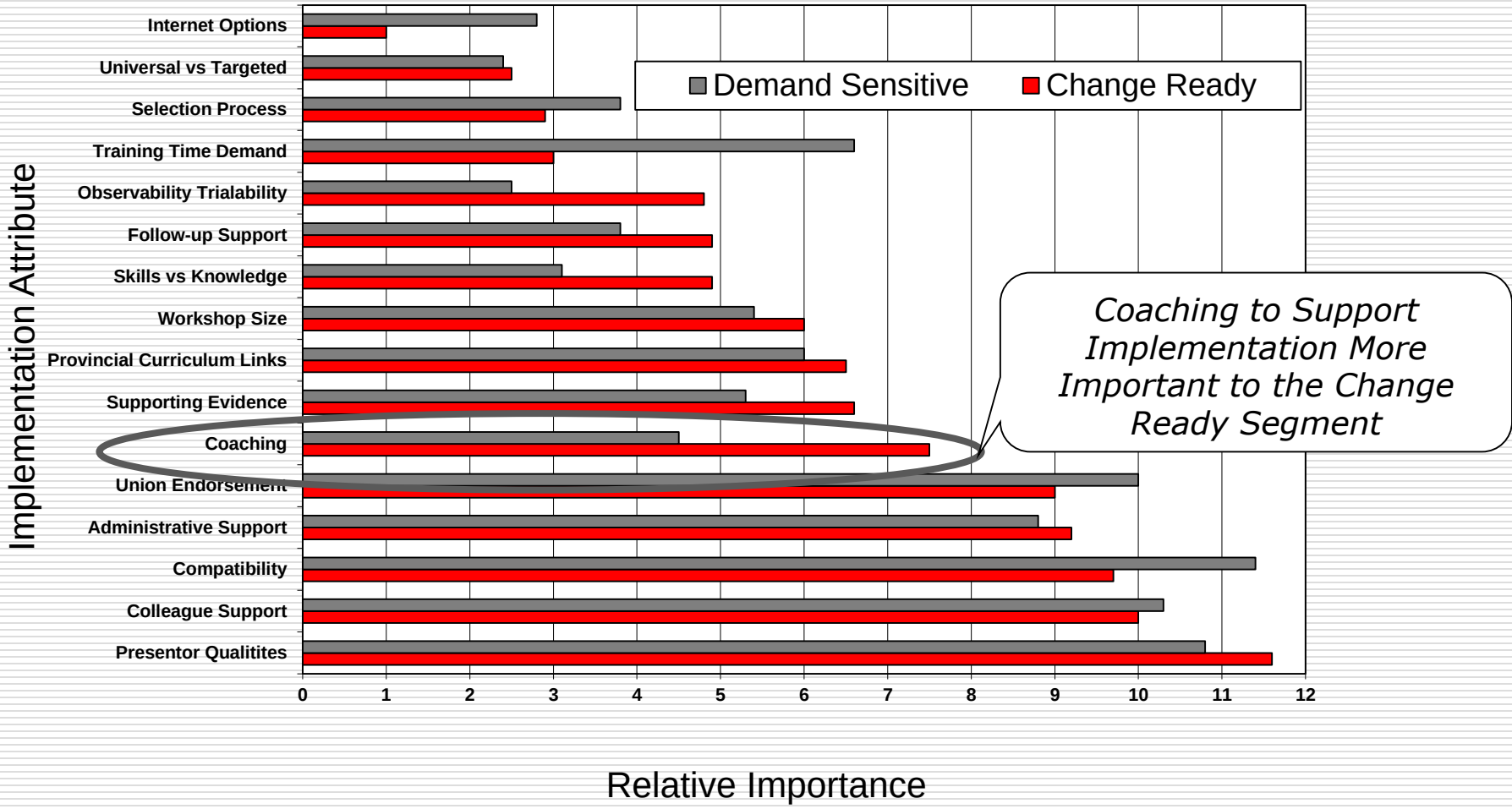
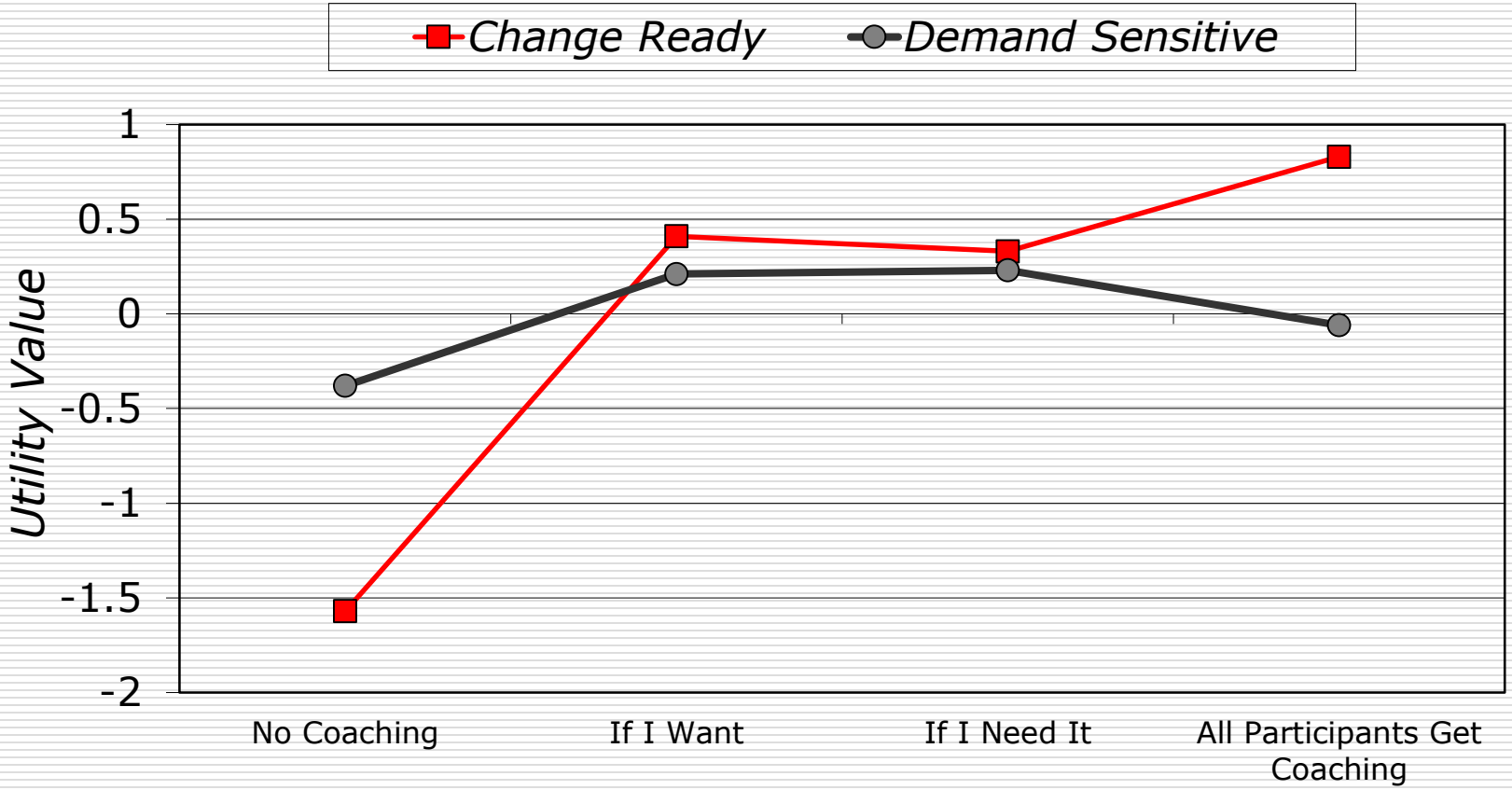
Relative Importance of KT Attributes: Coaching to Support Implementation



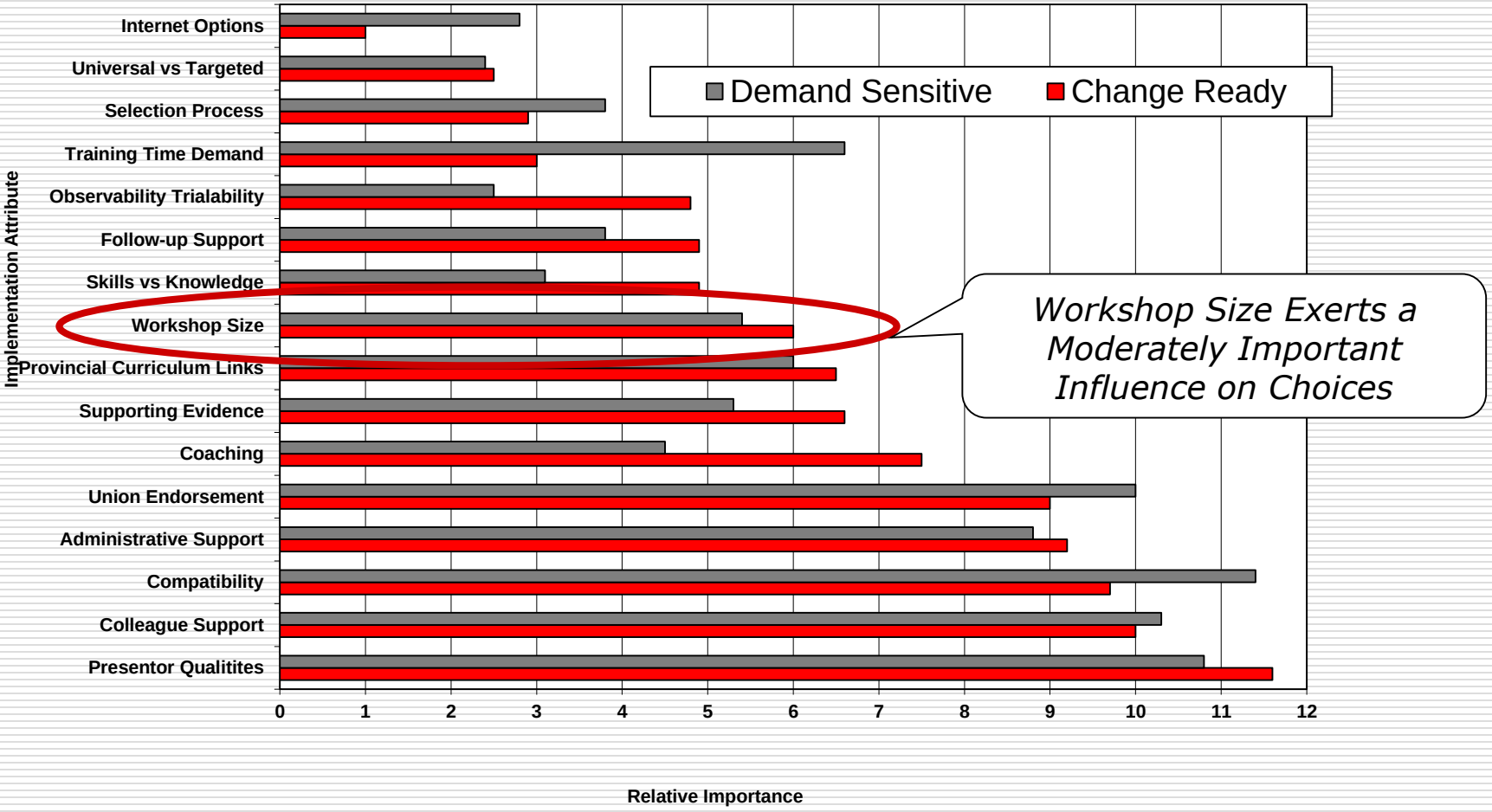
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Coaching Support to Improve Skills



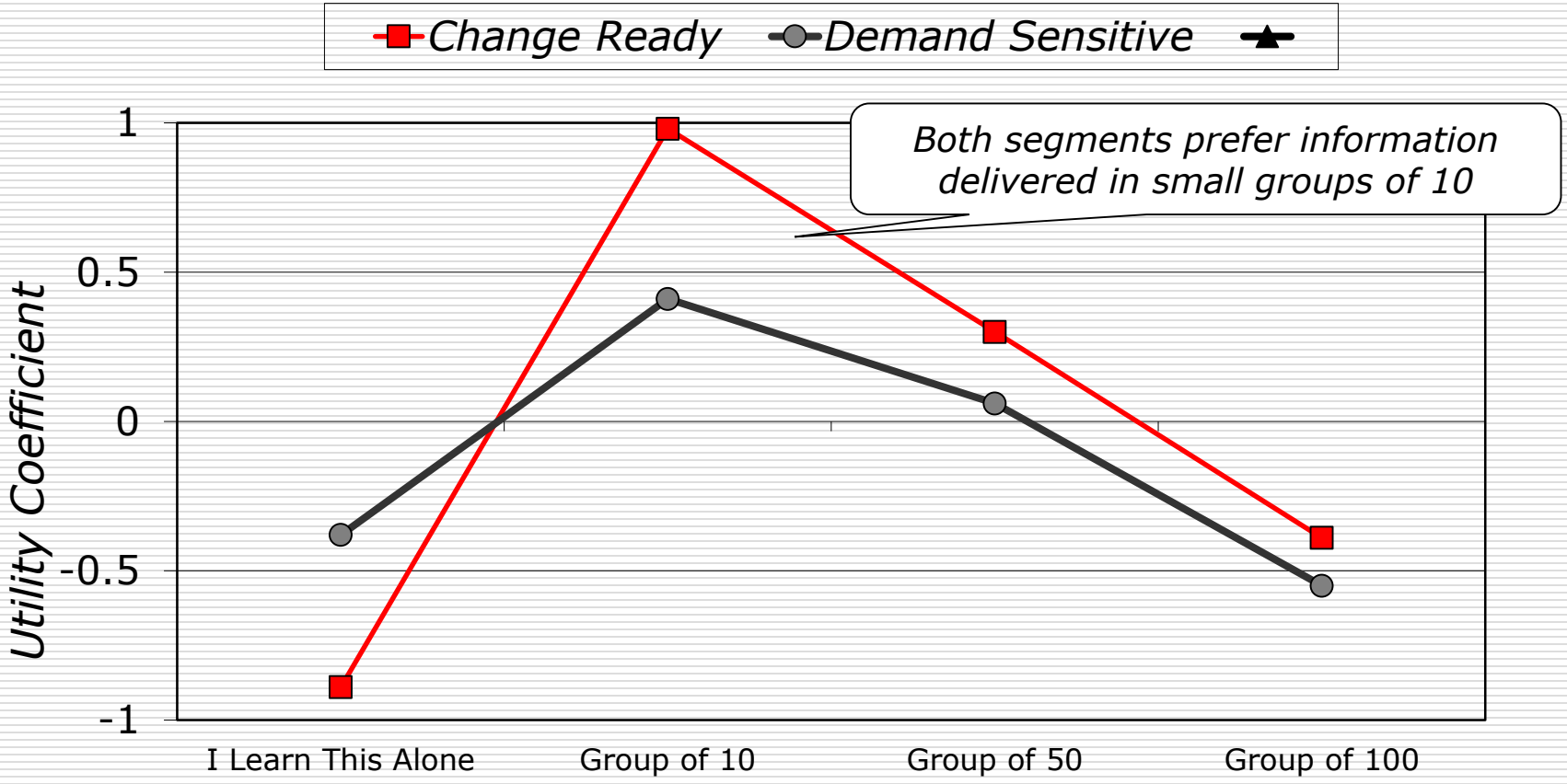
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Relative Importance of KT Attributes: Workshop Size



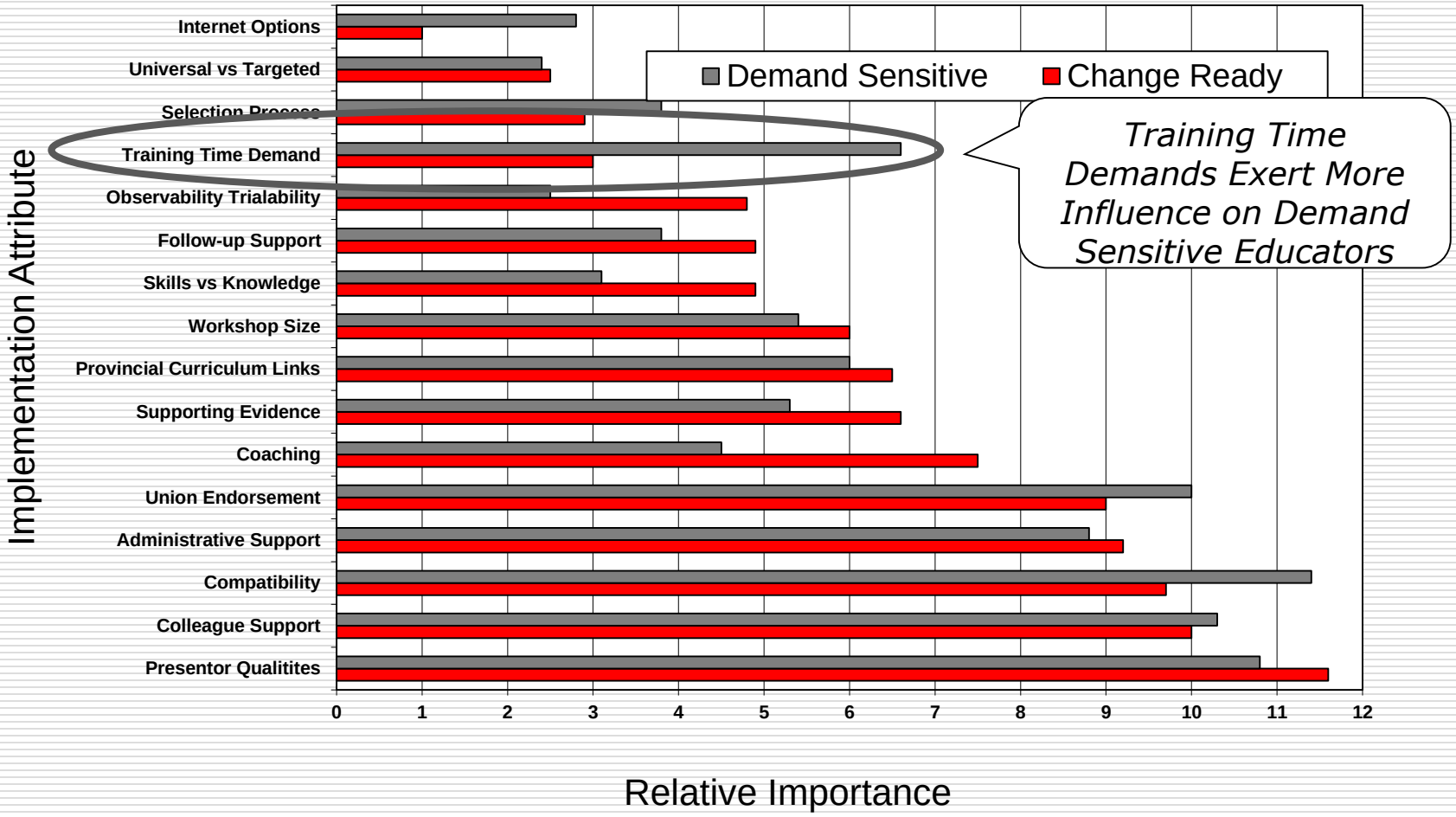
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Workshop Group Size



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

Relative Importance of KT Attributes: Training Time Demands



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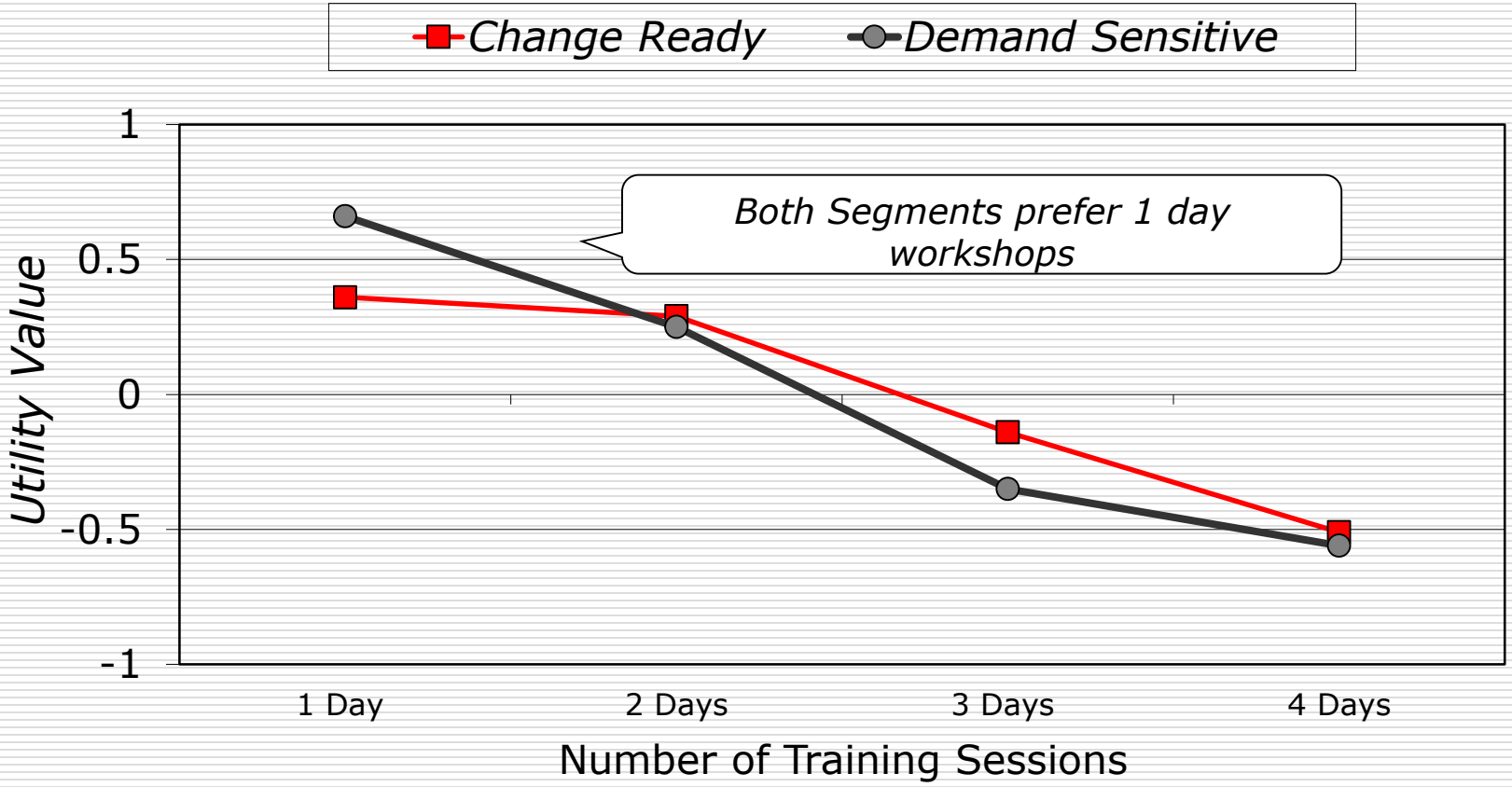
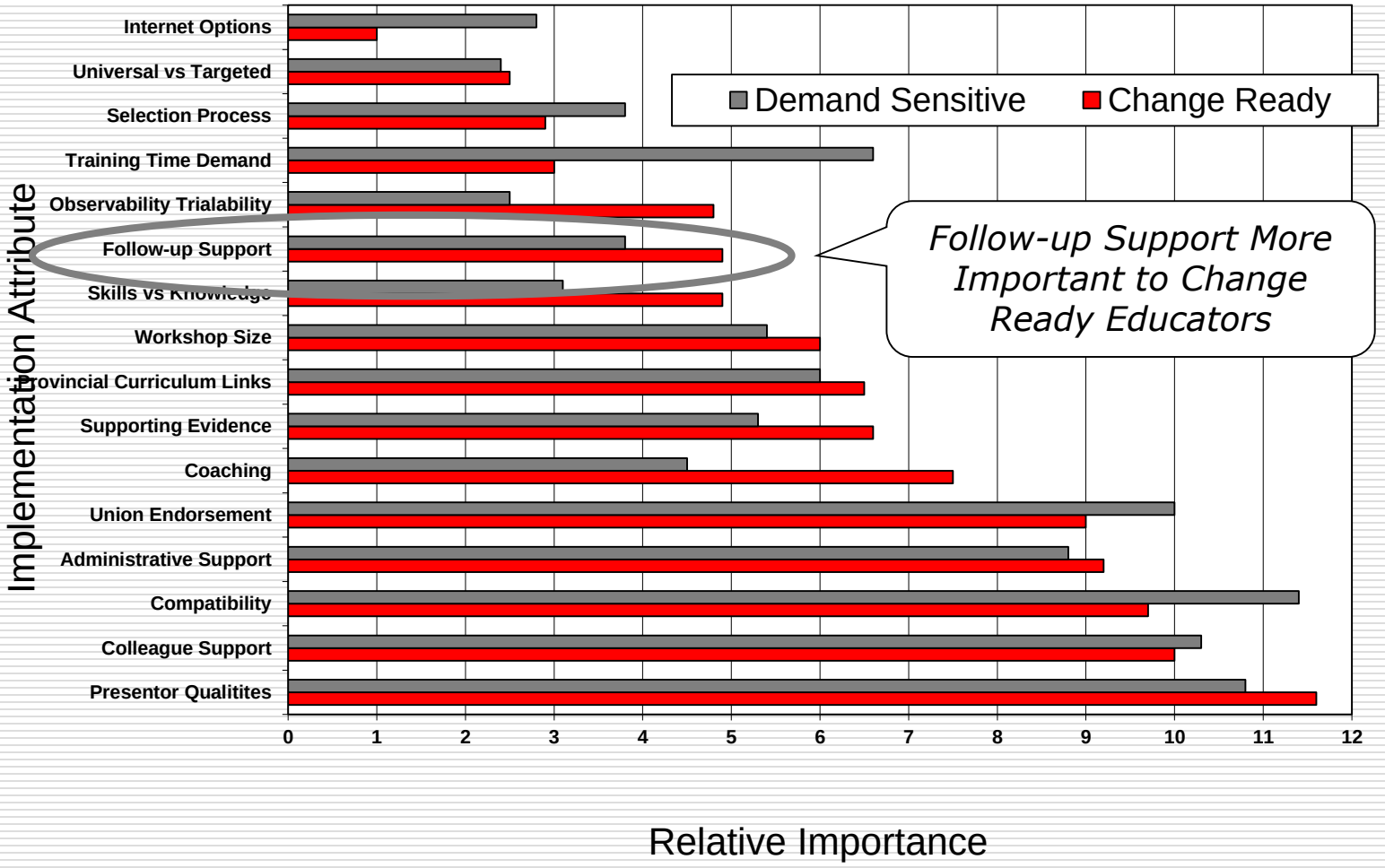
Training Time Demands



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

Relative Importance of KT Attributes: Follow-up Support



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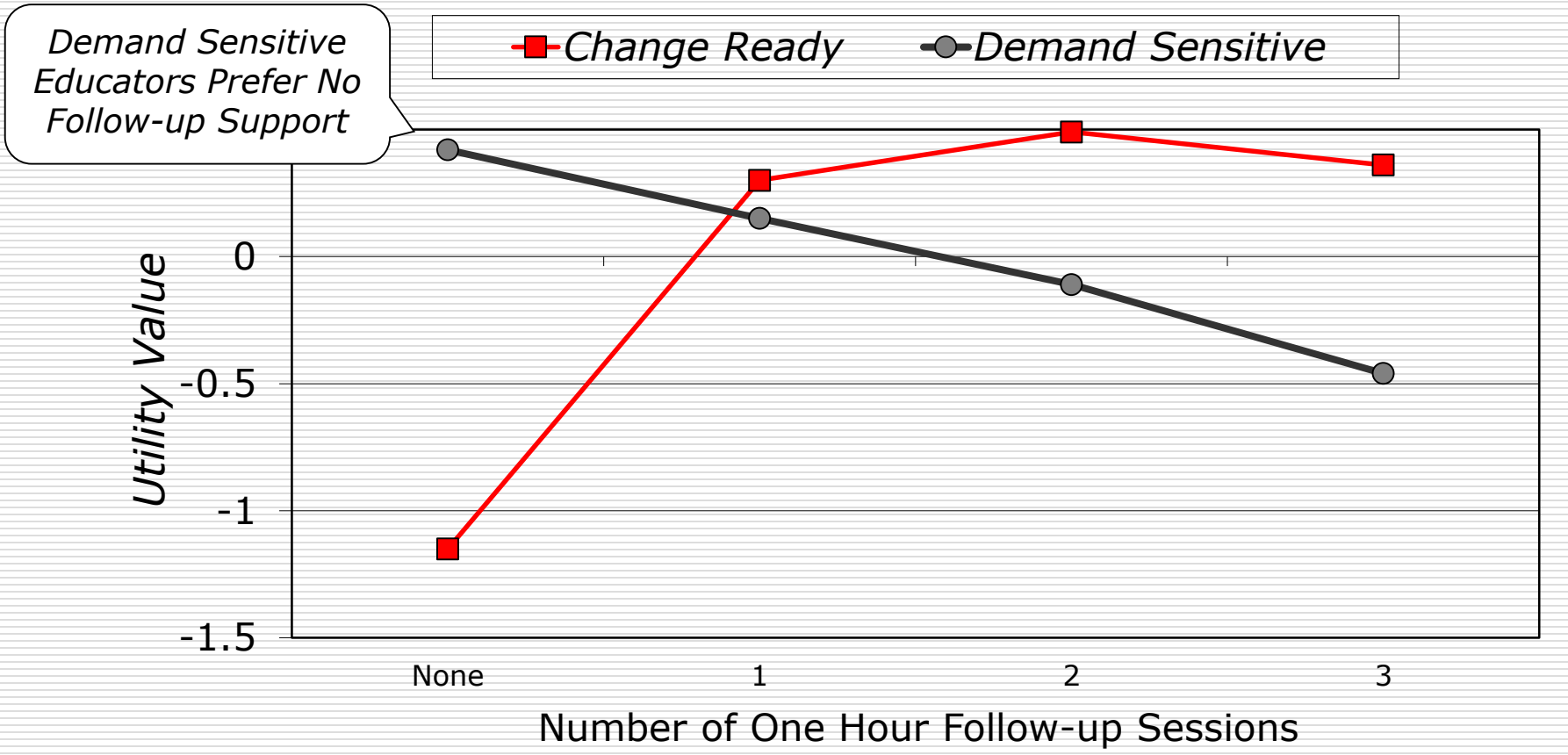
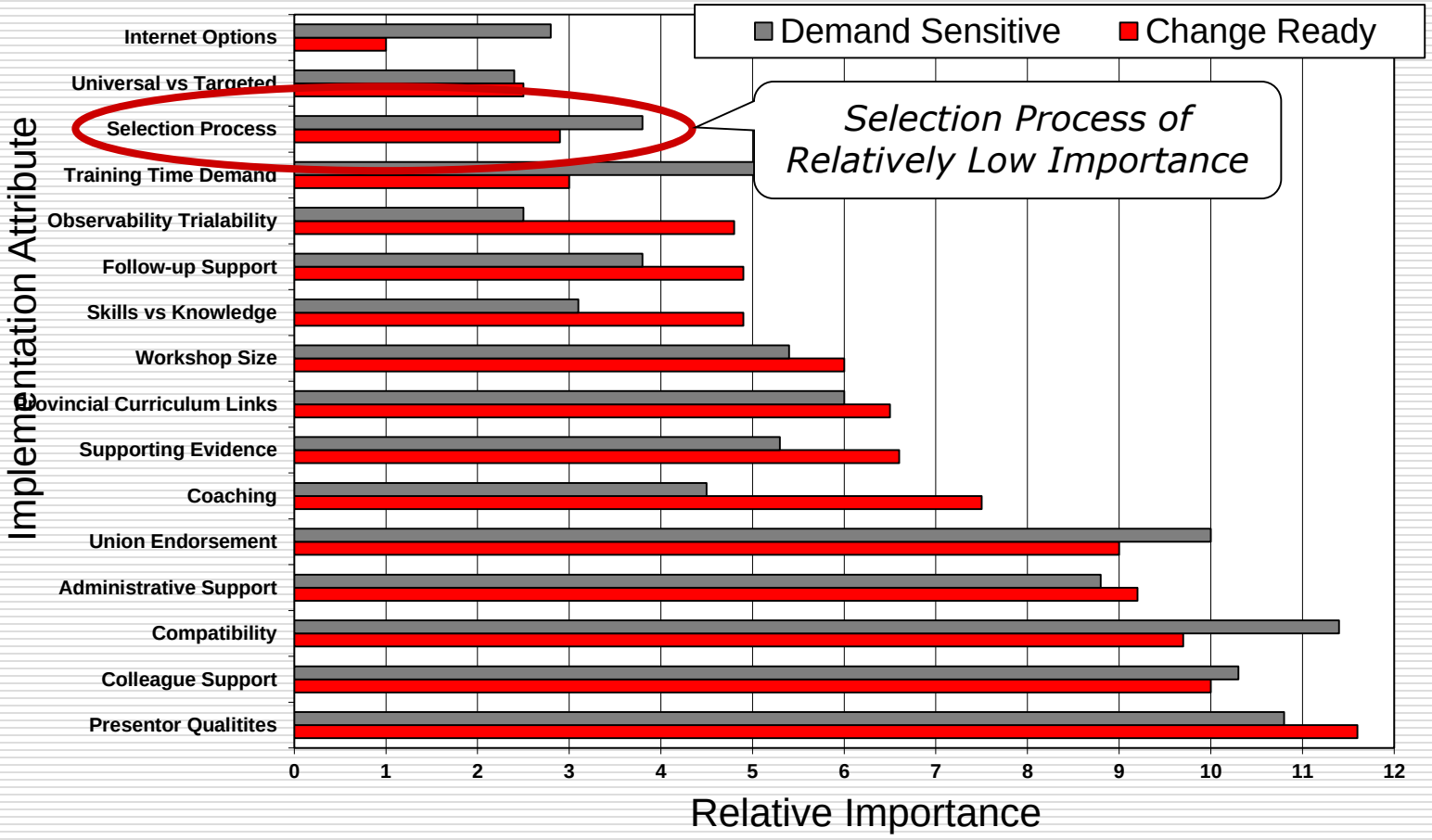
Follow-up Support



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

Relative Importance of KT Design Attributes: Selection Process



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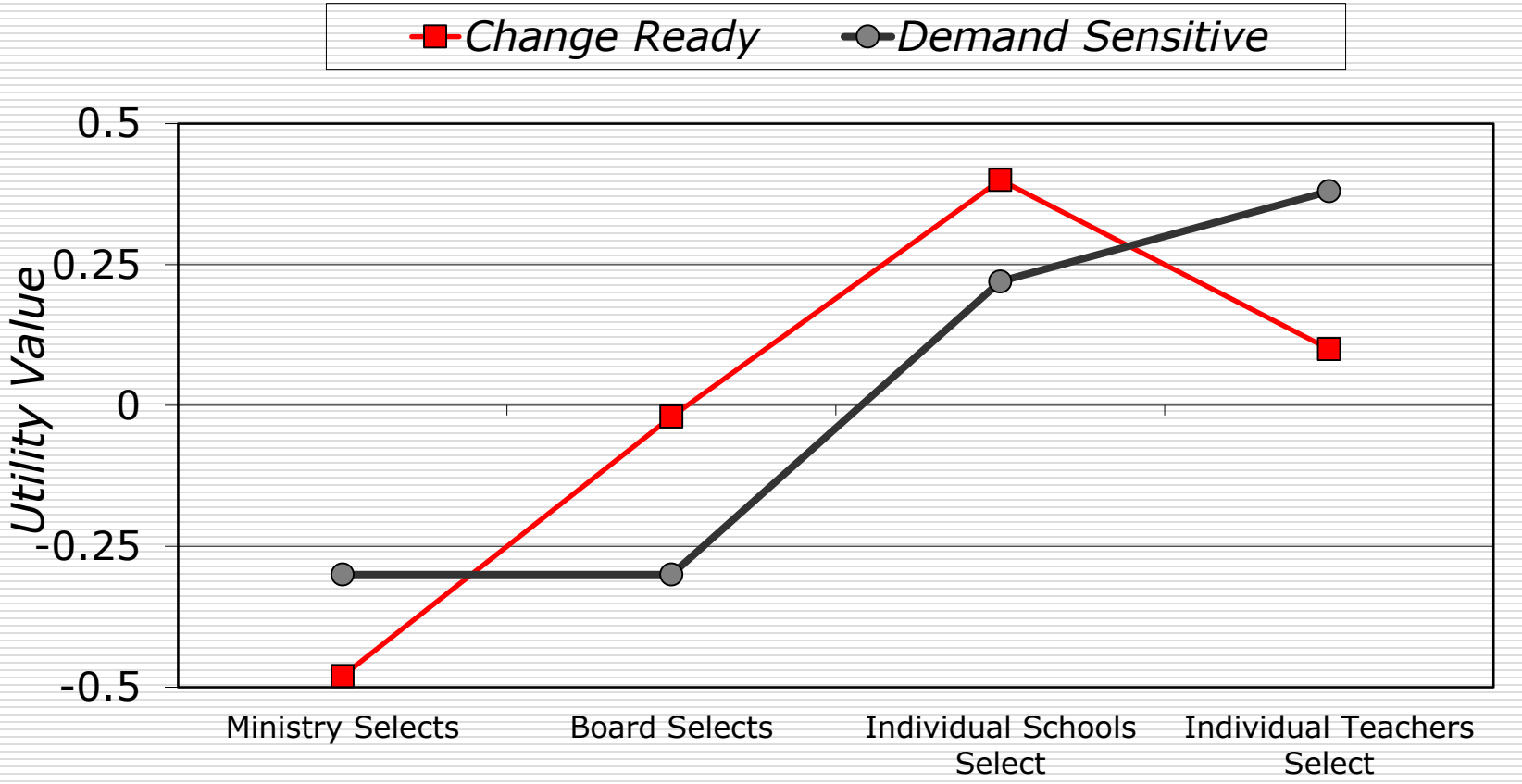
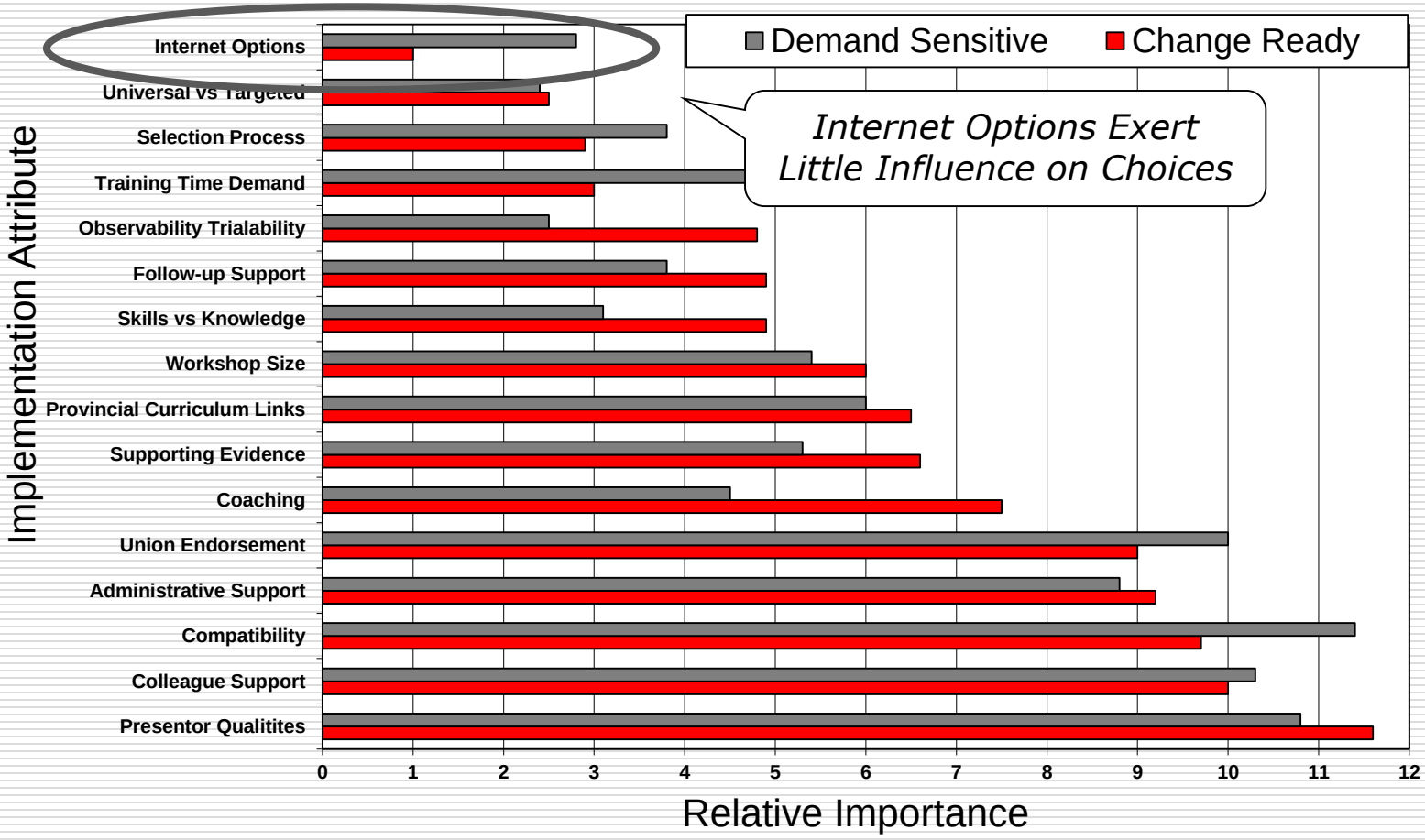
KT Selection Process



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

Relative Importance of KT Design Attributes: Internet Options



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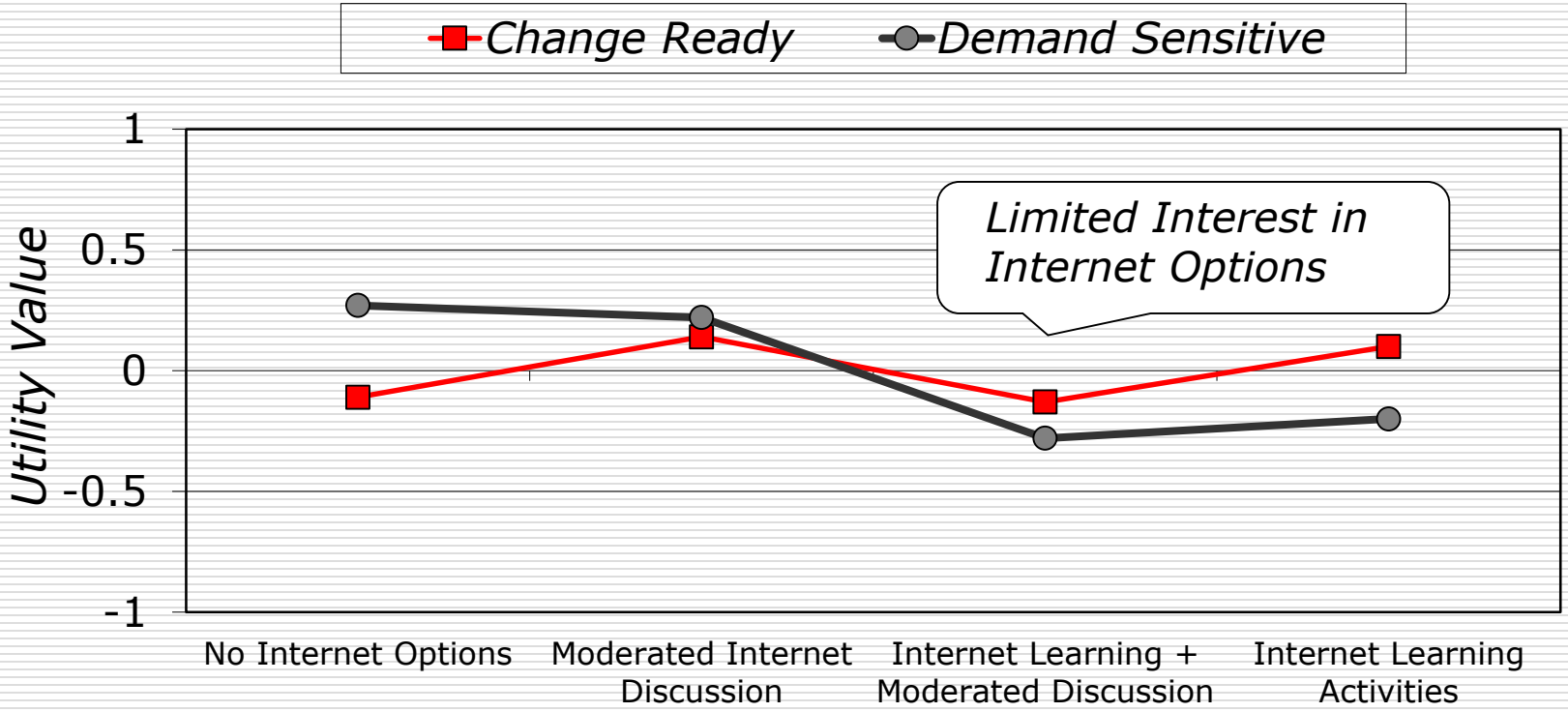
Internet Training Options



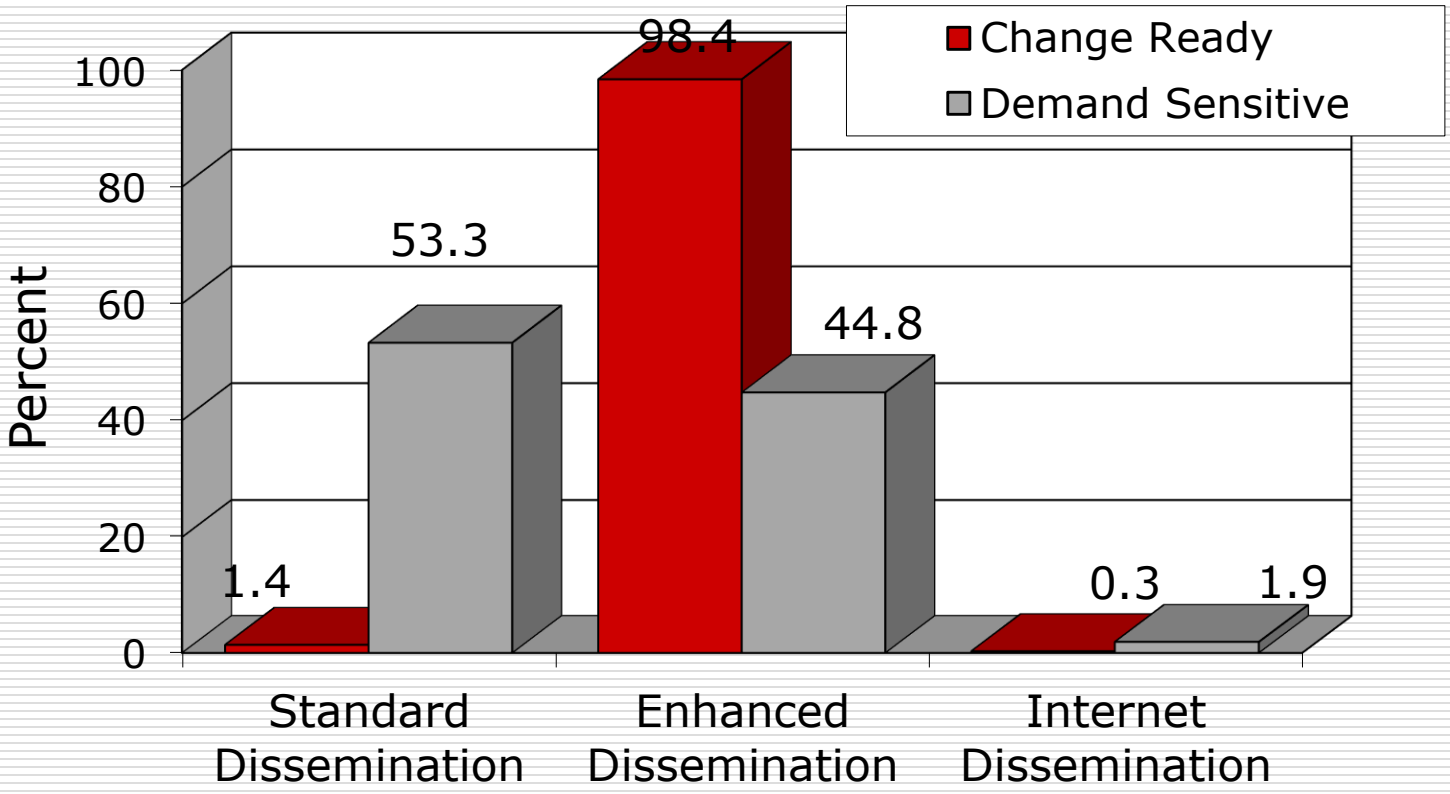
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

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*

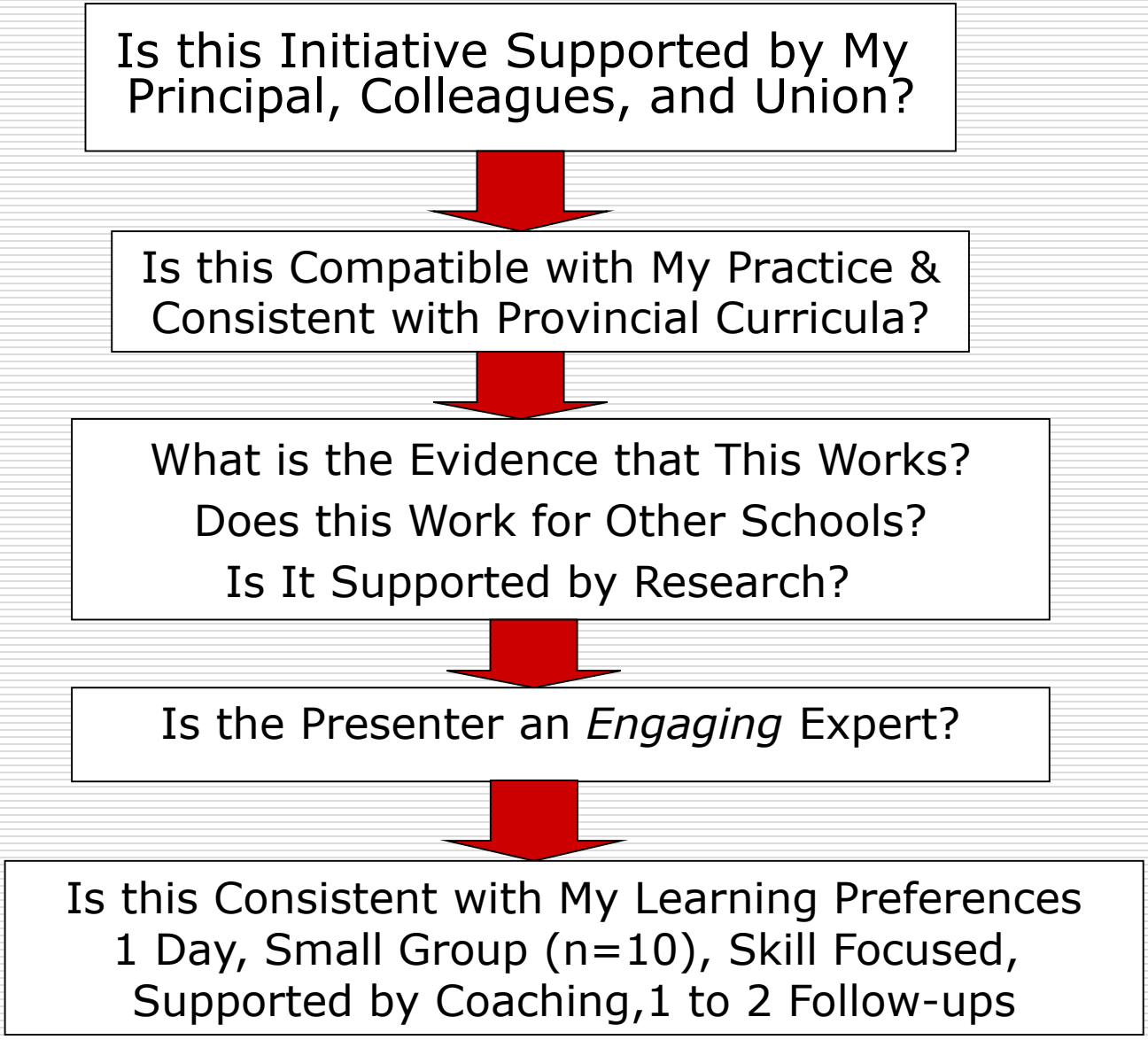
Source: Cunningham, Barwick et al. *School Mental Health (2014)*

Randomized First Choice Simulation



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

Multi-Stage Implementation Decisions



Modeling Evidence-based Practice Dissemination in Addiction Agencies Serving Women

SELECTED PROJECT PARTNERS

- *Members of Research Team*
  - Joanna Henderson
  - Alison Niccols
  - Maureen Dobbins
  - Wendy Sword
  - Karen Milligan
  - Ellen Lipman
  - Lehana Thabane
  - Louis Schmidt
- *Research Team*
  - Heather Rimas (Research Coordinator)
  - Stephanie Mielko (Research Assistant)
  - Yvonne Chen (HRM Graduate Student)
  - Ainsley Smith
- *Research Support*
  - Canadian Institutes of Health Research
  - Jack Laidlaw Chair in Patient-Centred Health Care

Discrete Choice Conjoint Survey

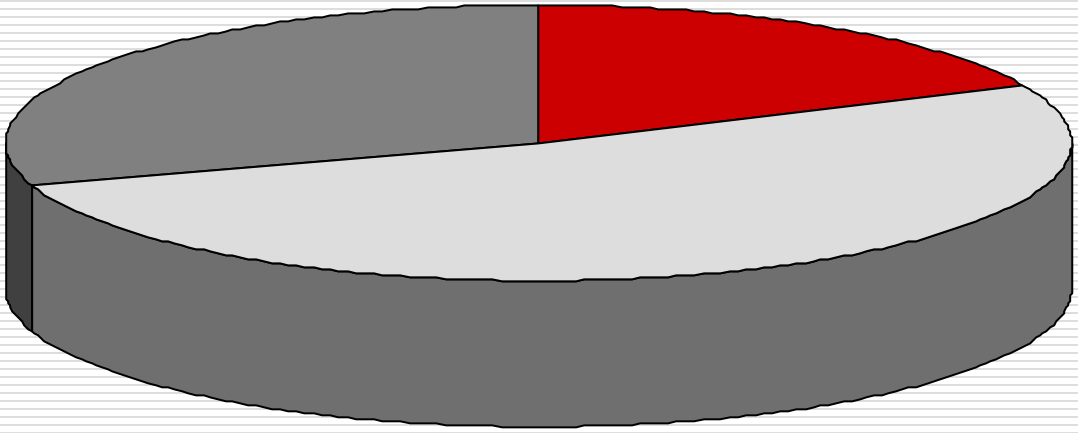
- Sample Size = 1379
- Return Rate = 60%
- 16 4-Level KT Attributes
- 20 Choice Tasks Per Informant
- 999 Versions of the Survey

Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Latent Class Segmentation Analysis

Process Sensitive (30%)

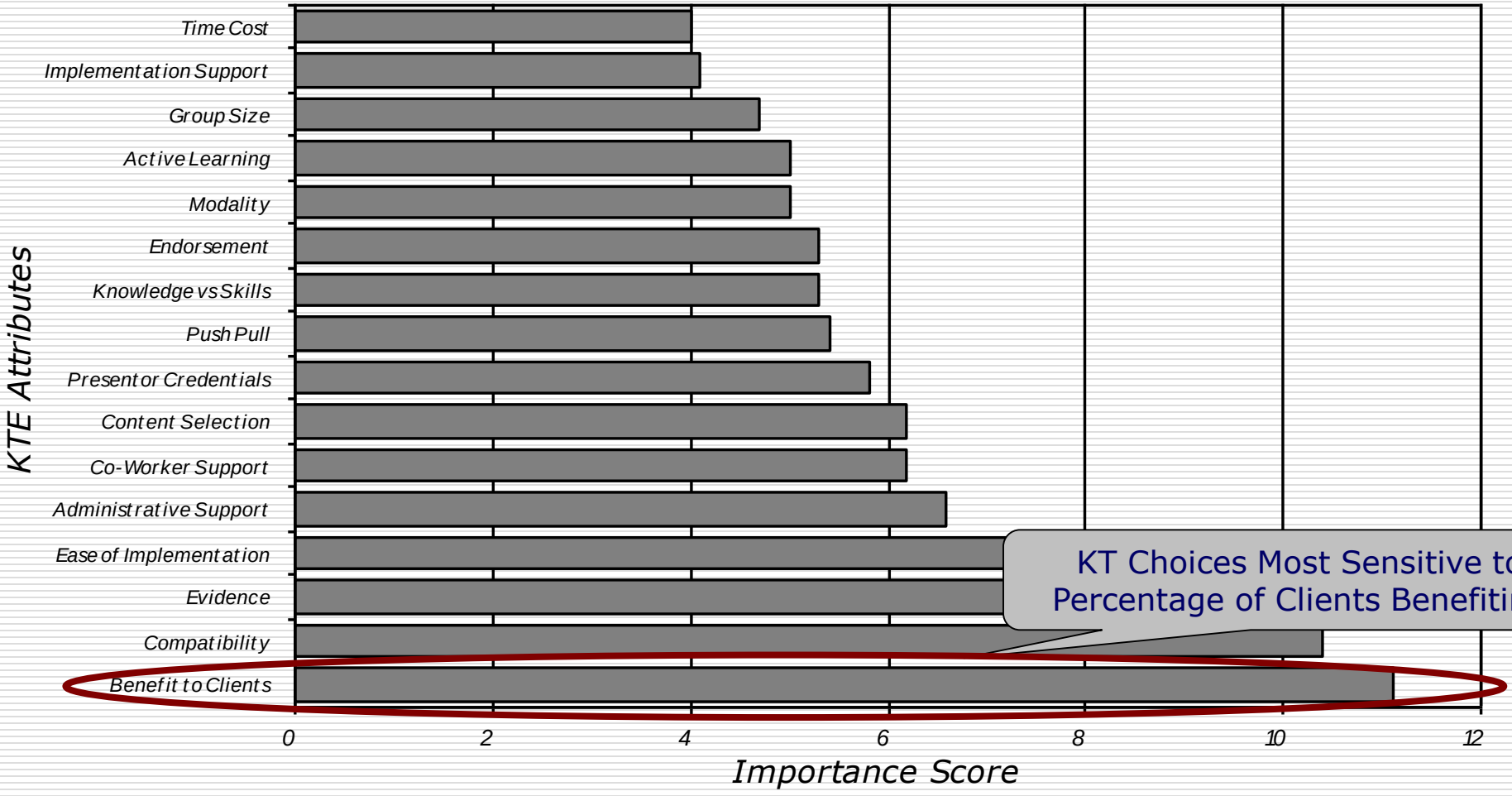
Demand Sensitive (18%)



Outcome Sensitive (52%)

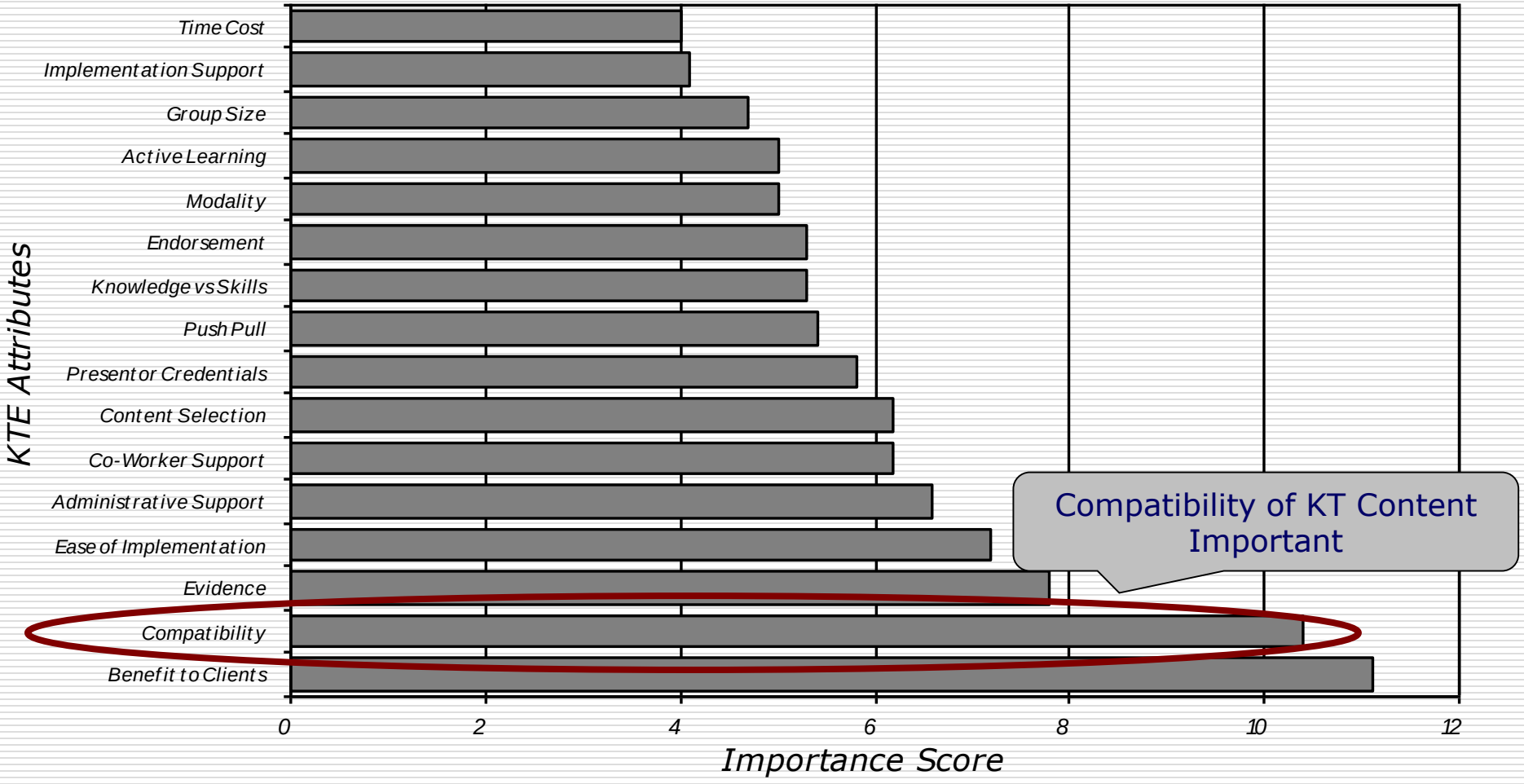
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Relative Importance of Knowledge Translation Attributes



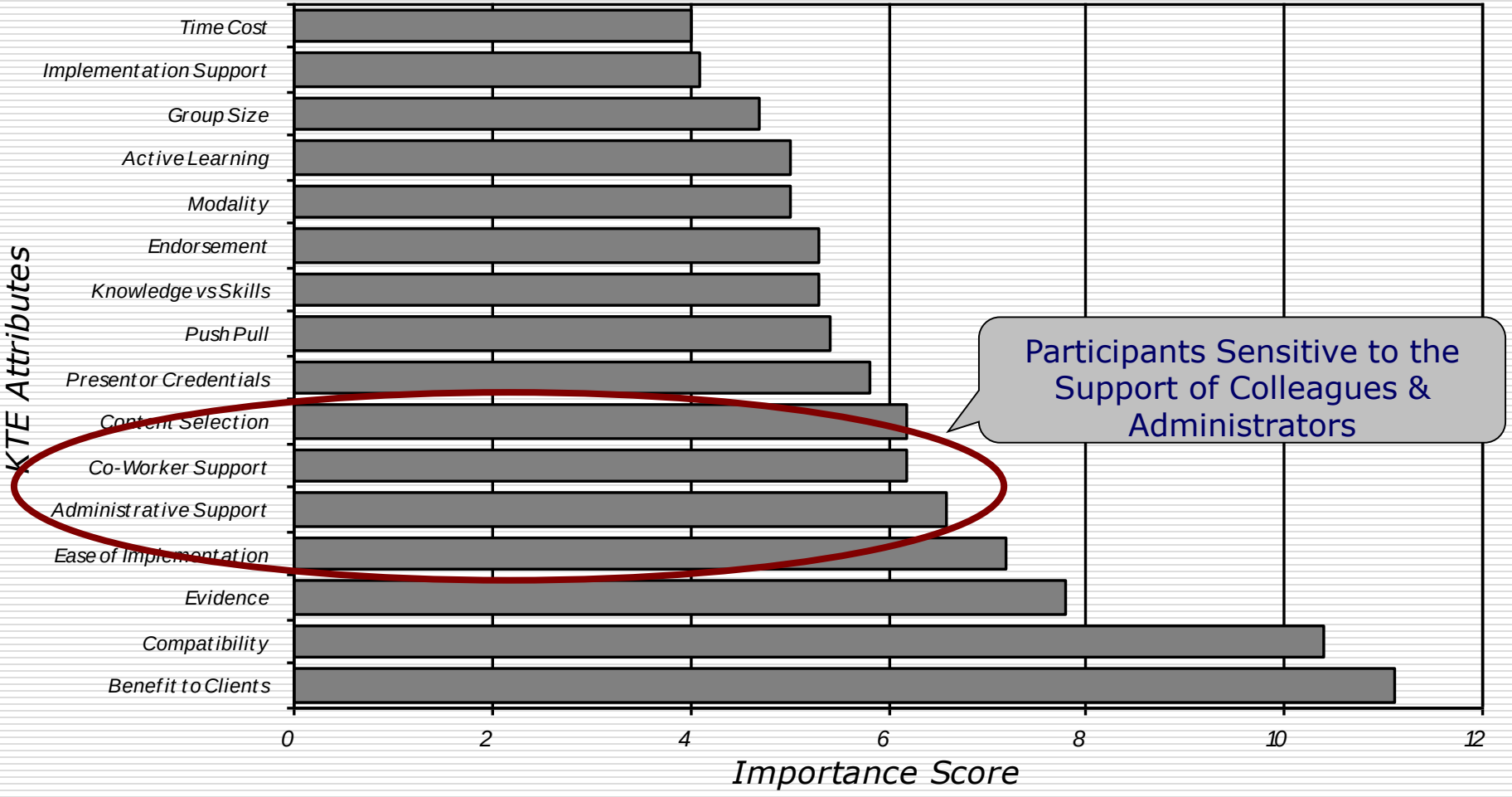
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Relative Importance of Knowledge Translation Attributes



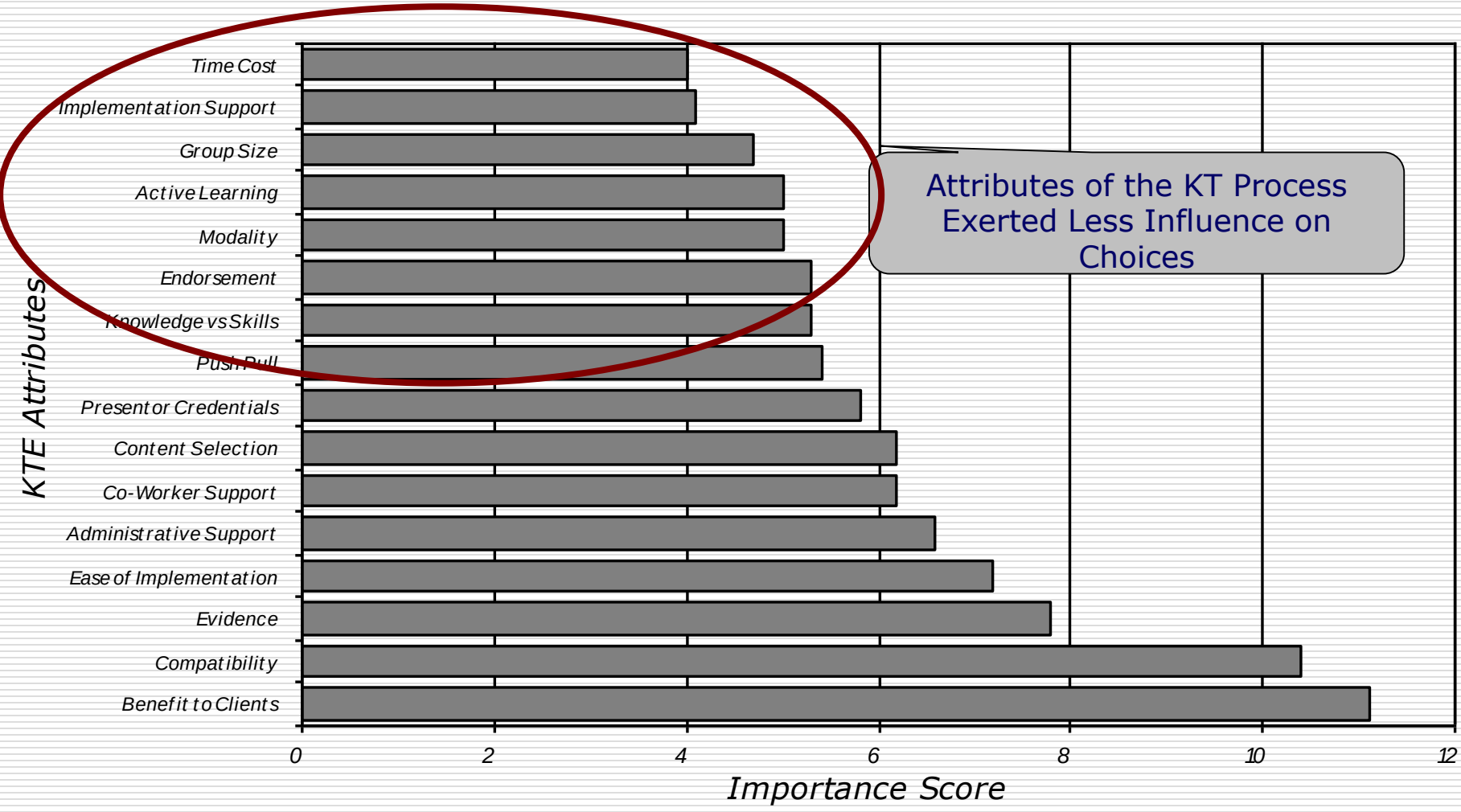
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Relative Importance of Knowledge Translation Attributes



Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Relative Importance of Knowledge Translation & Exchange Attributes to Professionals



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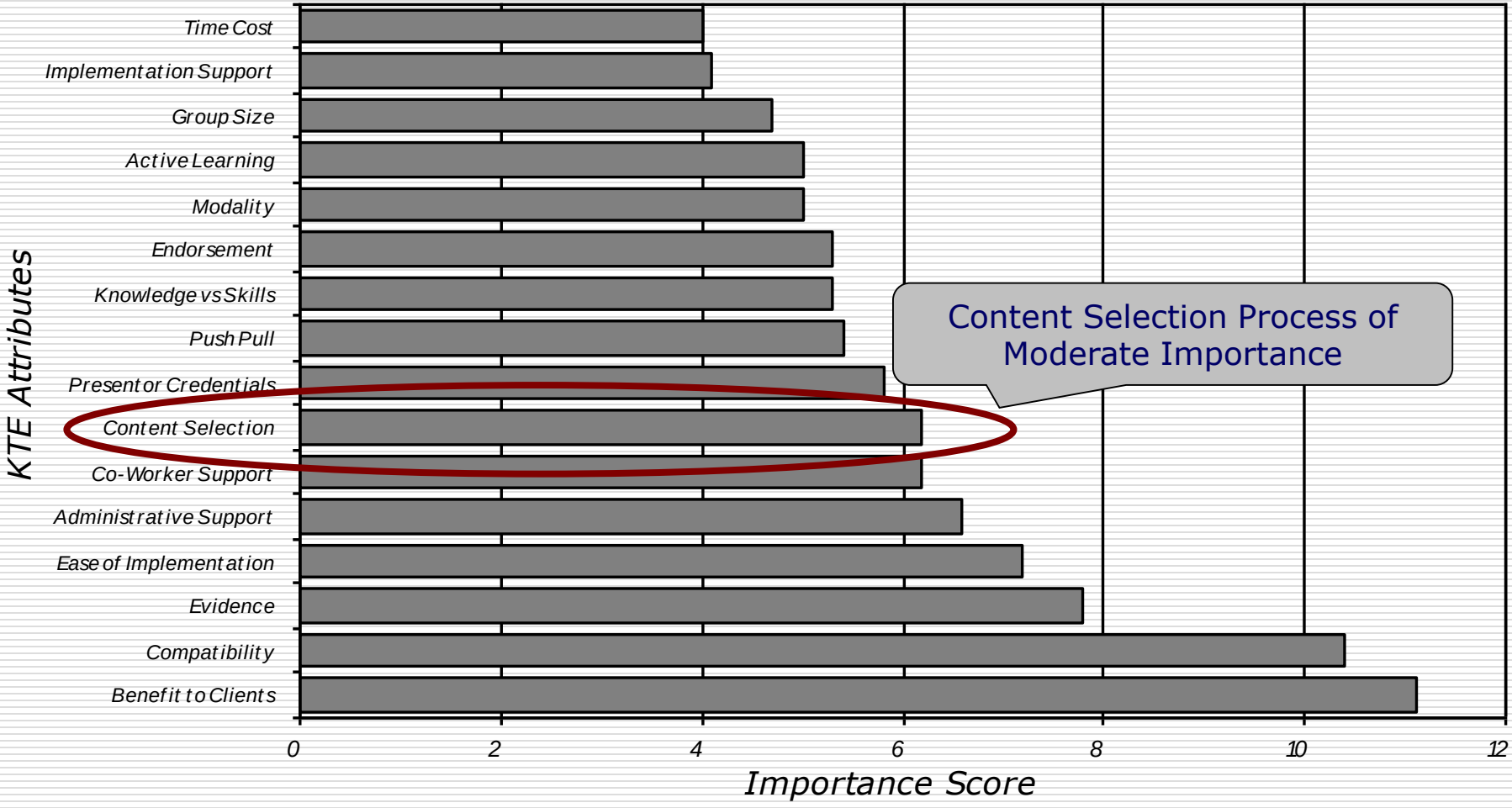
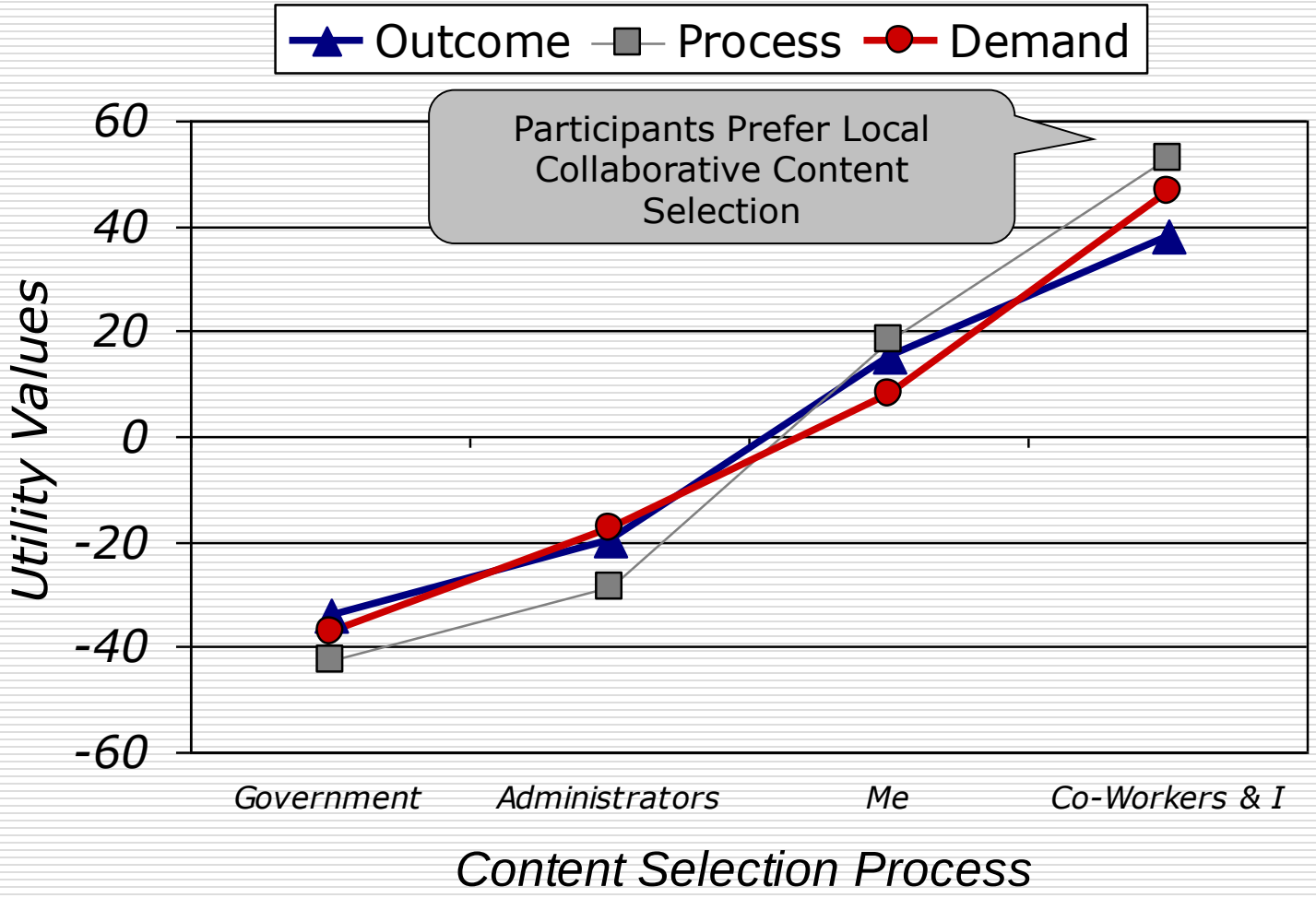
Relative Importance of Knowledge Translation & Exchange Attributes to Professionals



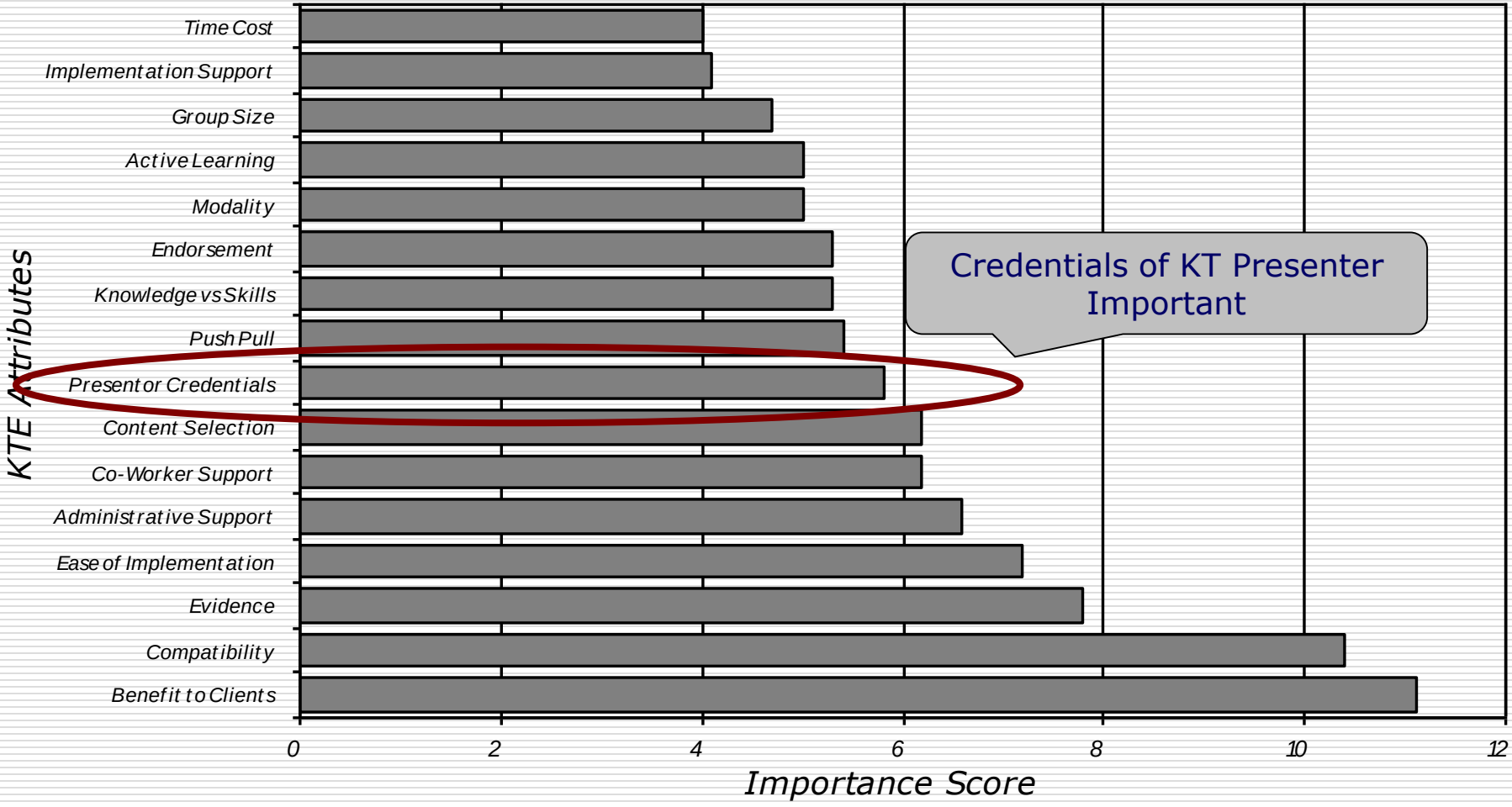
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Content Selection Process



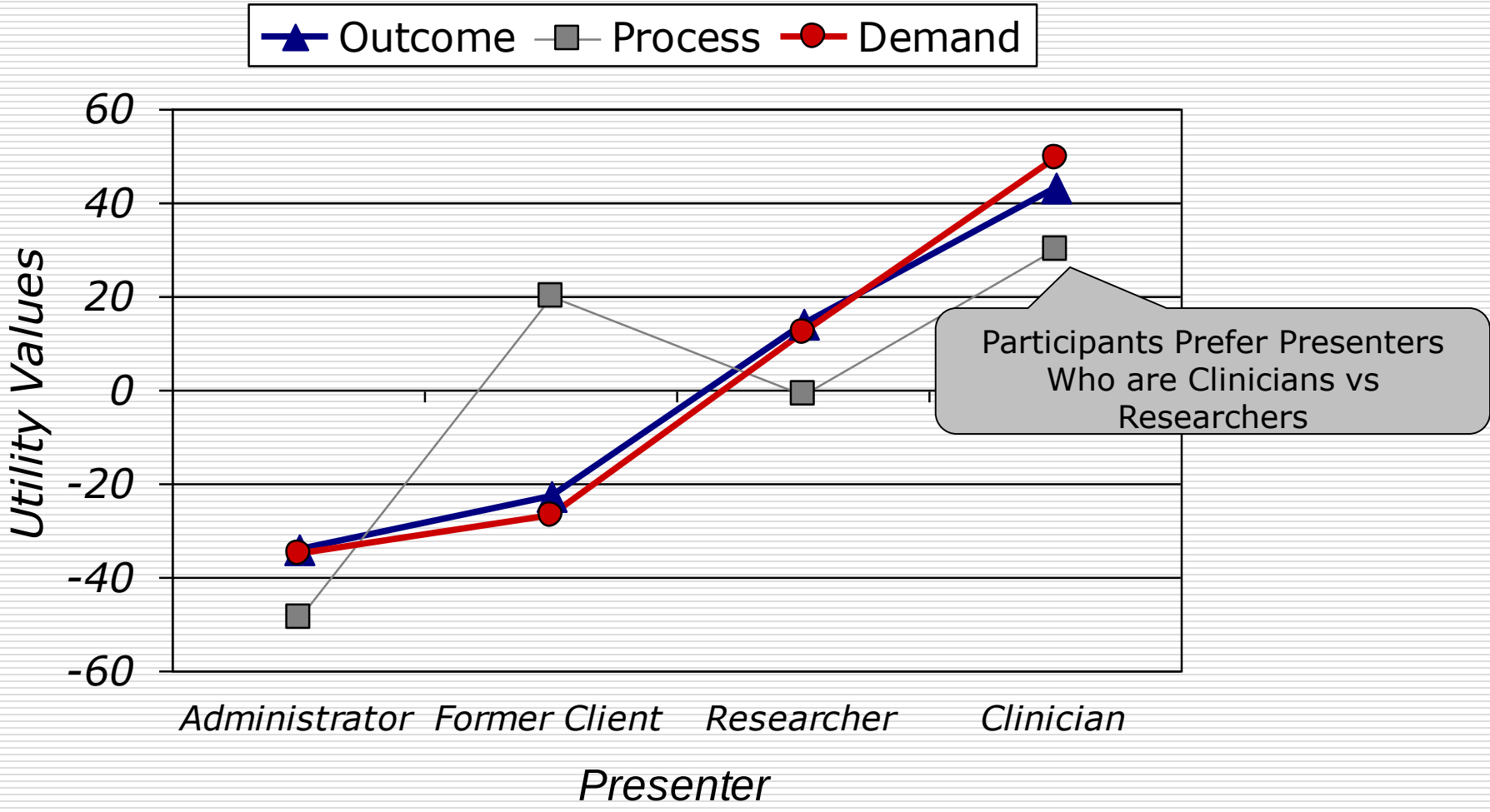
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Relative Importance of Knowledge Translation Attributes: KT Presenter



Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

KT Presenter



Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Simulating Response to KT Options

Standard KT

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

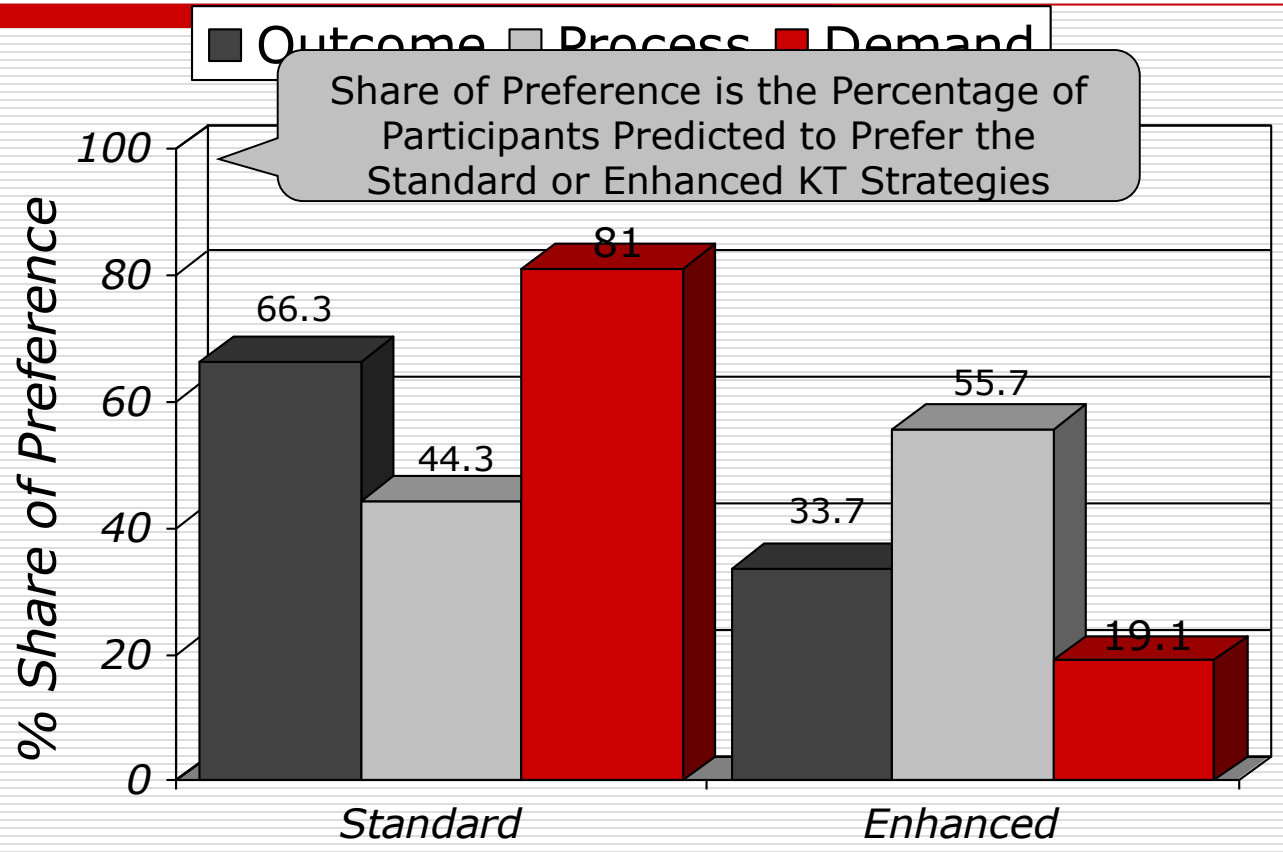
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

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

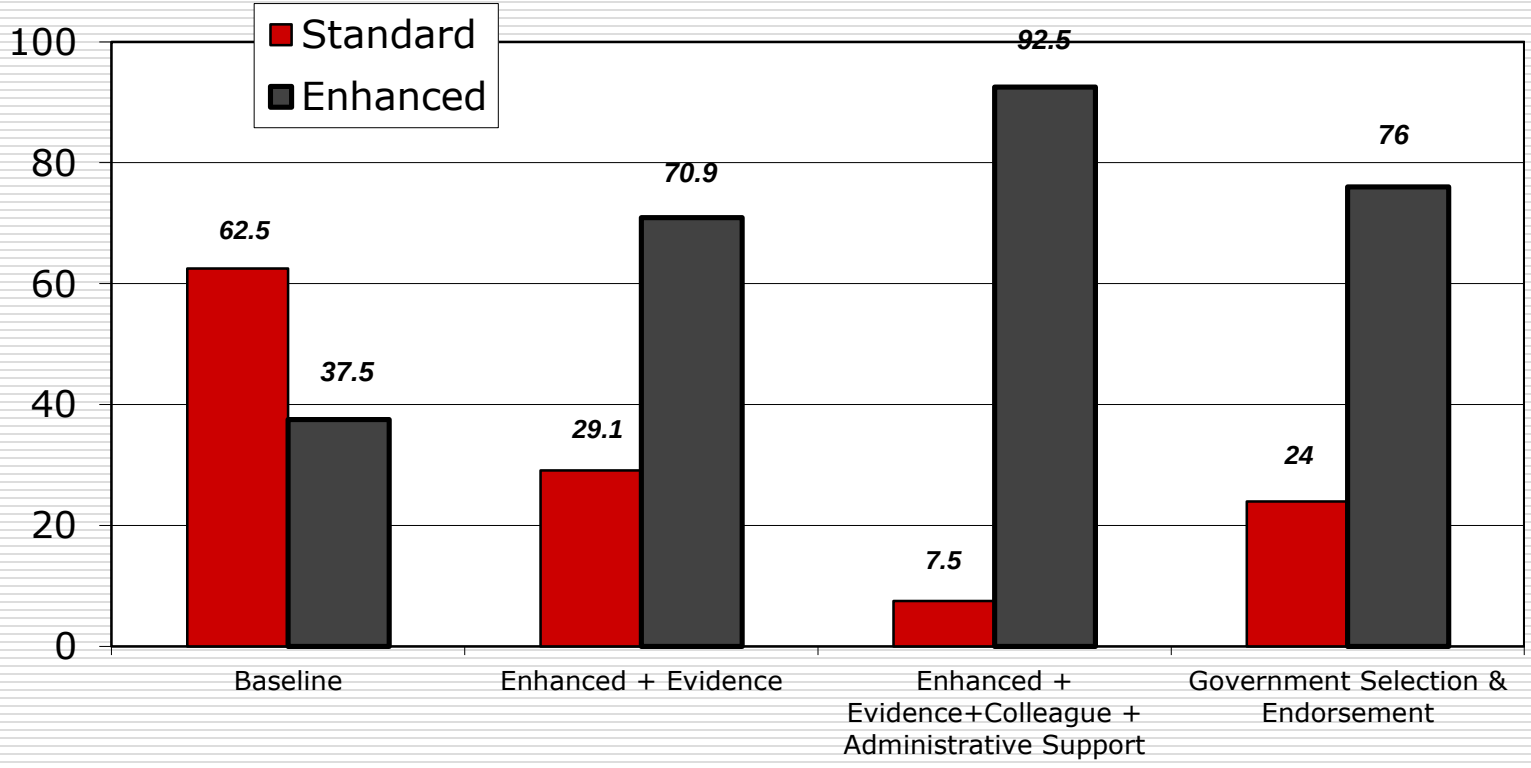
Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Simulating Practice Change Options



Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

Percent Predicted to Prefer Enhanced KT



Source: Cunningham, Henderson, Niccols, et al., *Addiction (2012)*

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

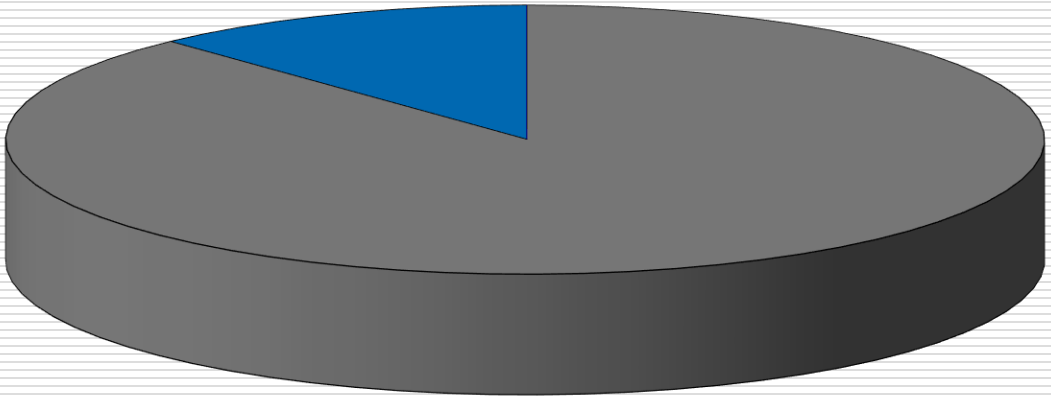
Discrete Choice Conjoint Survey

- 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%)

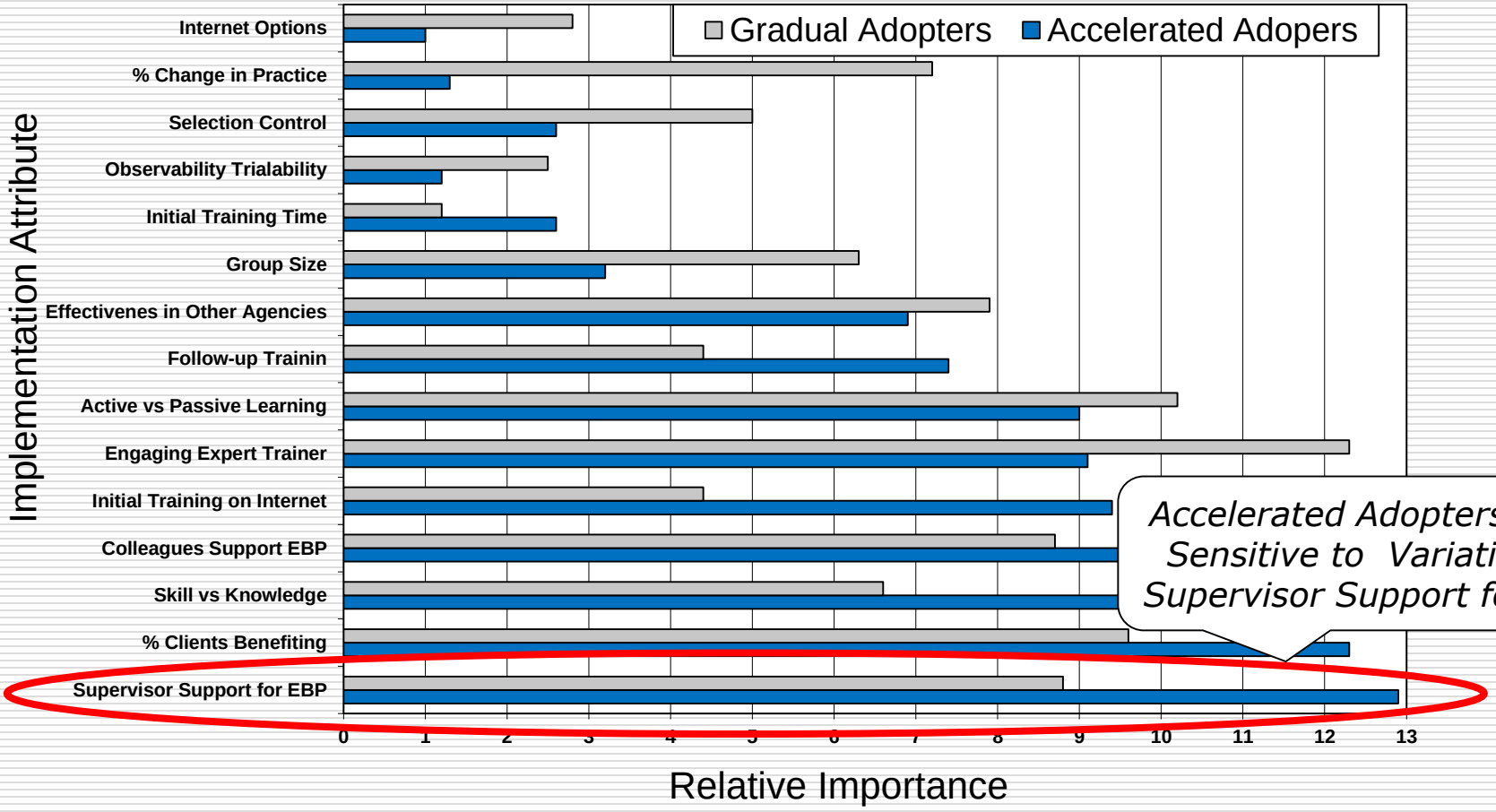


Gradual Adopters (88%)

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

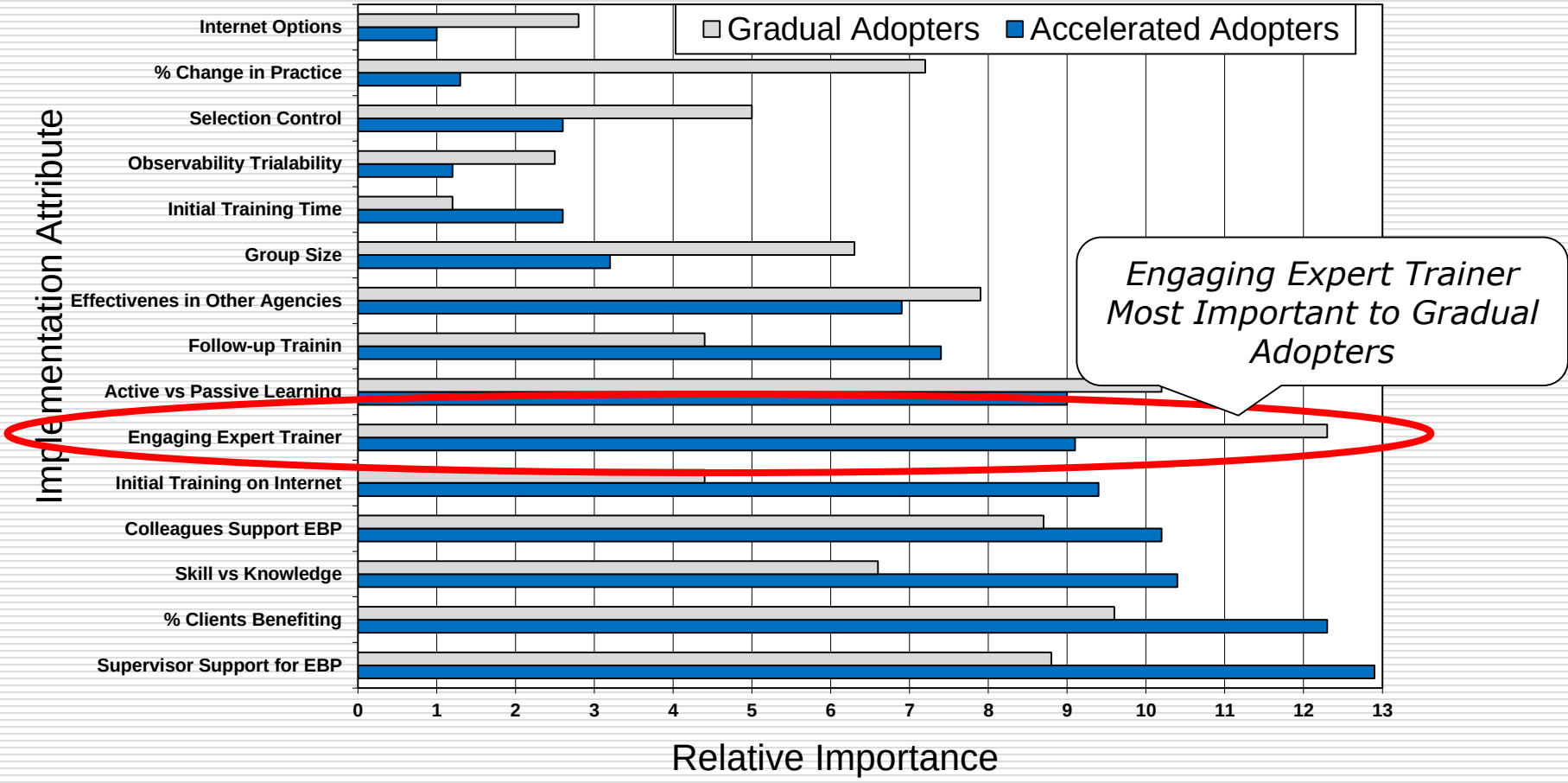
Attributes of the *Social Context* Influencing the Decision to Adopt Mental Health Practice Changes

Relative Importance of KT Design Attributes: Supervisor Support



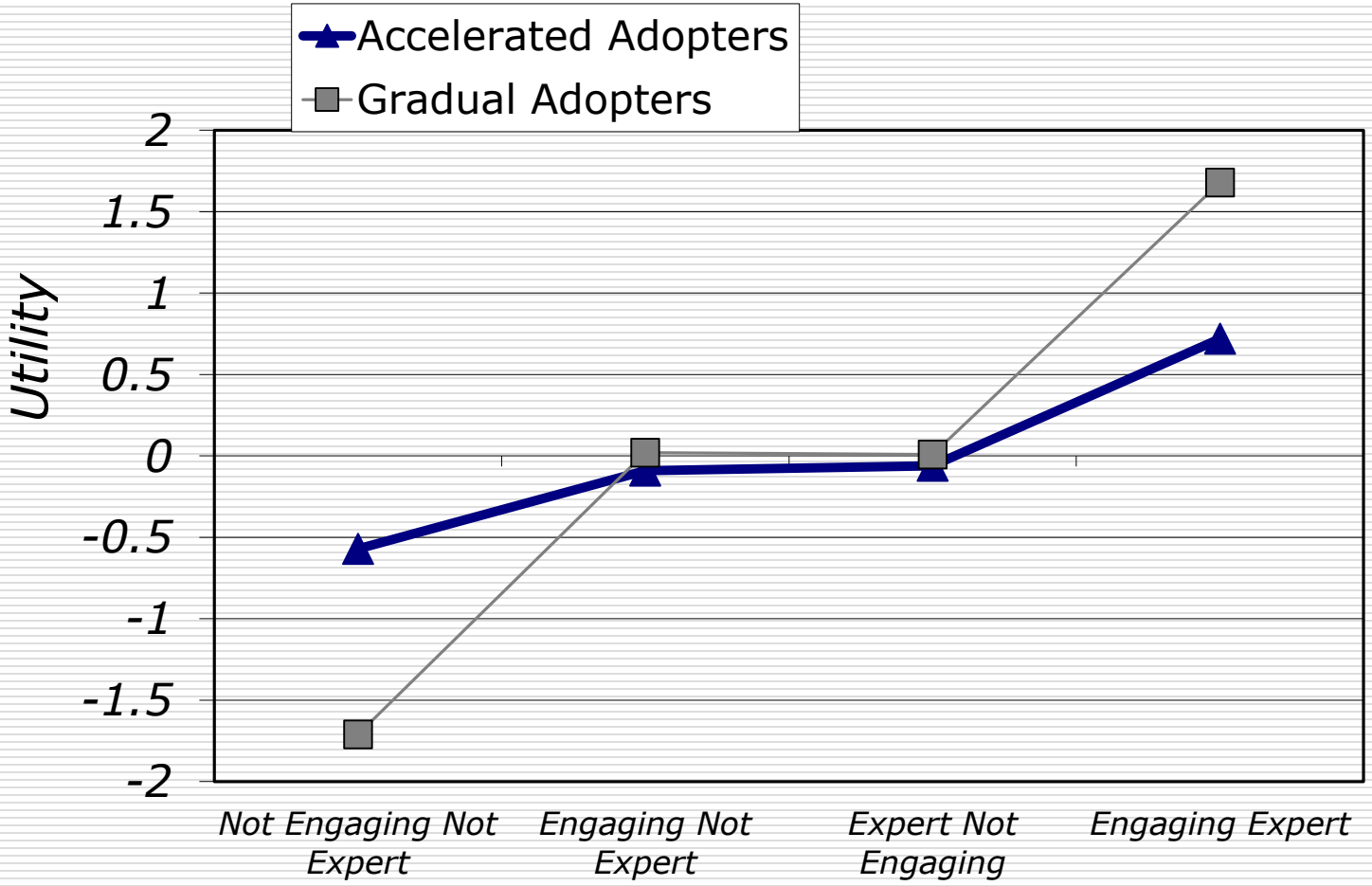
Source: Cunningham, Barwick et al. Administration and Policy in Mental Health *(2018)*

Relative Importance of KT Design Attributes: Trainer Qualitites



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

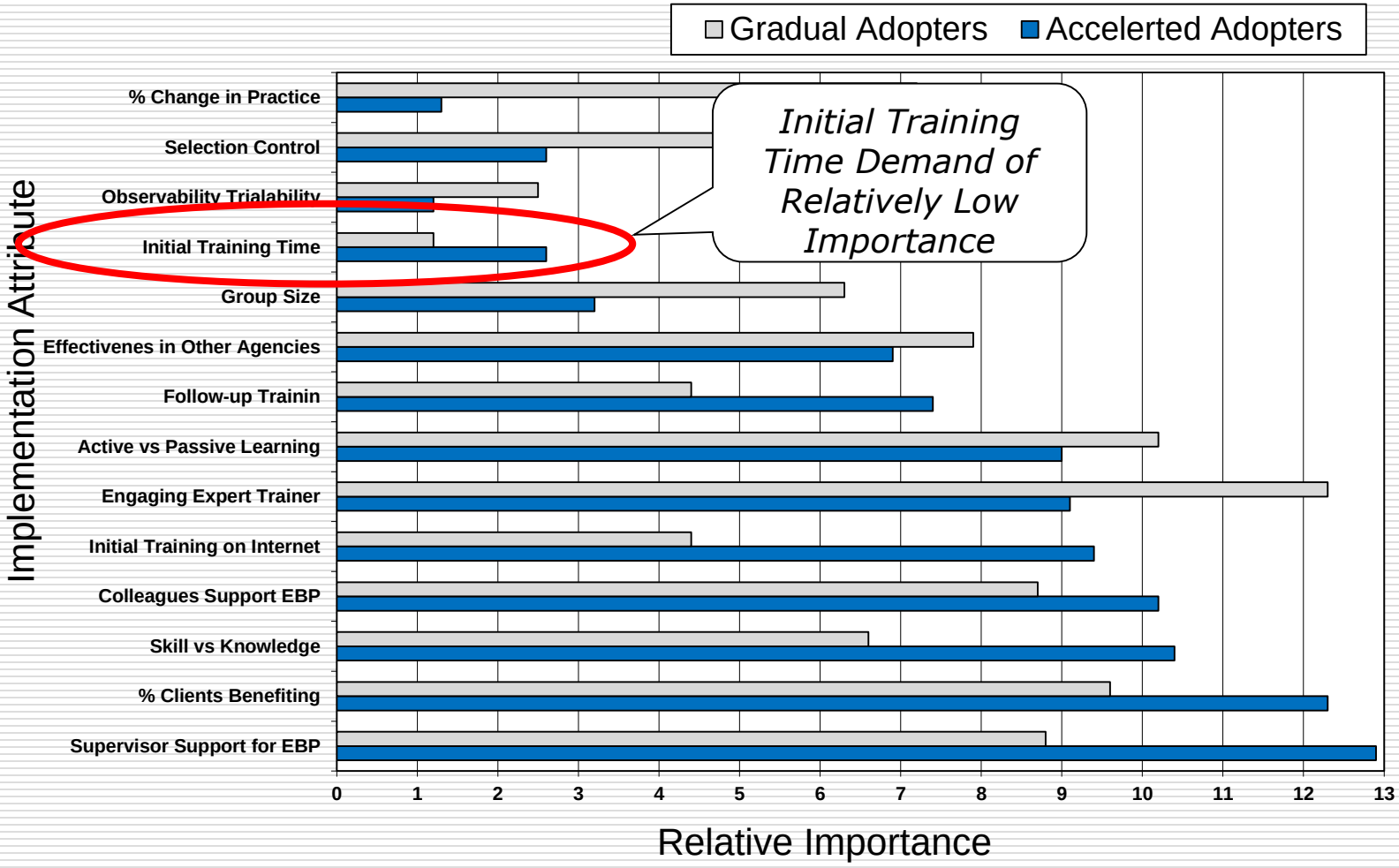
Trainer Qualities



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

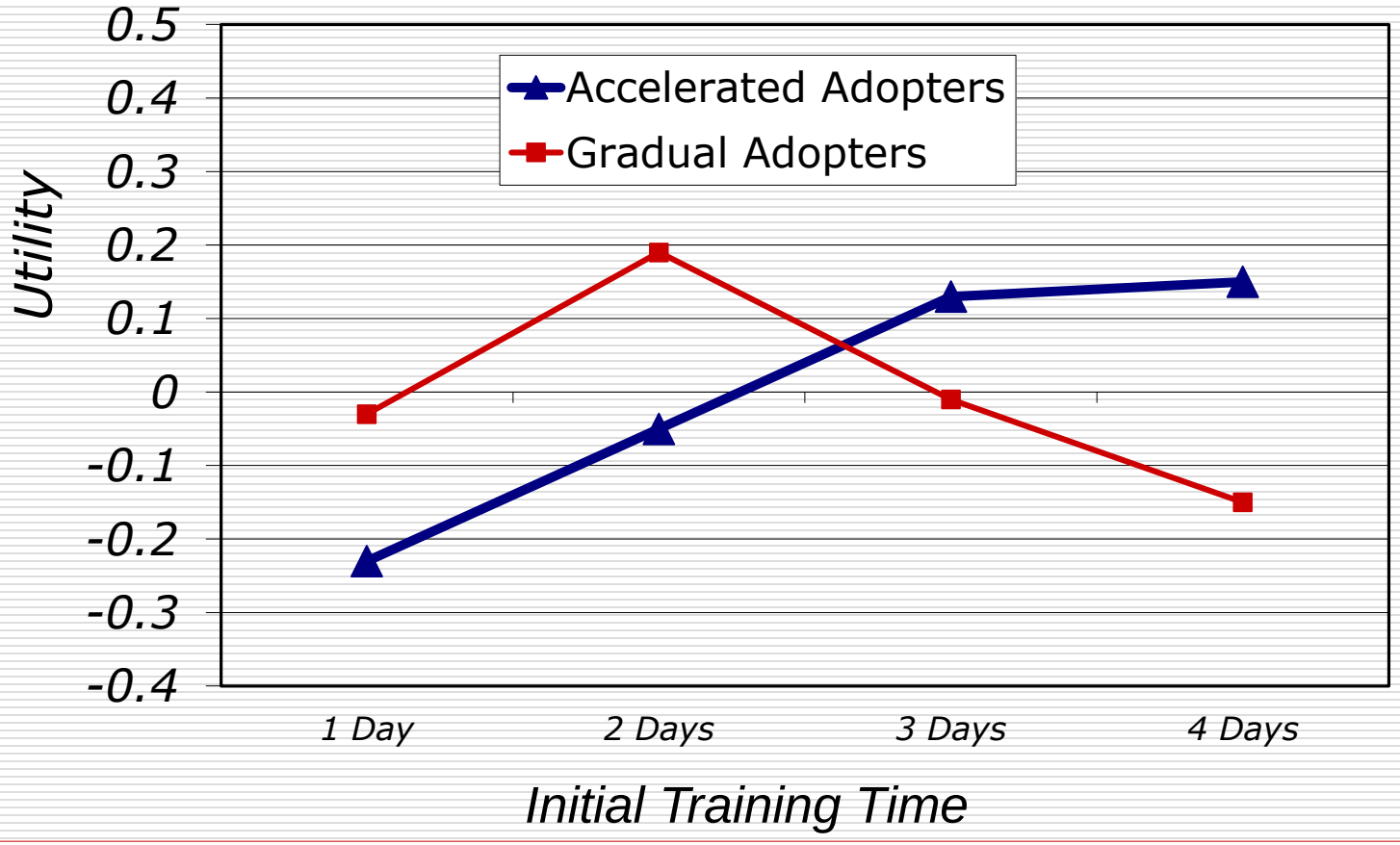
Attributes of the Implementation *Process* that Influence Decisions

Relative Importance of KT Design Attributes: Initial Training Time



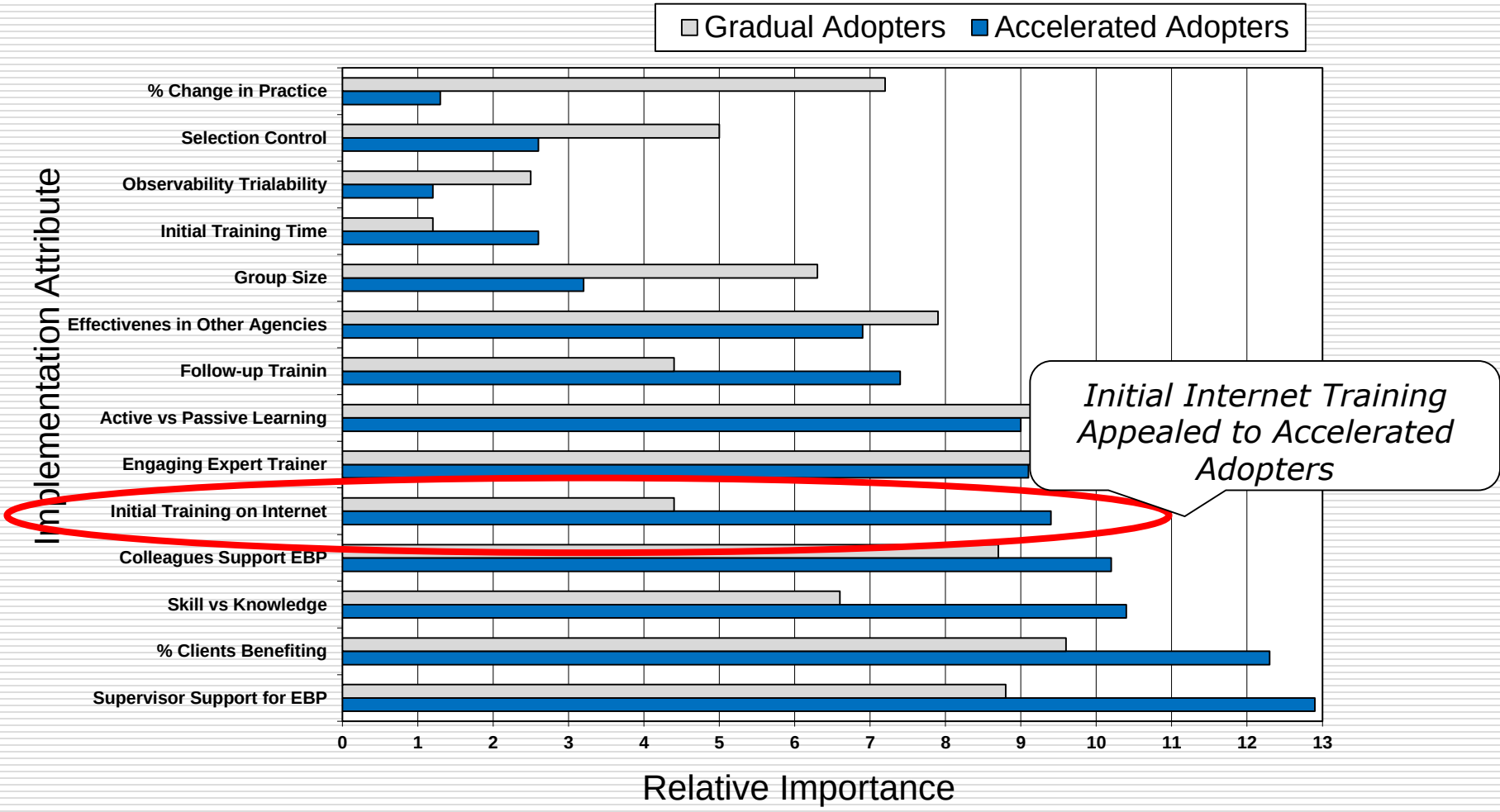
Source: Cunningham, Barwick et al. Administration and Policy in Mental Health *(2018)*

Initial Training Time



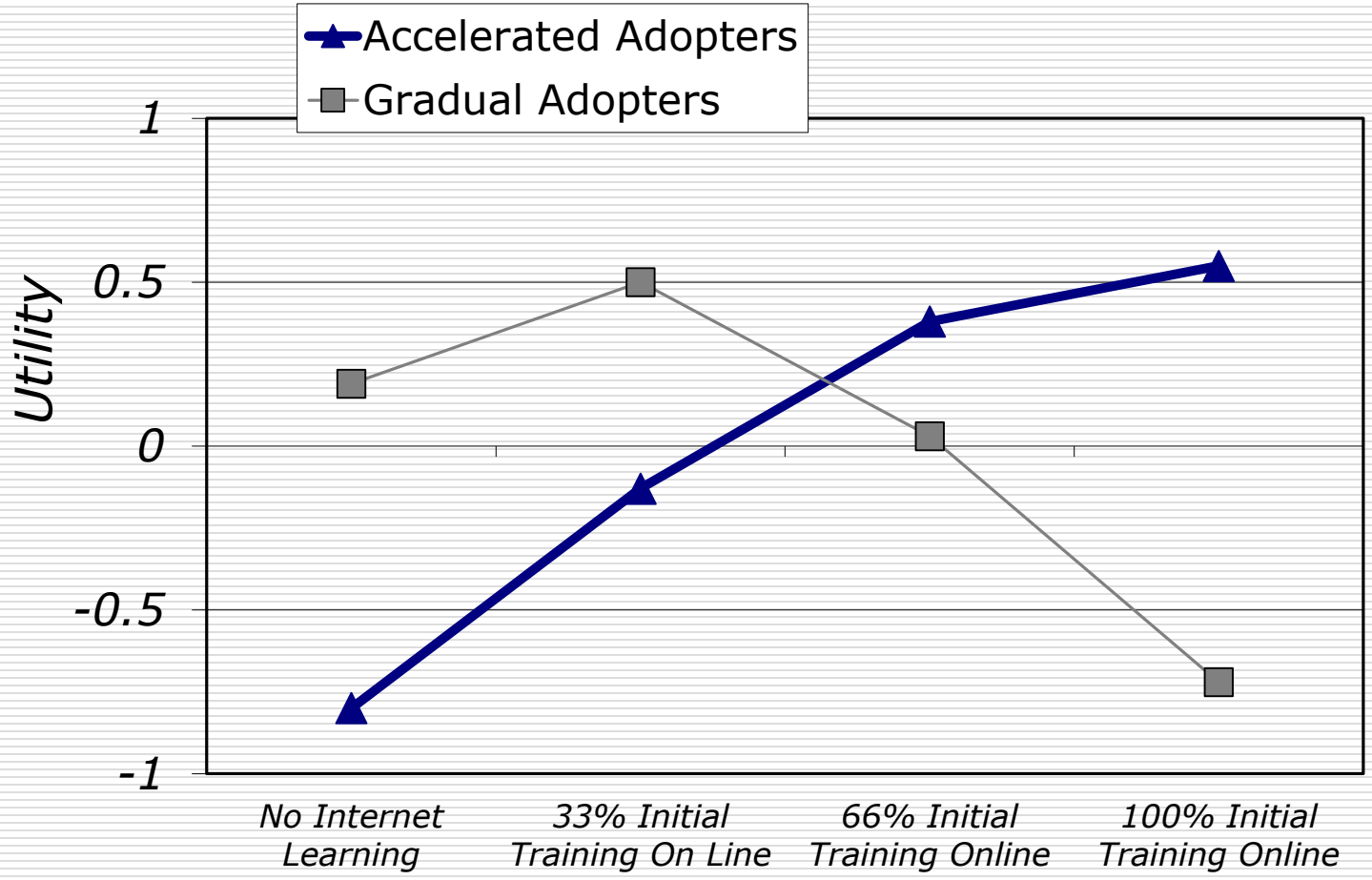
Source: Cunningham, Barwick et al., *Administration and Policy in Mental Health* (2018).

Relative Importance of KT Design Attributes: Initial Internet Training



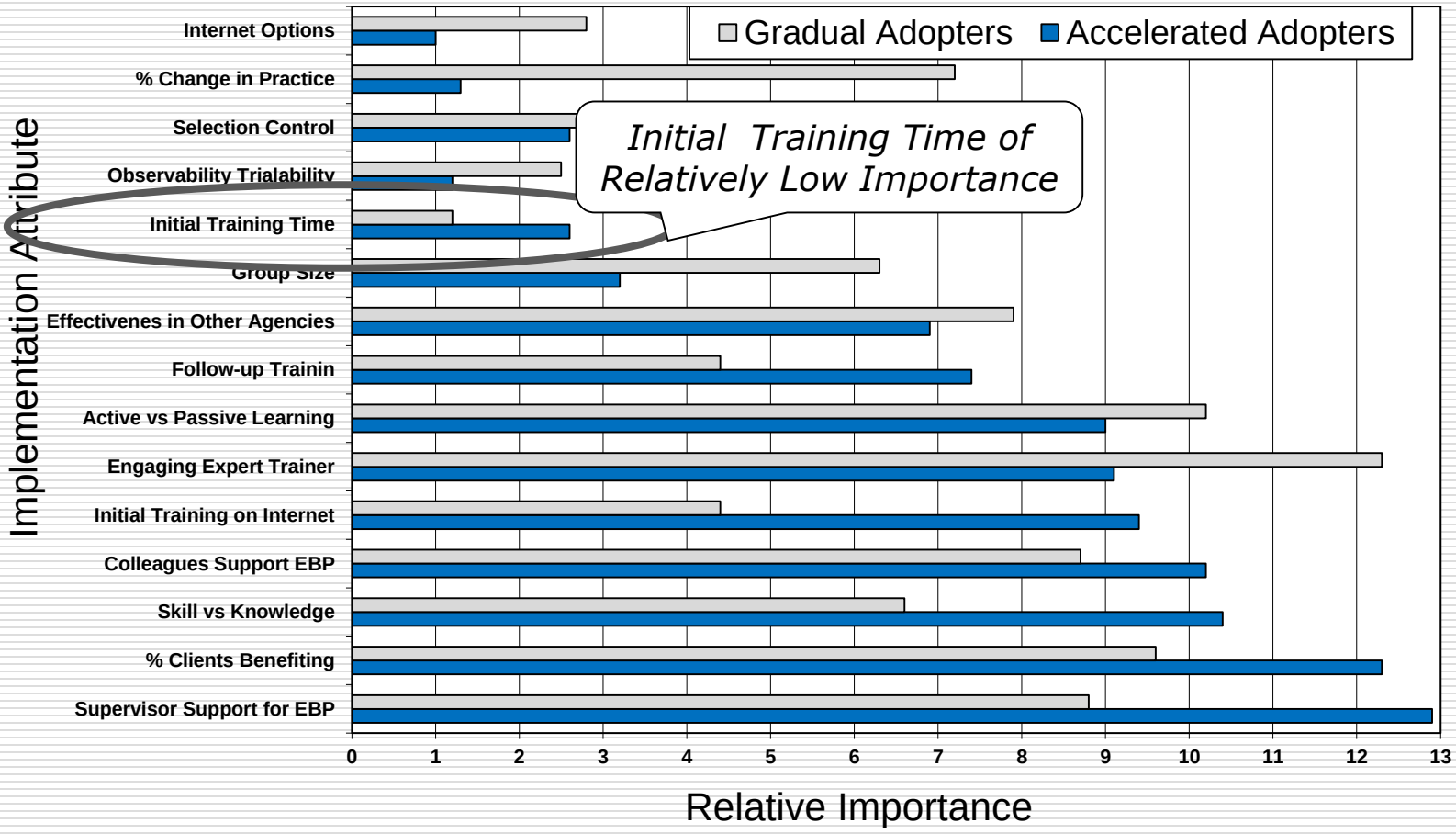
Source: Cunningham, Barwick et al. Administration and Policy in Mental Health *(2018)*

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)*

Mental Health Professionals

- *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

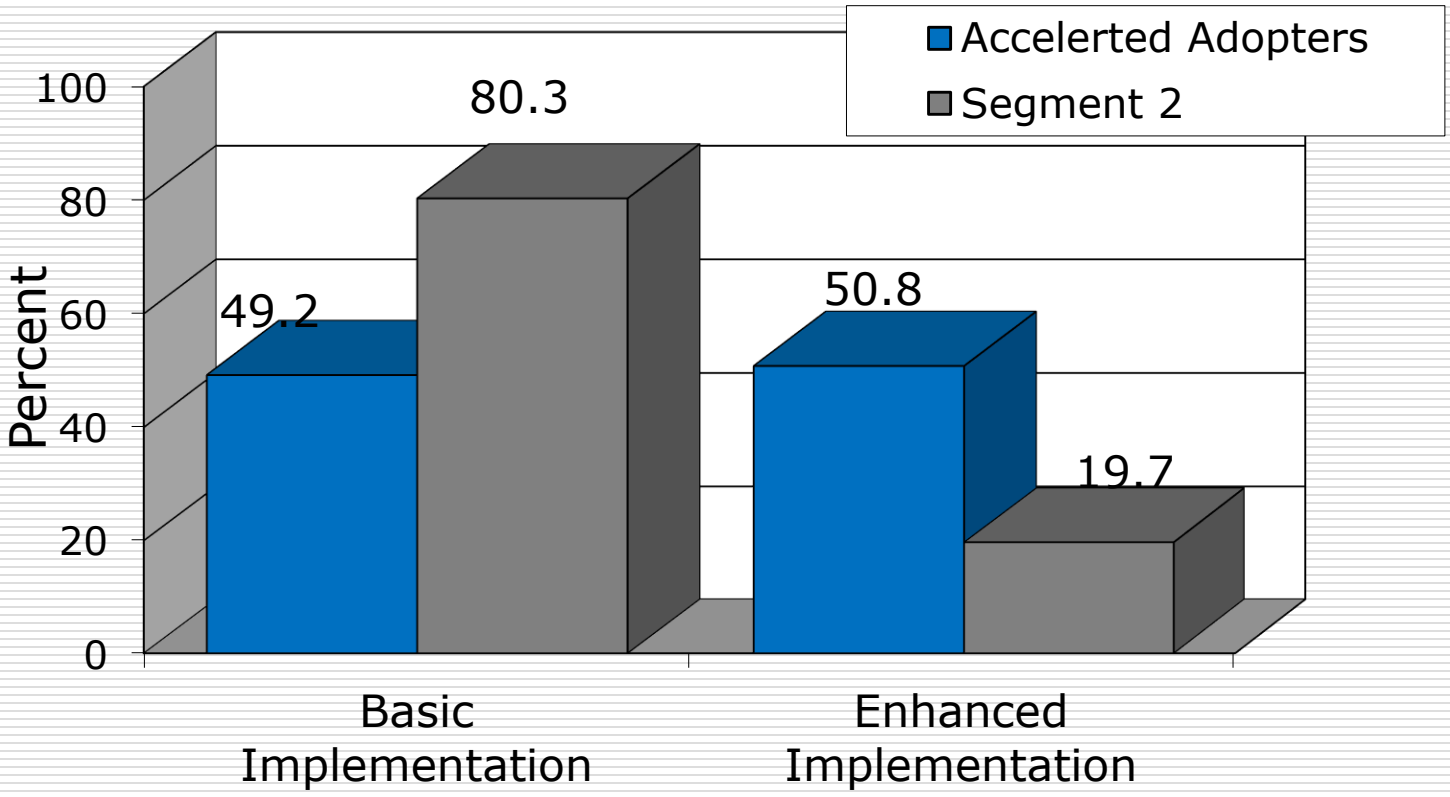
- *Accelerated Adopters 12%*
  - *Greater Intent to Participate*
  - *100% of Initial Training on Line*
  - *Devote More Time (4 Days) to Initial Training*
  - *Would Make More Changes to Their Practice*
  - *Introduce only Minor Modifications to EBPs*
- *Gradual Adoplers 88%*
  - *Lower Intent to Participate*
  - *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*

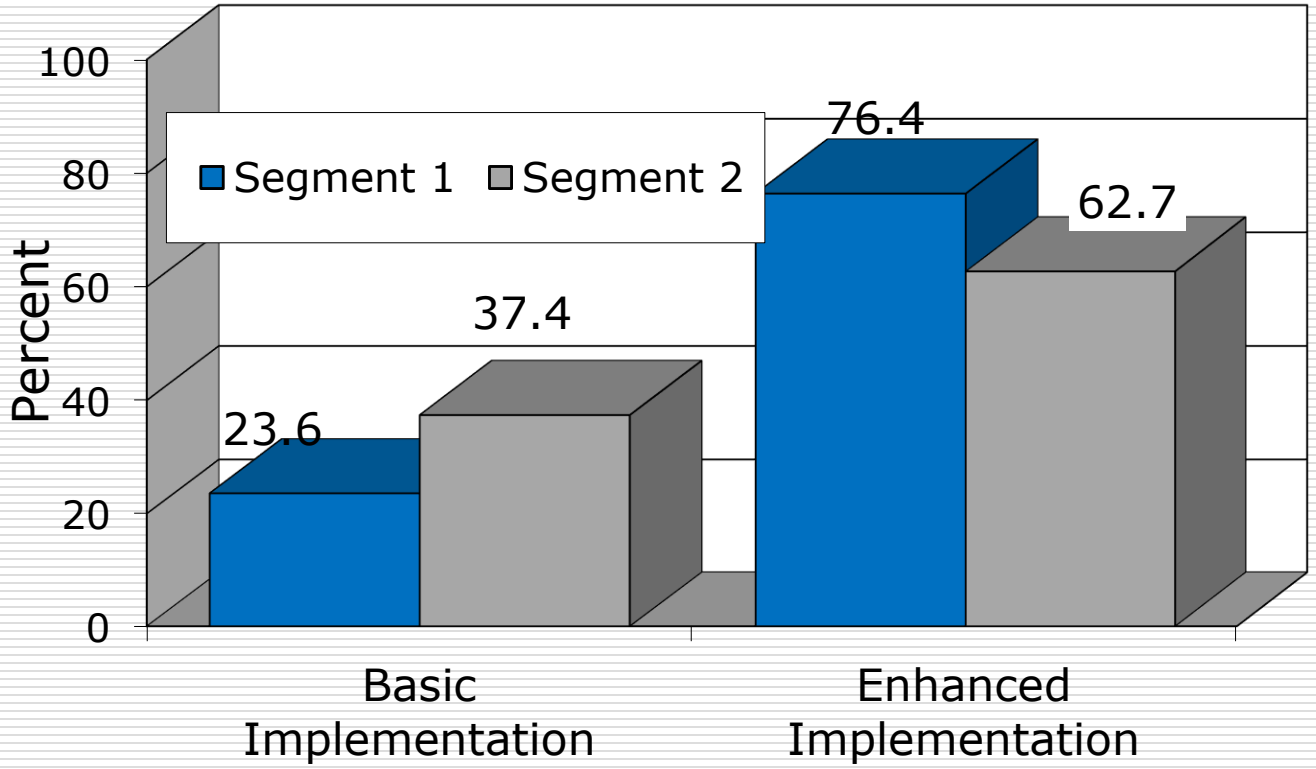
Source: Cunningham, Barwick Administration and Policy in Mental Health (2018)

Randomized First Choice Simulation: Basic vs Enhanced



Source: Cunningham, Barwick 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!