ADAPT LAB

Enhancing Adaptation:
Active Learning and Self-Regulation

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Abstract

•A persistent observation across a broad sweep of organizational research, is the rapid rate change in the workplace and the corresponding need for complex and adaptive capabilities for individuals, teams, and organizations. Over the last decade or so, my students, colleagues, and I have been examining the concept of performance adaptation – both conceptually and empirically – at multiple levels of the organizational system.

•This is a brief summary that highlights key developments in this stream of research -- how we have examined regulatory processes that underlie learning and adaptation, how we have manipulated and enhanced those processes, and how we have integrated this line of work on Active Learning.

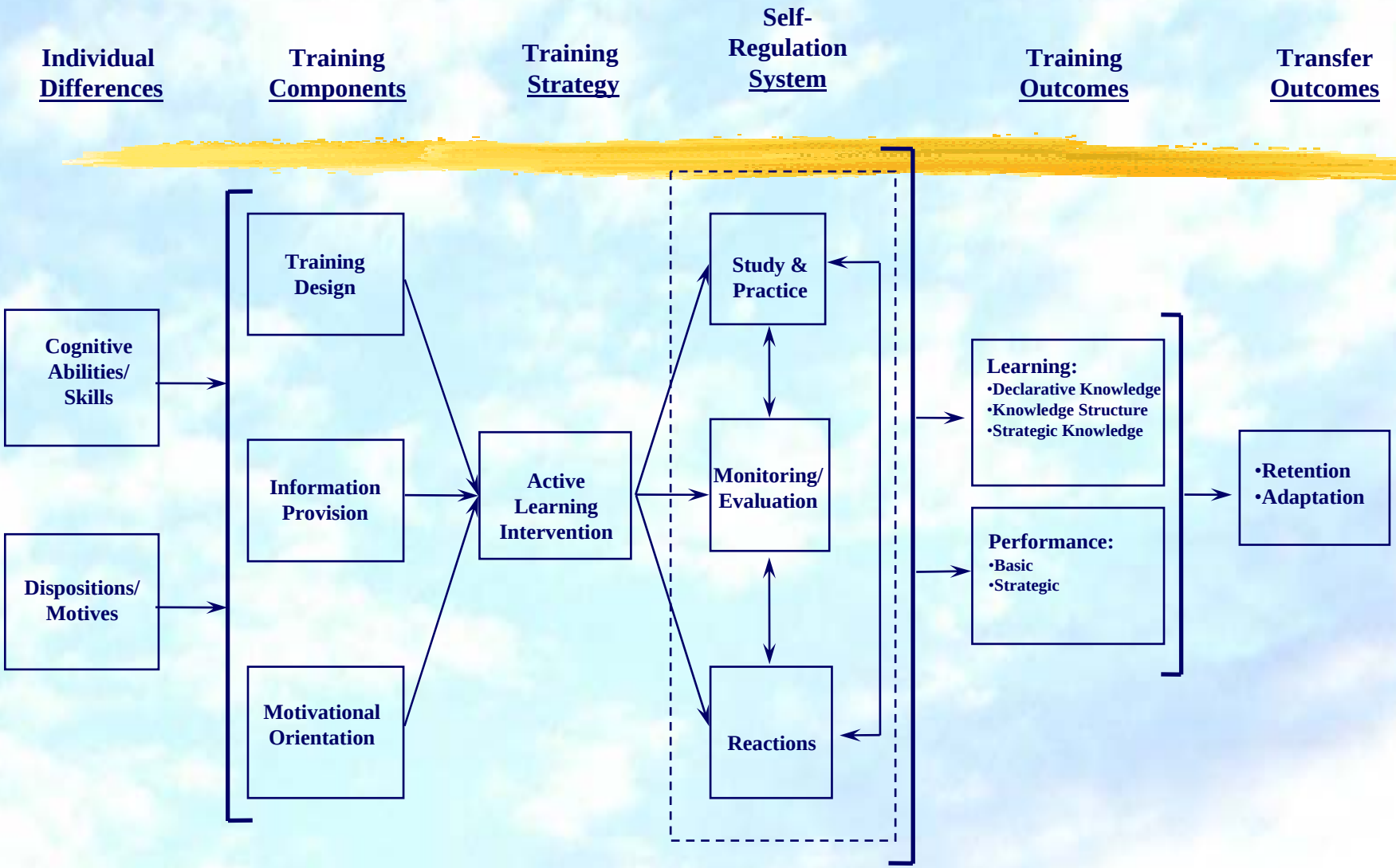
Theory and Research Encompass Multiple Levels

- Self-Regulation, Learning, & Adaptation
  - *Active Learning System Design (Kozlowski et al., 2001a, 2001b; Bell & Kozlowski, 2002)*
  - *Processes of Active Learning (Bell & Kozlowski, 2008, 2009)*
  - *Synthetic Learning Environments (Bell, Kanar, & Kozlowski, 2008)*
- Team Regulation, Learning, & Adaptation
  - *Team Learning & Development – Shaping Learning, Performance, & Adaptation*
    - *(DeShon, Kozlowski et al., 2004; Kozlowski et al., 1999; Kozlowski & Bell, 2008)*
  - *Team Leadership – Selectively Shaping Team Learning & Development*
    - *(Kozlowski et al., 1996; Kozlowski et al., 2009)*
  - *Team Effectiveness – Key Team Processes & Interventions to Enhance*
    - *(Kozlowski & Bell, 2003; Kozlowski & Ilgen, 2006)*
- Integrating Training & Development within the Organizational System
  - *Enhancing "Vertical" Transfer Across Levels (Kozlowski & Salas, 1997; Kozlowski et al., 2000)*
  - *Distributed Learning Systems (Kozlowski & Bell, 2007)*
  - *Infrastructure for Organizational Learning (Kozlowski et al., 2009)*

Theoretical Foundation:
Self-Regulation, Learning, & Adaptability

- Theory
  - Smith, Ford, & Kozlowski (1997)
  - Kozlowski, Toney, Mullins, Weissbein, Brown, & Bell (2001)
  - Bell & Kozlowski (in press, *SIOP Frontiers*)
- Research
  - Kozlowski, Gully, Brown, Salas, Smith, & Nason (2001, *OBHDP*)
  - Bell & Kozlowski (2002, *JAP;* 2002, *P. Psy*)
  - Kozlowski & Bell (2006, *JAP*)
  - Bell & Kozlowski (2008, *JAP*)
- ***Self-regulatory processes account for individual learning, performance, and adaptability***
- ***SR can be leveraged by a variety of interventions***

Theoretical Framework and Research Paradigm



Pre-Exp | Multiple Iterations & Assessments … typically 9 trials | Multidimensional | Post-Training

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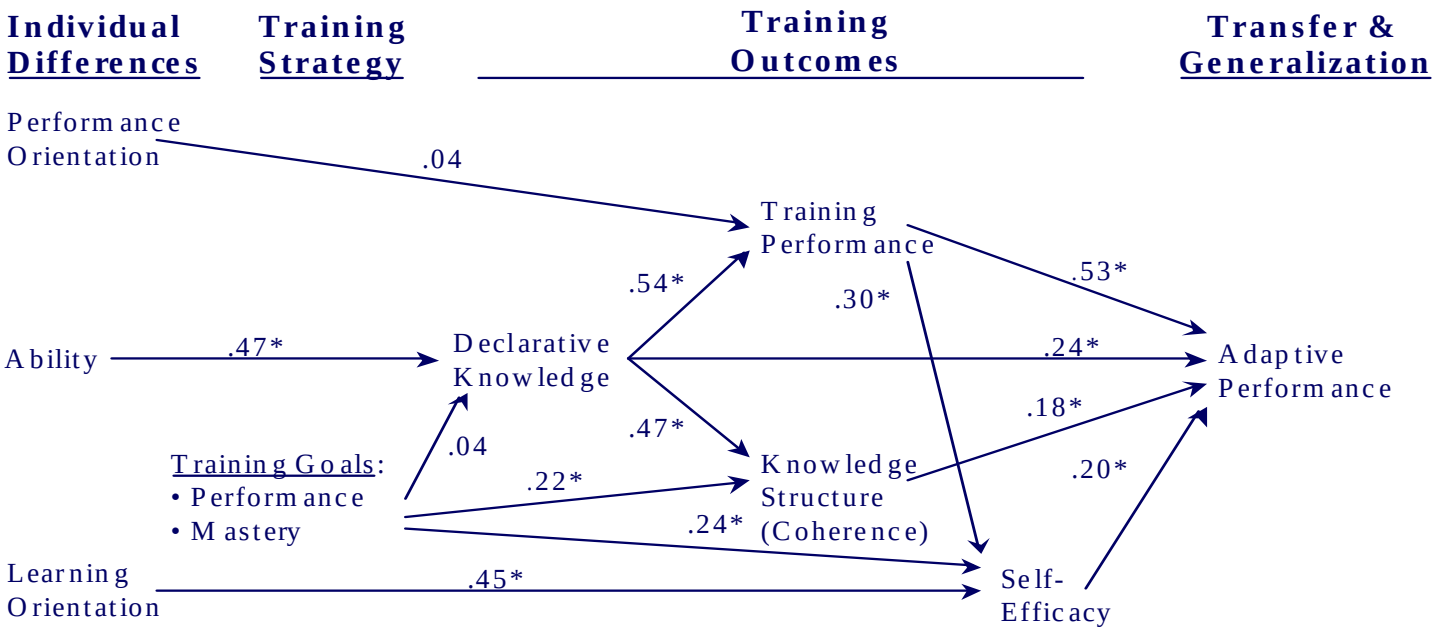
Goal Orientation Traits & Mastery vs Performance Goals

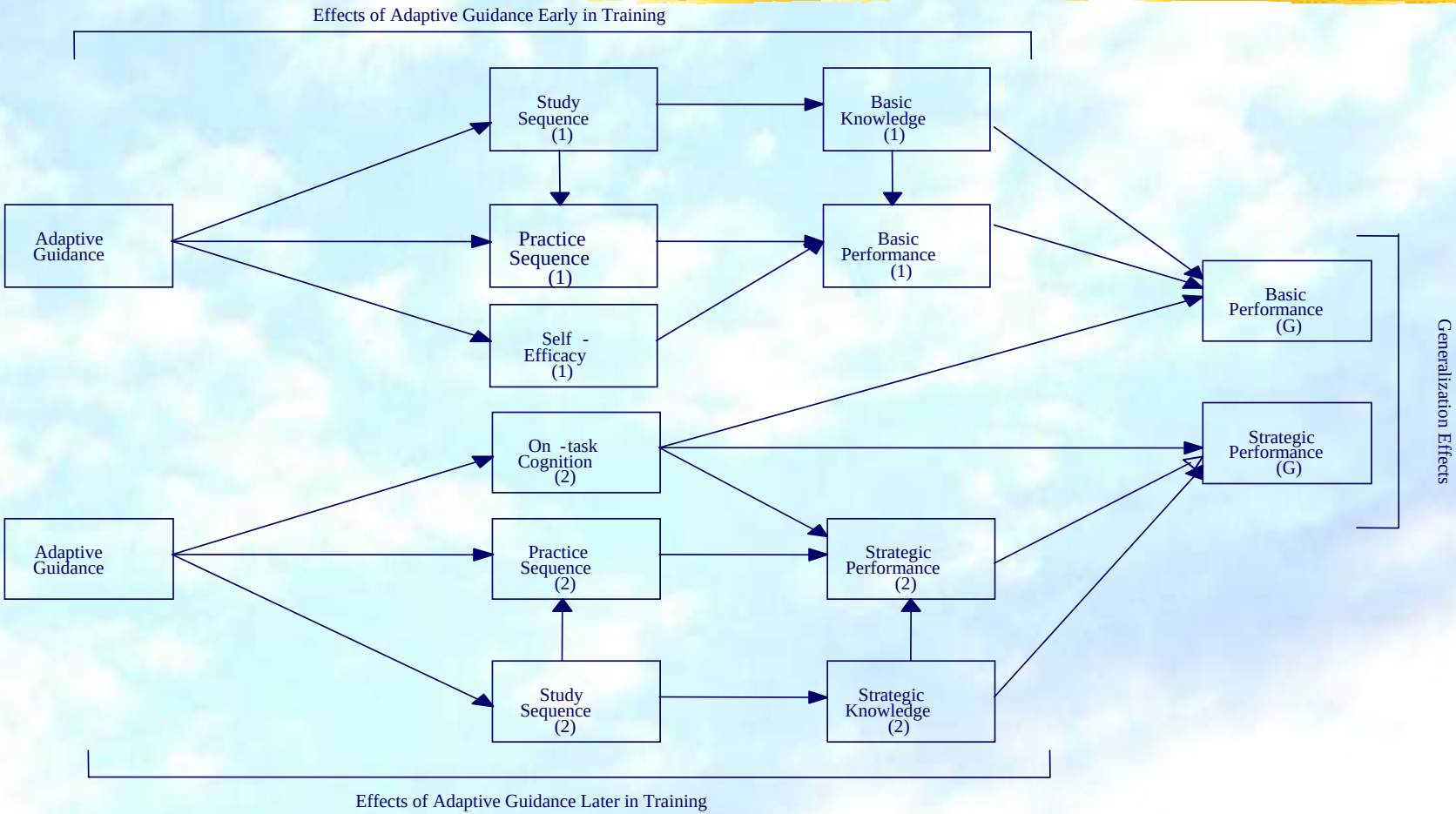
(Kozlowski et al., 2001, *OBHDP*)



(χ^2 = 11.21, df = 17, RMSEA = 0.01, GFI = .97, AGFI = .92)

Adaptive Guidance

(Bell & Kozlowski, 2002, *PPsy*)



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Active Learning (AL) Strategies & Process Pathways

(Bell & Kozlowski, 2008, *JAP*)

- Many AL techniques have been developed
  - e.g., Mastery Goals, Error-Based Training, Exploratory Learning…
- Research has treated them as distinctly different, but…
- Strategies overlap on several dimensions (Smith, Ford, & Kozlowski, 1997)
  - Example: Inductive learning process in which individuals must explore and experiment with the task to learn the rules, principles, and strategies
- Shifted theory & research focus from building interventions to identifying the mechanisms of AL techniques (Kozlowski & Bell, 2006, *JAP*)
- Research goals:
  - Identify fundamental elements of a broad range of active learning strategies
  - Examine the psychological mechanisms by which they exert effects
  - Examine how AL core elements interact with individual differences (AxT)

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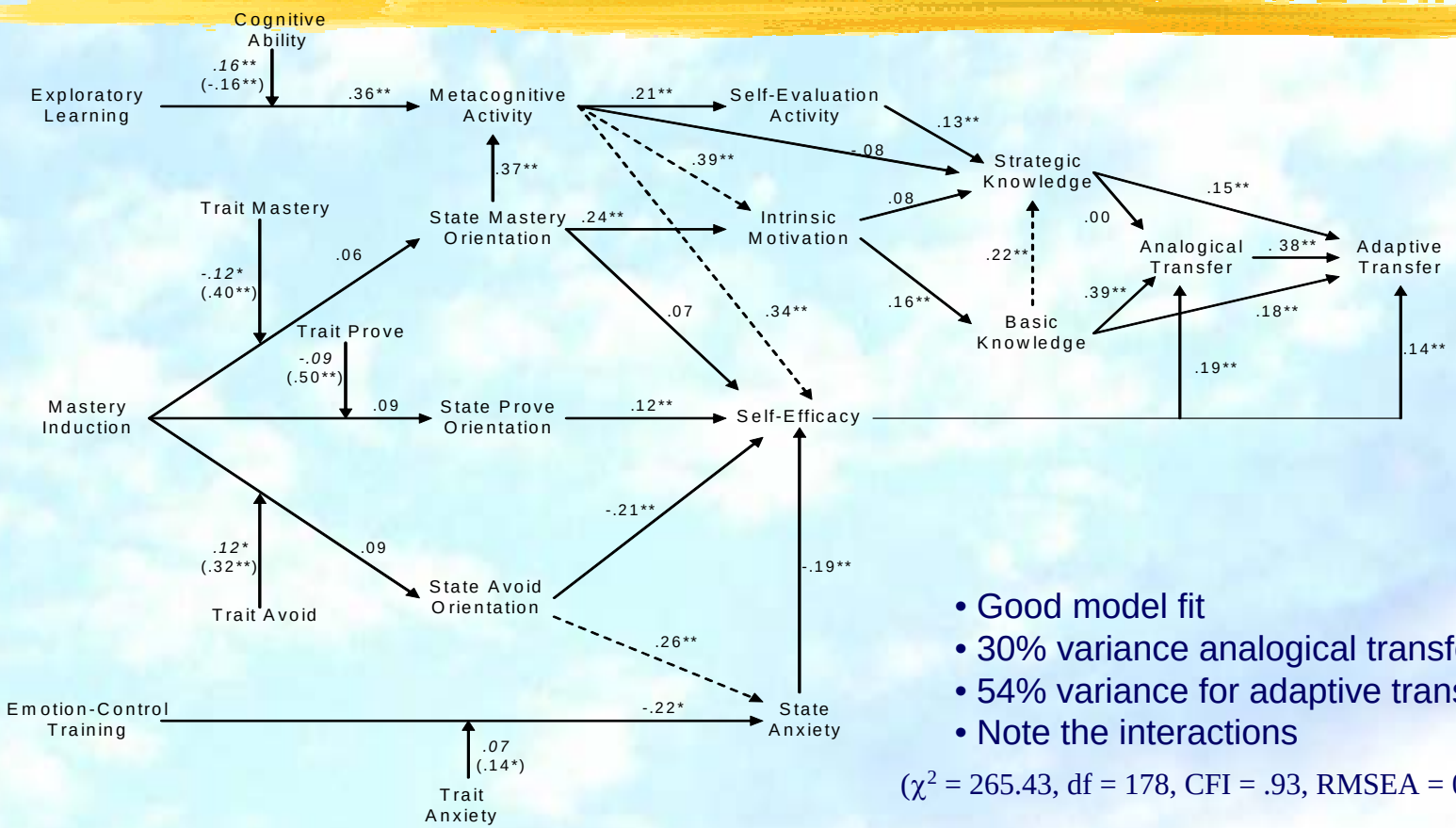
Moderated Structural Equation Model Results

(1) Good Fit; (2) Note Distinct Pathways; (3) A x T Interactions



- Good model fit
- 30% variance analogical transfer
- 54% variance for adaptive transfer
- Note the interactions

(χ^2 = 265.43, df = 178, CFI = .93, RMSEA = 0.37)

Note: Standardized path coefficients reported. For individual differences, interactive effect reported in italics and main effect in parentheses. When a significant interaction term is present, the main effects are conditional, although the direct relationship can be interpreted as the average effect (Aiken & West, 1991). Dashed paths represent model respecifications.

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Summary:
Individual Regulation, Learning, & Adaptation

- Theory for developing effective active learning (AL) interventions
  - Research shows enhanced self-regulation
  - Positive effects on learning, performance, and adaptation
- Theory to integrate core AL design elements and process pathways
  - Research shows relatively distinct processes
  - Good account of adaptation
  - Interactions with individual differences
  - Potential to tailor AL to learner characteristics, preferences, and progress
- Applications: “Synthetic” Learning Environments, Compressed Experience
  - Simulations, Gaming, Computer-based, Web-based training

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Broader Objectives re: Adaptation

- Theoretical models and research at multiple levels
  - Systematic examination of self-regulation, learning, and adaptability
  - Extensions to understand team learning, regulation, and adaptation
  - Role of leaders in leveraging team learning, development, and adaptation
- Application targets
  - Current: Computer, Web-based & Distributed Learning Design
  - Near Term: Extension to Distributed Team Learning; “Virtual” Team Leadership (Bell & Kozlowski, 2002);
  - Future: Foundation for Organizational Learning Systems
- Longer term goal…
  - *Apply the knowledge to create learning systems that enhance the development of adaptive people, teams, and organizations*

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