Transactive Memory Errors in Teams

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TM Error: Overspecialization

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Satellite mishap blamed on human error

By Matthew Fordahl, Associated Press

SAN JOSE, Calif. — A $239 million satellite toppled to a factory floor last year because nobody bothered to check that it was secure before moving it, according to a NASA investigation board's report on the mishap.

It will cost an estimated $135 million to rebuild the spacecraft's main section and two damaged instruments. No one was injured in the incident.

The NASA board, which was led by Christopher Scolese of the agency's Science Mission Directorate, faulted an unidentified engineer who didn't look at the cart's configuration but instead relied on paperwork from a prior operation.

"Had he followed procedures, the unbolted (cart) adapter plate would have been discovered and the mishap averted," the report said. "Errors were also made by other team members, who were narrowly focused on their individual tasks and did not notice or consider the state of the hardware or the operation outside those tasks."

A computer network model of transactive memory

Humans are not computers. They make errors, which can go undetected… even/especially in TM systems.
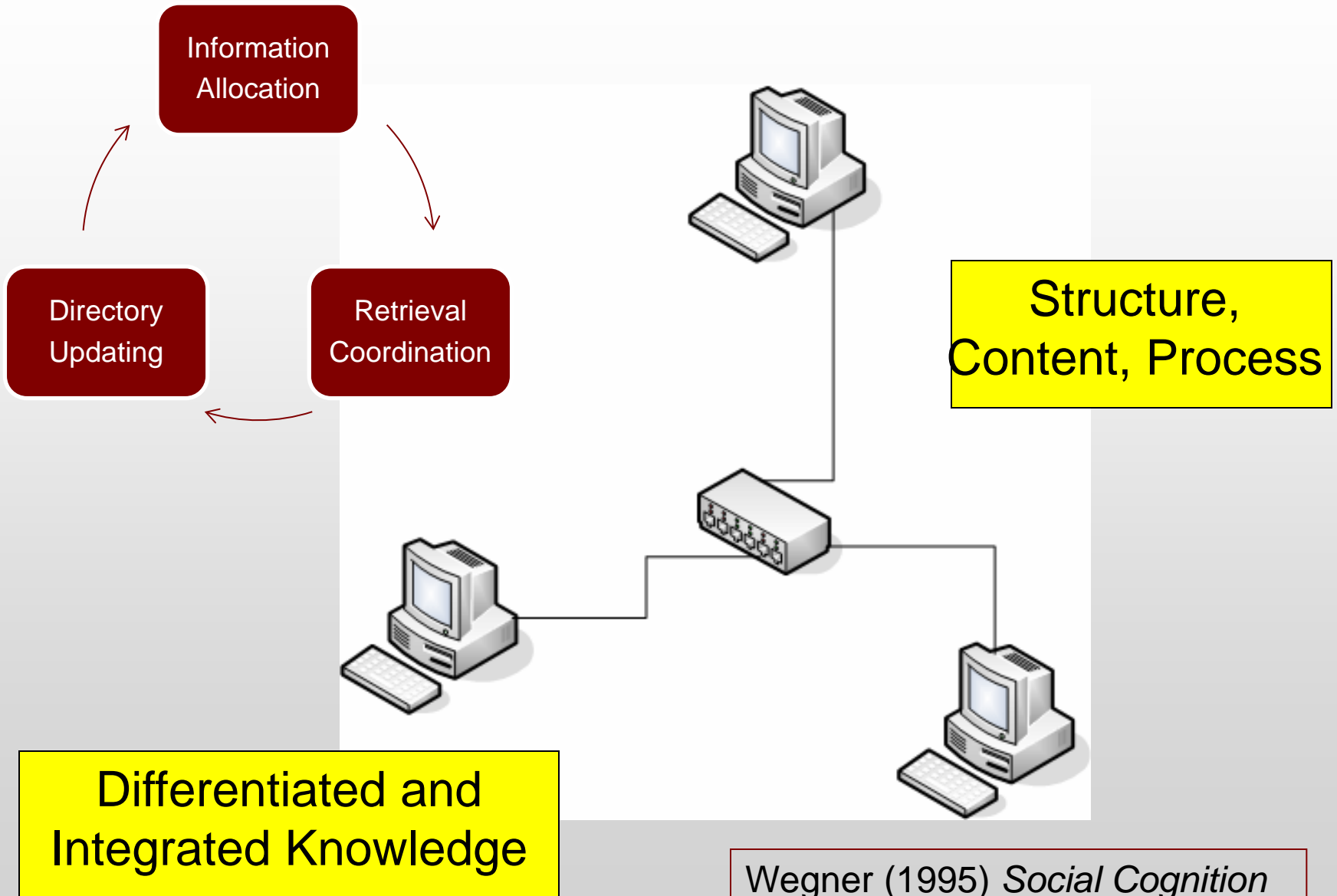
Allocation

Directory Updating

Structure, ntent, Process

Different Integrated interlinkage

Wegner (1995) *Social Cognition*

A computer network model of transactive memory

Information Allocation

Directory Updating

Retrieval Coordination

Structure, Content, Process

Differentiated and Integrated Knowledge

Wegner (1995) *Social Cognition*

Contexts

Differentiated Versus Integrated Transactive Memory Effectiveness: It Depends on the Task

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Task

Groups performed two tasks.[1] First, they worked on a group recall task in which they memorized a word list across six different knowledge categories: geography, math, alcohol, cars, cooking, and sports.[2] There were 15 words in each category. Next, they performed an intellective task in which they answered six questions from the same set of six categories. The answers to the questions were from the list of words they had memorized earlier. For ex-

The manipulation of transactive memory type was as follows: Groups in the differentiated transactive memory condition were further instructed that:

Groups do better on the second task when members divide responsibility for learning words in different categories equally on the first task. When groups divide up the responsibility of learning information, it is more likely that one of the members will be able to answer the question correctly. Each of you will be given word lists in only two of the six categories, which will be decided by the group.

Groups in the integrated transactive memory condition were further instructed:

Groups do better on the second task when all members try and learn all words across all categories on the first task. When group members learn the same information, it is more likely that one of the members will be able to answer the question correctly. Each of you will be given the same word lists across all six categories.
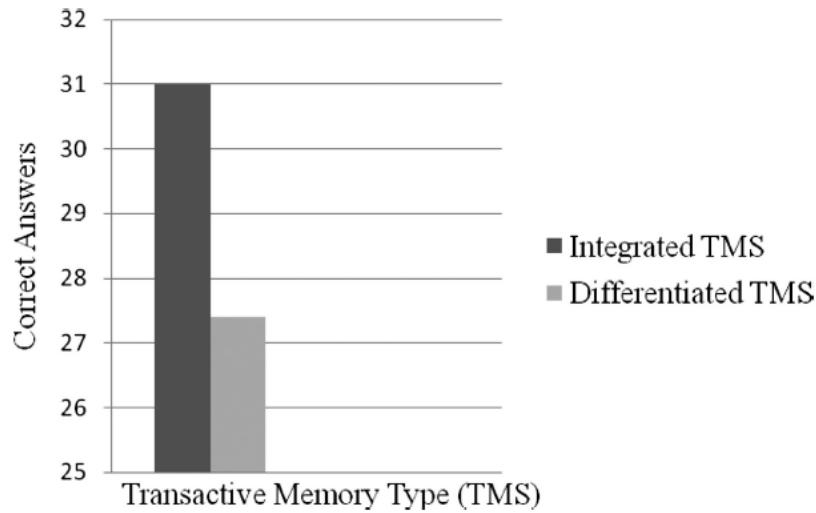
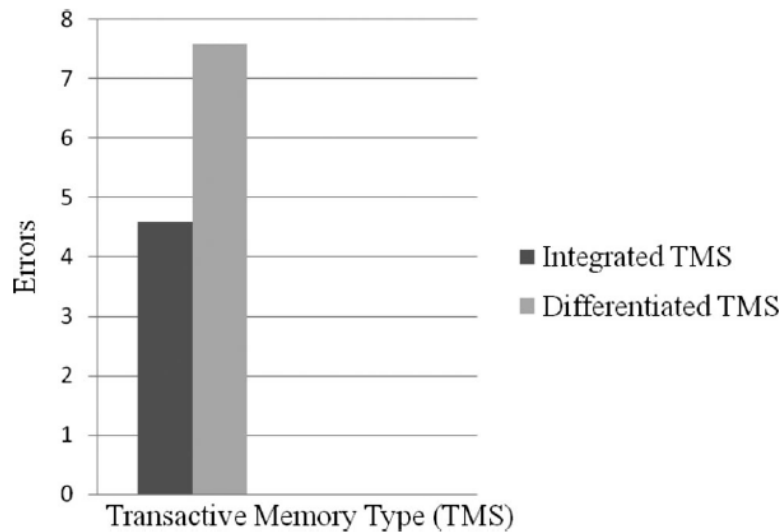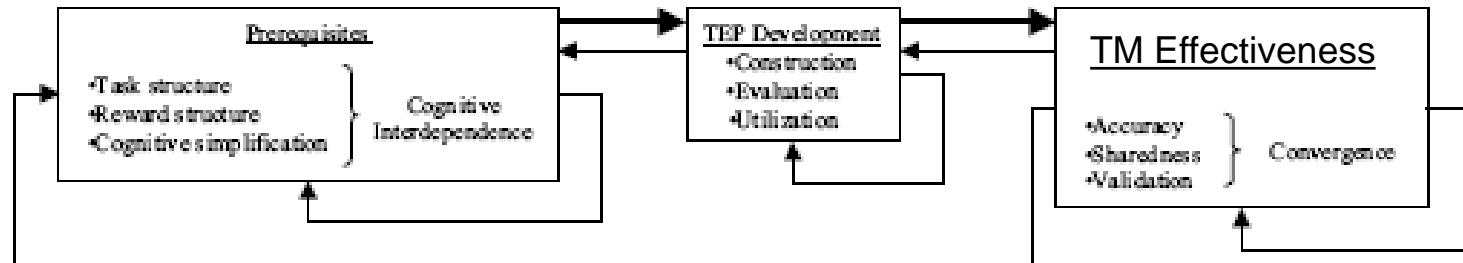*Figure 1.* Intellective task mean correct answers by transactive memory type.

Figure 2. Intellective task mean errors by transactive memory type.

Table 3
Instances of Group Interaction Behaviors by Transactive Memory Type

Group interaction behaviors	Transactive memory type	
	Differentiated	Integrated
Delegation of responsibility (D)	5.57 (2.07)a	3.00 (2.83)b
Assertions about unique expertise (D)	8.43 (5.68)a	0b
Questions about unique expertise (D)	3.57 (2.76)a	0b
Transactive unique information search (D)	1.57 (1.72)a	0b
Assertions about shared expertise (I)	0a	9.50 (3.78)b
Questions about shared expertise (I)	0a	1.63 (1.85)b
Transactive shared information search (I)	0a	3.63 (2.45)b

Transactive Memory Systems in Organizations: Matching Tasks, Expertise, and People

Figure 1 Cyclical Development of Transactive Memory

Prerequisites
- Task structure
- Reward structure
- Cognitive simplification

Cognitive Interdependence

TEP Development
- Construction
- Evaluation
- Utilization

TM Effectiveness
- Accuracy
- Sharedness
- Validation

Convergence

TEPs: ongoing hypotheses

What expertise is necessary for task? T-E

What do people know E-P?

Who is assigned task? P-T

Transactive Memory Effectiveness
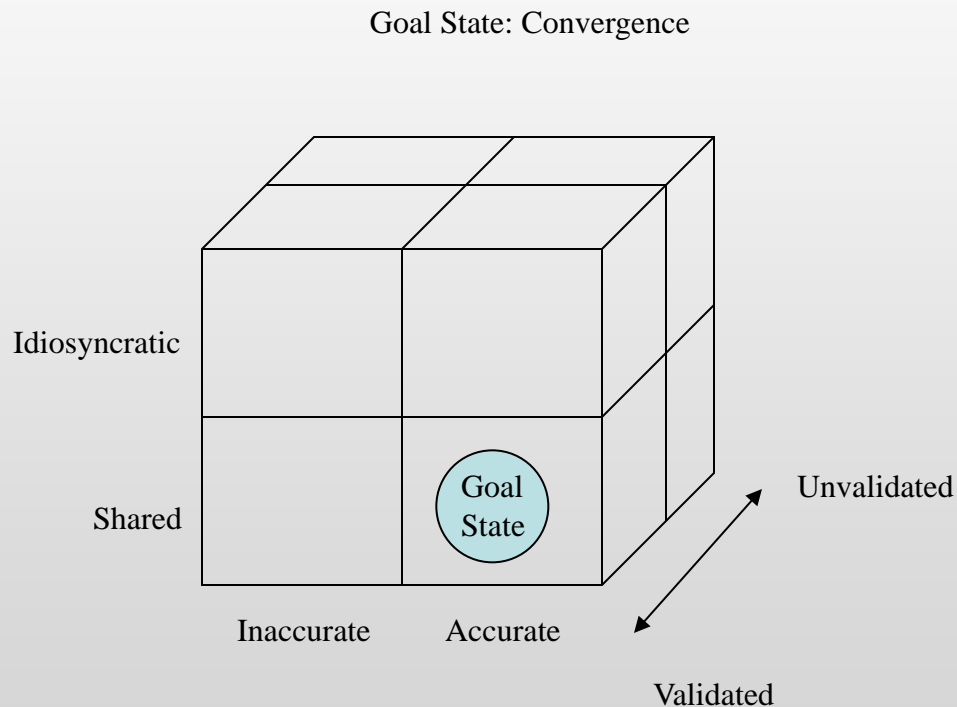
- Accuracy: Accurate--Inaccurate
- Sharedness: Shared-- Idiosyncratic
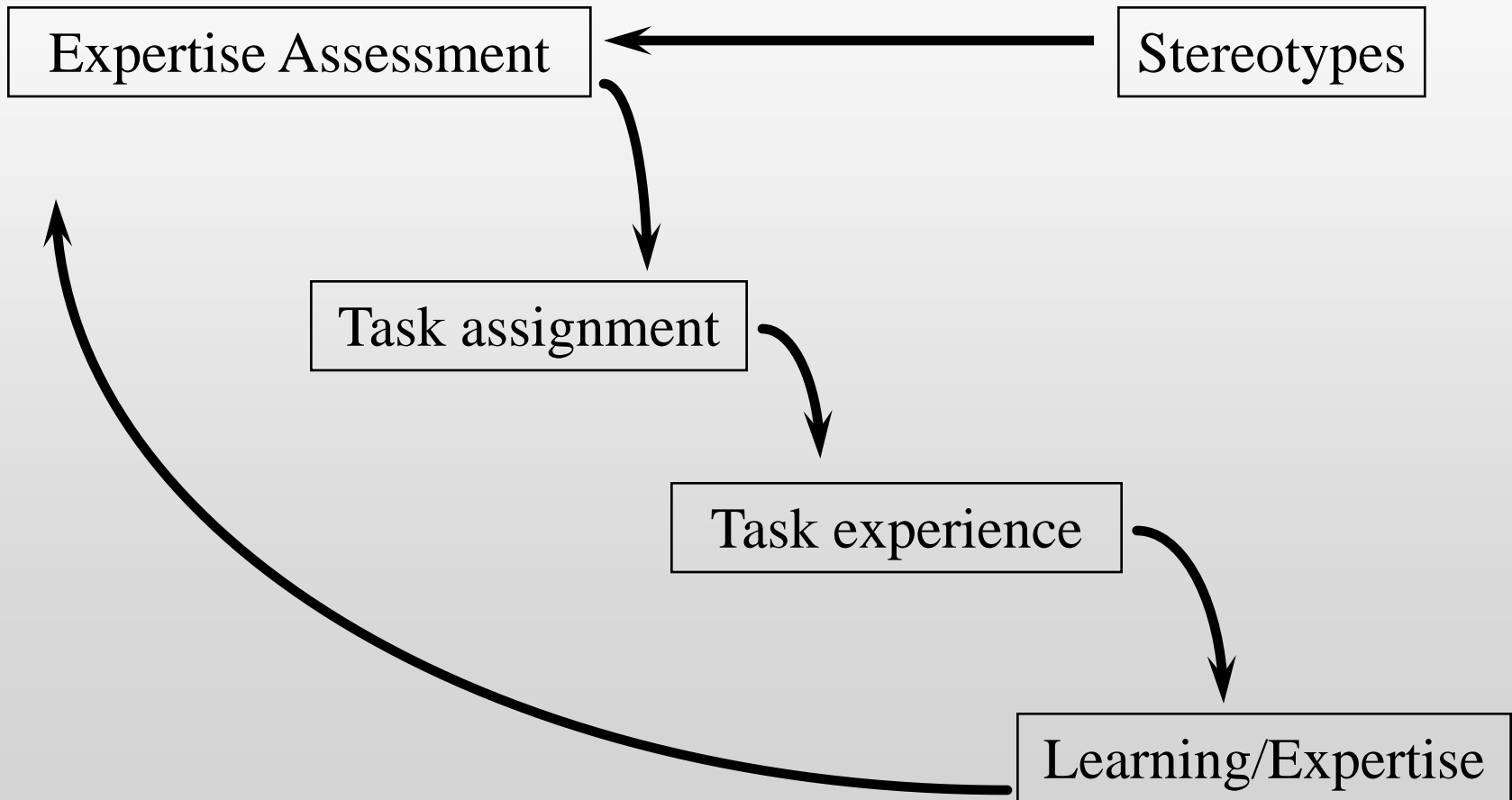- Validation: Validated-Not Validated

(Brandon & Hollingshead, 2004, *Org Science)*

Convergence: The Ideal Transactive Memory System

Goal State: Convergence

(Brandon & Hollingshead, 2004, *Org Science)*

The Self-Reinforcing Effect of Stereotypes in Diverse Teams

Expertise Assessment ← Stereotypes

Expertise Assessment → Task assignment

Task assignment → Task experience

Task experience → Learning/Expertise

Learning/Expertise → Expertise Assessment

(Fraidin & Hollingshead, 2005; Hollingshead & Fraidin, 2003)

Cultural Stereotypes

Table 2. Stereotypical and Counterstereotypical Category Assignments in Culturally Diverse Dyads

	Stereotypical		Counterstereotypical	
	M	SD	M	SD
No Communication	2.84	1.06	1.15	0.89**
Communication	3.00	0.95	0.11	0.90**

N ranged from 12 to 13. Range was 0 to 4.
** *p* < .01 between means in same row.

Table 3. Coordination Errors

	Culturally Diverse Dyads		Culturally Similar Dyads	
	M	SD	M	SD
No Communication	2.30	1.79	3.61	1.12*
Communication	0.00	0.00	0.00	0.00

Cultural Stereotyping, Convergent Expectations, and Performance in Cross-Cultural Collaborations

Kay Yoon and Andrea B. Hollingshead
Social Psychological and Personality Science, April 2010; vol. 1, 2: pp. 160-167.

Questions and Suggestions?