MIS Quarterly

SO, TALK TO ME: THE EFFECT OF EXPLICIT GOALS ON THE COMPREHENSION OF BUSINESS PROCESS NARRATIVES

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Appendix A

Demographic Information Sheet

ID # _____

Name: _____

e-mail: _____

Possible   M@_____   W@_____F@_____
Times   T@1:00   Th@1:00

Age: _____

Sex::   (M) (F)

SSN: _____

Education   High School   College
Circle highest completed   1   2   3   4   1   2   3   4   MS   PhD

If College
Specify Degree (Example: BA Journalism):   _____

Current Job Title: _____

How long have you been working (years): _____

Most Recent Work Experience: _____
(Job titles and time at job) _____
_____
_____

Appendix B

Experiment 1 (Short-Term Recall) Instruments ████████████████

Consultant Briefing: *New Man Company*

In the situation described below multiple independent businesses in different countries (an offshore manufacturing operation) cooperate to produce a single product – men's suits. Originally, all businesses are working together efficiently. Then, due to an unexpected event, one of the businesses changes its process. That is, they change the way of working that the other companies had become familiar with. Temporarily the overall work becomes uncoordinated. It becomes less efficient than it had been.

Think of your role during this session as a business analyst for a consulting firm such as Anderson Consulting. The original analyst for this project is recovering from food poisoning. You have been flown to the corporate headquarters on an emergency basis and in a short time you must make a presentation to a group of executives. Your presentation should contain:

1. Your analysis and understanding of the original process
2. Your analysis and understanding of how one of the departments changed and how it caused problems with the overall process
3. Multiple possible solutions to the problem and your analysis of which solution is the best solution

The description of the business process is short to make it easy to read. It may not be complete. If you feel you need information that is not in the write-up, **do not ask for the information**. Simply approach that information need as a sub-problem. Talk aloud as you reason through **why** you need that information. If, after reasoning, you still feel you need that information then <u>assume</u> a value for it based on your life experience. Any answer you think is reasonable is OK. Using the information you have just supplied you will then proceed with the original train of thought.

It is NOT a trick question in any way. Common sense should be sufficient to find an answer – and any answer that you think is correct is a right answer.

The description of the process is in a narrative format – an e-mail memo describing how the process works as might be captured in a current knowledge management system.

[page break]

Scenario 1n (no goals)

Hi -

Since I'm the one that's worked most closely on the project, Jack asked me to send you an e-mail describing the New Man situation. Here goes.

New Man, Inc. is one of our divisions, a clothing company headquartered here in the New York. They do their own design work, and then outsource the actual manufacture of the clothing to factories outside the US. The specific process I've been looking into is pretty typical and it's for the manufacture of a design of men's suit. Originally the suit consisted of a vest, a pair of pants and a coat.

The process starts with a production order that gets sent from New York to Taiwan, which is one of their big manufacturing shops. Everything's computerized, so when Taiwan's manufacturing system gets the order, they start making the suit beginning with the vests. When they finish

that, the system sends New York a message saying they're done with the vests, and then they start on the pants. It takes about as long to do the pants as it does for New York to get some Italian group in Milan (I think) to send this exclusive cloth to Taiwan so they can make the coats.

OK, so Taiwan starts on the pants, New York sends Italy a PO to have the cloth shipped to Taiwan and about the time it gets there they start manufacturing the coats. When they get everything together, they ship the whole batch of completed suits to New York.

So New York decided just to eliminate the vest and have the Taiwanese factory make the outfit consisting of coat and pants only.

Now, about the problem that's come up.

The first time this new order was sent to Taiwan, they started work on a batch of pants and then waited for the cloth to get there for the coats. After a while they quit waiting and started working on orders for other manufacturers. Eventually New York called Taiwan, all ticked off and demanding to know when the suits were going to arrive.

So that's where things stand now till we get it straightened out. Sorry I couldn't be there myself. Good luck with the presentation!

Beth

[page break]

Scenario 1g (goal information in italics)

Hi -

Since I'm the one that's worked most closely on the project, Jack asked me to send you an e-mail describing the New Man situation. Here goes.

New Man, Inc. is one of our divisions, a clothing company headquartered here in the New York. They do their own design work, and then outsource the actual manufacture of the clothing to factories outside the US. *Profit margins are slim in this business so minimizing labor costs is essential.* The specific process I've been looking into is pretty typical and it's for the manufacture of a design of men's suit. Originally the suit consisted of a vest, a pair of pants and a coat.

The process starts with a production order that gets sent from New York to Taiwan, which is one of their big manufacturing shops. Everything's computerized, so when Taiwan's manufacturing system gets the order, they start making the suit beginning with the vests. When they finish that, the system sends New York a message saying they're done with the vests, and then they start on the pants. It takes about as long to do the pants as it does for New York to get some Italian group in Milan (I think) to send this exclusive cloth to Taiwan so they can make the coats. *Using Italian cloth is vital to the sales campaign positioning New Man clothes as quality products. The cloth is not ordered until just before it's needed because its so expensive. Since it comes from Italy so it has to be shipped well ahead of the time it is needed.*

OK, so Taiwan starts on the pants, New York sends Italy a PO to have the cloth shipped to Taiwan and about the time it gets there they start manufacturing the coats. When they get everything together, they ship the whole batch of completed suits to New York.

Recently a leading fashion consultant reviewed their designs and told them that vests are out, but that the rest of the suit is OK. So New York decided just to eliminate the vest and have the Taiwanese factory make the outfit consisting of coat and pants only.

Now, about the problem that's come up.

The first time this new order was sent to Taiwan, they started work on a batch of pants and then waited for the cloth to get there for the coats. After a while they quit waiting and started working on orders for other manufacturers. Eventually New York called Taiwan, all ticked off and demanding to know when the suits were going to arrive.

So that's where things stand now till we get it straightened out. Sorry I couldn't be there myself. Good luck with the presentation!

Beth

[page break]

Consultant Briefing: *Effingham Corporation*

In the situation described below multiple independent departments in an insurance company cooperate to process a customer claim. Originally, all groups work together efficiently. Then, due to a business reorganization, the process changes. That is, they change the way of working

that the other departments had become familiar with. Temporarily the overall work becomes uncoordinated. It becomes less efficient than it had been.

Think of your role during this session as a business analyst for a consulting firm such as Anderson Consulting. The original analyst for this project is recovering from food poisoning. You have been flown to the corporate headquarters on an emergency basis and in a short time you must make a presentation to a group of executives. Your presentation should contain:

1. Your analysis and understanding of the original process
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3. Multiple possible solutions to the problem and your analysis of which solution is the best solution

The description of the business process is short to make it easy to read. It may not be complete. If you feel you need information that is not in the write-up, **do not ask for the information**. Simply approach that information need as a sub-problem. Talk aloud as you reason through **why** you need that information. If, after reasoning, you still feel you need that information then **assume** a value for it based on your life experience. Any answer you think is reasonable is OK. Using the information you have just supplied you will then proceed with the original problem.

It is NOT a trick question in any way. Common sense should be sufficient to find an answer—and any answer that you think is correct is a right answer.

The description of the process is in a narrative format – an e-mail memo describing how the process works as might be captured in a current knowledge management system.

[page break]

Scenario 2n (no goals)

Hi,

Since I'm the one that worked most closely on the project, Jack asked me to send you an e-mail describing the Effingham situation. Here goes.

Effingham Ltd. is one of our companies and they specialize in automotive insurance. When a customer makes a claim against an insurance policy, a whole host of people within the company are involved in checking the claim to determine the amount of damage accurately and prevent fraud. Its pretty standard stuff, but if you don't know the insurance biz it can seem complex at first.

Everything starts when a customer sends in a claim to the company. Claims get sent to the Claims Processing department (what else) and something called and Investigation Request is sent to a Claims Investigator. When the investigator gets the Investigation Request, he goes out and views the automobile. Then he writes up a report on what he's seen and sends it back to Claims Processing. When they get it they look it over and if it's OK, it's approved for payment. Then they send notice of payment authorization to the Accounts Payable department and the Customer Service department.

Customer Service sends a letter to the customer to let them know the claim has been approved. Meanwhile Accounts Payable processes the payment authorization and cuts the customer a check for repairs during the next payment cycle.

Now, about the problem that's come up.

Basically, as a result of a business process reengineering project, it was decided that Investigators could approve claims themselves. So now Investigators send their reports directly to Accounts Payable for processing.

But not long after they put the change in place customers began to call in and demand to know whether or not their claims had been approved. Sometimes this was weeks after sending in their claims. They were ticked off and I can see why.

So that's where things stand now till we get it straightened out.

Beth.

[page break]

Scenario 2g (goal information in italics)

Hi,

Since I'm the one that worked most closely on the project, Jack asked me to send you an e-mail describing the Effingham situation. Here goes.

Effingham Ltd. is one of our companies and they specialize in automotive insurance. When a customer makes a claim against an insurance policy, a whole host of people within the company are involved in checking the claim to determine the amount of damage accurately and prevent fraud.

Everything starts when a customer sends in a claim to the company. Claims get sent to the Claims Processing department (what else) and something called an Investigation Request is sent to a claims Investigator. *Using an investigator is an expensive part of the process, but otherwise Effingham is at the mercy of the repair shops, so they have to do it.* When the investigator gets the Investigation Request, he goes out and views the automobile. Then he writes up a report on what he's seen and sends it back to Claims Processing. When they get it, they look it over and if its OK, it's approved for payment. Then they send notice of payment authorization to the Accounts Payable department and the Customer Service department.

It's good for customer relations to let the customer know as soon as his claim has been approved – people like to be kept advised of the process of the claim. Customer Service sends a letter to the customer to let them know the claim has been approved. Meanwhile Accounts Payable processes the payment authorization and cuts the customer a check for repairs during the next payment cycle. *Effingham is investigating a newer computer system but that's a massive job and they're stuck with once-a-month batch checks till they can replace their system.*

Now, about the problem that's come up.

Basically, as a result of a business process reengineering project, it was decided that Investigators could approve claims themselves. So now Investigators send their reports directly to Accounts Payable for processing.

But not long after they put the change in place customers began to call in and demand to know whether or not their claims had been approved. Sometimes this was weeks after sending in their claims. They were ticked off and I can see why.

So that's where things stand now till we get it straightened out.

Beth.

[page break]

ID # _____

Solving the problem:

Use the next five pages (and scratch paper if necessary) to prepare your presentation to the executive meeting.

You may "talk out" the answer rather than writing it. You may make sketches or drawings or take notes on the pages if you'd like. Just remember to keep talking as you write. Answer the questions using the actual names of the actors and the names of the communications between them as given in the e-mail process description whenever possible.

Remember to give as thorough answers as possible.

[page break]

ID # _____

1. Describe the original process.

[page break]

ID # _____

3. Describe what went wrong with the process.

[page break]

ID # _____

4. Describe as many solutions to the problem as you can.

[page break]

5.   Pick the best solution from the ones you have proposed, and describe why it is the optimum.

[page break]

Scenario 1 Short Answer Questions (New Man)

1. What part of the process was performed in Taiwan?

2. Italy supplied cloth for the coat and pants (**T**   **F**)

3. When the vests are finished, Taiwan sends Italy an e-mail. (**T**   **F**)

4. An e-mail from Taiwan to New York starts the whole process (**T**   **F**)

5. When the Italians finish the coats, they ship them to Taiwan (**T**   **F**)

6. What is the US name of the clothing company?

7. In what way did the suit design change?

8. In the changed process, Taiwan phoned New York to get them to order cloth   (**T**   **F**)

9. Why didn't Taiwan finish New York's order?

10. In the changed process, when the vests are finished, they are shipped to Italy   (**T**   **F**)

11. Cloth is shipped from Italy because it is cheap there (**T**   **F**)

12. Italy was annoyed when New York called them (**T**   **F**)

[page break]

Scenario 2 Short Answer Questions (Effingham)

1. When did *Accounts Payable* send the customer a check?

2. *Claims Processing* personnel go to look at the automobile damage. (**T**   **F**)

3. *Accounts Payable* sent the customer a letter of claim approval. (**T**   **F**)

4. The Site Investigator let customers know if their claim was approved. (**T**   **F**)

5. Customer Service sent the customer a check and letter of approval. (**T**   **F)**

6. Payment Authorization went from Claims Processing to Accounts Payable.   (**T**   **F**)

7. Why was the original process changed?

8. The process change eliminated the need for the Site Investigator. (**T**   **F**)

9. In the changed process the Supervisor sends the customer the notice of approval. (**T**   **F**)

10. In the changed process no one needs to examine the automobiles. (**T**   **F**)

11. In the changed process, customer claims go directly to the Supervisor. (**T**   **F**)

12. In the original process who approved payment?

[page break]

ID # _____

Decision Review:

1. I am confident of my answers to most of the questions.
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

2. My solution to the problem was workable
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

3. I would like to review my answers to the questions
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

4. The description of the process was somewhat confusing.
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

5. I recommend the company take action as specified in my problem diagnosis as soon as possible.
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

6. The way the process was described was clear and complete.
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

7. More study of the situation is advisable prior to committing to a course of action.
    (**1** Strongly disagree -- Strongly agree **7**)
    (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

Appendix C

Experiment 2 (Long-Term Recall) Instruments

Session 2 Briefing

For the next fifteen minutes or so you will resume the role of senior analyst for an international consulting company that you assumed for the experimental session last week.

A co-worker at the consulting company, another analyst, has been flown into the companies you consulted with last week on an emergency basis. The stockholders have heard about the problem and are demanding a resolution.

Your fellow analyst has e-mailed you for information about the company. Take a seat at the PC, open the e-mail and read it, and then reply to it by typing in your e-mail response on the same PC.

This session is not a "talk aloud" session. Just be as helpful in response to the e-mail as you would be in a real consulting situation.

The third e-mail is actually a session comments sheet. Please type in your responses to it just as you answered similar questions last week and sent it as an e-mail

[page break]

Good Morning,

Sorry to drag you back into this, but things have exploded here and I need all the help I can get. They told me they flew you in here last week for a day, and they seemed impressed with your analyses.

PLEASE e-mail me back as soon as possible and tell me everything you remember about **New Man**. Describe in as much detail as you recall:

The process that was described to you.
The problems they were having.
What you thought caused the problem.
Any solutions you came up with.
ANYTHING else you think will help me solve this mess!

Thanks!!!

Ralph

[page break]

Good Morning,

Sorry to drag you back into this, but things have exploded here and I need all the help I can get. They told me they flew you in here last week for a day, and they seemed impressed with your analyses.

PLEASE e-mail me back as soon as possible and tell me everything you remember about **Effingham**. Describe in as much detail as you recall:

The process that was described to you.
The problems they were having.
What you thought caused the problem.
Any solutions you came up with.
ANYTHING else you think will help me solve this mess!

Thanks!!!

Ralph

[page break]

1. I am confident of most of the information I sent in the e-mails.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

2. I had an easier time recalling the insurance company information.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

3. I forgot a lot of what I read last week.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

4. The clothing-manufacturing scenario was harder to remember.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

5. I would have done MUCH better if I could have reviewed last week's e-mails.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

6. I couldn't explain the Effingham insurance approval situation very well.
    (**1** Strongly disagree --- Strongly agree **7**)
    (**1**　　　　　**2**　　　　　**3**　　　　　**4**　　　　　**5**　　　　　**6**　　　　　**7**)

7. The processes were clearer to me this week than last week.
   (**1** Strongly disagree --- Strongly agree **7**)
   (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

8. I communicated the key points of New Man's manufacturing process well.
   (**1** Strongly disagree --- Strongly agree **7**)
   (**1**   **2**   **3**   **4**   **5**   **6**   **7**)

Please comment on the recall task. Was it easy, hard, frustrating? Compare it to last week's session.

Appendix D

Protocol Parsing and Coding Rules

Protocol Coding Rules

Code	Rule	Citation
	Story model vs. mental logics/propositional model used in reasoning and decisions	
Causal inference (ci*x*) – see inferences section	Such phrases as "that was done because…" or "I guess they do that in order to…" Explanations that were not explicitly given in the process description	Kahneman and Tversky 1982
Schemata(s)	Reference to event *sequences* not explicitly given in the process description but commonly encountered in the real world (such as ordering from a restaurant, loading a truck, etc.)	Jou et al. 1996 Schank and Ableson 1977
Flexible temporal recall (playback) (ftr)	Spontaneous, correct answers to questions of the form: "what happened after the <event>" and "what actions preceded <event>"	Klein and Crandall 1995 Beach (image theory) 1996
Counterfactuals (cf)	Phrases such as "on the other hand…" or "but, if you think about…"	Dougherty et al. 1997 Kahneman and Tversky 1982 McCloy and Byrne 2000
	Recall	
Verbatim (v)	Phrases identical to the scenario	Large et al. 1994 Sadoski et al. 2000
Paraphrase (p) / Gist (g)	Factual phrases of scenario fact in different wordings	Large et al. 1994 Sadoski et al. 2000
Elaboration - Consistent (ec)	Phrases consistent with facts in the scenario but not mentioned in it (ec, ei, and e are evidence of evoked schemas)	Large et al. 1994 Sadoski et al. 2000
Elaboration – Inconsistent (ei) / Distortion (d)	Phrases inconsistent with facts in the scenario and not mentioned in it	Large et al. 1994 Sadoski et al. 2000
Error (e)	Phrases indicating beliefs about scenario events or actors that are counter to the scenario; mistaken recall of facts stated in the scenario (Ex. New York called Italy to start the process – when in fact New York called Taiwan)	Large et al. 1994 Sadoski et al. 2000

Goal Information		
Reference explicit goal (reg)	Reference to goal information stated explicitly in the scenario	Gamez and Marrero 2001
Reference implicit goal (rig)	Reference to goal information **not** stated explicitly in the scenario (evidence of evoked schema)	
Analogies		
Structural analogy (sta)	structural = similarity in the relationships between elements; Ex. Relationship between NY and Taiwan is contractor/subcontractor and so is analogy	Blanchette and Dunbar 2000
Superficial analogy (spa)	References only surface elements. Ex. Scenario mentions clothing companies, so does analogy	Blanchette and Dunbar 2000
	Inferences	
Explanation (cip)	"(I think)They **did** that because <so that>…" (meaning for past events)	Trabasso and Magliano 1996
Association (cic)	"They're **doing** that, I believe in order to <so that>…" (current inference)	Trabasso and Magliano 1996
Prediction (cif)	"I believe that as a result what **will happen** is…" or "I would expect…" (future inference)	Trabasso and Magliano 1996

Session 1 Decision Confidence Scoring

1. (+) I am confident of my answers to most of the questions.

2. (+) My solution to the problem was workable

3. (–) I would like to review my answers to the questions

4. (–) The description of the process was somewhat confusing.

5. (+) I recommend the company take action as specified in my problem diagnosis as soon as possible.

6. (+) The way the process was described was clear and complete.

7. (–) More study of the situation is advisable prior to committing to a course of action.

Invert scores for the negatively worded questions: 3, 4, 7 (i.e, 1 <--> 7, 2 <--> 6, and so on). Then compute the factor scores: Recall confidence<1>; Recall clarity <4 + 6>; Willingness to act <5 + 2>; Caution <3 + 7>

Session 2 Recall Confidence Scoring

1. (G+) I am confident of most of the information I sent in the e-mails.

2. (2+) I had an easier time recalling the insurance company information.

3. (G–) I forgot a lot of what I read last week.

4. (1–) The clothing-manufacturing scenario was harder to remember.

5. (G–) I would have done MUCH better if I could have reviewed last week's e-mails.

6. (2–) I couldn't explain the Effingham insurance approval situation very well.

7. (G+) The processes were clearer to me this week than last week.

8. (1+) I communicated the key points of New Man's manufacturing process well.

Invert scores for the negatively worded questions: 3, 5, 4, 6 (i.e. 1<--> 7, 2<--> 6, and so on). Then compute the overall recall confidence score as follows <1+7> + inverted<3+5>. For Scenario 1 recall confidence: <8> + inverted<4>. For Scenario 2 confidence: <2> + inverted<6>. Overall confidence is a manipulation check: numerically it should rank above the non-treatment confidence and below the treatment confidence.

Parsing Transcriptions into Clauses

Rules and Examples

From Trabasso and Magliano (1996):

> The analysis of a protocol began by first parsing the utterances made at each text sentence into clauses. A clause contained a unified predicate that expressed and event activity or state. Each predicate was a main verb. Infinitives and complements were included with the main verb as single clauses (Berman and Slobin 1994; for similar criteria used to parse narrations of picture stories into clauses, see Trabasso and Nickels 1992). An utterance that had two verbs and one or more agents was treated as having two separate clauses.

Example utterance 1:

> As expected Ivan being a warrior and caring about people will want to kill the giant.

Clausal parse:

1. As expected
2. Ivan being a warrior
3. and [Ivan] caring about people
4. [Ivan] will want to kill the giant

Example utterance 2:

> When the giant came Ivan shot an arrow at him and tried to kill him.

Clausal parse:

1. When the giant came
2. Ivan shot an arrow at him
3. and tried to kill him.

Scoring Rules: New Man and Effingham Process Scoring Sheets

For all scoring, record the page and line in the transcription that indicates the rationale for the score.

Process Steps:
Each process step consists of:
1. a communication (product or information)
1. between two entities,
2. occurring in a specified sequence, and
4. resulting in a state change.

One point is given fore each correctly recalled communication, entity, etc. Thus, the maximum possible score for each step is 5. The maximum possible raw score for each process is (9 steps * 5 points per step) = 45 points. Scoring rules:

- If the step is completely omitted, score 0.
- If the *entities* are correctly recalled, score +1 for each (2 possible).

- If the *communication* is correctly recalled, score +1.
- If the *sequence* (timing) is correct, score +1. (Note that the activities do not need to be *recalled* in sequence providing the ultimate process description, when all 5 comprehension recall questions have been answered, is sequentially correct when viewed as a whole.
- If the *state change* is correctly recalled, score +1. (State changes are usually implicit, i.e. in the case where the investigator sends report back to claims processing, state change = CP informed and ready to proceed to next step. Thus, if the participant recalls the next activity appropriately, then score the state change correct.)
- Record detail errors in any of the above in the appropriate section.
- The final score is a percentage (%): the total of the process step scores divided by the maximum recall for each process (45 for New Man, 45 for Effingham.)

Give full credit to *functionally correct* recall. Detail errors in recall (as opposed to functional; for example: recalling the country of manufacture as "Vietnam" instead of "Taiwan," the exact term for the communication mentioned in the scenario) are recorded in the final section of the scoring sheet.

Diagnosis:
- No diagnosis: score = 0
- If the diagnosis is consistent with facts and goals add 1 (+1).
- If the diagnosis is complete, add 1 (+1).

For New Man: The elimination of vests removed the manufacturing step that triggered the communication to NY that caused NY to order cloth from I for the jackets

For Effingham: Originally CI notified CP who approved claim and notified BOTH CS for approval letter and AP for check at end of cycle. When CI directly sends approval to AP, CS does not get the trigger to sent the letter of approval so clients don't know of approval till they get the check.

Number of Solutions:
- Score +1 for each distinct, explicit solution.

Solution Score:
- Score +1 for each distinct, explicit solution UNLESS
  - The solution contradicts an explicitly stated fact: score = 0.
  - Or, the solution contradicts an explicitly stated goal: score = 0.
  - Or, the solution is unworkably vague or incomplete: score = 0.
  Add the individual solution scores together to get the final score

New Man Process Recall Scoring Sheet

Subject ID _____ **Goals/No Goals** _____ **Session (1/2)/ Presentation Order (1/2)** _____
Entities:
New Man a clothing company (NY)   A Taiwanese manufacturing shop (T)
Italian fabric supplier (I)

(s) Process Steps: (45)
(1) NY → production order → T _____
(2) T makes vests _____
(3) Vests finished _____
(4)   Status message to NY _____
(5)   T begin pants _____
(6) NY → cloth order → I _____
(7) I → cloth → T _____
(8) T makes coats _____
(9) T → completed suits → NY _____

(p) Process change:
(1) eliminate vests   _____

(c) Change rationale:
(1) (g only) – fashion consultant recommendation   _____
(2) (g+ng) NY decided to eliminate vests   _____

(o) Problem state description:
(1) T waiting for cloth   _____
(2) NY calls T because no suits   _____

(d) Diagnosis (correct =
              consistent+complete)   _____

(l) Consistent solutions: _____

(g) Goal inconsistent solutions: _____

(f) Fact inconsistent solutions: _____

(v) Verbatim phrases: _____

(r) Goal recalls (process (p)
          or solution (s)):   _____

(i) Inferences: _____

(e) Detail errors: _____
(recall errors or inconsistent recollections)

Effingham Process Recall Scoring Sheet

Subject ID _____   **Goals/No Goals** _____   **Session (1/2)/ Presentation Order (1/2)** _____
Entities:
Effingham – automotive insurance co.   Customer (C)
Claims Processing (CP)   Claims Investigator (CI)
Customer Service (CS)   Accounts Payable (AP)

(s) Process Steps: (45)
(1) C → claim → CP   _____
(2) CP → investigation request → CI _____
(3) CI views auto   _____
(4) CI → report → CP   _____
(5) CP → authorization → CS   _____
(6) CP → authorization → AP   _____
(7) CS → letter → C   _____
(8) AP → check → C   _____
(9) Payment cycle   _____

(p) Process change:
(1) CI → report → AP   _____

(c) Change rationale:
(1) (g+ng) – business process reorganization   _____

(o) Problem state description:
(1) C call in wondering if claims approved   _____

(d) Diagnosis (correct =
         consistent+complete)   _____

(l) Consistent solutions: _____

(g) Goal inconsistent solutions: _____

(f) Fact inconsistent solutions: _____

(v) Verbatim phrases: _____

**(r) Goal recalls (process (p)
         or solution (s))**:   _____

(i) Inferences: _____

(e) Detail errors   _____
(recall errors or inconsistent recollections):

Goal Information Defined

We use the terms "goal information" and "intentional information" our paper as they are used in the reading research literature: phrases that either explicitly or implicitly provide the reason for the intended effect of an action in a narrative (Albrecht and O'Brien 1995; Gamez and Marrero 2001; Lutz and Radvansky 1997; Magliano and Radvansky 2001). For example, in the sentence: "John stuck his thumb out in order to hitch a ride," the phrase "in order to hitch a ride" is the explicitly stated goal (the intended effect) of John sticking out his thumb. Intentional information can also be strongly implied by passages of text. Consider the example: "As the snow began to stick to the road, John pumped the breaks whenever he stopped the car." In this sentence the phrase "the snow began to stick to the road" supplies the rationale for why John pumped the breaks while bringing the car to a stop: he wished to avoid skidding on the snow. That is, the goal for the action of pumping the breaks is implicitly supplied by the information given about snow sticking to the road. Understanding is always contextual and so there is a possibility that in this case someone from a tropical climate might miss the implication. However, in our experiment, the intentional information was deliberately chosen to be widely understood by our subject pool (business school students with several years of work experience) and the understanding of that group was confirmed by a confirmatory study, described below, that tested for the understanding of the intentional information phrases. Further evidence of understanding was demonstrated in the verbal protocols taken during the experiment.

Appendix F

Post Experiment Confirmatory Study ▬▬▬▬▬▬▬▬▬▬▬▬▬▬

In order to confirm that the manipulation of the experiments, the additional text we term "intentional" or "goal" information, was actually perceived by the subjects as intentional information, we performed a confirmatory study. The study also sought to duplicate some of the findings of enhanced comprehension and retention due to intentional information that were found in the original experiment.

Materials: Each subject was presented sequentially with two narratives one of which contained the goal sentences treatment, one of which did not and sets of questions for probing their understanding of the material.

The narratives were descriptions of the same two business processes used in the original experiment. There were two versions of each narrative, one containing intentional information and the other containing "neutral" information tangential to the actual function of the process. The "goal" narrative for each process was identical to the "goal" narrative used in the original experiment. The non-goal narrative was identical to the goal narrative except the intentional sentences were replaced by "filler" sentences with the same number of words; goal and non-goal narratives were identical in length for each of the two processes.

Three types of questions were presented to the subjects. The first question set was the manipulation check which elicited responses indicating: (1) that the subjects had read and recalled the intentional sentences and (2) that they understood the information as a goal or sub-goal for the process. If the subjects understood the goal information as a *constraint* on possible solutions (that is, as a goal to be preserved as a solution to the problem was sought) then both recall and understanding were considered to have been demonstrated. These questions were specific to each of the two basic narratives (one on clothing manufacturing, one on auto insurance). A single question, identical for all treatments, asked for the problem described in the narrative. Questions asking subjects to recall the activities in the process and the reasons why the activities were performed was common to all treatments.

Subjects: Sixty students from graduate and upper division undergraduate information systems classes participated in the experiment; 38 subjects came from a large (25,000 student) urban university, and 22 subjects came from a medium sized (17,000) western university. Subject demographics: average age: 28; average years of work experience: 5.5; percentage of students working 20 hours or more at the time of the experiment: 78 percent; 55 percent male.

Procedure: Subjects volunteered for the experiment and were offered an incentive of $100.00 for best performance. Best performance was explicitly defined as the number of correct answers divided by total time taken for the experiment; subjects understood that time and accuracy were equally important.

In a within-subjects design, each subject was given two narratives to read and answer questions about, one with goal information, one without. Subjects were randomly assigned to one of four groups (two process narratives X two versions) based on the order of presentation of the material. First, a one-printed-page narrative was given to the subjects to read. When they finished reading they returned the narrative sheets and were given question sheets about the narrative. When subjects finished the question sheet, they turned it in and received the demographics sheet to fill out (a distractor task between the two experimental treatments). After completion of the demographics sheet, the second narrative/ question set was administered. The time taken for each sheet for each subject was recorded on that sheet.

Results: We performed four analyses on the data, each intended to explore a point raised by one or more of the reviewers concerning the manipulation or interpretation of the original experiment: percentage of subjects recognizing intentional information, t-test of the number of correct problem diagnosis for goal vs. non goal narratives, t-test of number of correctly defined problem descriptions for goal versus non-goal narratives, t-tests of the numbers of activities and reasons for activities listed for goal versus non-goal scenarios.

Six subjects (of an original 66) were discarded for gross omissions (one confessed to being hung-over, another admitted he left early to get to his next class) or due to obvious misunderstanding of the process, as indicated by their responses.

Manipulation check: For the "insurance company" scenario three intentional sentences were probed. For the "clothing manufacturing" scenario four intentional sentences were probed. For example one goal sentence (found only in the goal version of the narrative) contained the information "This cloth [from Milan Italy] is expensive, but it's necessary to preserve New Man's quality image." The probe for the understanding of this goal was the question: "Could New Man save money by using cloth for the coats from Taiwan?" The vast majority of non-goal treatment subjects gave the answer "yes," while the vast majority of the goal-treatments subjects answered "no," and explained their reasoning using information from the goal sentence.

All of the subjects correctly identified at least two of the intentions and 57 percent correctly identified all three. All)of the subjects correctly identified at least one, 92 percent correctly identified two or more, 77 percent identified three or more, and 31 percent identified all four. We conclude from these results that when the manipulation (goal information) was recalled at all, it was correctly understood by the majority of subjects as intentional information.

t-tests: the results of the t-tests are shown Table F1. Although a diagnosis was not specifically probed for, many subjects spontaneously reported a diagnosis in the course of answering other questions. Please note that five of the subjects (9 percent) provided correct diagnoses for the non-goal scenarios, three for the "insurance company" narrative, two for the "clothing manufacturing" narrative; this demonstrates that there was sufficient information in *all* narratives to make a correct diagnosis. This strengthens the conclusion that any difference in the rates of successful problem diagnosis for goal and non-goal scenarios in the original experiment was due to the treatment.

Table F1. Results of the Confirmatory Study		Goals		No Goals	
Measure	**p**	**Mean**	**Std.**	**Mean**	**Std.**
Problem Description	.010	94.0	.231	80.0	.407
Diagnosis	.002	.33	.476	.09	.293
Number Recalled Activities	.060	5.37	2.122	4.78	2.212
Number Recalled Reasons (for activities)	.098	1.39	1.156	1.109	15.4