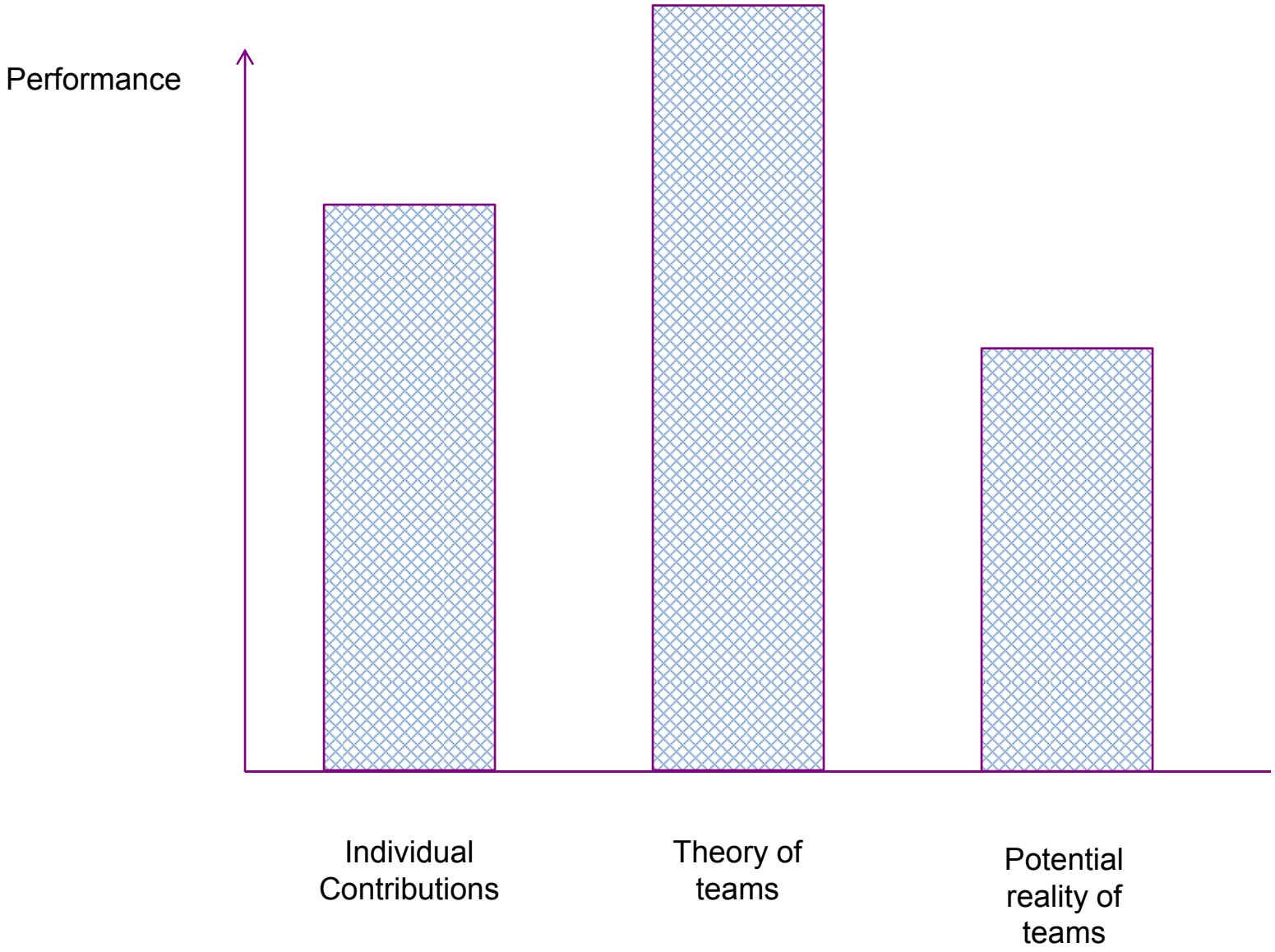
Team performance



Knowledge utilization, coordination, and team performance

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Poor knowledge utilization

- Simple mismatch between what people know and do on a team
- Individual team members are less receptive to external ideas
  - Embrace evidence consistent with initial preferences, defend publicly stated position, and strategically share/withhold information
- Unique knowledge is critical for decision making and team performance, but shared knowledge has a sampling advantage
  - Introducing unique knowledge is personally risky
    - Individuals with low status characteristics are even less likely to share unique knowledge and will be ignored if they do

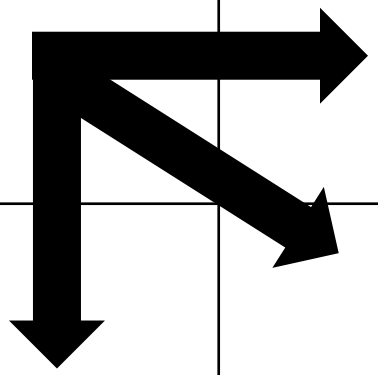
➢ Thus, the “stuff” that would make a team more productive often goes unsaid and therefore underutilized!

Poor coordination

- Team relationships are too weak
  - Demographic diversity: Surface differences make it hard for people to collaborate
  - Distributed work: Hard to collaborate and coordinate across geographic distances
- Team relationships are too strong
  - Etiquette bias: Desire to develop and maintain a strong relationship can undermine the sharing of divergent knowledge and information
- Team members are too worried about their status
  - Psychological safety: Willingness to engage behaviors that promote creativity and learning

Improvement in team performance

	Low coordination	High coordination
Low knowledge utilization	1	2
High knowledge utilization	3	4



Potential failure modes

- High knowledge utilization and low coordination teams: There is a way, which is my way
  - Local optimizations undermine team performance (We suspect via process loss)

- High coordination and low knowledge utilization: There's the way
  - Global satisficing leave potential performance improvements on the table (We suspect non-experts are unable to evaluate alternatives with different performance outcomes)

Obscuring potential failures

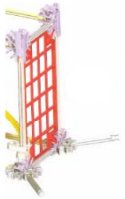
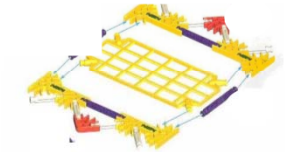
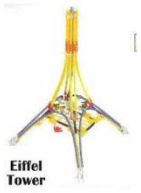
- Measure association between experience working together and team performance
  - With more experience working together, presumably knowledge utilization and collaboration improve, which in turn improve team performance
- Measure indicators of knowledge utilization and collaboration and use those measures to create some summary construct (TMS)
  - Measure association between summary measure and team performance
- As a result, we know a great deal about the relative performance of teams in the first and fourth cells. But we know less about teams in the off diagonal cells and so we do not know if improving knowledge utilization or coordination alone will actually improve team performance

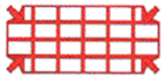
Building the Eiffel ("Awful") Tower

- Two samples: US and Israeli Samples

- Manipulate knowledge utilization
  - Training phase: train 3 participants on building K'nex figures
  - Performance phase: individuals get a role that either does or do not allow them to utilize their acquired skills
  - ($\alpha = 0.77$, $b = 1.12$, $p < .001$; $\alpha = .60$, $b = 1.23$, $p < .001$)

- Manipulate coordination
  - Team members must coordinate their efforts to be effective. Manipulate coordination with language. Team members either all use the same terms or use different terms.
  - ($\alpha = 0.88$, $b = -2.3$, $p < .001$; $\alpha = .82$, $b = -1.77$, $p < .001$)

Individual Task	Parts assembled in the training stage	Parts assembled in the performance stage
Role A		 
Role B		
Role C		
The Complete Model		

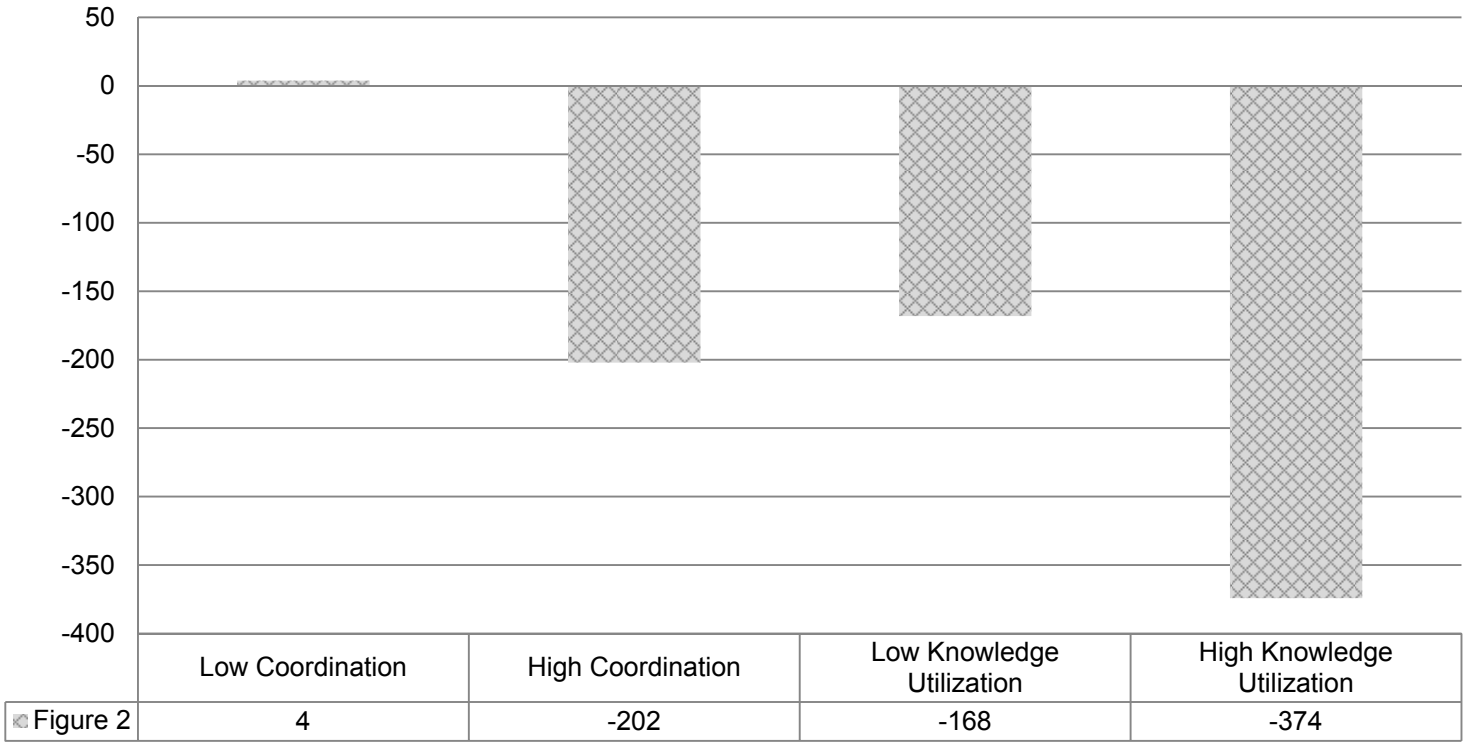
K'nex Part	Version A	Version B	Version C
	Grid	Lattice	Panel
	Snowflake	Sunburst	Spider
	Half snowflake	Half sunburst	Setting Sun
	Ladder	Bridge	Tracks
	Leaf	Quarter snowshoe	Bird footprint
	Pulley	Half bridge	Half trak
	Arch	White U	Curve
	Pinch connector	Pinch connector	Pinch connector
	Angled pinch connector	Angled pinch connector	Angled Pinch connector
	Hole	Ring	Circle

US Sample

Table 2: Study 1 Results		
	Completion Time	Completion Time
Constant	7.898 (.744)**	7.427 (.719)**
Number of women	.035 (.017)**	.025 (.020)
English speakers	-.045 (.085)	-.155 (.086)*
1-5 mistakes	.080 (.089)	.059 (.080)
6-10 mistakes	-.096 (.044)**	-.080 (.078)
More than 10 mistakes	-.009 (.050)	.096 (.070)
Prior experience	-.075 (.024)**	-.086 (.026)**
Average age	-.043 (.036)	.013 (.038)
Variation in age	-.259 (.238)	.019 (.386)
Average age X Variation in age	.014 (.010)	.000 (.017)
Matched expertise (Matched)	-.013 (.055)	-.418 (.470)
Shared language (Shared)	.040 (.054)	-.636 (.335)*
Matched X Shared	.063 (.085)	1.389 (.665)**
Specialization		-1.403 (.868)
Matched X Specialization		1.870 (1.205)
Shared X Specialization		2.257 (1.106)**
Matched X Shared X Specialization		-3.379 (1.671)**
Coordination		-.783 (.442)*
Matched X Coordination		.338 (.839)
Shared X Coordination		.834 (.585)
Matched X Shared X Coordination		-1.809 (1.281)
Specialization X Coordination		2.026 (1.417)
Matched X Specialization X Coordination		-2.366 (2.219)
Shared X Specialization X Coordination		-2.764 (2.118)
Matched X Shared X Specialization X Coordination		3.790 (3.410)
Model Fit		
Observations	89	89
Log Likelihood	10.03	31.64
Coefficients are from a continuous time hazard model. Their standard errors are in parentheses. * = p < .10, ** = p < .05		

US Results: Weak support

Horizontal axis is team condition and vertical axis is change in team performance as corresponding factor varies from low to high. So -202 is the change in team performance as knowledge utilization changes from low too high for teams in the high coordination condition.

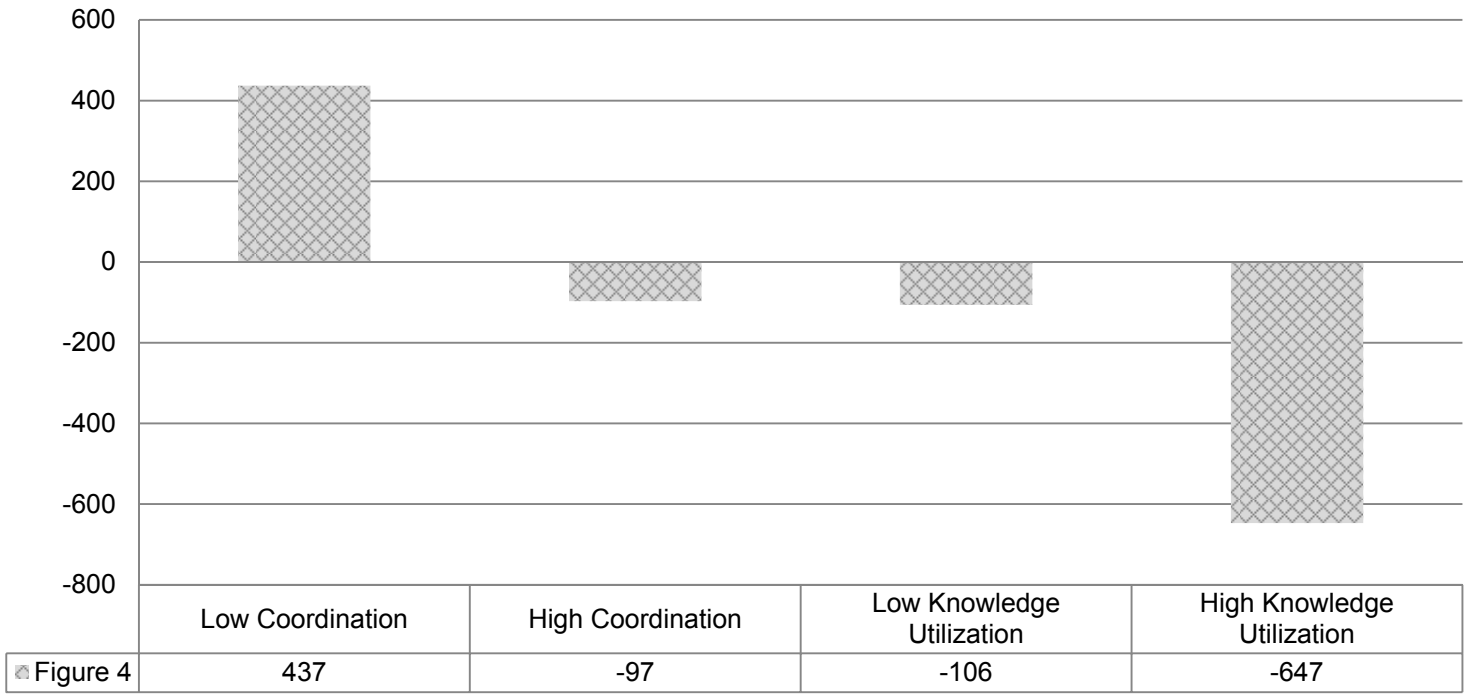


Israeli Sample

Table 3: Study 2 Results		
	Completion Time	Completion Time
Constant	6.157 (.556)**	6.451 (.236)**
Number of women	.094 (.025)**	.077 (.015)
Hebrew speakers	.008 (.045)	.001 (.024)
1-5 mistakes	.064 (.045)	.031 (.029)
6-10 mistakes	.197 (.092)**	.104 (.121)
More than 10 mistakes	.459 (.082)**	.354 (.063)**
Prior experience	-.049 (.025)**	-.033 (.014)**
Average age	.039 (.023)*	.0334 (.010)**
Variation in age	-.180 (.150)	-.208 (.094)**
Average age X Variation in age	.004 (.006)	.005 (.003)*
Matched expertise (Matched)	.120 (.075)	-.199 (.088)**
Shared language (Shared)	.099 (.059)*	.794 (.253)**
Matched X Shared	-.306 (.104)**	.384 (.613)
Specialization		.540 (.380)
Matched X Specialization		.965 (.410)**
Shared X Specialization		-2.237 (.822)**
Matched X Shared X Specialization		-1.019 (1.495)
Coordination		-.413 (.093)**
Matched X Coordination		.419 (.325)
Shared X Coordination		-.557 (.294)
Matched X Shared X Coordination		-1.077 (.666)*
Specialization X Coordination		-.005 (.443)
Matched X Specialization X Coordination		-1.676 (.484)**
Shared X Specialization X Coordination		2.151 (.956)**
Matched X Shared X Specialization X Coordination		2.136 (1.576)
Model Fit		
Observations	79	79
Log Likelihood	15.54	55.06
Coefficients are from a continuous time hazard model. Their standard errors are in parentheses. * = p < .10, ** = p < .05		

Israeli Sample: Strong support

Horizontal axis is team condition and vertical axis is change in team performance as corresponding factor varies from low to high. So -647 is the change in team performance as coordination changes from low too high for teams in the high knowledge utilization teams.



Implications: Opening questions

- Managerial
  - When staffing a team, managers often face a choice between either selecting teams on which team members can optimize their knowledge and expertise or have developed some capacity for coordinating their efforts . Which one should she select? Which failure mode can a team overcome more quickly?

- Theoretical
  - We routinely suspect that two primary determinants of team performance have failure modes, and our results provide support for those suspicions. Do the effects vary with the task? Perhaps dueling experts promotes creativity and innovation, which is all you want. Someone else will be responsible for implementation.