



Choking and Excelling Under Pressure in Novices and Experts

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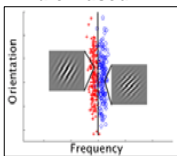
Introduction

- Choking under pressure – abnormally poor performance when under pressure.
- **Distraction Theory**- Pressure decreases working memory (WM) and attention (Wine, 1971; Beilock et al, 2004).
- **Monitoring Theory**- Pressure increases WM and attention (Baumeister, 1984; Gray, 2004).

Category Learning

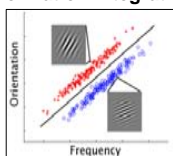
- Multiple systems mediate learning for different category structures (Maddox & Ashby, 2004).

Rule-Based



- Verbalizable
- Explicit
- Requires WM and attention

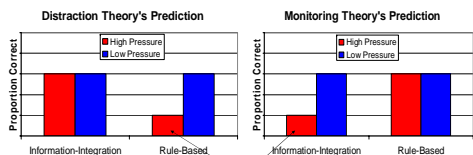
Information-Integration



- Not Verbalizable
- Implicit
- Does not require WM and attention

Hypotheses

Distraction and *Monitoring* theories make opposite predictions.



Choking

References

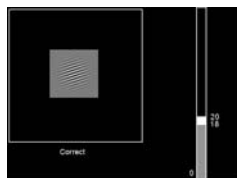
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Beilock, S. L., Kulp, C. A., Holt, L. E., & Carr, T. H. (2004). More on the fragility of performance: Choking under pressure in mathematical problem solving. *Journal of Experimental Psychology: General*, 133(4), 584-600.

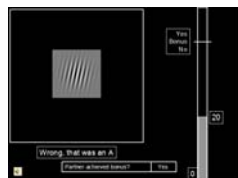
General Method

Low-Pressure Rule-based	High-Pressure Rule-Based
Low-Pressure Information-Integration	High-Pressure Information-Integration

Low Pressure



High Pressure

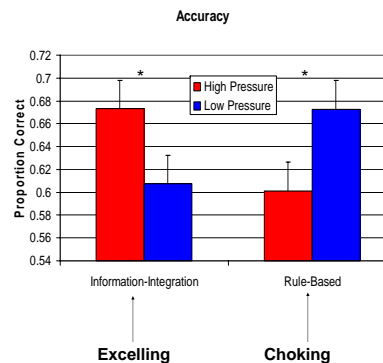


- Told to "do your best"

- Paired with a 'partner'
- Both reach criterion, both get \$6
- One fails neither get \$6
- Partner reached criterion

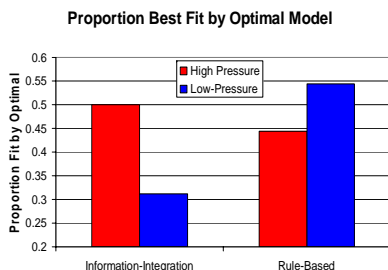
Results

Experiment 1 - Novices



- Novice rule-based subjects choked under pressure, while novice information-integration subjects excelled under pressure

Decision Bound Modeling



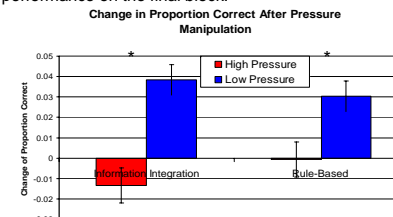
- More *high pressure* information integration subjects were best fit by the optimal general linear classifier model.

- More *low pressure* rule-based subjects were best fit by the optimal unidimensional rule model.

Results

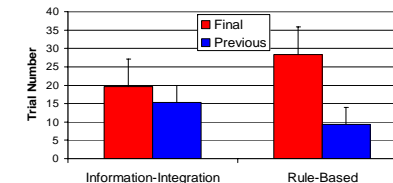
Experiment 2- Experienced

- Four sessions were performed identical to the low pressure condition in experiment 1.
- On the fifth session half received the pressure manipulation
- High Pressure subjects could earn a \$100 bonus for perfect performance on the final block.



- Experienced information-integration subjects experience more severe declines in performance when under high pressure than rule-based subjects.

First Incorrect Trial on Final Block



- Experienced rule-based subjects perform significantly better under pressure when given a criterion of 100% accuracy.

General Discussion

- In novices, rule-based subjects *choked* under pressure, and information-integration subjects *excelled* under pressure.
- Expert RB subjects experience less severe decrements than expert II subjects because they have explicit strategies to fall back to.
- Results suggest that the Distraction Hypothesis may apply to knowledge or skill *acquisition*, but that the Monitoring Hypothesis may apply to knowledge or skill *use*.