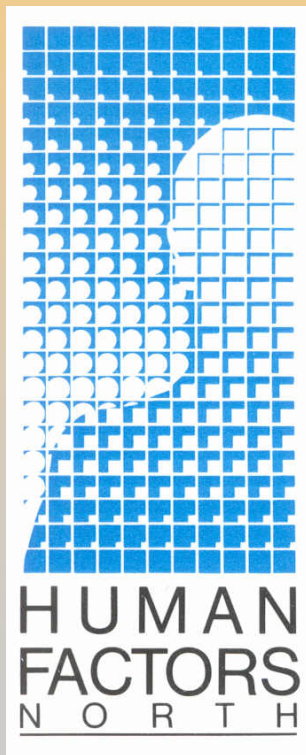


WHAT IS DISTRACTION?



Alison Smiley, PhD, CCPE

Human Factors North Inc.

118 Baldwin Street

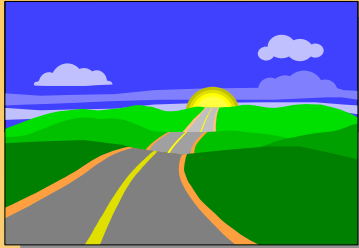
Toronto, Ontario

M5T 1L6

**INTERNATIONAL CONFERENCE
ON DISTRACTED DRIVING**

Toronto, Ontario

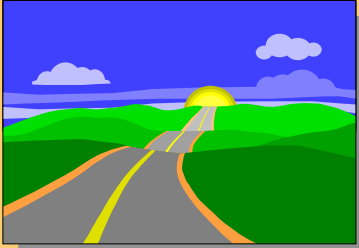
October 2 – 5, 2005



DISTRACTION AND CRASHES

- **Naturalistic 100 car study**
- **109 primary drivers, 43000 hours**
- **Distraction a contributor to 78% of 76 crashes and 65% of 761 near-crashes**

(Neale et al., 2005)

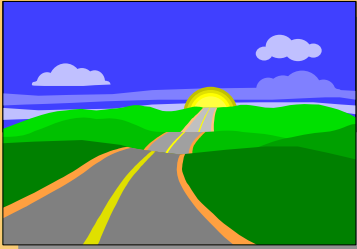


- **Distraction: Misallocated attention**

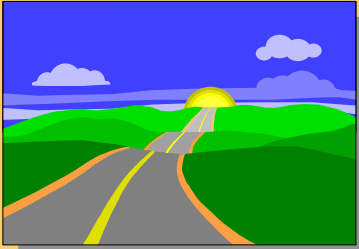


The degree to which attention is misallocated depends on:

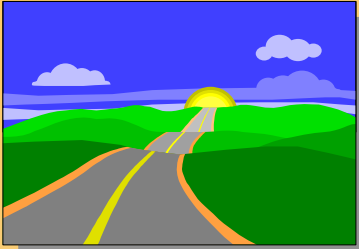
- **Driver state**
- **Driving task**
- **Driving environment**



- **Why is distraction a problem?**



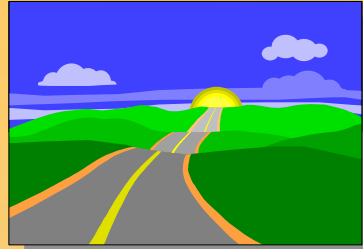
- **Humans are essentially serial, limited capacity processors of information**



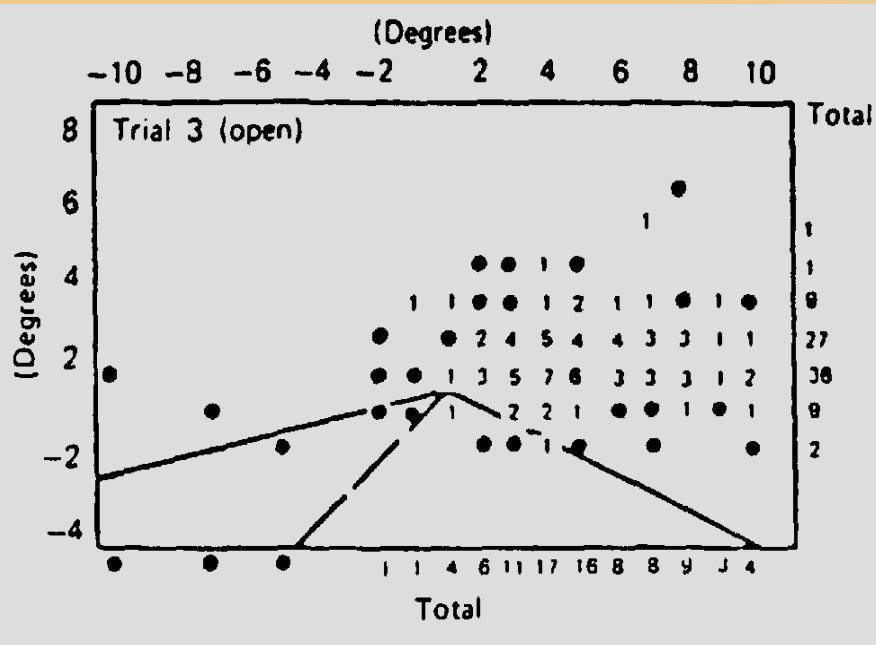
- **Attentional resources are limited**



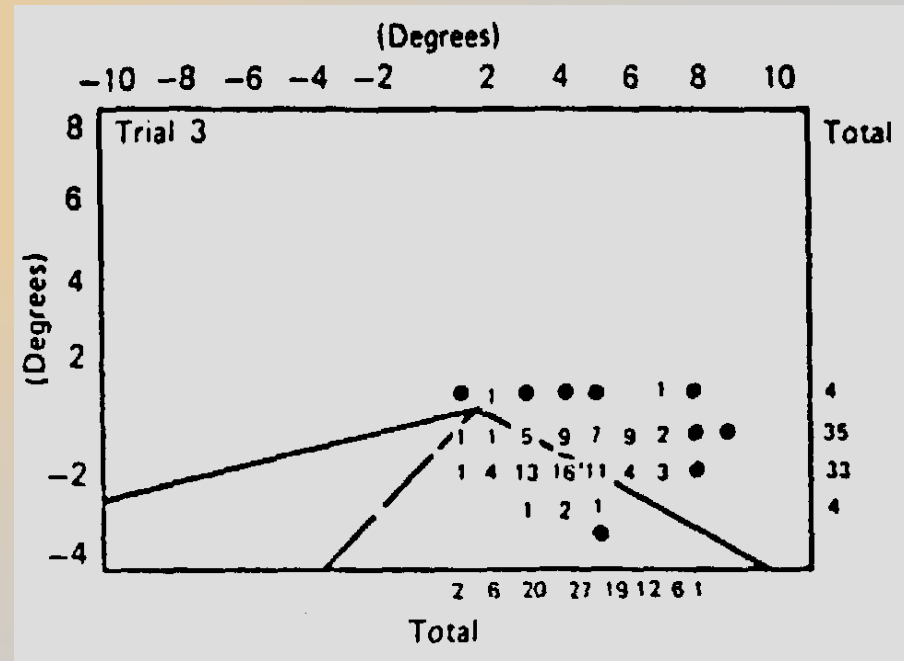
- **The more attention required by one task, the less available to others**



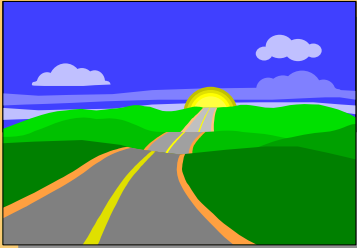
VISUAL SEARCH & TASK DEMAND



Driving on an Open Road



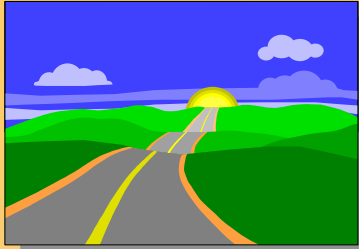
Driving Close Behind a Vehicle Ahead



INFORMATION PROCESSING

	INFORMATION BITS/SEC
Registration in sense organ	1,000,000,000
Conscious awareness	16
Lasting impression	0.7

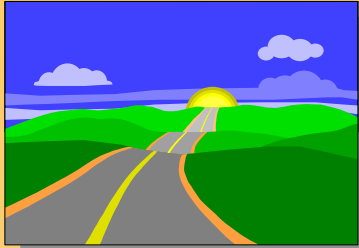
(McCormick, 1970)



MEASURES OF DISTRACTION

- **Information acquisition**
 - Visual search – number and length of glances
- **Task performance**
 - Car control
 - Variability in lane position, speed, headway
 - Speed reductions and increases
 - Headway reductions and increases
 - Response time to unexpected hazards
- **Safety outcomes**
 - Conflicts
 - Crashes

VIDEO OF VISUAL SEARCH MEASURES





SUMMARY

- **Distraction frequently cited in crashes**
- **Misallocated attention, in relation to driver state, task and driving environment**
- **Humans serial, single-channel processors of information with limited attentional resources**
- **Measures:**
 - Visual search
 - Vehicle control
 - Conflicts and crashes

