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www.basiswissen-multimedia.at

Applying User-Centered Design

706.046

Vorlesung-Übung (3 SE, 4,5 ECTS)

Interdisziplinäre Zusammenführung von Erkenntnissen aus
Psychologie und Informatik zum
User-Centered Design und Development von Medienobjekten
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Mo, 05.03.2007

Our aim

Bridging the gap between Psychology and Computer Science

Psychology

Informatics



Human-Computer Interaction



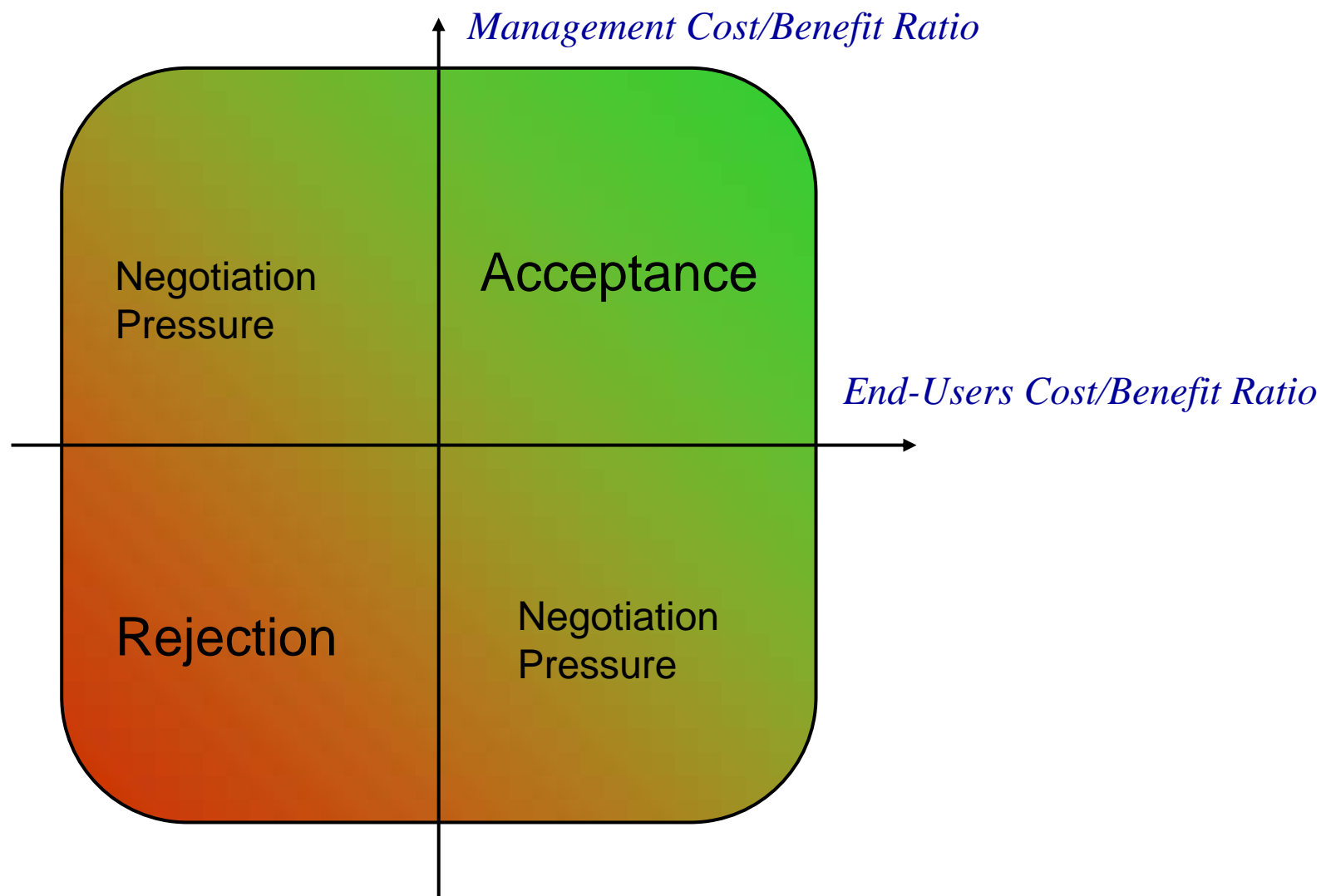
Wilhelm Busch (1832-1908)

- Learning requires cognitive effort!
- Successful learning results in permanent understanding of contexts and
- in mastering problems (zone of developments)



- Was ist Usability?
- Was ist Performance?
- Wozu psychologische Forschung?
- Warum im Software Engineering?

- **Usability** is the typical way a product is *evaluated*
- **Usability Engineering (UE)** is all encompassing to *enable good Usability*
- **User-centered design (UCD)** is one approach of UE to incorporate the end-user in design and development (User-centered development)



Attitudes Towards Testing



The Fatalist
"Why test,
it won't help."



The Philosopher
"I test therefore
I am."



The Anarchist
"Test but don't
tell anyone the
results."



The Optimist
"Why test, what
could be wrong?"



**Usability
Engineer**
"I test therefore
I work."



Alfred E. Neuman
"What me test?"



The Gangster
"You want to test?
Fugettaboutit"



The Designer
"Why test, my
designs are
perfect."



Product Manager
"Test, but no time
to implement this
version."



The Therapist
"Test and feel
positive about it."



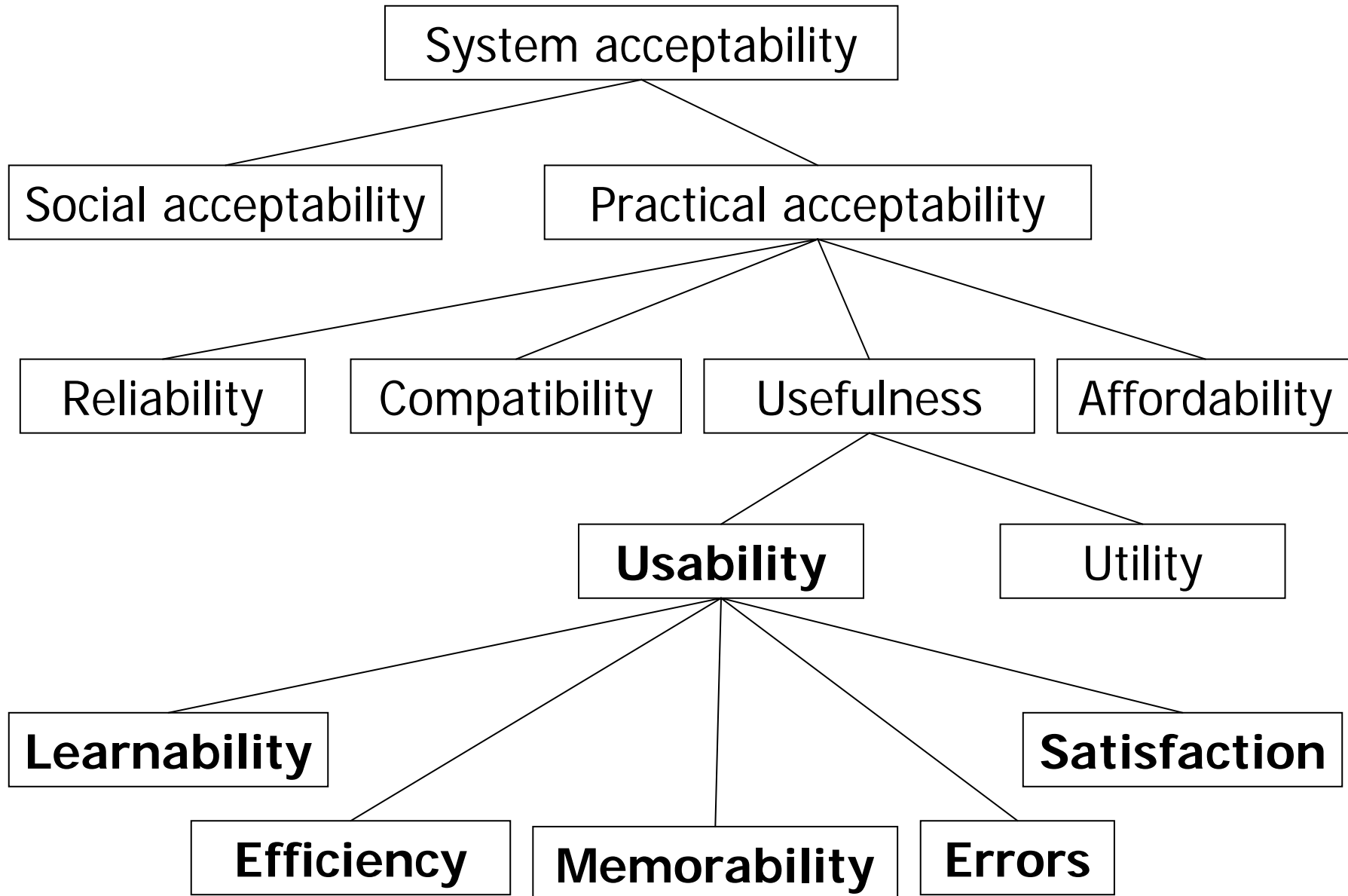
The Developer
"Why test at all?"



The Revolutionary
"Test but trash the
results!"

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What is Usability?



Definition of Usability



Nielsen (1993), Nielsen & Levy (1994), Nielsen (1996)

<i>Dimension</i>	<i>Description, e.g. ...</i>	<i>Benchmark</i>
(1) LEARNABILITY	Low start-up overhead ...	Time to perform task
(2) EFFICIENCY	Achieving high productivity ...	Measuring task performance
(3) MEMORABILITY	Easy to remember ...	Time to repeat task
(4) FAULT-TOLERABILITY	Easy to recover from errors ...	Number of errors
(5) SATISFACTION	Pleasant to use ...	Users subjective opinion

Objective	Effectiveness	Efficiency	Satisfaction
Suitability	<i>% of goals achieved</i>	<i>Time to Complete</i>	<i>Subjective Rating</i>
Appropriateness	<i># of power features used</i>	<i>Relative to expert</i>	<i>Rating of power</i>
Learnability	<i>% learned</i>	<i>Time to learn</i>	<i>Rating of learning</i>
Error	<i>% errors corrected</i>	<i>Time to correct</i>	<i>Rating of error handling</i>

Dix et al. (1998), ISO 9241, ISO 13407

- “M is a model of A if M can be used to answer questions about A” (Ross, 1983)
- A model is a representation of relevant characteristics of an object (Rohr & Tauber, 1984)
- A model is a description that can be communicated, of a certain aspect of part of the real world, viewed at a certain level of abstraction (Oberquelle, 1984)

Modell nach Wickens (2000)

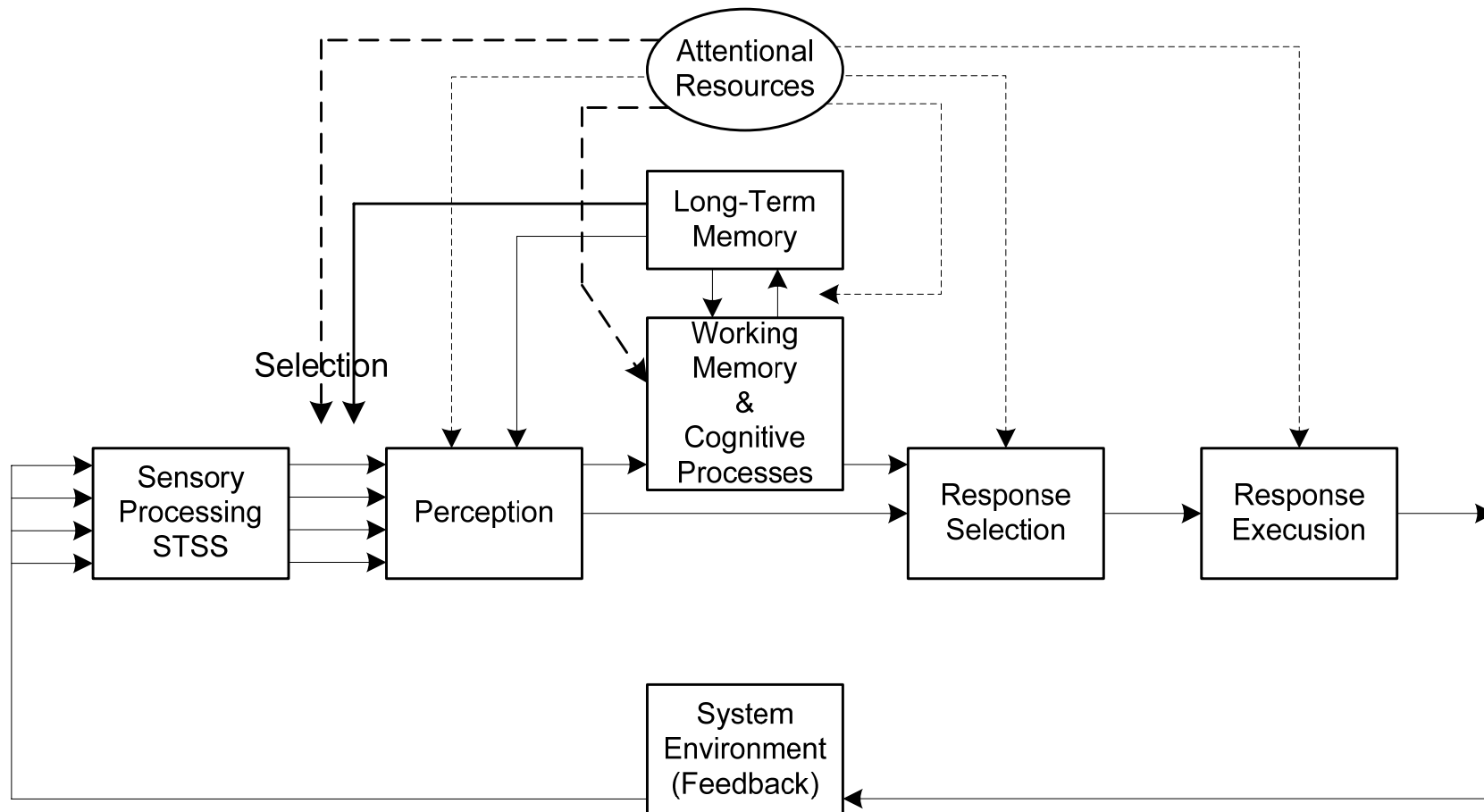
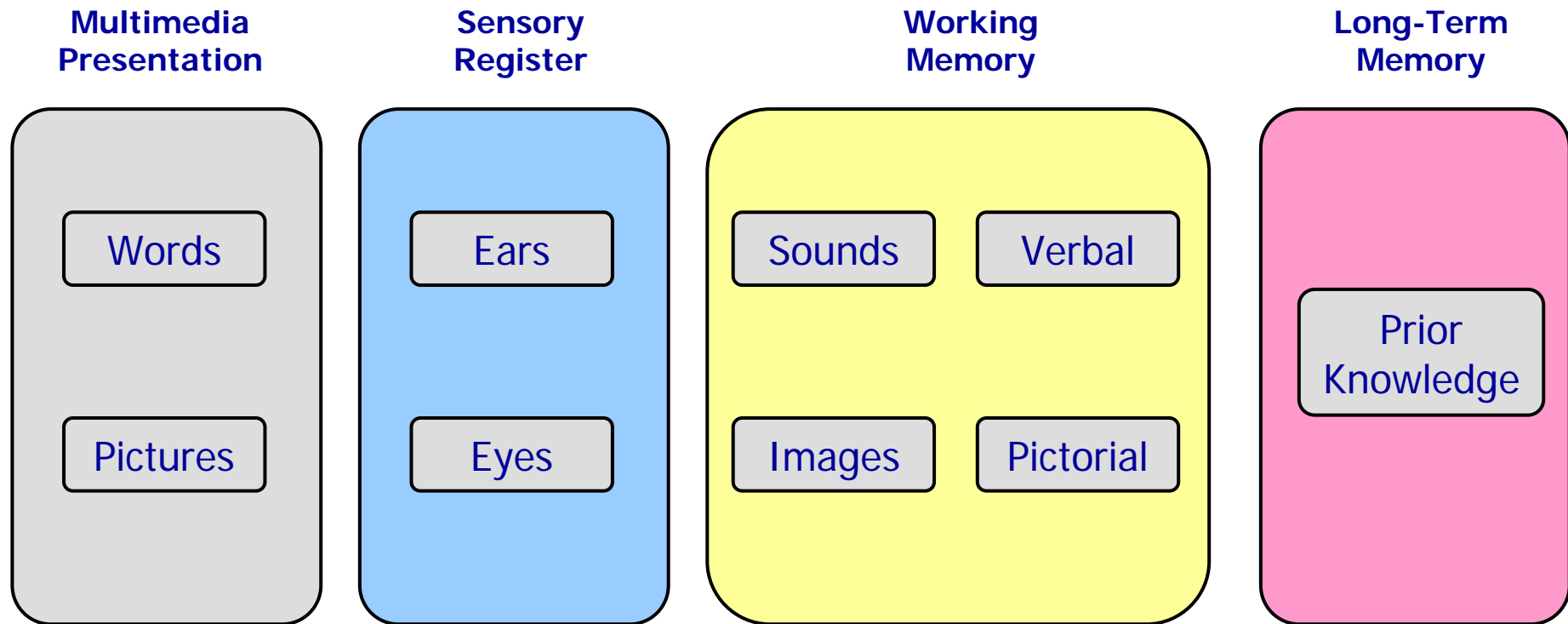
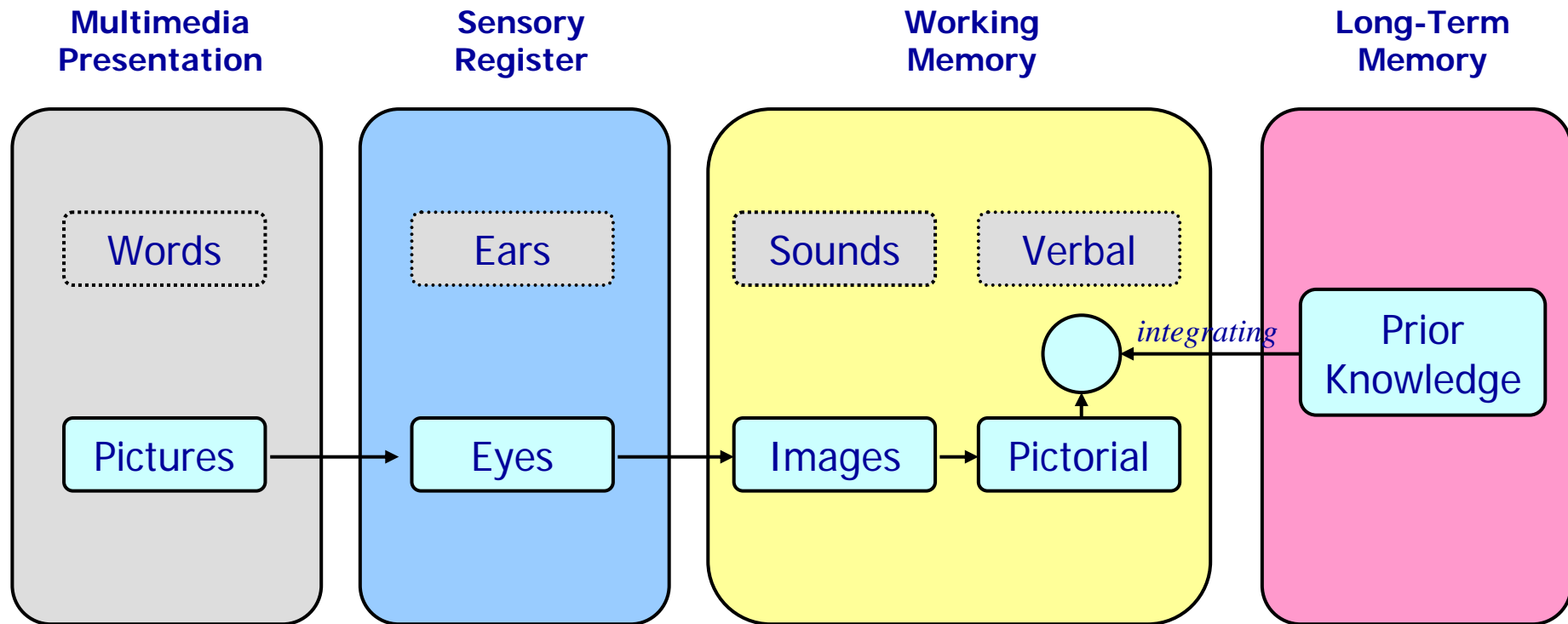


Figure adapted from Wickens (2000)



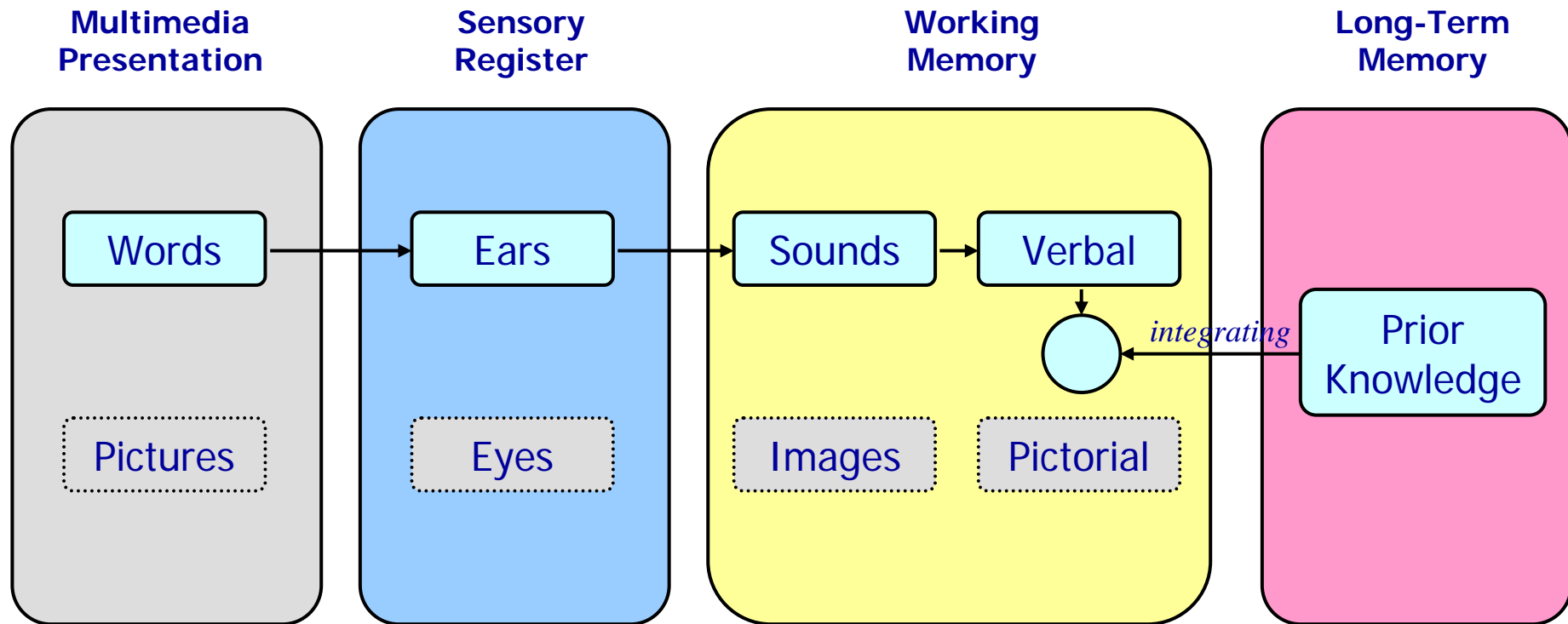
cf. with Paivio (1973), Mayer & Moreno (1998), Schnotz & Bannert (2002)

a) Processing of visual information (PICTURES)



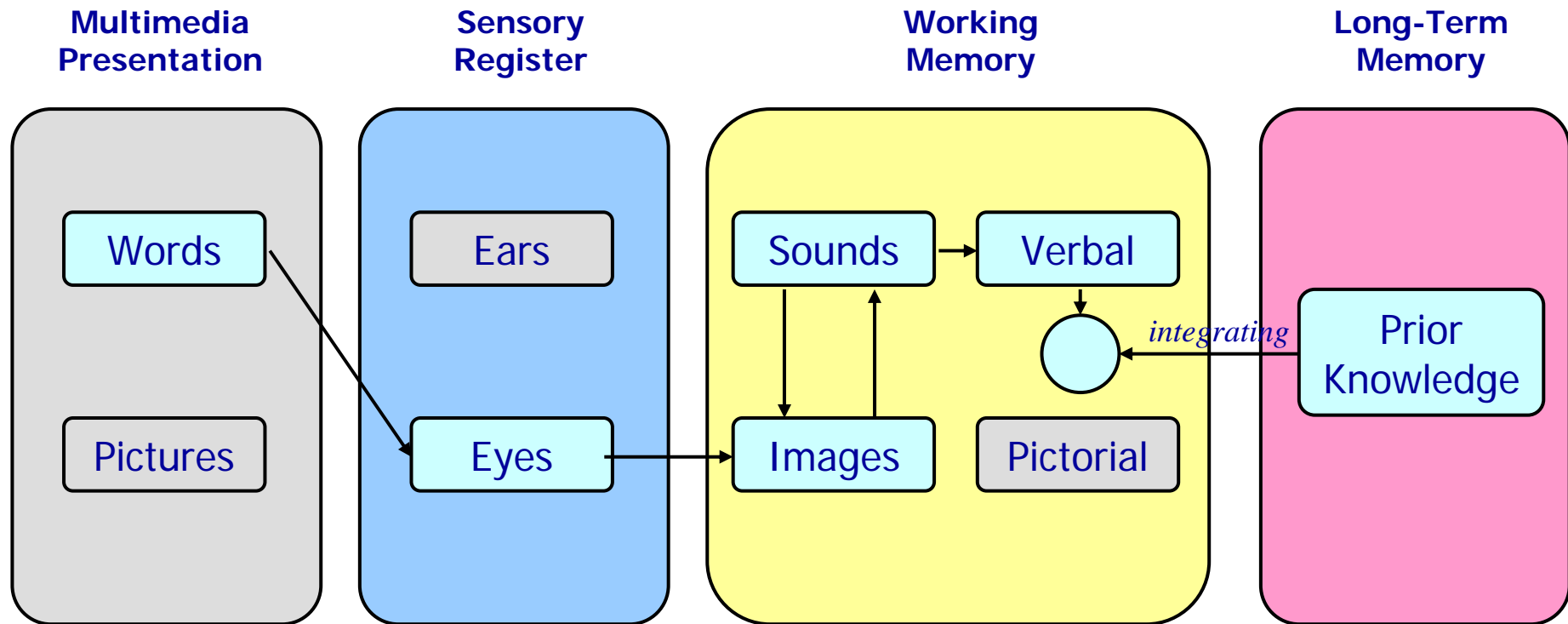
cf. with Paivio (1973), Mayer & Moreno (1998), Schnotz & Bannert (2002)

b) Processing of audio information (SPOKEN WORDS)

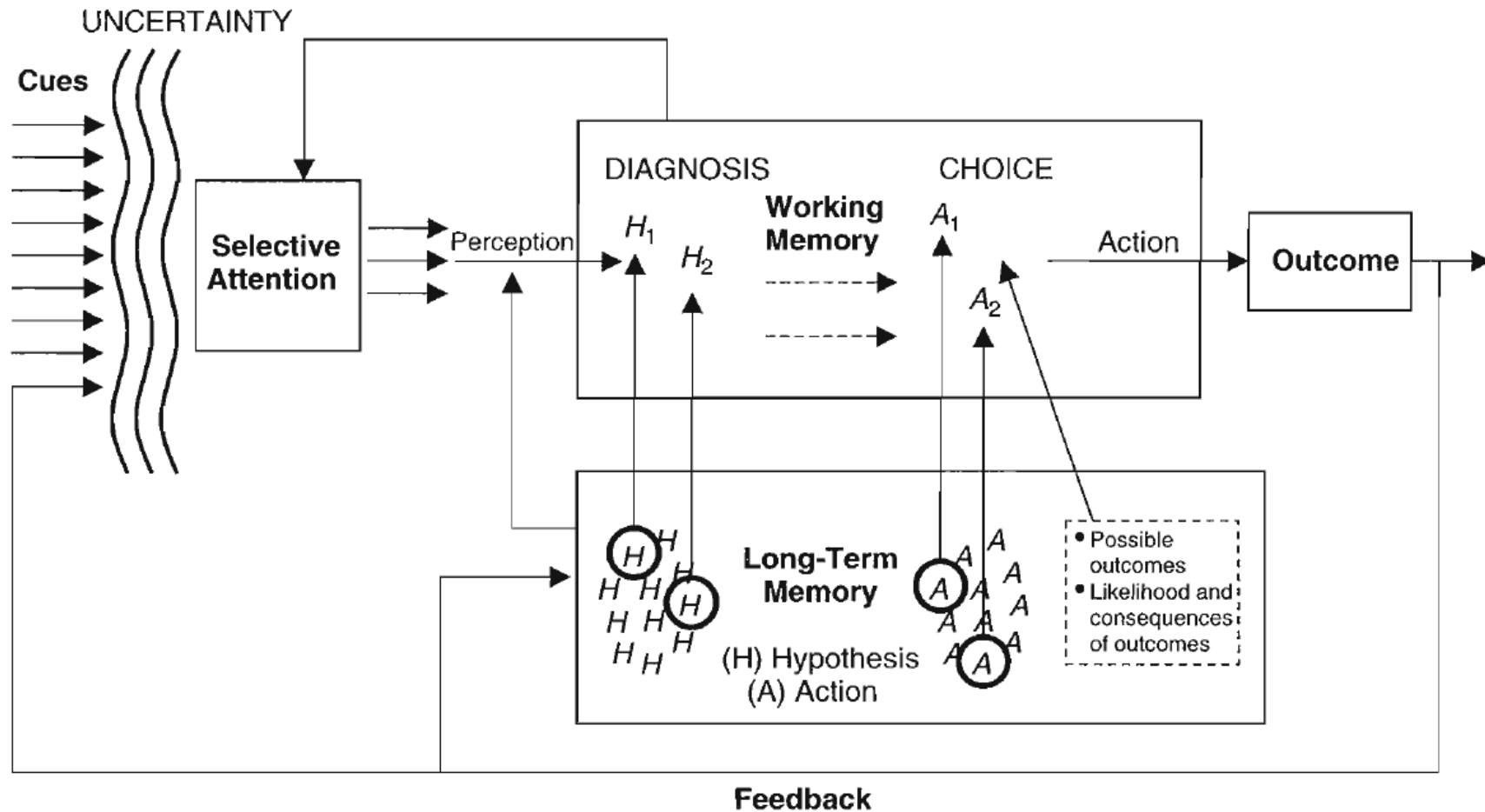


cf. with Paivio (1973), Mayer & Moreno (1998), Schnotz & Bannert (2002)

c) Processing of visual information (PRINTED WORDS)

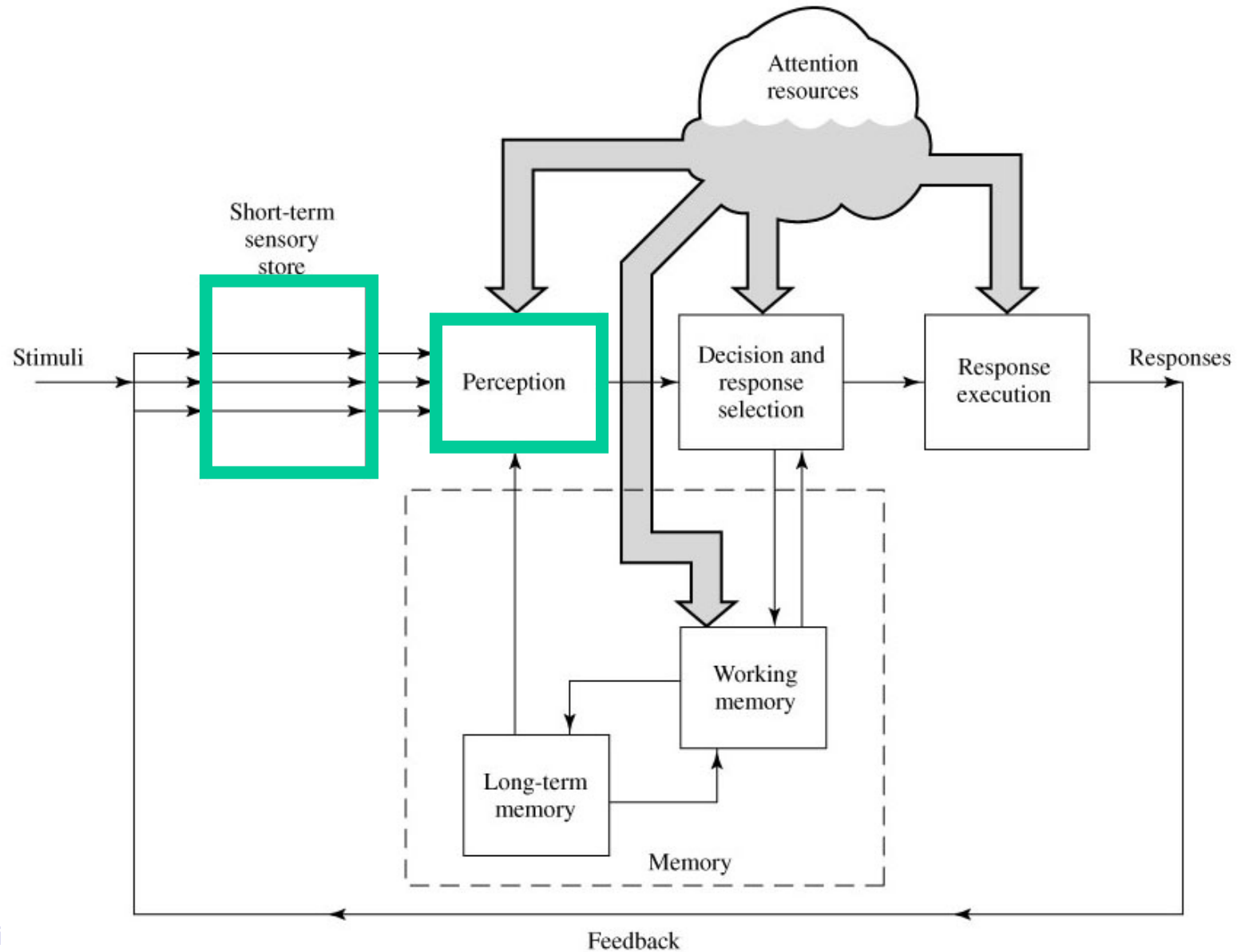


cf. with Paivio (1973), Mayer & Moreno (1998), Schnotz & Bannert (2002)

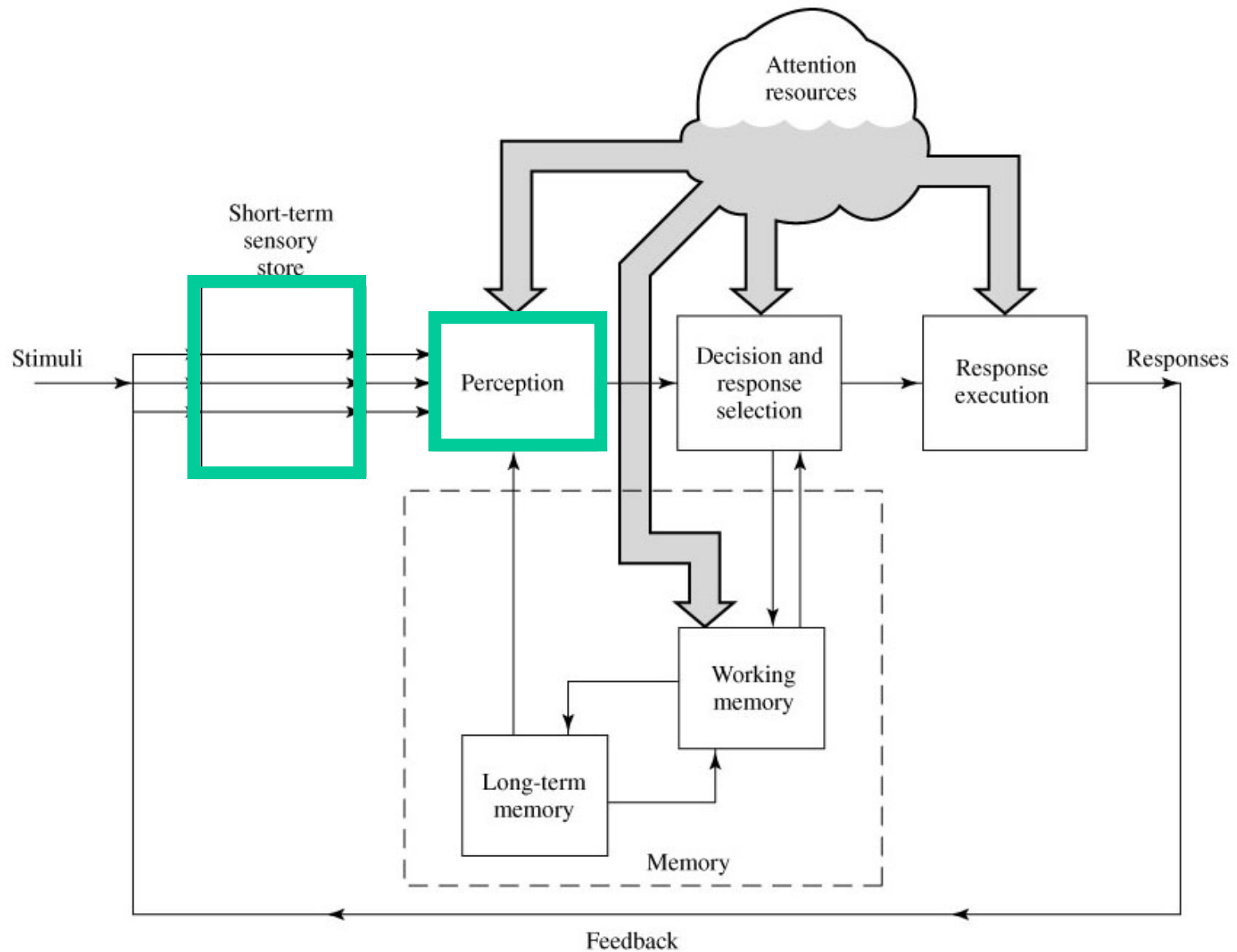


Nach Wickens (2000)

Aufmerksamkeit nach Sanders & McCormick (1999)



Wesentliche Ressource: Aufmerksamkeit



Nach Sanders and Mc Cormick, (1993)

*Wie die Experimente von
Daniel Simons (2003) zeigen ...*



*Danke fürs
Mitmachen!*