

Thought Processes During a Golf Putting Task: A Concurrent Verbal Protocol Approach

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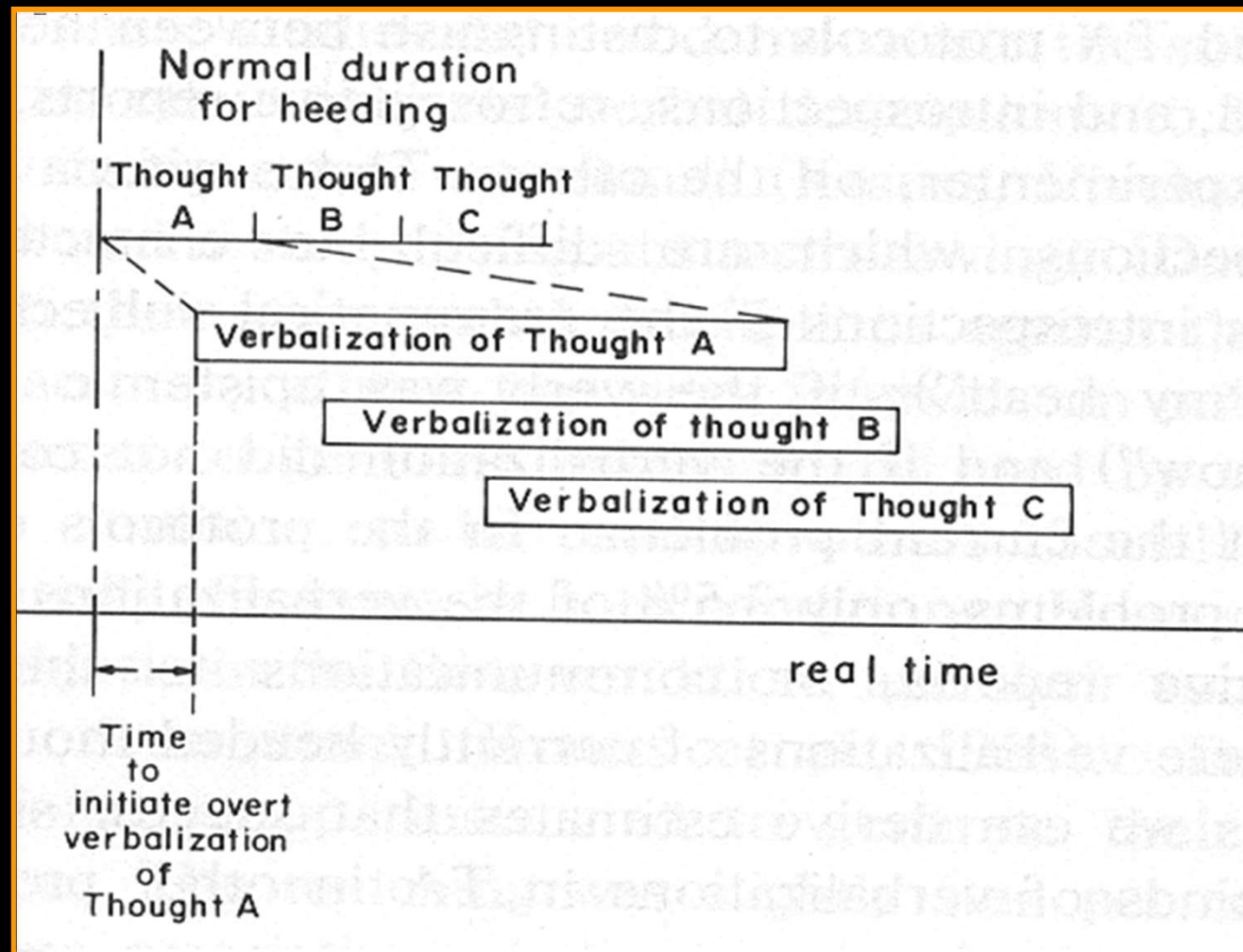
CONCURRENT VERBAL PROTOCOLS



- Talk-aloud or think-aloud procedures
- Cognitive processes
 - “sequence of internal states successively transformed by a series of information processes”,
 - “the small number of information structures, or chunks, that are attended to or available in the limited storage capacity in short-term memory” (Ericsson, 1988, p.141).
- Reporting heeded information



THOUGHT SEQUENCES

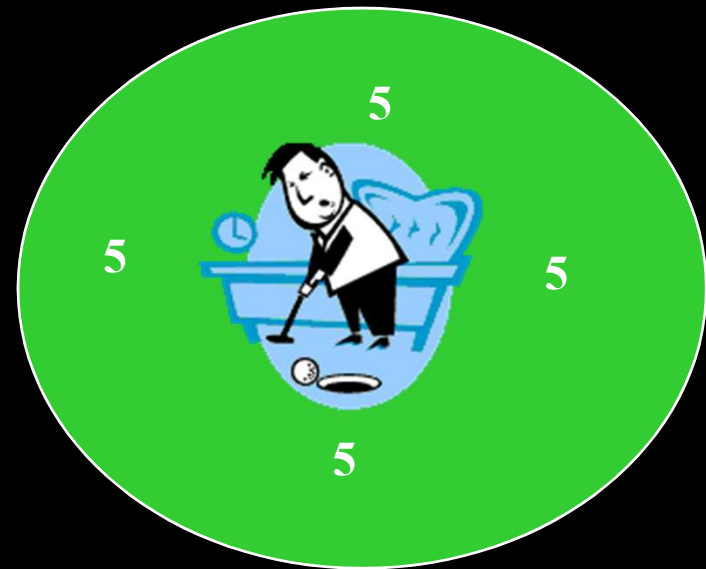


(Ericsson & Simon, 1993)

PARTICIPANTS & TASK



- 7 golfers
 - 3 experienced
 - 4 novices
- Task
 - 4x5 12-foot (3.66 m) putts with “verbalization”, alternating with 4x5 12-foot putts in “silence”



INSTRUCTION



“Please think aloud and verbalize everything that is going on in your mind as you perform this round of putts. Pretend that you are alone. Do not describe or explain what you are doing. Simply give voice to your thoughts by talking aloud as they appear in your mind”



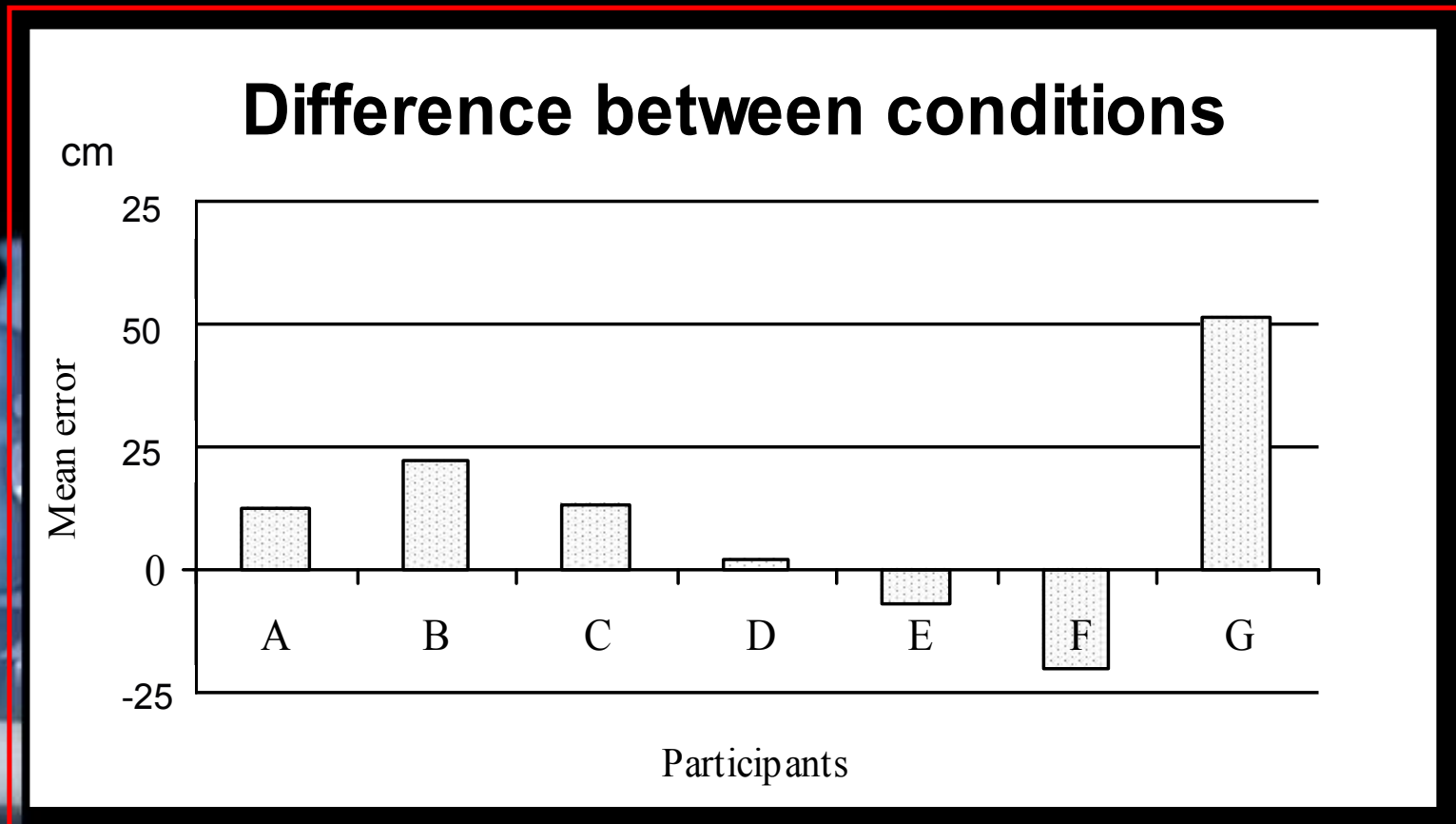
CODING SCHEME



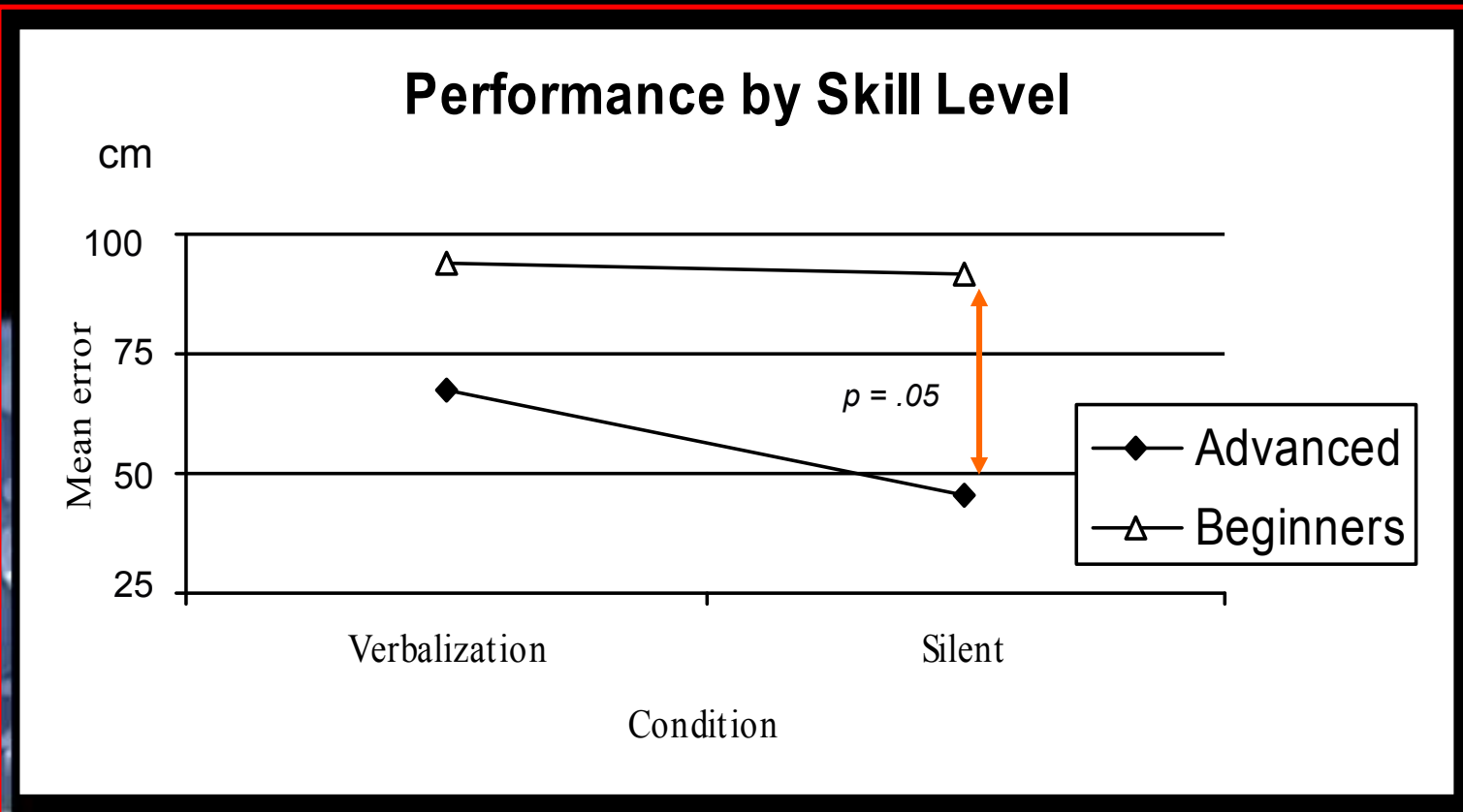
- Gathering information
 - Planning
 - Technical Instruction
 - Description of outcome
 - Diagnosis
 - Mental Readiness
 - Reactive comments
 - Other comments
- Interrater reliability
 $r = .63$ and $.78$
($.33 < r < .88$)
 - Intrarater reliability
 $r = .73$ and $.85$
($.36 < r < .88$)



PUTTING PERFORMANCE: SILENT VS. VERBALIZATION



PUTTING PERFORMANCE: SKILL LEVEL



Overall performance

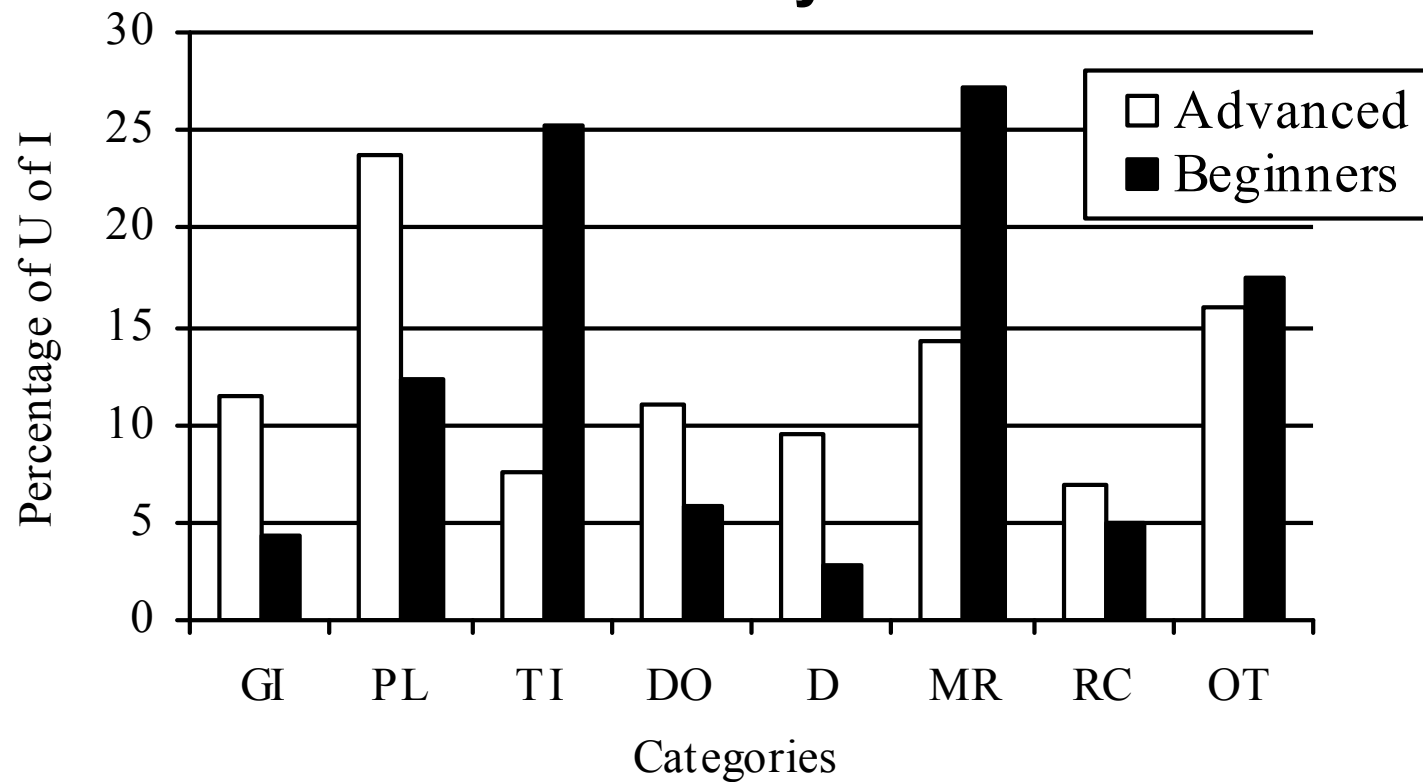
$M_a = 55, SD = 27; M_b = 93, SD = 30;$

$t(5) = -2.44, p = .06$

THOUGHT CONTENT



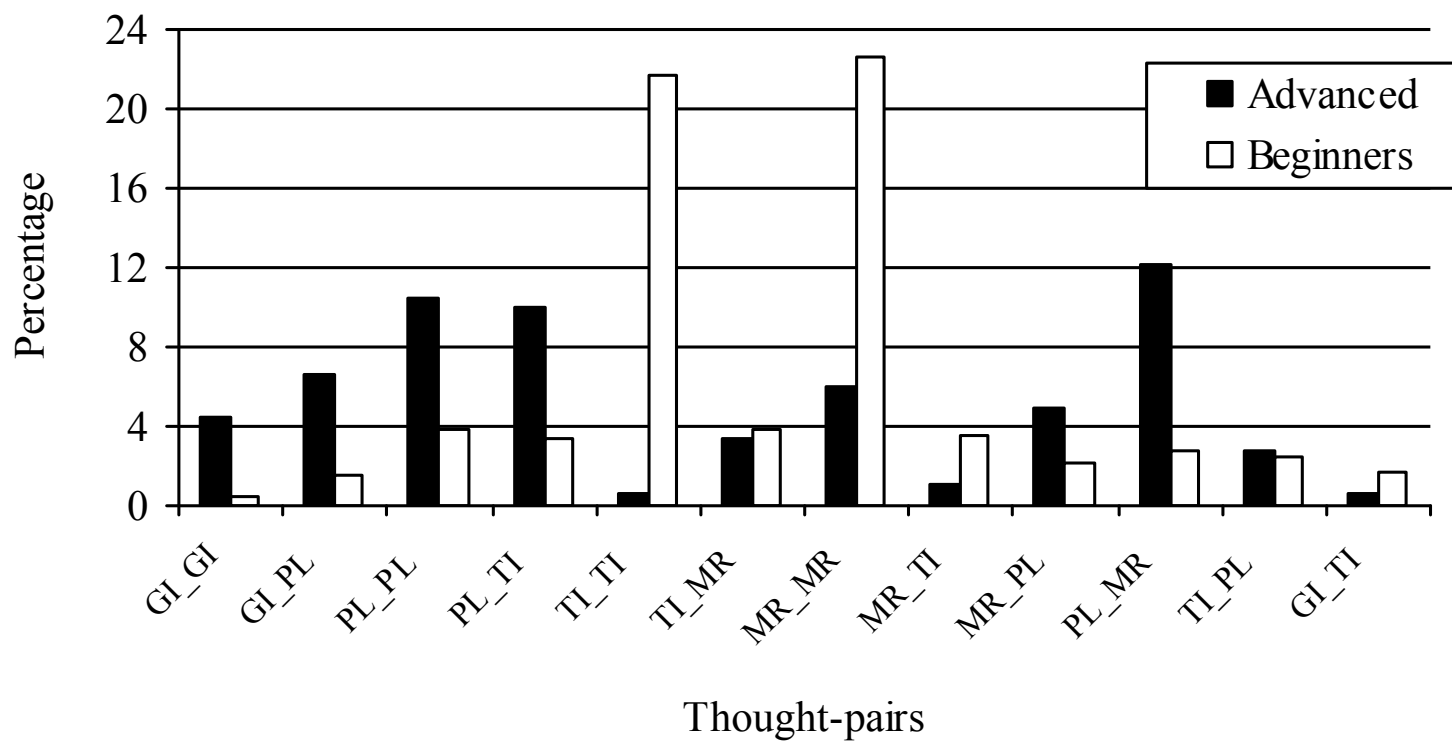
Verbalizations by Skill Level



THOUGHT SEQUENCES



Thoughts Sequence Before Putting



EFFECTS OF VERBALIZATION



- No significant differences
 - Small sample
 - Methodological issues
 - Subject A
 - procedure
 - Subject G
 - Personal goals (last five holes)

P89: ok, I'm thinking, on this one I want to put in as many in as I can;

P90: so, I'm not going for closeness like before;

P91: going for the hole.



THOUGH CONTENT & SEQUENCE



- Advanced players → “assessment”
- Beginners → “execution” (Beilock et al., 2003)
- better goals, planning, strategy use, self-monitoring and self-evaluation (Kitsantas & Zimmerman, 2002).
- more planning concepts than novices (McPherson, 2000).
- deliberate preparation, planning, reasoning and evaluation (Ericsson & Lehmann, 1996).



FUTURE DIRECTIONS



- Effects of verbalization
 - Control for confounding variables
- Refine the coding system
 - Better definition of categories
 - Data reduction
 - Sophistication of verbalizations
- Complement with immediate retrospective recall



THANK YOU

