

Conscious Processing and focus of attention: Conceptual links, research & implications

Part 2

Week 10

Masters (1992) The Conscious Processing Hypothesis (CPH)



- States that an increase in state anxiety, combined with explicit knowledge about the task being performed can induce conscious control and = performance disruption



A shift in emphasis

- CPH argues **against** the focus on explicit knowledge
- Focus of attention literature is concerned with **where attention should be directed** (these could still be explicit or implicit)
- Internal versus external

Focus of attention

- Paralleling much of the work on conscious processing
 - What should the performer focus their attention on when executing a task?
 - Could learning in this manner reduce tendency for conscious processing?
- **Internal:** when a performer focuses on their body movements or feelings
- **External:** when a performer focuses on an external target such as a point on the wall, a marker in the distance, or the effect of the movement (environmental effects).

Focus of attention

- Rugby
 - An imaginary piece of string going from the ball, through the post
 - Through the seam of the ball
 - On a point in the grass just beyond the ball

Focus of attention

- Basketball free-throws
 - The ball, the hoop, the ball, the hoop, the ball
 - The front of the hoop
 - Flight of the ball into the net
 - A point on the glass – if I hit that point, I know it will go in
 - The release of my hand on the ball

Focus of attention

- Golfers hitting a shot
 - I really focus in on a tree or a camera tower; I have a point in the distance that I aim to hit
 - You have to look at the ball...the back of it.
 - When chipping, I pick a point to land the ball on
 - Always the target, how can you expect to hole it if you don't think of the target?
 - A piece of grass just in front of the ball

Internal versus external focus?

- when using an internal focus of attention, you are more “self focused” and may focus on bodily movements
 - Is this a good thing?
- For learning?
 - Constrains movements, stabilises performance
- More skilled performers under pressure?

Problems?....

- 1980s - Singer and colleagues argued that instructing learners to be conscious and aware of their body movements during the execution of a skill may not be very effective for **learning**
 - forces performers interfere with the automatic processes associated with the movement.
- Wulf & Weigelt (1997)
 - providing **learners** with instructions to focus on the details of their movement was detrimental to performance.

Overview of research findings

- when a performer is given instructions directing their attention to the effect of their movement on the apparatus (external), they are more effective than when directing their attention to their body movements (internal).
- Results have consistently found support for an external focus of attention
- Why?
 - It allows unconscious or automatic processes to control the movement

Wulf, Hob & Prinz (1998) Experiment 1



- Slalom type movements on a ski simulator
- N=33
 - Group 1 – internal focus (feet)
 - Group 2 – external focus (wheels under their feet)
 - Group 3 – control group
- External focus enhanced learning, internal focus no more effective than no instruction

Wulf, Weigelt, Poulter & McNevin (2003)

- Participants (n=18) balanced on a stabilometer and held a tube with a tennis ball in it
- Internal – focus on your hands
- External – focus on keeping the tube horizontal
- Both experiments, the external group demonstrated more effective retention and transfer than the internal

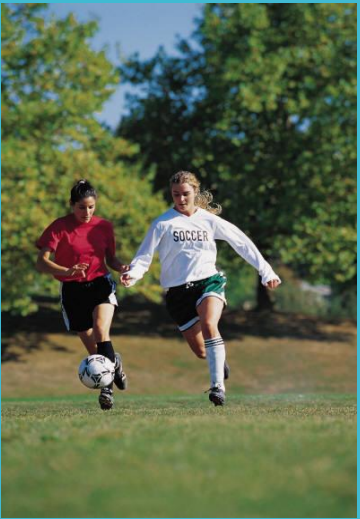
Other research.....

- Wulf et al., (1999)
 - Pitching a golf ball (practice for 20 trials)
 - 80 practice 30 retention
 - Results – an external focus increase novice learning
- Wulf (2007)
 - Expert golfers – 20 shots per condition
 - External focus of attention better
- Beilock & Carr (2001, 2002)
 - Using golfers and soccer players, Beilock & Carr (2002)
 - detrimental effects of internal focus of attention instructions (on automated skills) for high vs low skilled

Attentional focus effects on motor control

- Greater amount of automaticity of movement control afforded by attention directed to the movement effects
- Consciously intervening in the motor control processes - interferes with smoothness of movement and breaks it down)
- Why doesn't performance ALWAYS breakdown for experts?
 - Experts possess a large pool of generic knowledge, but low levels of episodic knowledge (knowledge on a specific putt)
 - "expert induced amnesia"
- Gender differences?

Wulf, Wachter & Wortmann (2003)



- Soccer kick with instructions that either induced an internal or external focus
- Hypothesised that - gender differences most pronounced in male dominated sports
 - Females tend to be more concerned about performing a movement correctly than males who might be more inclined to focus on the outcome of the action
- Greater learning advantages with an external focus of attention...



Implications

- When performers take an internal focus – accessing explicit knowledge base, resulting in de-automatisation and performance breakdown under stress
- External focus suggested to be more likely to deny access to the explicit knowledge base
 - Similarly adopting a holistic approach might reduce tendency for negative 'internal focus' effects
 - Learners focusing on the 'effects' of movements may reduce the build up of explicit knowledge
 - Distance effect?

References

- Beilock, S., & Carr, T.H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology: General*, 130, 701 – 725.
- Beilock, S.H., Carr, T.H., MacMahon, C., & Starkes, J.L. (2002). When paying attention becomes counterproductive: Impact of divided versus skill-focused attention on novice and experienced performance of sensori-motor skills. *Journal of Experimental Psychology: Applied*, 8, 6 – 16.
- Wulf, G., Hob, M., & Prinz, W. (1998). Instructions for motor learning: Differential effects of internal versus external focus of attention. *Journal of Motor behaviour*, 30 (2), 169-179.
- Wulf G., Weigelt, M., Poulter, D., & McNevin, N. (2003). Attentional focus on supra-postural tasks affects balance learning, *Quarterly Journal of Experimental Psychology*, 56, 1191-1211.
- Wulf, G., McNevin, N.H., Fuchs, T., Ritter, F., & Toole, T. Attentional focus in complex skill learning, *Research Quarterly for Exercise and Sport*, 71 (3), 229-239.
- Singer, R.N., Lidor, R., & Cauragh, J.H. (1993). To be aware or not aware: What to think about while learning and performing a motor skill. *The Sport Psychologist*, 7, 19-30
- Wulf, G., Wachter, S., & Wortmann, S. (2003). Attentional focus in motor skill learning: Do females benefit from an external focus? *Women in Sport and Physical Activity Journal*, 12, 37-52.
- Wulf, G., Lauterbach, B., & Toole, T (1999). Learning advantages of an external focus of attention in golf. *Research Quarterly for Exercise and Sport*, 70, 120-126.