Pashler's Psychological Refractory Period (PRP) Paradigm
-       Refractory Period: a pause after becoming active
-       Three parts: perceptual analysis, central processes, response production (3 parts, 2 peripheral, 1 central)
-       Dual speeded responses to two tasks which 'overlap'
-       Response to the second task is slowed depending on when the second stimulus is presented
-       This suggests an overlap in 'central' stages involving decision and response selection

Long SOA

S1 ◄———— Task 1 Reaction time ————► R1

| Perceptual analysis | Central Processes | Response Production |

◄———————— SOA ————————►

| Perceptual analysis | Central Processes | Response Production |

S2 ◄———— Task 2 Reaction time ————► R2

Short SOA

S1 ◄———— Task 1 Reaction time ————► R1

| Perceptual analysis | Central Processes | Response Production |

◄——— SOA ———►| Perceptual analysis |

| Central Processes | Response Production |

S2 ◄———— Task 2 Reaction time ————► R2   17
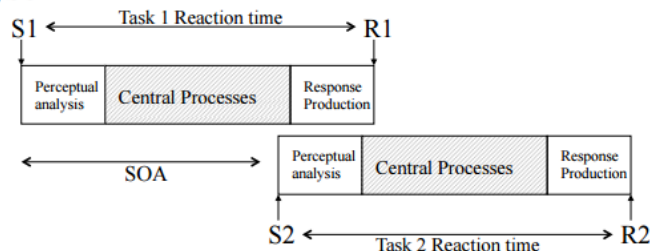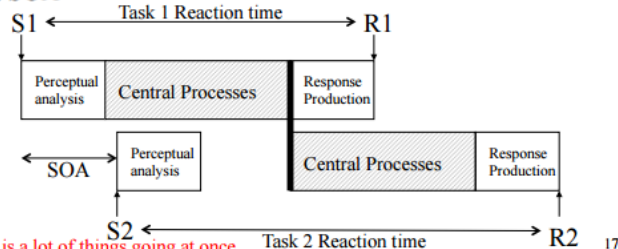
Note: there is a lot of things going at once.
Gives the illusion of doing multiple tasks at once.

-       S1= stimulus 1, R1= response 1
-       SOA: stimulus onset asynchrony (1 then the other, asynchronies; if the SOA is long, no loss of processing speed – long overlap)
-       Central processing is the bottle neck – if you do two things, they have to be done sequentially
                -       Short SOA: both tasks overlap, central processing can only do one task at a time so processing of task 2 must wait (perceptual analysis can be completed, but central processing of task 2 waits for task 1 central processing to finish
                        -       Central processing must be done sequentially, but perceptual analysis can be done, there is a pause between the perceptual analysis and central process if S1 is not finished (sequence!)
                -       Long SOA: no overlap of central processes so no reaction time cost in doing these two tasks
                -       Critical SOA: shorter SOAs than this will cause central processing overlap and slower reaction time to task 2
-       Supermarket example
                -       One checkout operator (bottleneck) – central executive process
                -       SOA: time between arrival of customers
                -       Pre-checkout: load your shopping onto conveyer belt (perceptual analysis)
                -       Post-checkout: gather your shopping and leave (response production)
                -       SOA short: customer has to wait (even when shopping trolley is unpacked and ready to scan)
                -       SOA long: no wait at all (you can have multiple stimuli, but they will all have to wait to do the central processing sequentially)

- PRP findings and conclusions
    - 1 for 1 ratio, if you preload 500ms earlier, you need to wait 500ms for central processing
        - Good support for bottleneck theories
            - There is an essential point (bottleneck) that can only be applied to do a single process – the rest must be done serially
            - The PRP effect is reduced with practice but never disappears (Selst, Ruthruff, and Johnston, 1999) – if the interval in between tasks is too short, you still have to wait
            - PRP is found when tasks are simple and in different modalities (against Wickens and divided resources)
            - Visual task and auditory tasks, you should be able to do both at once, but there is still a refractory period when the central processing is busy (PRP still applied)
        - AOC curve is evidence against bottleneck?
            - No: might simply be rapid switching
            - Practice can shorten the central processing time, but they will still never be done in parallel (central processing only)
                - Perceptual and response can be done in parallel
                - With rapid switching to share central processing