The Effects of Multitasking on Task Integrity

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Multitasking is a common occurrence in today's society. People are constantly performing more than one task at a time, consciously shifting between tasks, and performing multiple tasks within a limited period of time (Redick et al., 2016). It is important to understand how well people are able to delegate their attention between multiple tasks. The three levels of negative consequences to multitasking include relatively minor, severe, and situations where no harm is done but no progress has been made. Oftentimes, many people are multitasking without ever consciously thinking about it. Each person holds their own levels of capacity concerning attention span and ability to be efficient. An understanding of multitasking can help improve task efficiency within careers and activities of daily living.

Divided Attention

If more than one task is assigned to a person to complete at the same time, the person must then choose to prioritize each task. In a study completed on divided attention, the participants demonstrated both short and long bursts of time spent on each task depending on what was to be prioritized (Farmer et al., 2018). In a rewards-based system, the participants sought out the best strategy to maximize the reward for each assignment. The strategy could be adjusted due to environmental conditions, such as time constrictions and an increased noise-level. Essentially, the participants were only permitted to complete one task at a time, forcing them to divide their effort wisely between the tasks (Farmer et al., 2018). Approaching the subject in this manner allowed for the researchers to understand how well people are able to efficiently divide a set of tasks while searching for their limits. This strategy helped the researches assess how well each plan was completed and divided using a reward-based system. When multitasking, people have to choose which events are more important or essential to must

be completed first compared to the others. Due to the consistent changes of conditions in today's world, it is important to be flexible and able to adapt in a pinch. This method provides for the best opportunity to complete the task most effectively. An exploration phase was created in this study which allowed each participant to briefly understand the task to better prioritize their chosen order. The results of this study demonstrated that people have the ability to alter their strategy in response to environmental changes (Farmer et al., 2018).

Cognitive Effects

In young adults, there is a strong correlation between "working memory, attention control, fluid intelligence, and multitasking" (Redick et al., 2016). Every person contains different levels of attention spans, memory capacity, and a secondary memory (Redick et al., 2016). Working memory is the limit of mental space that one can temporarily contain information. A secondary memory contains the knowledge that is engrained in one's mind and is difficult to forget. The three perspectives of structural, flexibility, and plasticity help to explain how multitasking effects the brain (Koch et al., 2018). Structural task switching leads to a time-consuming process of "activating and implementing" the given set of tasks (Koch et al., 2018). Flexibility can become problematic while task-switching due to various amounts of planning necessary. Predictable results are hard to have flexibility with, especially knowing that the given task will have long-term effects that need prior planning (Koch et al., 2018). Human behavior is greatly affected while adapting to a new set of tasks or a change in plans. Also, the lack of sleep can affect how well the task is performed (Redick et al., 2016). Multitasking can become more difficult and lead to more errors due to details lost in the mix of events.

Distractions Within the Primary Task

The brain can easily disengage from a task that the participant finds rather difficult or easily becomes uninterested in. A couple consequences include mind wandering or environmental disruptions. Mind wandering, also known as daydreaming, is a common inward distraction that most people experience from time to time due to stress or boredom. A combination of mind wandering and environmental disruptions typically occur as one begins to ponder an unrelated thought that was triggered by something in the room. Things like windows in classrooms, side conversations in large group settings, and background music are all examples of things that can trigger this occurrence. A study was completed that researched where the minds of the participants went when they became distracted with the task at hand (Ralph, Smith, Seli, & Smilek, 2020). In this study, the participants environment had a video playing in the background leading to a personal decision of whether to be distracted or focus on the primary task. Interestingly enough, it was found that a shift of focus was put on the secondary task or outside disruption rather than reverting to mind wandering during the primary task. In the event that there were no extra environmental stimulations, the participants were less likely to lose their focus on the given task. It was found that both outside distractions and unrelated inward thoughts led to mistakes or inefficiencies in completing the primary task (Ralph, Smith, Seli, & Smilek, 2020).

Intentionality of Mind Wandering

A harder or more extensive task that requires more brain power often leads to mind wandering. These mental distractions can occur both intentionally and spontaneously. Intentional daydreaming tends to be more futuristic and less vague compared to unintentional mind wandering (Ralph et al., 2020). Unintentional mind wandering can also be associated with

Attention Deficit Hyperactivity Disorder and Obsessive-Compulsive Disorder (Ralph, Smith, Seli, & Smilek, 2020). The laboratories noticed an interesting find during this study that illuded to the conclusion that mind wandering rates increases as the amount of time spent on the task increases. Conversely, while studying undergraduate lectures, the same group of researchers noticed a steady amount of mind wandering over the set period of time (Ralph, Smith, Seli, & Smilek, 2020). People allow themselves to get absorbed in the pleasant feelings associated with particular thoughts from their daydreams. These feelings lead to differences in how successful people are able to block out the distractions. Both intentional and unintentional mind wandering impair the performance on the primary task, leading to decreased integrity. Also, nonrequired tasks appear to take priority over the primary task due to the desire for a distraction (Ralph, Smith, Seli, & Smilek, 2020). Examples such as smaller homework assignments that are due later in the week and the use of social media tend to create a break from the primary assignment. These distractions stem from whether the person is intentionally looking for a distraction or way to avoid the primary task (Ralph, Smith, Seli, & Smilek, 2020).

Media Multitasking

Recently, there has been a shift in research from whether the brain is affected by media usage towards learning how the brain is affected from media usage. Many people believe that they are capable of engaging in media multitasking, although some do not have the ability to efficiently maintain focus on the given tasks. Media multitasking leads to negative well-being, higher rates of impulsive behavior, and more sensation seeking activities (Ralph, Thomson, Cheyne, & Smilek, 2014). It is important to take a step back to look at how the attention span is affected during the daily activities of someone who media multitasks (Ralph, Thomson, Cheyne, & Smilek, 2014). Media multitasking is also associated with boredom, depression, and

scholastic performance as media usage increases (Ralph, Thomson, Cheyne, & Smilek, 2014). The cognitive mistakes of those who participated in media multitasking were measured using a scale in this particular study. In order to measure these findings, the team researched three significant things. These included the daily lapses of attention and attention-related errors, mind wandering, and attention control. Episodes of absent-mindedness have a higher chance of leading to major errors within the task. It is fascinating that there were no significant correlations found between self-reported memory mistakes and self-reported media multitasking (Ralph, Thomson, Cheyne, & Smilek, 2014). The level of importance each participant thought of the primary task became clear as the trial continued and distractors were introduced (Ralph, Smith, Seli, & Smilek, 2020).

Conclusion

Although divided attention allows for one to complete multiple tasks at once, there is a higher chance for serious consequences and one to lose integrity of the task. People need different levels of time to complete specific tasks due to the difficulty level or set of skills. A person can need more time to complete a task due to various environmental and internal distractions. Essentially, media multitasking and mind wandering compete with each other as a person is attempting to complete a primary task. This means that the more frequently someone engages in one of these forms of distractions, the less likely they are to engage in the opposing distractors. In other words, the frequency of mind wandering varies alongside the availability of media-based distractors (Ralph, Smith, Seli, & Smilek, 2020). While multitasking, it is important to carefully plan and think about each option before prioritizing.

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