Is student's frequency of media multitasking associated with distraction levels?

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Abstract

Advancements in technology in the last decade have resulted in a saturation of media into peoples lives. However, while research has focused on the cognitive effects of increased media usage, many have failed to recognise the rise and importance of media multitasking. There is little research surrounding the potential cognitive impairments of media multitasking. This study aims to investigate whether there is a relationship between self-reported measures of media multitasking and distraction levels. Participants (N=192) completed an online version of the Eriksen Flanker Task and Media Multitasking Index (MMI). Results showed that media usage and in particular media multitasking had no significant correlation with distraction levels. This suggests the brain's cognitive ability can cope with the increasing information processing demands.

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As technological advancements continue to take place on an exponential scale, individuals are subject to ever-increasing streams of media. It is not uncommon to see people listening to music, scrolling through Facebook, and perhaps replying to a text message simultaneously. This phenomenon is known as media multitasking – the simultaneous use of two or more different media types - rises in function of technological advancements and hence is increasingly prevalent in day to day life. Rideout, Feohr, and Roberts (2010) reported that "26% of the time that young people use media, they use two or more media simultaneously" (p. 59). This saturation of media into peoples lives, particularly teenagers, poses questions surrounding cognition. As a result, research into the potential cognitive impairments of increased media consumption is on the rise.

Current research suggests that a high level of media multitasking is associated with lower levels of educational achievement. For example, Junco and Cotton (2012) surveyed 1839 students on ICT usage and frequency of multitasking. They found that increased Facebook usage and texting while studying resulted in a lower grade point average (GPA). Bellur, Nowak, and Hull (2015) further support this idea. They surveyed 361 students on technology usage and high school estimated GPA. They also found that multitasking during class reduces GPA. However, multitasking during homework had no significant effect. Both of the studies suggest a relationship between media multi-tasking and GPA. It is therefore important to understand the relationship between media multi-tasking and information processing as it can affect achievement in life and hinder an individuals progress towards goals.

A common theme of media multitasking that has been central to current research is the ability to switch attention between mediums. (Alzahabi & Becker, 2013; Ophir, Nass, & Wagner, 2009). Despite increased attempts, findings have shown mixed results. For

example, Ophir, Nass, and Wagner (2009) found that heavy multi-media taskers showed greater difficulty in attention switching then light multi-media taskers and that they were more susceptible to distraction from irrelevant stimuli. Subsequent studies, however, have presented results that multimedia tasking is positively correlated with attention switching ability (Alzahabi & Becker, 2013). Some studies such as that by Minear, Brasher, McCurdy, Lewis, and Younggren (2013) even found no correlation between frequencies of media multitasking and task switching ability.

Due to the contradictory evidence, further research was needed to acquire a better understanding of the subject area. We, therefore, investigated the relationship between self-reported methods of media multitasking and levels of distraction. We hypothesised that increased levels of media-multitasking would be associated with a higher level of distraction rates.

Method

Participants

One hundred and ninety-two participants (62 male, 130 female) were recruited in a research methods seminar; all of whom were Undergraduate Psychology students enrolled at Bangor University. Participants ranged in age from 18 to 24 (M = 18.9, SD = 1.3) and received two SONA credits in exchange for their participation.

Materials

The Eriksen Flanker Task was used to measure distraction levels. Letter stimuli were presented in the centre of the computer screen in which participants were required to attend to the central letter; ignoring the four flanking letters either side. A left-handed response was associated with letter X or C whereby the participant was required to press key A. Similarly,

a right-handed response was associated with letters V or B whereby the participant was required to press key L. In each trial, the target letter was flanked by 4 letters either matching the target response (Compatible trials) or opposing it (Incompatible trials). An example of a compatible trial used was CCXCC, as both the flanking letters and central letter related to the same key response. The difference in response times (in milliseconds) was calculated between the incompatible and compatible trials. A larger value indicated more distraction from the irrelevant flanking letters.

The media multitasking index (MMI), developed by Ophir et al. (2009), was used to measure multitasking levels. The questionnaire addresses eight different mediums: television, music, computer games, telephone, social networking, text messaging, emailing and other computer-based activities such as word processing. For each medium, the questionnaire addressed two questions: (1) how often the participant uses the given medium per week and (2) how often the given medium is simultaneously used with one other.

Design

The study used a correlational design. The co-variables were level of media multitasking and the ability to ignore distracting information.

Procedure

Participants started by completing the Eriksen Flanker Task on their laptops. They were instructed to complete the task as fast and accurately as possible and to not discuss answers with any other student. The task was completed in silence. Directly following this, participants completed the online MMI Questionnaire.

Results

A Pearson correlation was computed to assess the relationship between media multitasking *(M* = 3.72, SD = 1.12) and distraction *(M* = 22.66, *SD* = 38.36). There was no significant correlation between the two variables, *r* (190) = -.08, *p* = .298 (see Figure 1).

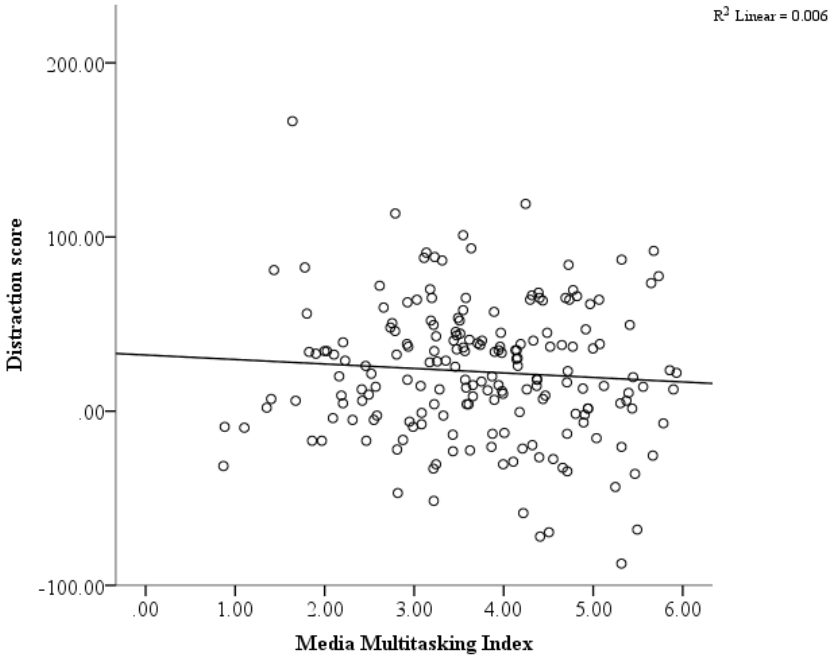

Figure 1. A scatterplot to illustrate the correlation between media multitasking and distraction.

Discussion

Originally we hypothesised that there would be a positive relationship between media multitasking and distraction levels, however, our results suggest there is no relationship. Increased frequency of media multitasking seems to have no effect on distraction levels. While this result contradicts some of the empirical research to date, it supports the research completed by Minear, Brasher, McCurdy, Lewis, and Younggren (2013) that indicated high multi-media taskers do not show any deficits in ignoring distracting information. This suggests that human cognition does have the ability to process the ever-increasing levels of external stimuli. One possible reason for this finding is the fact we sampled just students who

may be more use to media multitasking than other cohorts. Their cognition ability may have evolved to ignore irrelevant information as a coping mechanism for the increasing levels of media in day to day life. However, this relationship is not always supported in previous research such as that by Bellur, Nowak, and Hull (2015) or Junco and Cotton (2012).

In light of these conflicting findings, it is important to consider the validity of the research methods used to examine media multi-tasking and distraction rates. In order to study media multi-tasking, a self-report questionnaire was used both in this study and in previous research, however, this poses validity and reliability issues. For example, Bellur, Nowak, and Hull (2015) asked participants to estimate college and high school GPA. This is a subjective matter as it relies on the individual's self-efficacy, support network, and recent assignment grades. If one of the participants recently received a lower grade then usual, their achievement outlook may have been hindered and thus would have reduced their GPA estimations. Participants in this study were required to estimate how often they used the eight different types of media, however, with the increasing amount of time people now spend on technology how easy is this to estimate and keep track of accurately.

Further to this, one possible limitation of the study is the operationalisation of the different mediums. For example, one of the questions asked the participants to indicate how often they listened to music while using one of the other mediums simultaneously. This poses interpretation problems as one of the mediums is computer games. A large majority of computer games have background music which can either be critical to the gameplay or background noise. Each participant is likely to interpret this differently and thus acts as an extraneous variable. Contrasting this, however, the majority of the previous research uses the same or similar adaptation of the MMI questionnaire developed by Ophir et al. (2009) and thus if this is the case, the results should be of similar nature.

Overall, the study provides further evidence to support the idea their no relationship between media multi-tasking and distraction rates. This suggests the human cognition can process the increasing levels of media consumption. This can be applied to schools whereby technology is used to aid learning, such as the use of virtual reality or applied gaming modules. Although the study provides further evidence, the majority of conclusions on the topic is still conflicting, and hence further research needs to be completed with an aim for controlling self-report interpretation issues and bias'.

Word Count – 1499

References

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Appendix

		Media Multitasking Index	Distraction score
Media Multitasking Index	Pearson Correlation	1	-.076
	Sig. (2-tailed)		.298
	N	192	192
Distraction score	Pearson Correlation	-.076	1
	Sig. (2-tailed)	.298	
	N	192	192