A meta-analysis of the relationship of academic performance and Social Network Site use among adolescents and young adults

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ABSTRACT

This meta-analysis explores the relationship between SNS-use and academic performance. Examination of the literature containing quantitative measurements of both SNS-use and academic performance produced a sample of 28 effects sizes (N = 101,441) for review. Results indicated a significant negative relationship between SNS-use and academic performance. Further moderation analysis points to test type as an important source of variability in the relationship. We found a negative correlation between SNS-use and GPA, while a positive one for SNS-use and language test. Moreover, we found that the relationship of SNS-use and GPA was more strongly negative in females and college students.

1. Introduction

The relationship between academic performance and the use/visiting of a Social Network Site (SNS) has been the focus of a fair amount of research attention in the past decade. As this literature base has grown, questions have emerged about important theoretical and practical issues: Is SNSs use beneficial or harmful to academic performance? Can the relationship between academic performance and SNSs use be moderated by educational levels (e.g., middle school & college) and academic test types (e.g., literacy & achievement)? Are there gender differences in the relationship between SNS-use and academic performance? Given these questions, the time is ripe for a systematic review and analysis of the research on SNS-use and academic performance.

2. SNS-use and academic performance

2.1. Social networks and Social Network Site

Social Network Site is unique in its definition (Ellison & Boyd, 2013). It is a networked communication platform in which participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-level data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user-generated content provided by their connections on the site. These three key elements articulate the scope and emphasis of SNS, differentiating it from networking and relationship initiation between strangers. On many of the large SNS, participants are primarily communicating with people who are already a part of their extended social network.

2.2. SNS and academic performance

Scholars believe that SNS may impact informal learning processes and academic performance. Some believe that SNS like Facebook can be harnessed to facilitate learning processes, such as knowledge sharing, knowledge construction, and argumentation.
learning (Greenhow, Gibbins, Menzer, 2015; Tsoultsi, Judele, Puhl, & Weinberger, 2015). In their study, Junco, Heibeiger and Loken (2011) found that Twitter can be used as an educational tool to help engage students and to mobilize faculty into a more active and participatory role. SNS (e.g., Facebook, Twitter) may “facilitate informal communication around classroom activities” (Lampe, Wohl, Vitak, Ellison, & Wasch, 2011, p.331). That is, students may use Facebook for educational goals, such as sharing information about their classroom activities, collaborating with their peers on assignments, and arranging study groups (Lampe et al., 2011).

However, it should be noted that the primary use of SNS is still for communication, and not for schoolwork. SNS is still predominantly a social tool unrelated to school. In real life, students do not have much knowledge of using SNS for learning and problem solving, and they rarely use SNS for learning purposes (Kirschner, 2015). While many scholars and educators espouse the point that SNSs may positively impact academic performance, there is little empirical evidence that Facebook and other SNS-use actually facilitate learning and improve academic performance.

On the contrary, ample evidence supports that SNS-use may impair academic performance in important ways. One way is that learners studying while making simultaneous use of SNS ‘multitask’. Multitasking is the simultaneous execution of two or more information-processing activities (i.e., cognitive processes) at the same time. Multitasking on an SNS is widely considered to be a major source of attention distraction from learning that impairs students’ overall semester GPAs (e.g., Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013; Kirschner & Karpinski, 2010; Judd, 2014; Junco, 2012a; Junco & Cotten, 2012). Kirschner and Karpinski (2010) found that the use of SNS was associated with a lower GPA and especially when disruptive multitasking was reported. Judd (2014) demonstrated that Facebook was one of the most common computer-based activities among Australian students and its use included significantly more multitasking behaviors and less focused behaviors. Junco (2012) found that SNS activities such as status updates or chatting that require considerable cognitive resources may lead to cognitive overload and multitasking errors. A summary of the findings on the relationship between SNS-use, multitasking and academic performance was reported in Table 1.

Displacement effect of both attention and time may also negatively impact academic performance. Recent studies found that increased dependence on SNS was also correlated with decreased sleep quality and with increased everyday cognitive failures (Orzech, Grandner, Roane, & Carskadon, 2016; Xanidis & Brignell, 2016). Students who reported spending more hours on SNS before bedtime are, hence, expected to have more schoolwork problems than those who did not as they are always in a state of cognitive fatigue on class or learning. Also, excessive SNS-use may take time away from important academic responsibilities such as studying and exercising.

However, there is no consensus that SNS-use is negatively associated with lower GPA (Kirschner & Karpinski, 2010; Junco, 2012b, 2015; Pasek & Hargittai, 2009). Early in 2009, Karpinski and Duberstein reported a negative relationship between SNSs use and academic achievement as measured by self-reported GPA and hours spent studying per week. However, some following studies found non-significant (Kolek & Saunders, 2008; Pasek & Hargittai, 2009) or positive results. A meta-analysis and systematic review is in need to clarify this inconsistency.

### 2.3. Academic test types

Academic test was different by test content and aims. After a systematic review, we found that the variation on academic test types was an important contributor to the differences of effect between SNS-use and academic performance. Achievement and literacy test are the two types of test we found in this area of research, which are very different. Although excessive SNS-use was pervasively thought to be linked to poorer GPA, Alloway and his associates (2013) surprisingly found that students who had used Facebook for over one year had significantly higher scores in working memory, verbal ability, and spelling compared to those who had used Facebook for less than a year. They articulated that Facebook use is just like a working memory task that trained students’ information processing ability. Longer use with SNS like Facebook might provide the students with ‘training’ that could boost cognitive skills to impact literacy test performance including verbal and spelling scores (Alloway, Horton, Alloway, & Dawson, 2016).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Summary of main findings on the relationship between SNS(s) Use, multitasking and Academic performance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s), Year</td>
<td>Participants/Country</td>
</tr>
<tr>
<td>Ellis, Daniels, &amp; Jauregui (2010)</td>
<td>Undergraduate business students, Southeastern, US</td>
</tr>
<tr>
<td>Gabre &amp; Kumar (2012)</td>
<td>Historically Black College (HBCU), and a metropolitan university, US</td>
</tr>
<tr>
<td>Golub &amp; Miloloza (2010)</td>
<td>Undergraduate students, Croatia.</td>
</tr>
<tr>
<td>Junco and Cotten (2012)</td>
<td>4-year, public, primarily residential institution, Northeastern US.</td>
</tr>
<tr>
<td>Karpinski et al. (2013)</td>
<td>Undergraduate and graduate students, US vs. Europe</td>
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</tbody>
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