SOCIAL NETWORK SITE USE AND ACADEMIC ACHIEVEMENT
FOUR META-ANALYSES

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BACKGROUND

- Negative relationship:
  - *Time displacement hypothesis* (Nie, 2001; Putnam, 2000; cf. Tokunaga, 2016)
  - Multitasking
  - Sleep deprivation

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Social networking: teachers blame Facebook and Twitter for pupils’ poor grades

Teachers believe social networking sites such as Facebook and Twitter are to blame for pupils' poor grades, a study has concluded.
Evidence is heterogeneous

- Negative relationship (e.g., Kirschner & Karpinski, 2010)
- No relationship (e.g., Hargittai & Hsieh, 2010)
- Positive relationship (e.g., Khan, Wohn, & Ellison, 2014)
**Positive relationship**

- e.g., *Social Capital* (e.g., Ellison, Steinfeld, & Lampe, 2007; Resnik, 2001)
METHOD

- Literature search
  - Databases: PsychINFO, ERIC, Google Scholar
  - References of relevant articles
  - Request for unpublished data through different psychological associations

- Selection criteria
  - SNS use (e.g. frequency, intensity, etc.)
  - Measure of academic achievement (e.g. GPA)
  - Correlational data or comparable information about the results
  - Exclusion of non-SNS activities (e.g. blogging, e-learning), evaluations of SNS use, student engagement

765 possibly relevant articles
50 articles included
METHOD

Records identified through database searching (PsychINFO, ERIC) (n = 676)
Records identified through references of relevant articles (n = 30)
Records identified through other sources (n = 7)
Records identified through Google (Scholar) (n = 52)

Records screened (n = 765)

Records excluded (n = 582)

Full-text articles assessed for eligibility (n = 183)

Full-text articles excluded, with reasons (n = 133)

Articles included in quantitative synthesis (meta-analysis) (n = 50)
METHOD

Coding process and meta-analytic procedure

- General SNS measures
- Multitasking SNS use
- SNS use for academic purposes
Sensitivity analyses

- Publication type
  - Published
  - Unpublished
- Developmental status the country of study conduction
  - Very high developed countries
  - High developed countries
  - Medium developed countries
  - Low developed countries
METHOD

- Academic achievement measure
  - Self-reported grades
  - Documented grades
- Type of effect size
  - Zero-order correlation
  - Regression weight (transformed with the formula by Peterson and Brown, 2005)
- Sample type
  - Adolescents
  - Undergraduates
### RESULTS

**Meta-Analyses for Different Types of SNSs Use**

<table>
<thead>
<tr>
<th></th>
<th>Average Effect</th>
<th>Heterogeneity</th>
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<tbody>
<tr>
<td></td>
<td><strong>k</strong></td>
<td><strong>N</strong></td>
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<tr>
<td>General SNS use and</td>
<td></td>
<td></td>
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<tr>
<td>Academic achievement</td>
<td>55</td>
<td>25,432</td>
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<tr>
<td>Learning time</td>
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<td>Multitasking SNS use and</td>
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<td>SNS use for academic purposes and</td>
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<tr>
<td>Academic achievement</td>
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<td>2,589</td>
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</table>
## RESULTS

**High heterogeneity**

*Meta-Analyses for Different Types of SNSs Use*

<table>
<thead>
<tr>
<th>General SNS use and</th>
<th>Academic achievement</th>
<th>25% CI</th>
<th>Z</th>
<th>p</th>
<th>Q</th>
<th>df (Q)</th>
<th>p</th>
<th>I²</th>
<th>v²</th>
<th>SE_v²</th>
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<tr>
<td></td>
<td>55</td>
<td>[-.121; -.020]</td>
<td>-2.73</td>
<td>.006</td>
<td>805.95</td>
<td>54</td>
<td>&lt;.001</td>
<td>93.30</td>
<td>.033</td>
<td>.009</td>
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<tr>
<td>Learning time</td>
<td>10</td>
<td>[-.109; -.059]</td>
<td>-0.58</td>
<td>.562</td>
<td>48.68</td>
<td>9</td>
<td>&lt;.001</td>
<td>81.51</td>
<td>.015</td>
<td>.009</td>
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</table>

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<thead>
<tr>
<th>Multitasking SNS use and</th>
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<th>p</th>
<th>I²</th>
<th>v²</th>
<th>SE_v²</th>
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</thead>
<tbody>
<tr>
<td>Academic achievement</td>
<td>15</td>
<td>[-.161; -.045]</td>
<td>-3.46</td>
<td>.001</td>
<td>83.40</td>
<td>14</td>
<td>&lt;.001</td>
<td>83.21</td>
<td>.010</td>
<td>.006</td>
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<table>
<thead>
<tr>
<th>SNS use for academic purposes and</th>
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<th>25% CI</th>
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<th>p</th>
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<th>df (Q)</th>
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<th>I²</th>
<th>v²</th>
<th>SE_v²</th>
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</thead>
<tbody>
<tr>
<td>Academic achievement</td>
<td>10</td>
<td>[0.015; .135]</td>
<td>2.45</td>
<td>.014</td>
<td>19.37</td>
<td>9</td>
<td>.022</td>
<td>53.53</td>
<td>.005</td>
<td>.004</td>
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## RESULTS

### Sensitivity analyses on general SNS use

<table>
<thead>
<tr>
<th>Variable</th>
<th>( K )</th>
<th>( Q (1) = 7.226, p = .007 )</th>
<th>( \hat{\beta} )</th>
<th>( 95%\text{CI} )</th>
<th>( Z = )</th>
<th>( p = )</th>
<th>( Q (40) = 772.09, p &lt; .001 )</th>
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<tbody>
<tr>
<td>Academic achievement measure</td>
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<tr>
<td>Self-reported achievement</td>
<td>41</td>
<td></td>
<td>( \hat{\beta} = -.09 )</td>
<td>( -0.15; -0.03 )</td>
<td>( -2.72 )</td>
<td>( p = .007 )</td>
<td></td>
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<tr>
<td>Documented achievement</td>
<td>14</td>
<td></td>
<td>( \hat{\beta} = .01 )</td>
<td>( -0.02; 0.04 )</td>
<td>( 0.52 )</td>
<td>( p = .604 )</td>
<td>( Q (13) = 9.24, p = .755 )</td>
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<tr>
<td>Type of effect size</td>
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<tr>
<td>Correlation</td>
<td>41</td>
<td></td>
<td>( \hat{\beta} = -.11 )</td>
<td>( -0.17; -0.05 )</td>
<td>( 3.48 )</td>
<td>( p = .001 )</td>
<td>( Q (40) = 538.73, p &lt; .001 )</td>
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<tr>
<td>Regression weight</td>
<td>14</td>
<td></td>
<td>( \hat{\beta} = .03 )</td>
<td>( -0.05; 0.11 )</td>
<td>( 0.75 )</td>
<td>( p = .453 )</td>
<td>( Q (13) = 170.05, p &lt; .001 )</td>
</tr>
<tr>
<td>Sample type</td>
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<td></td>
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<tr>
<td>Adolescents</td>
<td>11</td>
<td></td>
<td>( \hat{\beta} = .01 )</td>
<td>( -0.05; 0.06 )</td>
<td>( 0.232 )</td>
<td>( p = .817 )</td>
<td>( Q (10) = 21.57, p = .017 )</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>44</td>
<td></td>
<td>( \hat{\beta} = -.08 )</td>
<td>( -0.14; -0.02 )</td>
<td>( -2.66 )</td>
<td>( p = .008 )</td>
<td>( Q (43) = 744.73, p &lt; .001 )</td>
</tr>
</tbody>
</table>
Meta-analytic test of the time displacement hypothesis. Standardized regression parameters (*p < 05) are presented.
PUBLICATION BIAS

For all three SNS use types

- Sensitivity analyses for publication type showed no significant differences
- Egger's regression test was not significant
- Funnel Plots showed no asymmetry
CONCLUSION

Results of our meta-analyses show that

• SNS use and academic achievement is positively related as long as SNS use is school-related

• SNS use unrelated to school is associated with poorer academic achievement

• The meta-analytic correlations are weak, only a small part of students academic achievement co-varies with SNS use

• Time displacement is not the main mechanism behind the negative relationship
LIMITATIONS

- Cross-sectional design
  - Do SNS lead to poorer grades or people with poorer grades use more SNS?
  - Longitudinal evidence: positive effect of SNS on grades (e.g., Leung, 2015)

- Linear relationship
  - Medium use vs. no use or excessive use?

- Heterogeneity
  - How to deal with limited information on possible moderators?
  - Problem of measures in media psychology?
Thank you!


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