

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



The screenshot shows the top navigation bar of The Telegraph website, including links for Privacy and cookies, Jobs, Dating, Offers, Shop, Puzzles, and Investor. The main header features the site's name, "The Telegraph", and a secondary navigation bar with categories like Home, Video, News, World, Sport, Business, Money, Comment, Culture, Travel, and Life. Below this, there are sub-categories for Politics, Investigations, Obits, Education, Science, Earth, Weather, Health, Royal, and Cele. A breadcrumb trail indicates the current page is "HOME » EDUCATION » EDUCATION NEWS". The main headline of the article is "Social networking: teachers blame Facebook and Twitter for pupils' poor grades", and the sub-headline reads "Teachers believe social networking sites such as Facebook and Twitter are to blame for pupils' poor grades, a study has concluded."

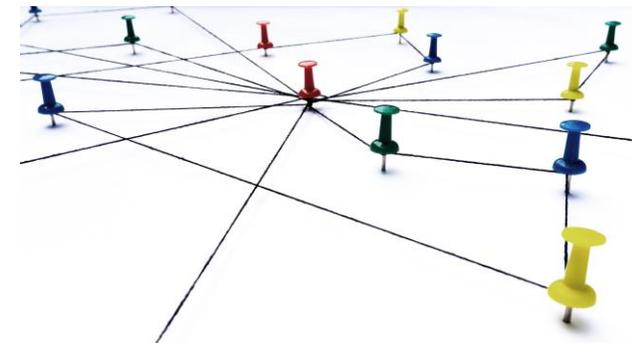
BACKGROUND

- 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)



BACKGROUND

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



METHOD

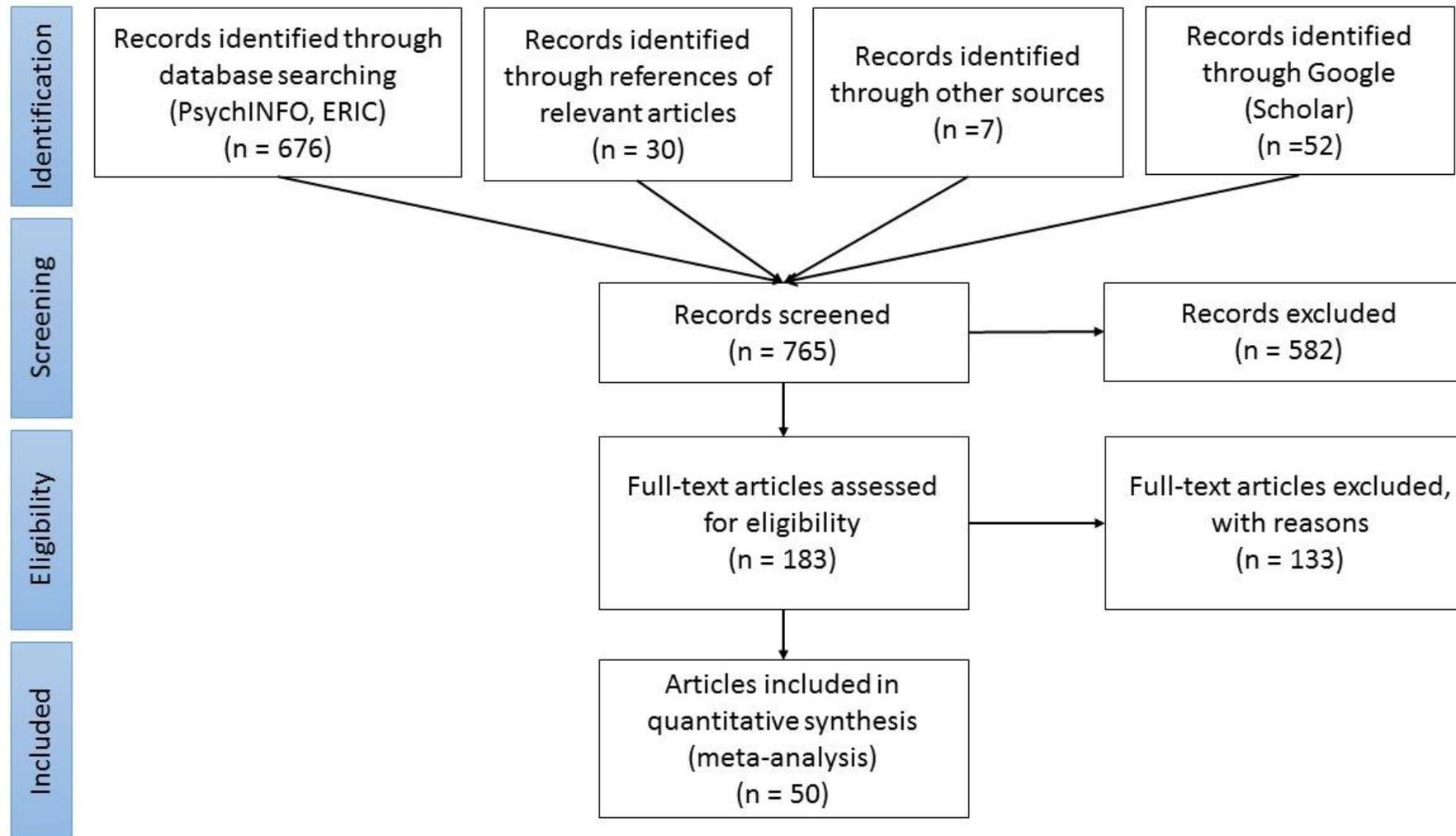


- Literature search
 - Databases: PsychINFO, ERIC, Google Scholar
 - References of relevant articles
 - Request for unpublished data through different psychological associations
- Selection criteria
 - SNS use (e.g. frequency, intensity, etc.)
 - Measure of academic achievement (e.g. GPA)
 - Correlational 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

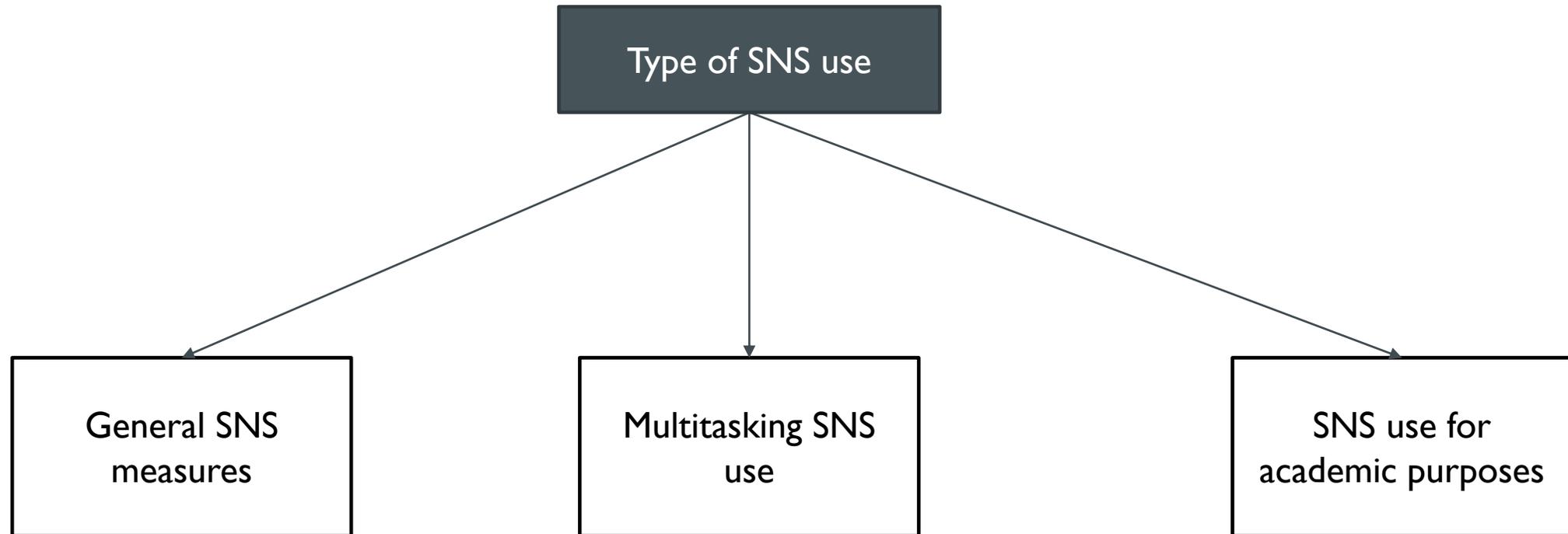
METHOD



METHOD



Coding process and meta-analytic procedure



METHOD



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

	Average Effect						Heterogeneity					
	<i>k</i>	<i>N</i>	Effect Size (ρ)	95% <i>CI</i>	<i>Z</i>	<i>p</i>	<i>Q</i>	<i>df</i> (<i>Q</i>)	<i>p</i>	<i>I</i> ²	τ^2	<i>SE</i> _{τ^2}
General SNS use and												
Academic achievement	55	25,432	-0.071	[-.121; -.020]	-2.73	.006	805.95	54	<.001	93.30	.033	.009
Learning time	10	3130	-0.025	[-.109; -.059]	-0.58	.562	48.68	9	<.001	81.51	.015	.009
Multitasking SNS use and												
Academic achievement	15	7,615	-0.103	[-.161; -.045]	-3.46	.001	83.40	14	<.001	83.21	.010	.006
SNS use for academic purposes and												
Academic achievement	10	2,589	0.075	[.015; .135]	2.45	.014	19.37	9	.022	53.53	.005	.004

RESULTS



High heterogeneity

Meta-Analyses for Different Types of SNSs Use

	Average Effect						Heterogeneity					
	<i>k</i>	<i>N</i>	Effect Size (ρ)	95% <i>CI</i>	<i>Z</i>	<i>p</i>	<i>Q</i>	<i>df</i> (<i>Q</i>)	<i>p</i>	<i>I</i> ²	τ^2	<i>SE</i> _{τ^2}
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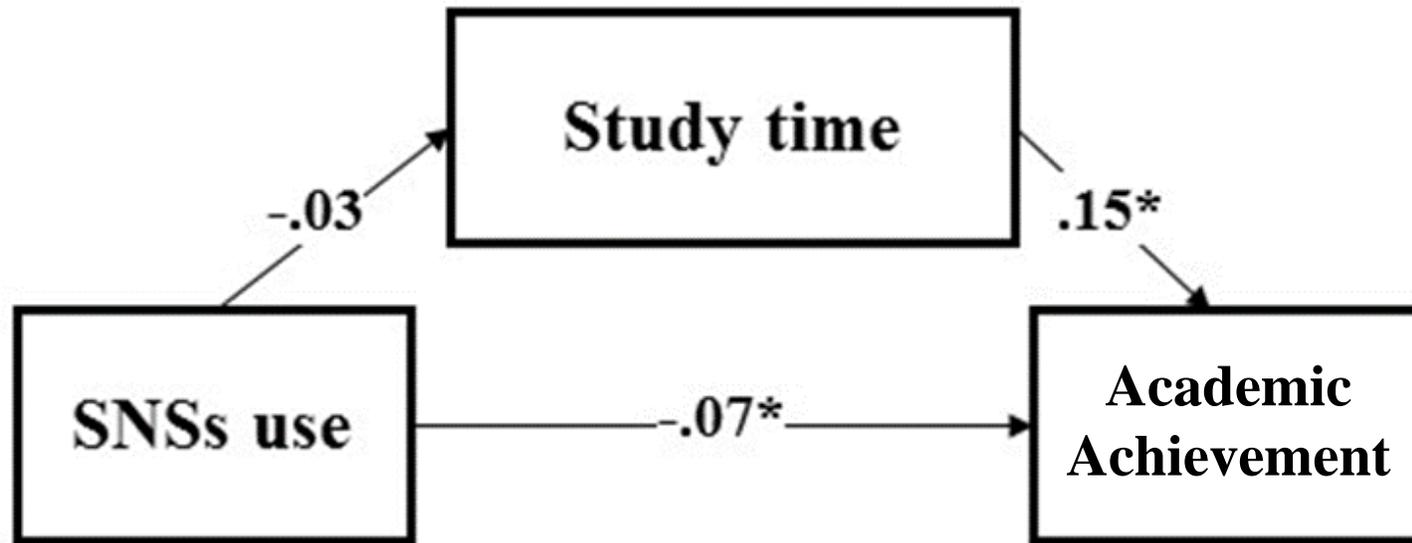
RESULTS



Sensitivity analyses on general SNS use

Variable	K	Between-groups analysis Subgroup Effect Size	By Group Analysis
Academic achievement measure		$Q(I) = 7.226, p = .007$	
Self-reported achievement	41	$\hat{\rho} = -.09$ (95%CI = -0.15; -0.03, $Z = -2.72, p = .007$)	$Q(40) = 772.09, p < .001$
Documented achievement	14	$\hat{\rho} = .01$, (95%CI = -0.02; 0.04, $Z = 0.52, p = .604$)	$Q(13) = 9.24, p = .755$
Type of effect size		$Q(I) = 7.273, p = .007$	
Correlation	41	$\hat{\rho} = -.11$ (95%CI = -0.17; -0.05, $Z = -3.48, p = .001$)	$Q(40) = 538.73, p < .001$
Regression weight	14	$\hat{\rho} = .03$, (95%CI = -0.05; 0.11, $Z = 0.75, p = .453$)	$Q(13) = 170.05, p < .001$
Sample type		$Q(I) = 4.678, p = .031$	
Adolescents	11	$\hat{\rho} = .01$, (95%CI = -0.05; 0.06, $Z = 0.232, p = .817$)	$Q(10) = 21.57, p = .017$
Undergraduates	44	$\hat{\rho} = -.08$ (95%CI = -0.14; -0.02, $Z = -2.66, p = .008$)	$Q(43) = 744.73, p < .001$

TIME DISPLACEMENT?



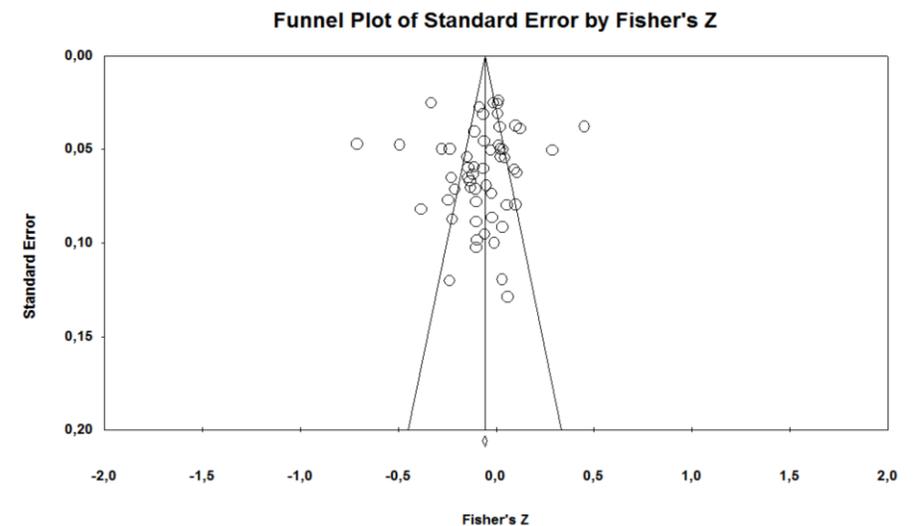
Meta-analytic test of the time displacement hypothesis. Standardized regression parameters ($*p < .05$) are presented.



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

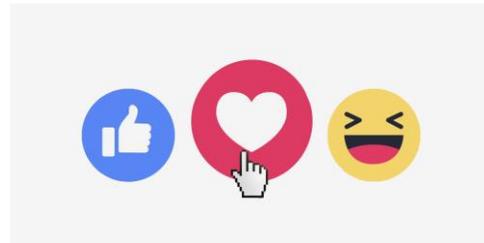
- SNS use and academic achievement is positively related as long as SNS use is school-related
- SNS use unrelated to school is associated with poorer academic achievement
- The meta-analytic correlations are weak, only a small part of students academic achievement co-varies with SNS use
- Time displacement 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!



Marker, C., Gnambs, T., & Appel, M. (in press). Active on Facebook and failing at School? Meta-analytic findings on the relationship between online social networking activities and academic achievement. *Educational Psychology Review*. <https://doi.org/10.1007/s10648-017-9430-6>

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