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Bundesamt für Sport BASPO



EHSM

Eidgenössische
Hochschule
für Sport
Magglingen

Influences de l'utilisation du smartphone sur l'apprentissage et la performance

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Warm-Up

Discuter en groupes de 2-3 personnes :

Quels sont les types d'utilisation d'un smartphone?

De quels aspects de l'utilisation d'un smartphone doit-on tenir compte?

Quels sont les aspects positifs de l'utilisation d'un smartphone?

Quels sont les aspects négatifs de l'utilisation d'un smartphone?

Qu'est-ce la nomophobie?



Utilisation du smartphone (médias numériques)



Types d'utilisation du «Smartphone»

Satisfactions au niveau contenu

- Actualités
- Divertissement (films, musique)
- Divertissement (Jeux)
- Produits (Achats)

Satisfactions au niveau social

- Chatrooms
- Messaging
- Blogs
- Réseaux sociaux (Facebook, Instagram etc.)

Aktiv

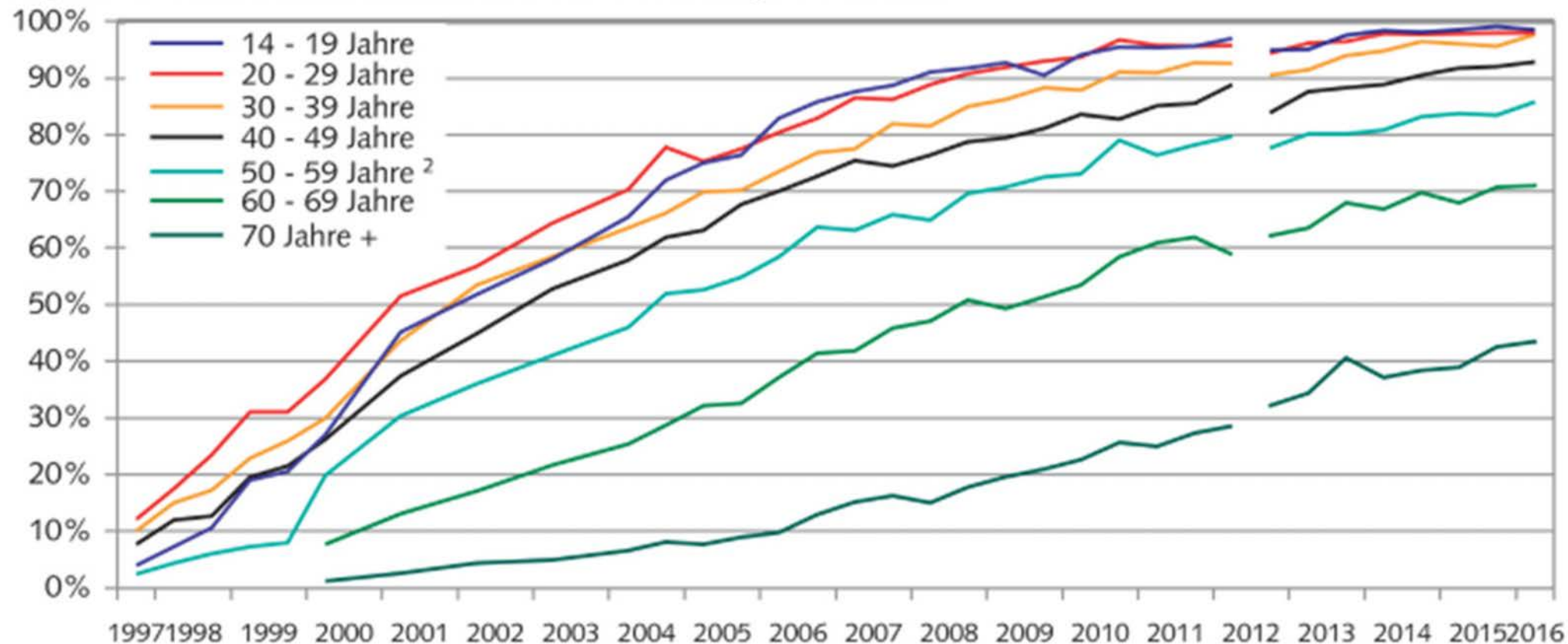
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Evolution de l'utilisation de l'internet selon l'âge

Engerer Nutzerkreis Internet (ENK). In % der Bevölkerung ab 14 Jahren



¹ Halbjährliche Angaben (Durchschnitt von April bis September und von Oktober bis März). Neue Serie ab dem zweiten Halbjahr 2012

² 50 Jahre und mehr für 1997-1999

Quelle: MAMet: Net-Matrix-Base

© BFS



Comment les jeunes Suisses utilisent-ils les médias numériques?

Kooperationspartnerin



Zürcher Hochschule
für Angewandte Wissenschaften



JAMES



JAMES Etude 2018: Utilisation des médias dans le temps libre?E

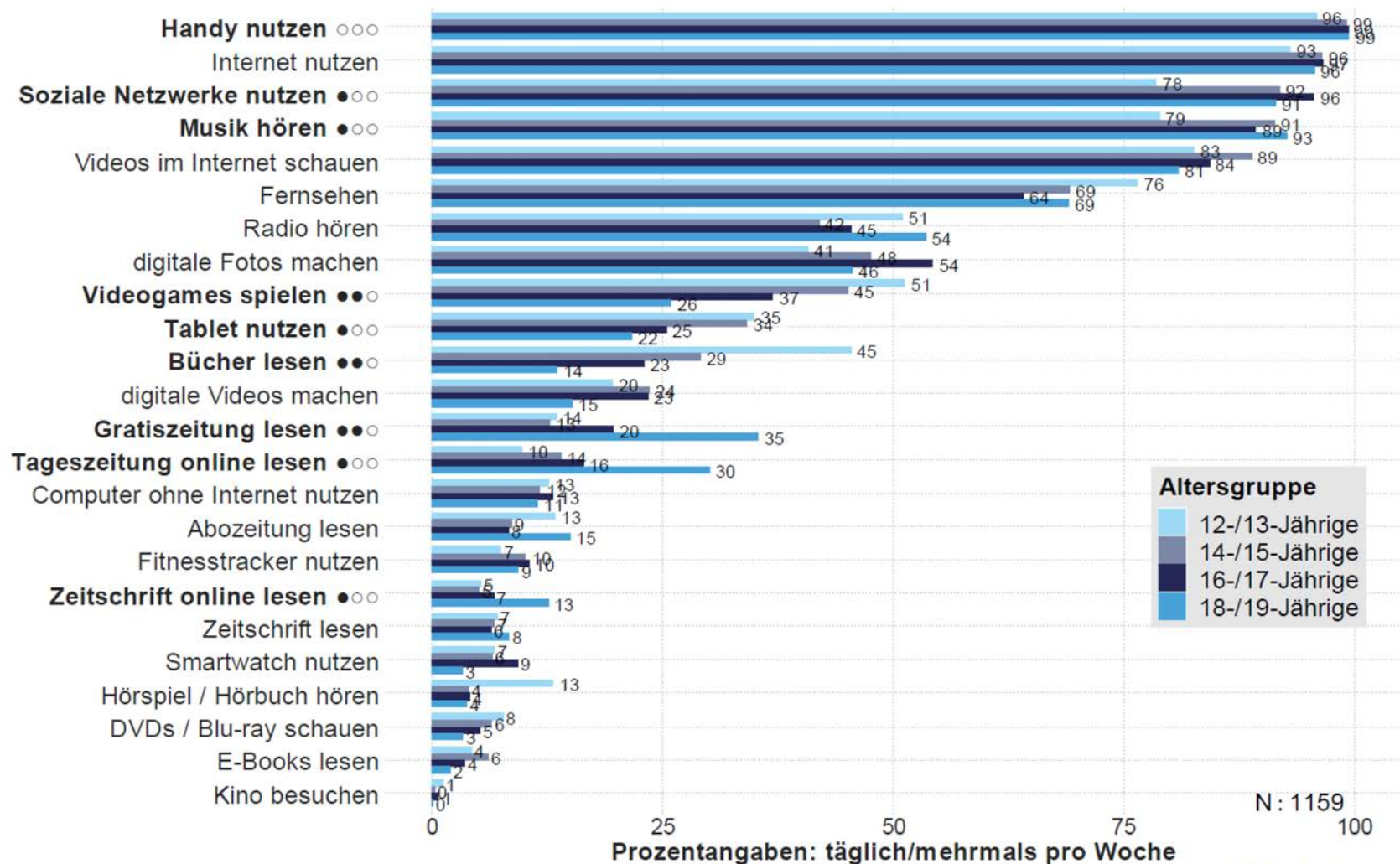


Abbildung 22: Freizeit medial nach Altersgruppen

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JAMES Etude 2018: Modification de l'utilisation des médias depuis 2012

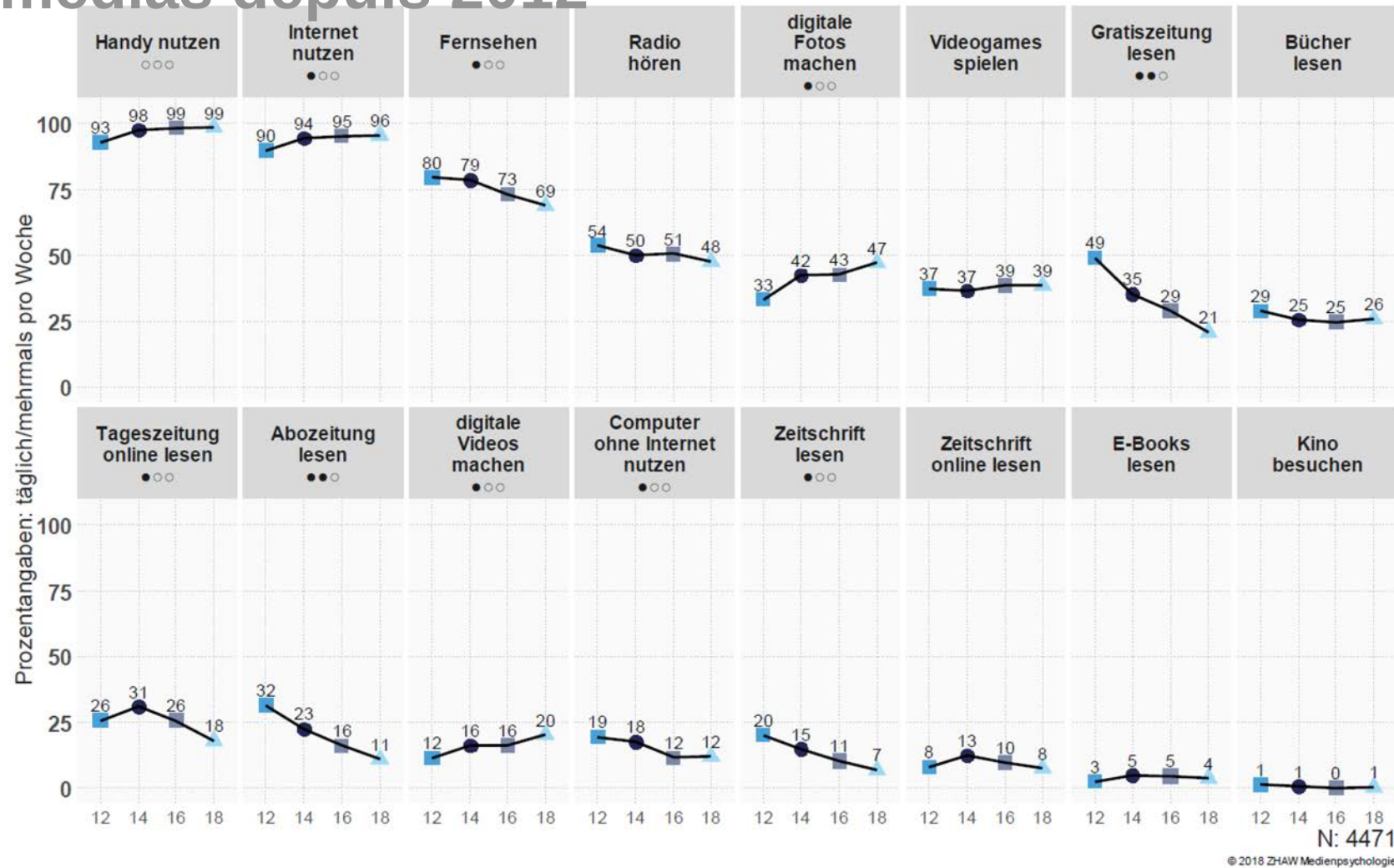
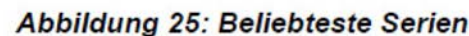


Abbildung 24: Freizeit medial im Zeitvergleich 2012-2018





JAMES Etude 2018: Qu'utilisent les jeunes CH sur Internet ?

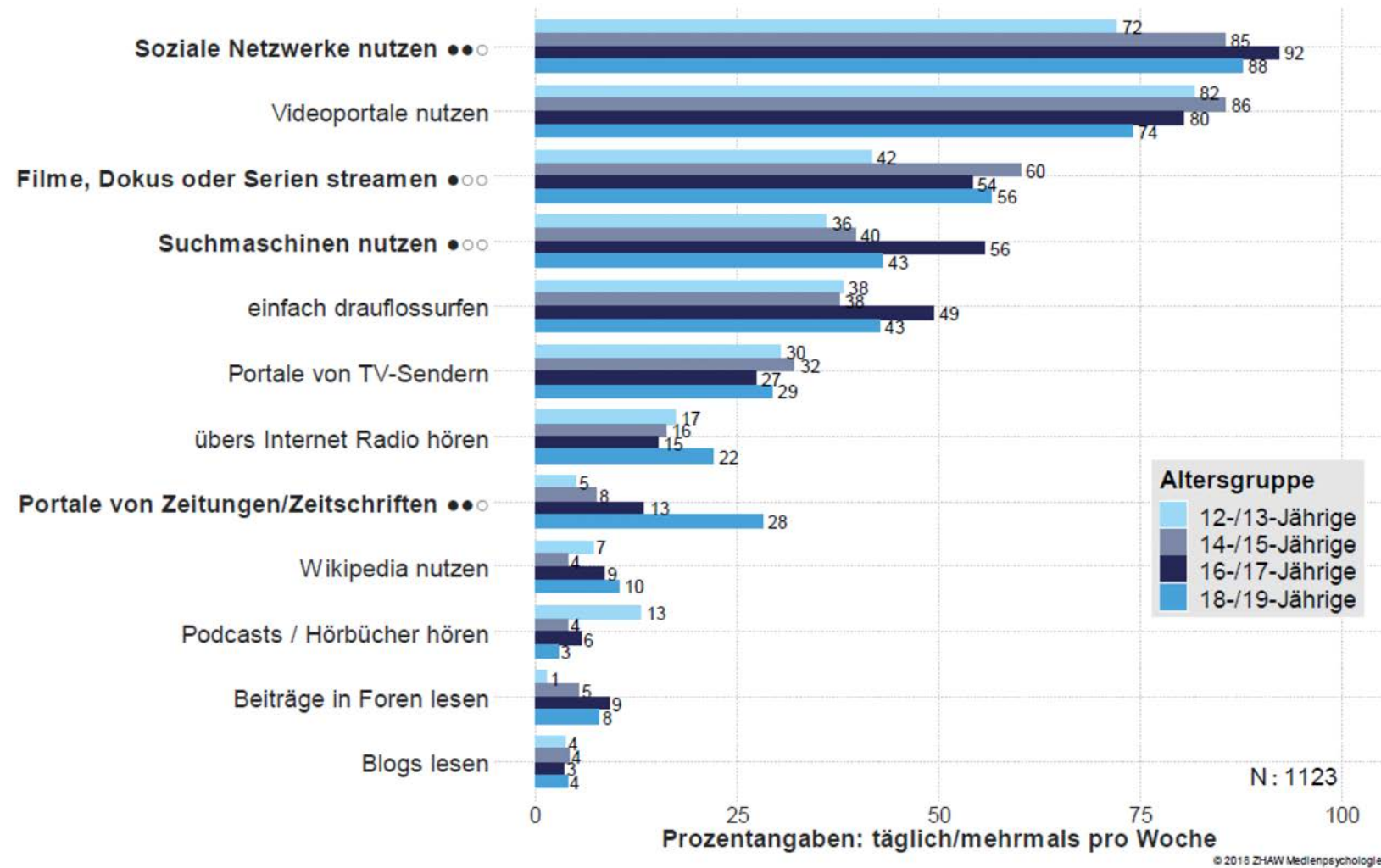


Abbildung 30: Unterhaltung im Internet nach Altersgruppe



JAMES Etude 2018: Adhésion aux réseaux sociaux ?

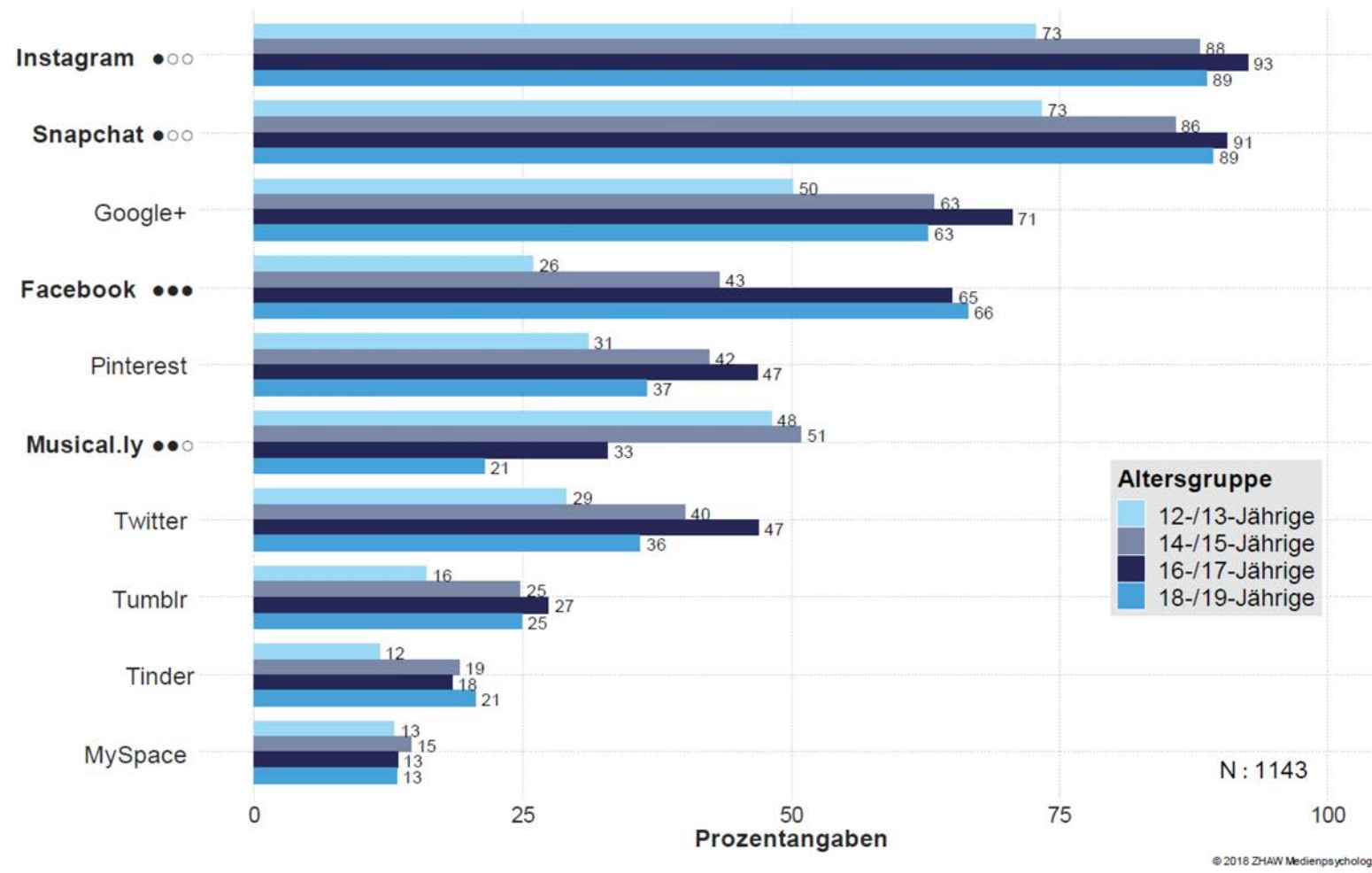


Abbildung 37: Mitgliedschaft bei sozialen Netzwerken nach Altersgruppe



JAMES Etude 2018: Modification de la fréquence d'utilisation

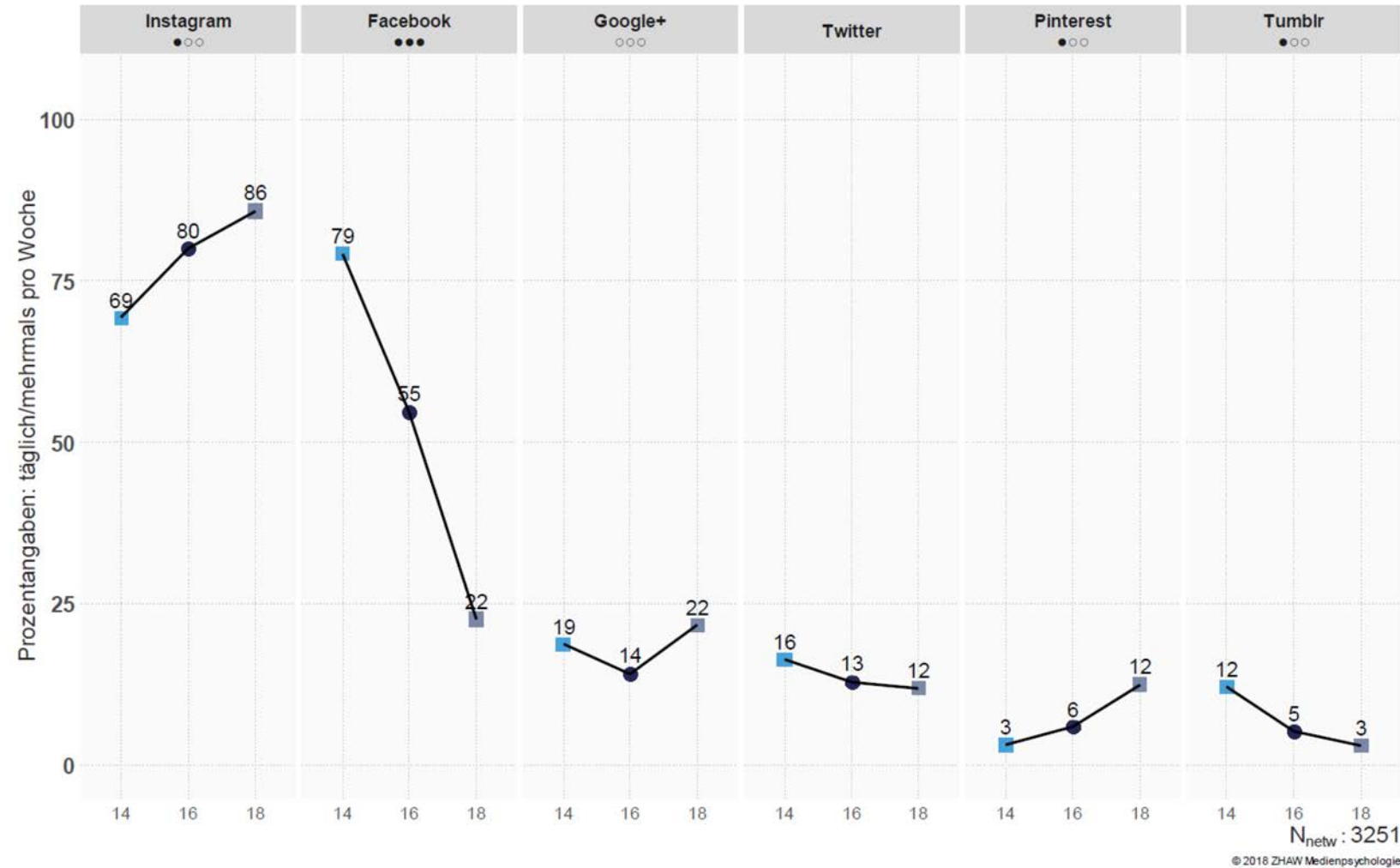


Abbildung 42: Nutzungshäufigkeit sozialer Netzwerke im Zeitvergleich 2014-2018



JAMES Etude 2018: Que font les jeunes CH sur les réseaux sociaux?

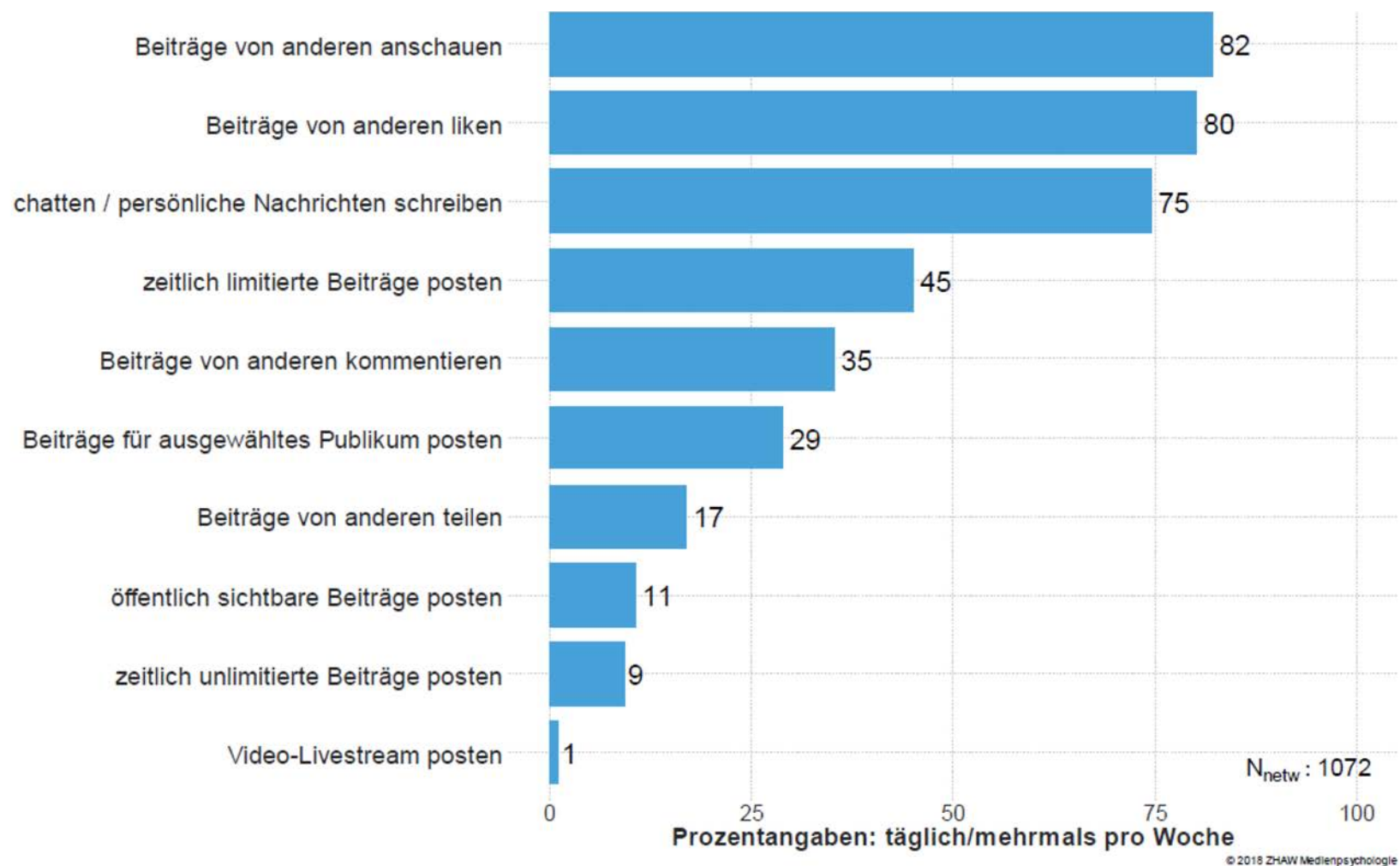


Abbildung 43: Tätigkeiten in sozialen Netzwerken



JAMES Etude 2018: Quelles sont les apps préférées des jeunes CH

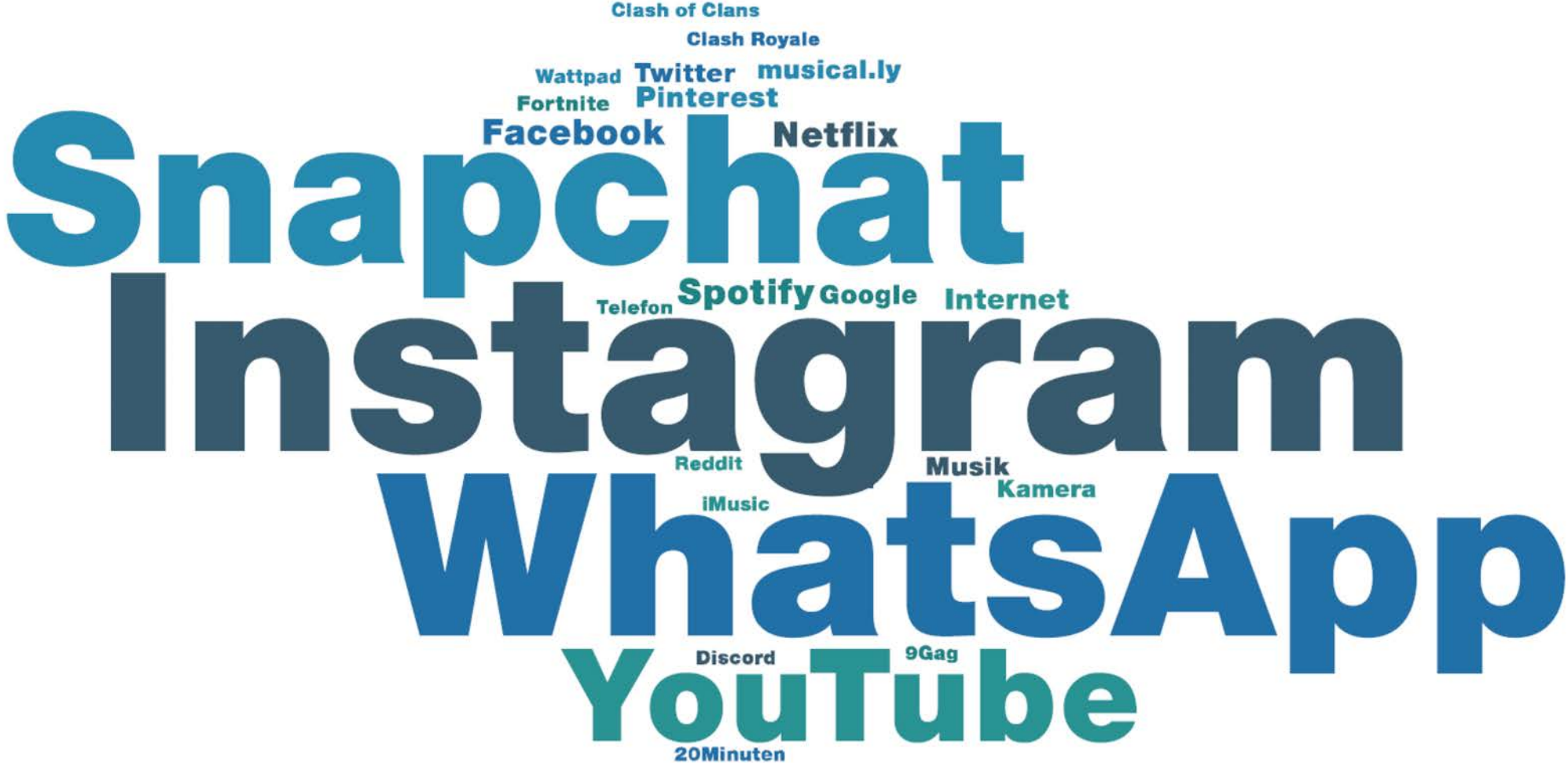
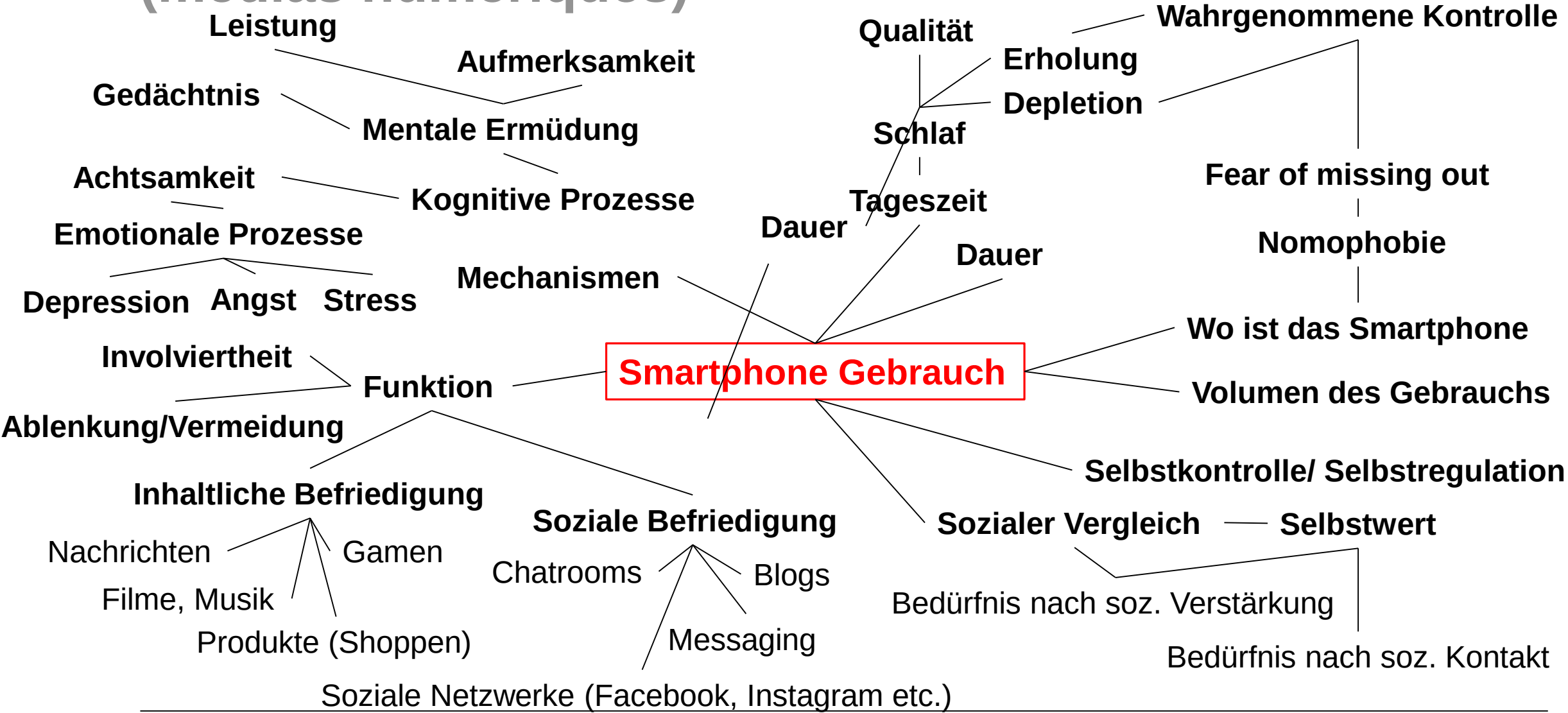


Abbildung 60: Lieblingsapps

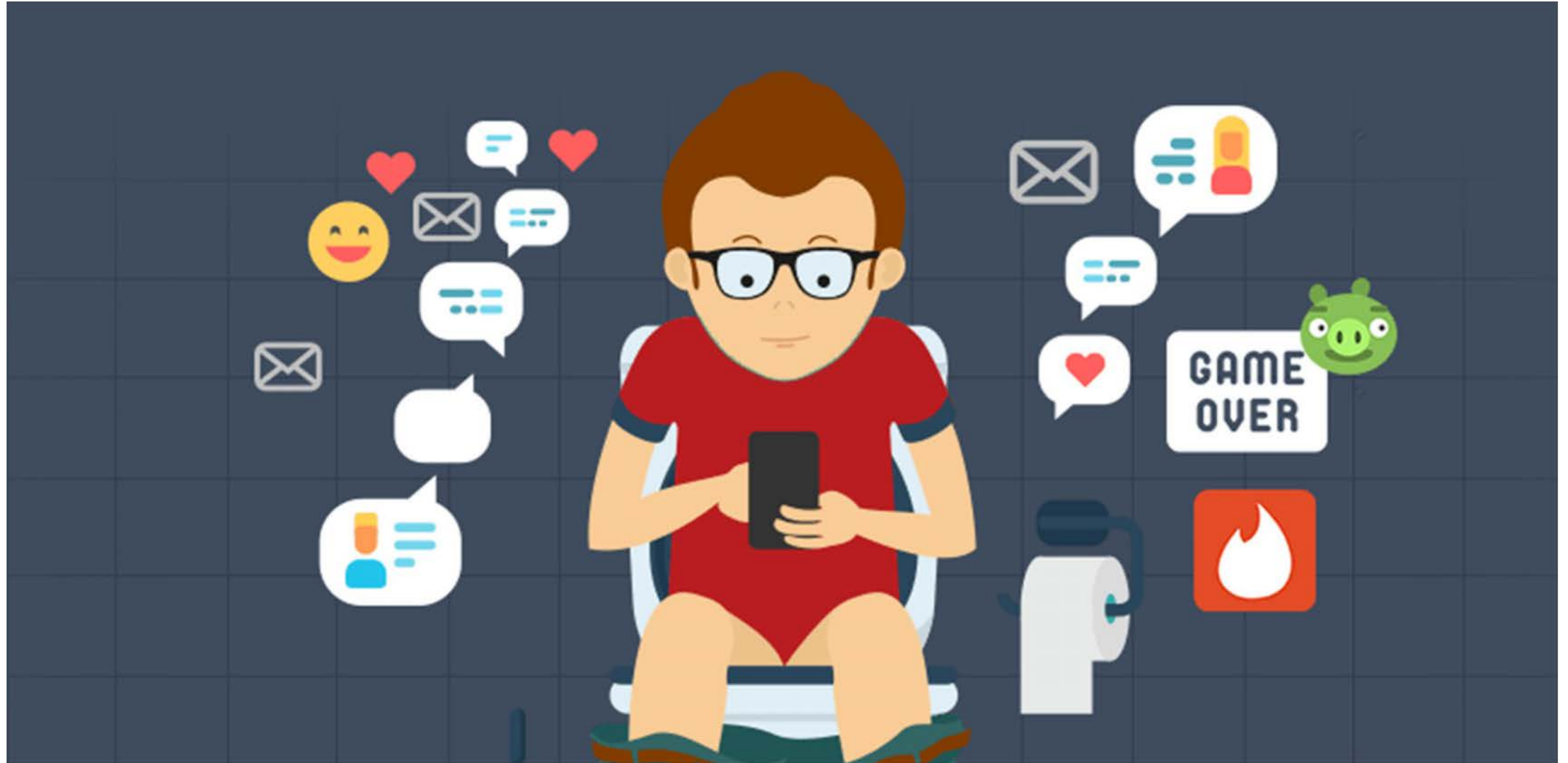


Aspects de l'utilisation du smartphone (médias numériques)





Utilisation du smartphone et santé psychique





Utilisation du smartphone et santé psychique

- **Dépression** importance significative (problématique et en général) en relation avec l'utilisation du smartphone (Elhai et al, 2017)
- **Anxiété** symptômes significatifs liés à l'utilisation/la dépendance au smartphone (Elhai et al., 2017; Vahedi & Saiphoo, 2018)
- Rapport statistiquement prouvé entre l'utilisation du smartphone et du **Stress** (Elhai et al., 2017; Vahedi & Saiphoo, 2018)
- Relation statistiquement prouvée entre **l'estime de soi** et l'utilisation problématique du smartphone (Elhai et al., 2017)

Metaanalyse mehr als 21000 Probanden repräsentierend





Utilisation du smartphone et cognition

(2017)

Attention

- Indications selon lesquelles l'utilisation du smartphone **diminue le processus de l'attention**

Mémoire

- L'utilisation du smartphone semble être en rapport avec une diminution de la mémoire Sm

Reinforcement von Belohnungen

- En raison des boosters immédiats, l'utilisation du smartphone semble être associé à un **plus grand retardement des gratifications** (delay of gratification) Processus cognitif quotidien.
- L'utilisation du smartphone, les activités sur les réseaux sociaux, la messagerie instantanée sont en rapport avec **une baisse des notes**.



- **L'utilisation du smartphone est positivement associée avec l'inattention.**

- L'utilisation du smartphone est positivement **associée avec l'inattention** si le smartphone est disponible, pas en mode silencieux ou en mode avion (**même si aucune alerte n'arrive**).





Consommation des médias et distraction (Levine et al., 2007)

TABLE 2. REGRESSION ANALYSIS SUMMARY FOR MEDIA USE VARIABLES
PREDICTING DISTRACTIBILITY FOR ACADEMIC TASKS

<i>Variable</i>	<i>B</i>	<i>SEB</i>	<i>β</i>
Read books	−0.319	0.068	−0.347**
Read newspapers	−0.046	0.090	−0.041
Read magazines	−0.145	0.080	−0.145 ^a
Watch television	0.054	0.088	0.050
Internet use	−0.085	0.083	−0.124
Video/computer games	−0.038	0.093	−0.031
Listen to music	0.078	0.046	0.131
Instant message	0.173	0.073	0.290*
Respond quickly to IM?	0.042	0.098	0.033
N people IM with?	−0.086	0.058	−0.114

Note: $R^2 = 0.221$ ($N = 161$, $p < 0.001$).

^a $p < 0.07$; * $p < 0.019$; ** $p < 0.001$.

Lecture de livres et magazines
→ Moins d'effet de distraction

Messagerie instantanée
→ Plus d'effet de distraction



NOMOPHOBIE = No Mobile Phone Phobie

Fear of Missing Out (FoMO)
= **nouveau type de peur de la séparation**, parce qu'on craint de perdre/manquer des contacts sociaux à cause du smartphone.

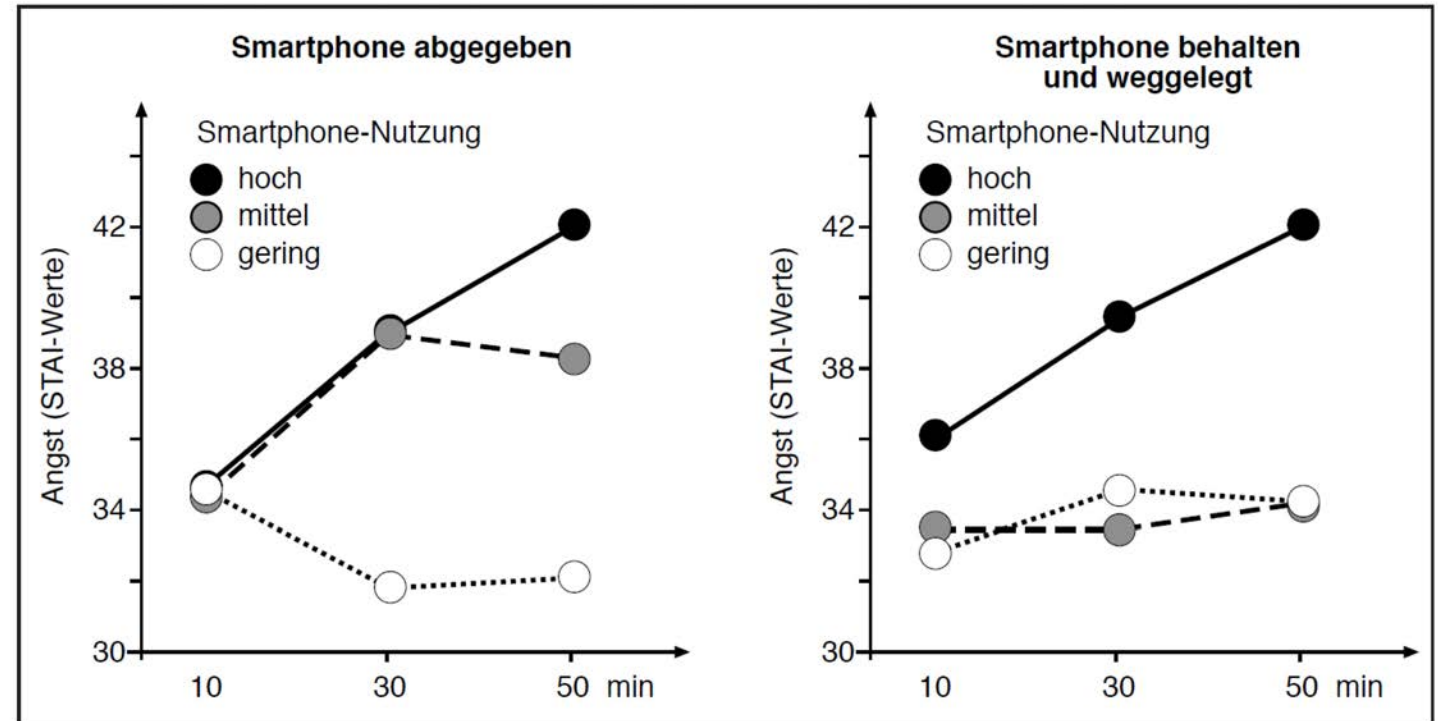


Abb. 4 Angstniveau beim sitzenden stillen Arbeiten ohne Smartphone im Verlauf von 40 Minuten in Abhängigkeit vom Ausmaß der Nutzung („heavy“, „moderate“, „low“) des Smartphones (nach 3; Figure 2) und der Art des Entferns des Smartphones (Wegnehmen versus Weglegen). Die mittelgradigen Nutzer (graue Punkte) zeigten einen Anstieg ihrer Angst nur dann, wenn man ihnen ihr Smartphone abgenommen hatte (die Dreifach-Wechselwirkung zwischen Nutzung, Art der Entfernung und Angstzunahme war mit $p = 0,014$ signifikant).

Spitzer (2015)



Fear of Missing Out (Leshner & Almond, 2015)

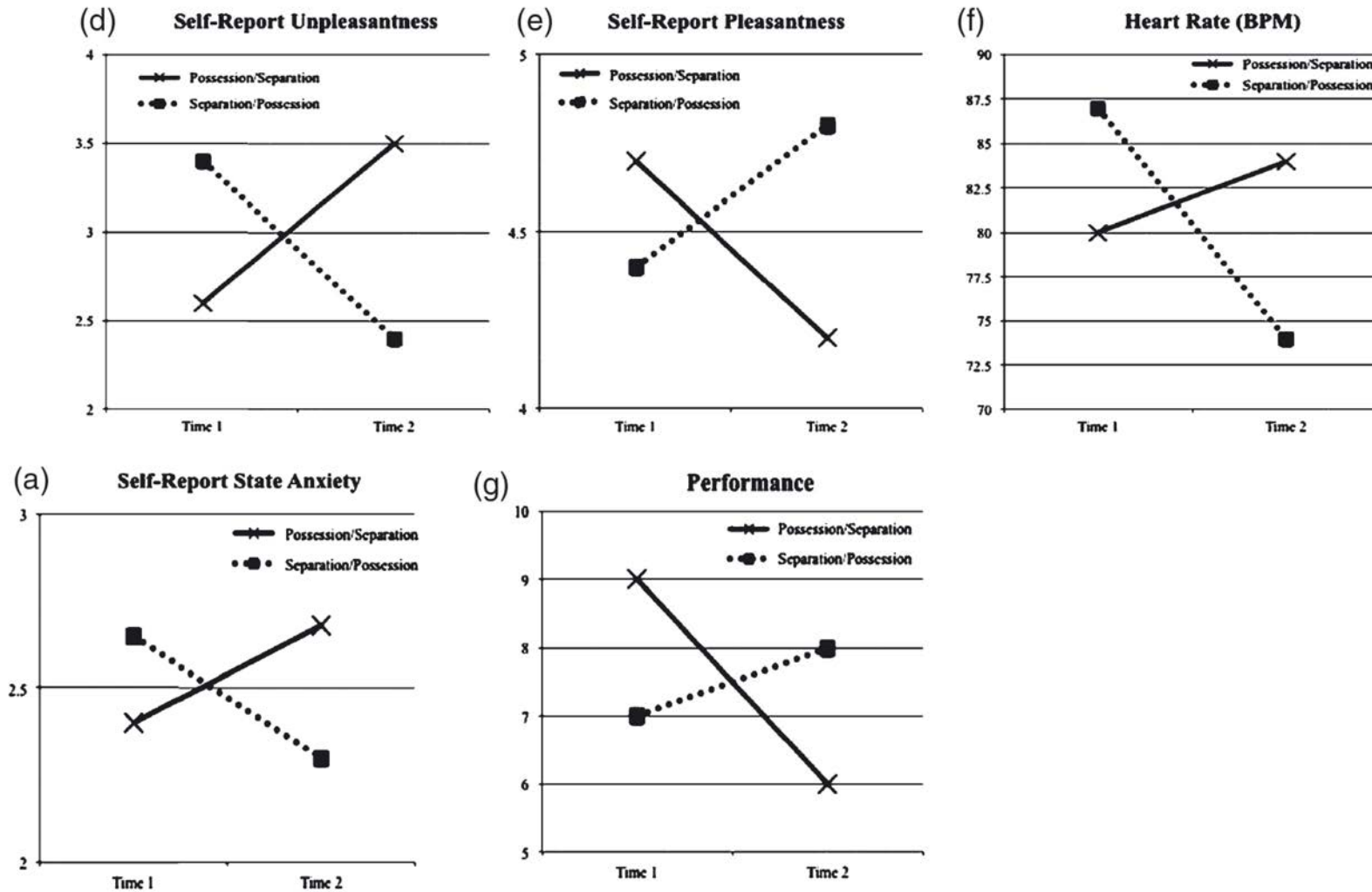
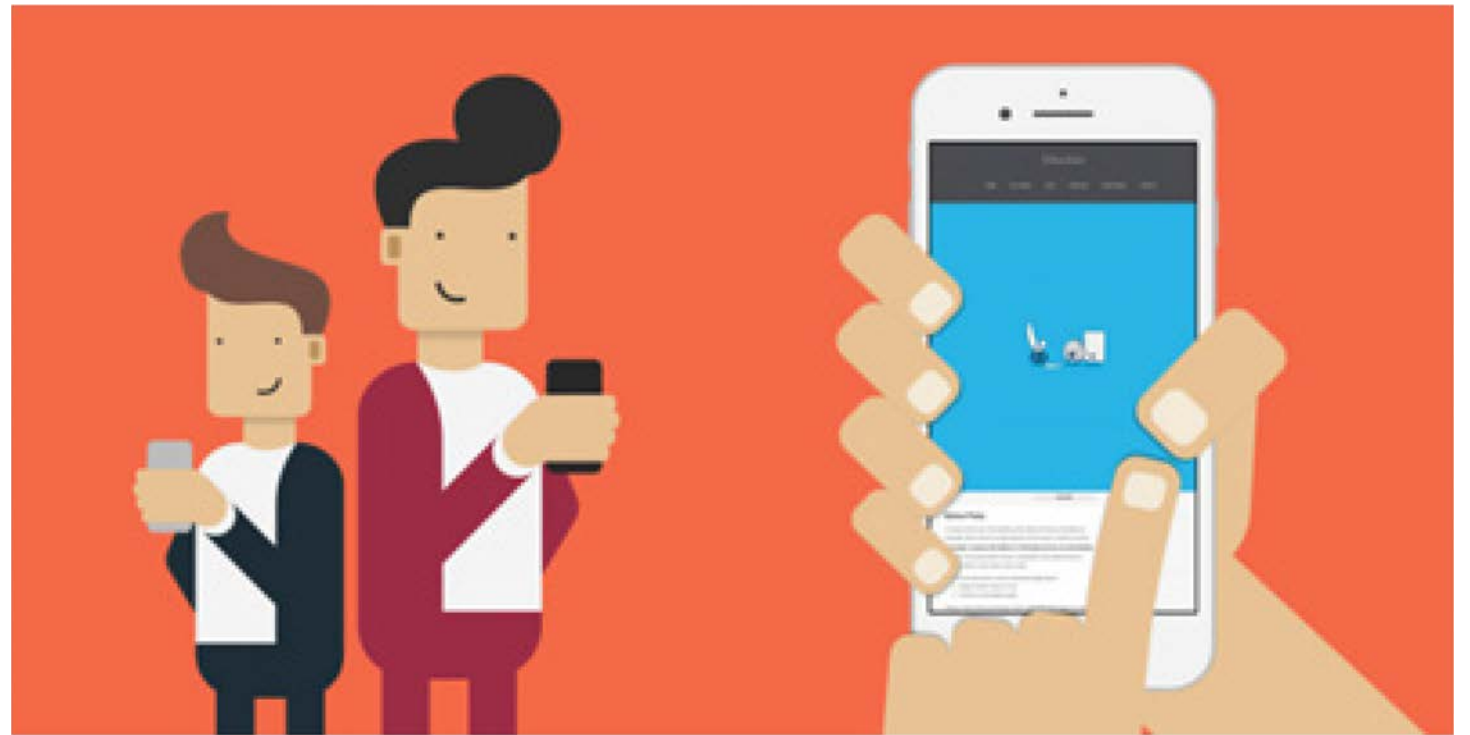


Figure 1 Depiction of dependent variables as a function of time



Aspects de l'utilisation de smartphones (médias numériques)

Au secours! Où est mon smartphone?





Où est mon smartphone? (Ward et al, 2017)

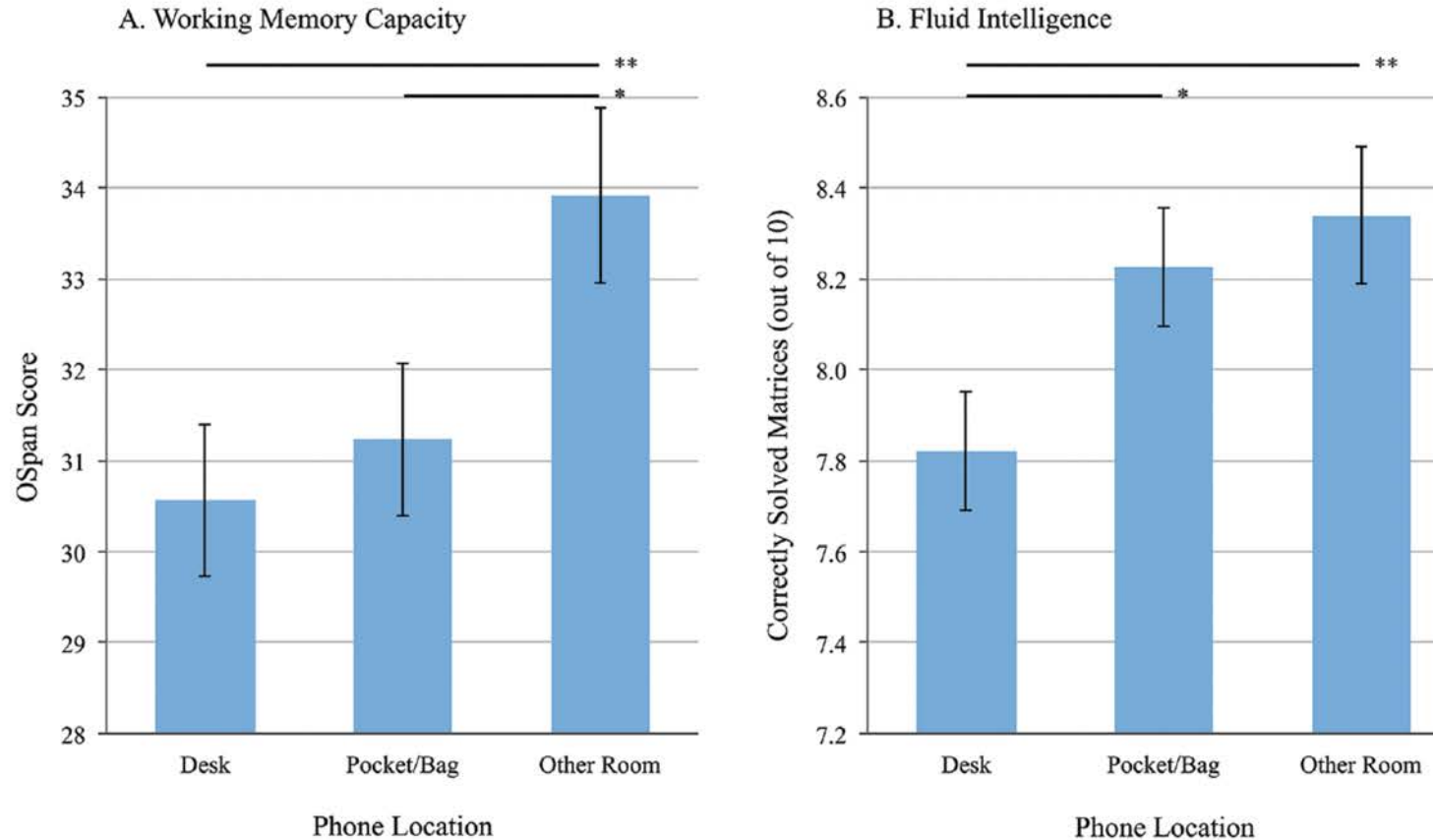


Figure 1. Experiment 1: effect of randomly assigned phone location condition on available WMC (OSpan Score, panel A) and functional Gf (Correctly Solved Raven's Matrices, panel B). Participants in the "desk" condition (high salience) displayed the lowest available cognitive capacity; those in the "other room" condition (low salience) displayed the highest available cognitive capacity. Error bars represent standard errors of the means. Asterisks indicate significant differences between conditions, with * $p < .05$ and ** $p < .01$.

Ward et al. (2017)



Où est mon smartphone? (Ward et al, 2017)

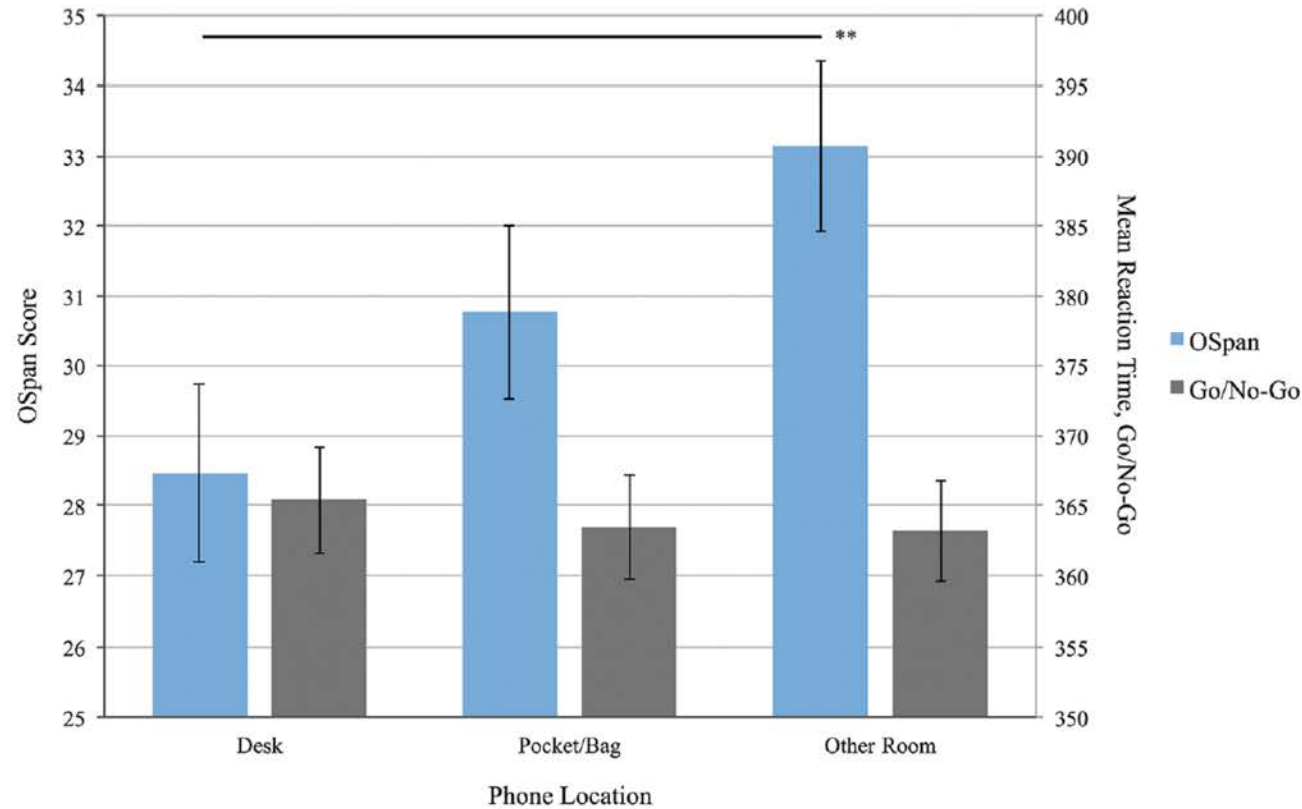


Figure 2. Experiment 2: effect of randomly assigned phone location condition on available cognitive capacity (OSpan Score) and sustained attention (Mean Reaction Time, Go/No-Go). Participants in the “desk” condition (high salience) displayed the lowest available cognitive capacity; those in the “other room” condition (low salience) displayed the highest available cognitive capacity. Phone location did not affect sustained attention. Error bars represent standard errors of the means. Asterisks indicate significant differences between conditions, with $**p < .01$.

Ward et al. (2017)



Où est mon smartphone? (Ward et al, 2017)

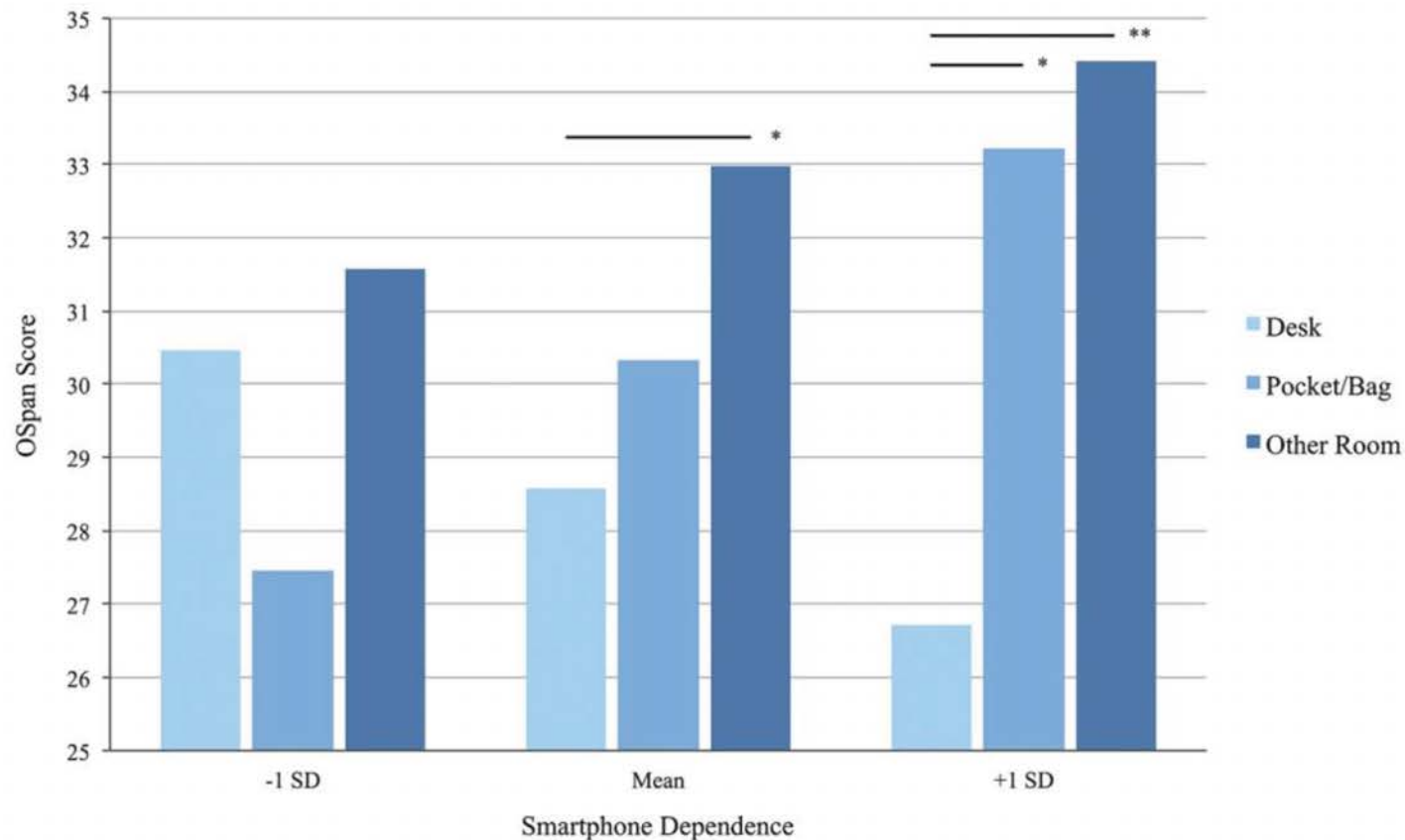
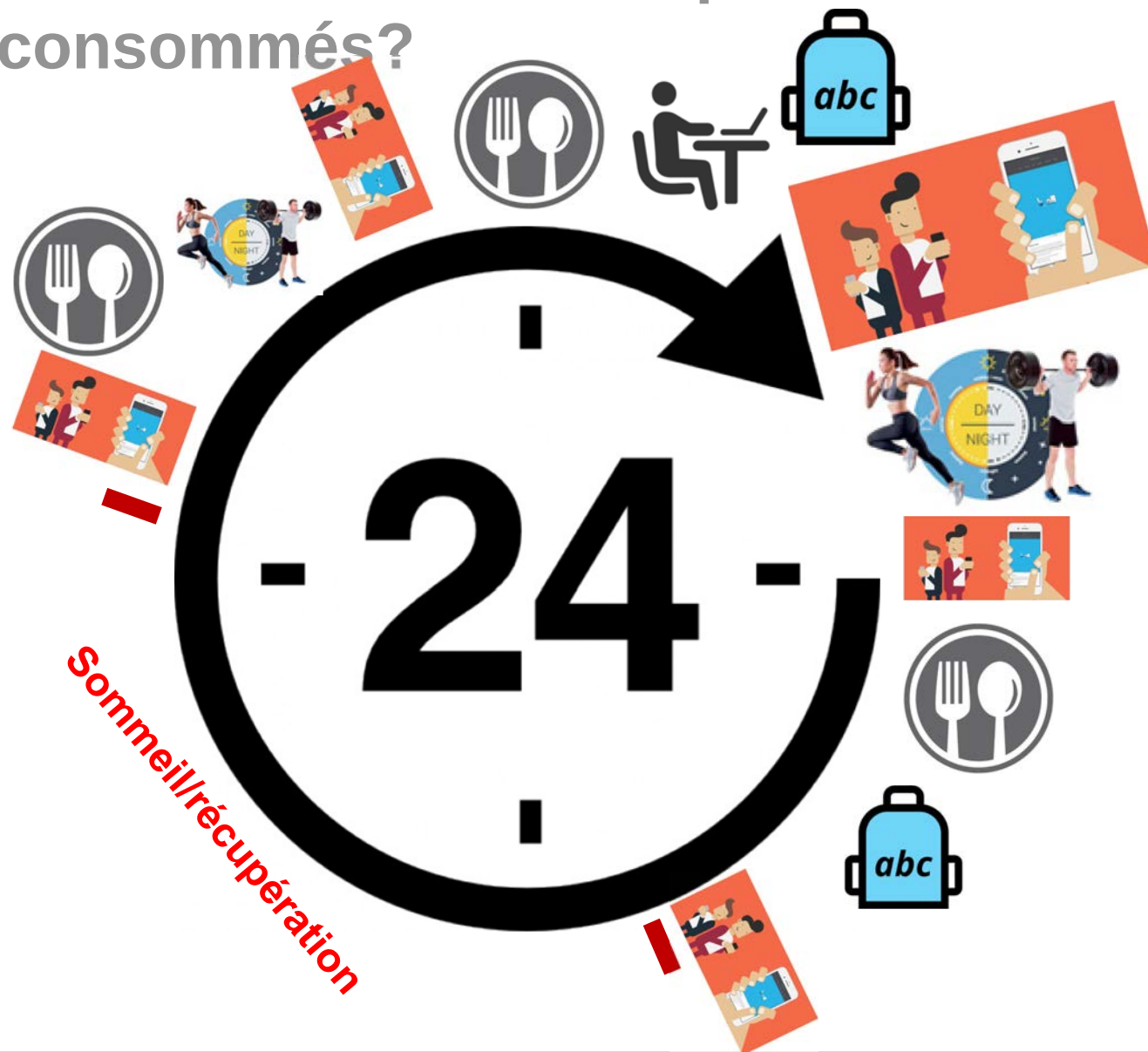
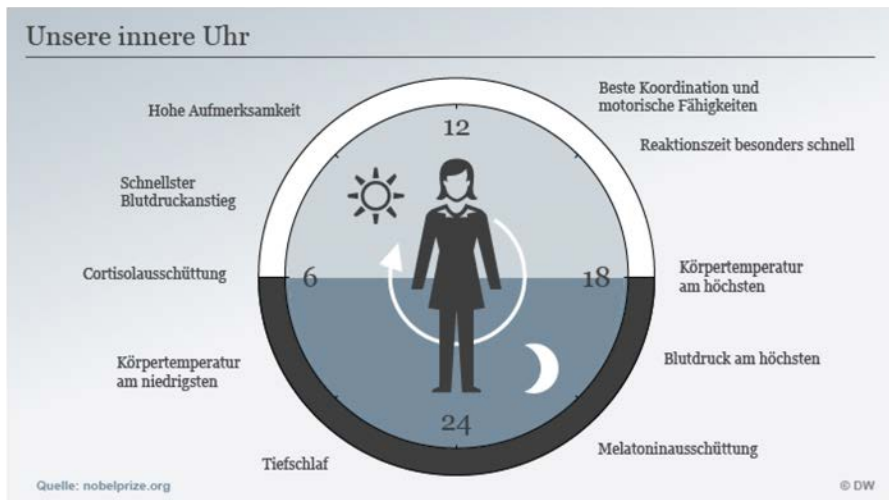


Figure 3. Experiment 2: estimated marginal means representing the effect of phone location on available cognitive capacity (OSpan Score) at low (-1 SD), mean, and high ($+1$ SD) levels of smartphone dependence. Phone location affects available cognitive capacity at mean and high levels of smartphone dependence, but not at low levels of smartphone dependence. Asterisks indicate significant differences between conditions, with $*p < .05$ and $**p < .01$.

Ward et al. (2017)



Aspect temporel: quand et combien de temps les médias numériques sont-ils consommés?





Utilisation des médias numériques et sommeil





Modèle relatif à l'utilisation des médias et le sommeil

Cain & Gravisar, 2010)

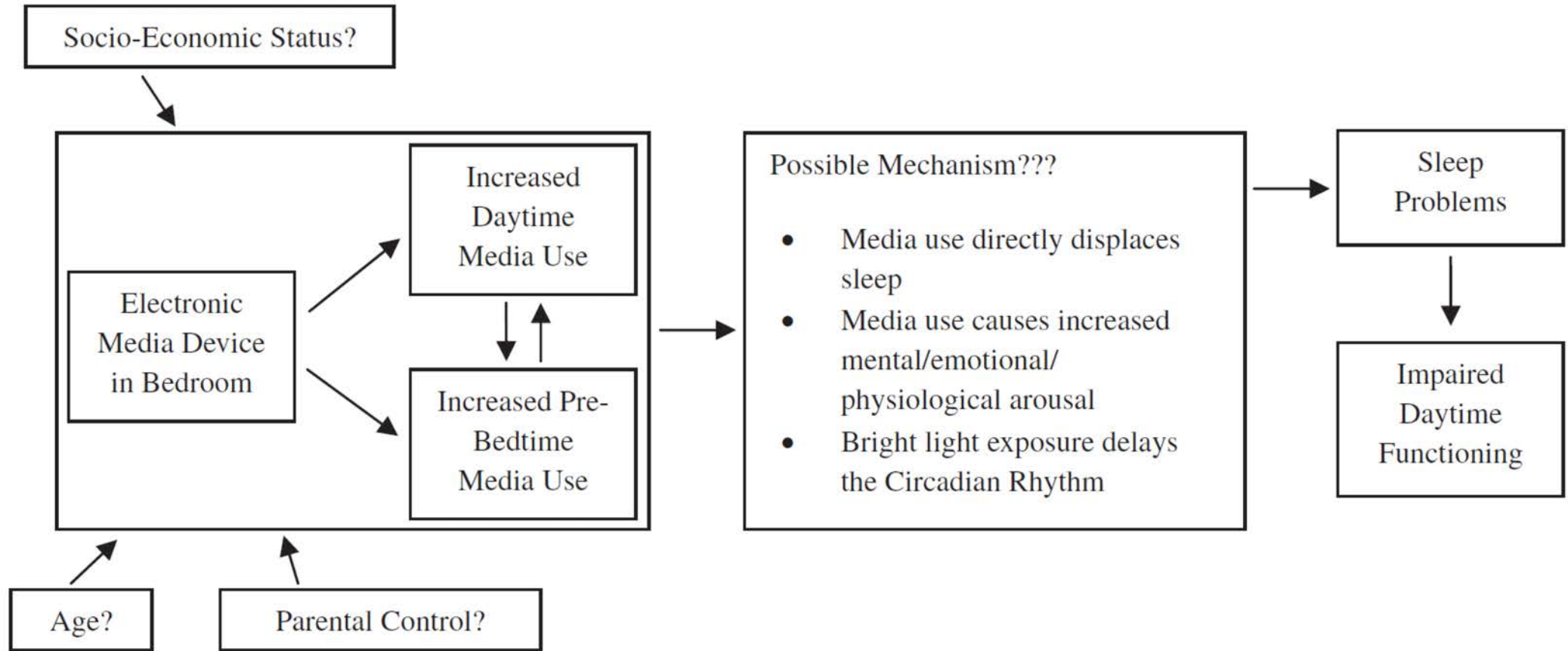


Fig. 1. A graphical representation of the potential impact of electronic media on sleep.



Utilisation médias numériques et sommeil (Cain & Gravisar, 2010)

- TST = temps total de sommeil réduit → dans le sport liés à de meilleures performances car meilleures
- performanes d'apprentissage
- TIB = moins de temps au lit
- SOL = plus de temps pour l'endormissement
- GTB = se coucher plus tard
- Daytime sleepiness = sommeil diurne
- Qualité du sommeil

Table 1
Relationship between sleep variables and use of computer, internet, or electronic games.

Authors	Age (years)	TIB	TST	SOL	GTB	WUT	BR	SA	Parasomnias	Daytime sleepiness/tiredness	Overall sleep quality
Van den Bulck [19]	12–17	✓			✓	✓				✓	
Gaina et al. [42]	12–15			✓							
BaHammam et al. [33]	6–13		✓								
Eggermont and Van den Bulck [37]	12–17		✓		✓					✓	
Fuligni and Hardway [43]	14–15		✓								
Gaina et al. [29]	12–13			✓							
Li et al. [14]	5–11		✓		✓	X	X	X	X	X	
Mesquita and Reimao [45]	15–18										✓
Punamaki et al. [44]	12–18		✓								
Adam et al. [26]	5–11		✓		✓	✓					
Oka et al. [17]	6–12		✓		✓	✓					
Yen et al. [46]	12–18		✓								✓

Note: ✓ = examined in study (significant relationship between variables); X = examined in study (non-significant); TIB = less time in bed; TST = shorter total sleep time; SOL = longer sleep onset latency; GTB = delayed bedtime; WUT = later weekend wake-up time; BR = bedtime resistance; SA = sleep anxiety.



Utilisation médias numériques et sommeil (Cain & Gravisar, 2010)



Table 4

Relationship between sleep variables and mobile telephone use.

Authors	Age (years)	TST	SOL	WUT	Evening type	Dissatisfied with sleep	Nap frequently	Daytime sleepiness/tiredness	Subjective insomnia
Harada et al. [49]	13–15	✓		✓	✓	✓	✓		
Van den Bulck [21]	12–17							✓	
Gaina et al. [42]	12–15		X						
Punamaki et al. [44]	12–18	✓							
Van den Bulck [51]	12–17							✓	
Soderqvist et al. [50]	15–19							✓	X
Yen et al. [46]	12–18	X							X

Note: ✓ = examined in study (significant relationship between variables); X = examined in study (non-significant); TST = shorter total sleep time; SOL = longer sleep onset latency; WUT = later weekend wake-up time.



Utilisation tardive du smartphone et engagement au travail

Lanaj et al. (2014)

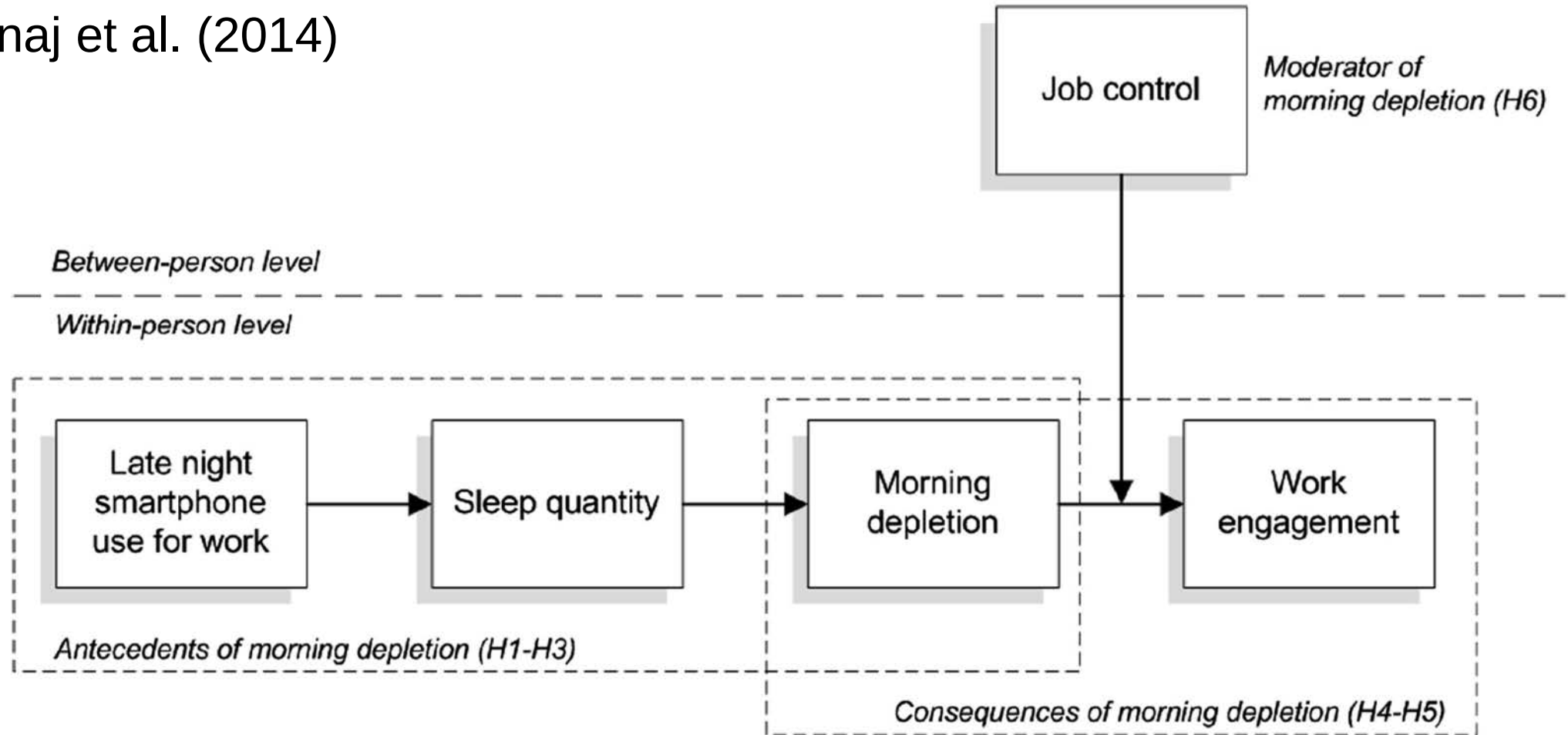


Fig. 1. Theoretical model linking smartphone use for work at night with sleep, depletion, and engagement.



Enlèvement d'appareils électroniques (Dunical et al., 2017)

L'enlèvement d'appareils électroniques pour 2 nuits
→ N'a pas apporté d'amélioration significative des paramètres de sommeil

The Effects of the Removal of Electronic Devices for 48h **SLEEP IN ELITE ATHLETES** By Dunican et al. JSR 2017

Over 6 days and nights, the sleep of 23 elite athletes was monitored during a 6-day training camp



DEVICE-RESTRICTED
All electronic devices were removed on days 3 & 4 (i.e. for 48 hours)



VS

CONTROL
Permitted to use their devices throughout the camp

RESULTS

Removal of electronic devices on Nights 3 & 4 did not significantly change any sleep-related measure between the groups

SIMILAR

The participants increased their sleep duration by delaying wake time, only when such an opportunity is presented, as was the case on the final day of the training camp



- 1 The removal of electronic devices for a period of 48 h has little effect on time of sleep onset and sleep duration of elite athletes, at least under circumstances where training schedules precluded the athletes from delaying their next-morning wakeup
- 2 This study also demonstrates the difficulty in increasing sleep duration by providing an environment more conducive to sleep in the evening
- 3 Young adult athletes are able to increase sleep duration by delaying wake time, but only when such an opportunity is presented
- 4 The scheduling of training camps should be designed to consider sleep and recovery in order to support sleep-related optimisation and efficacy of the training and the consolidation of skills



Utilisation problématique du smartphone (Kim, 2018)

Comparaison sociale

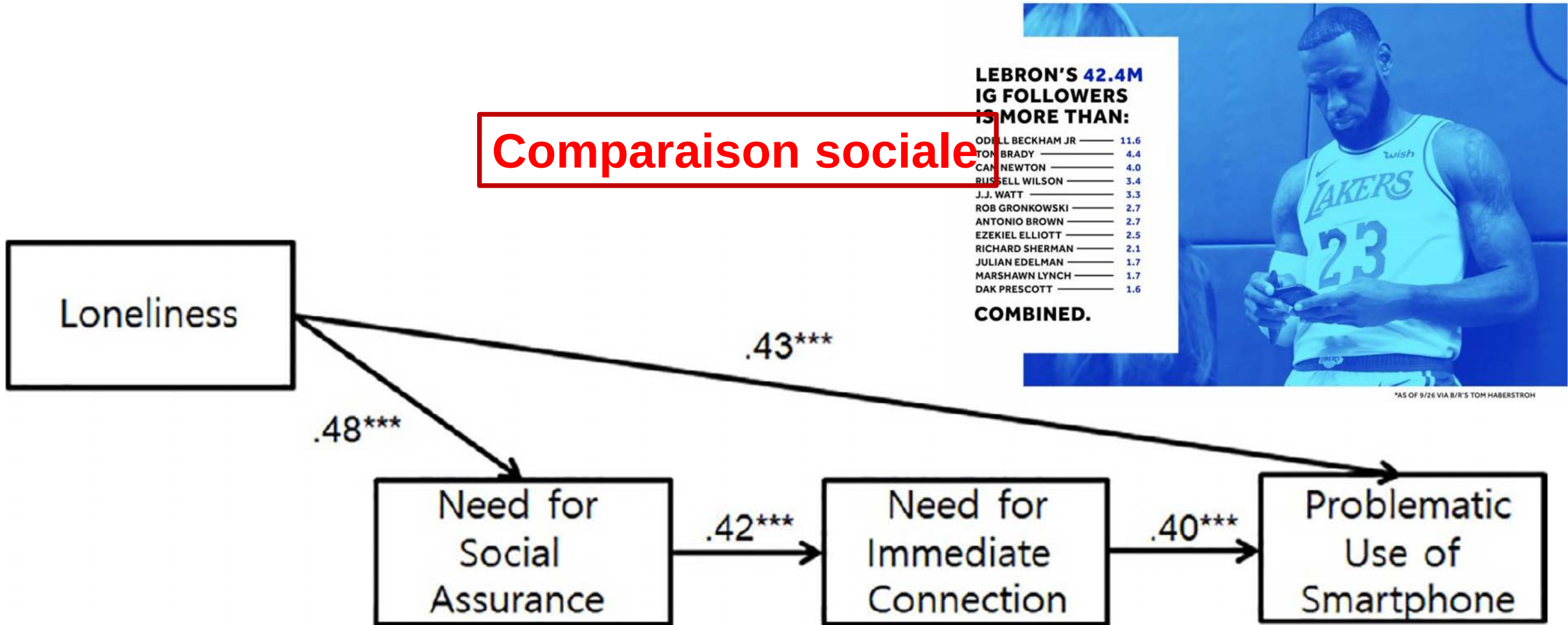


Fig. 2. Standardized coefficients for the hypothesized model. Note. $N = 615$. *** $p < .001$.



Comparaison sociale





Utilisation du smartphone et performance sportive

(Fortes et al. 2019)

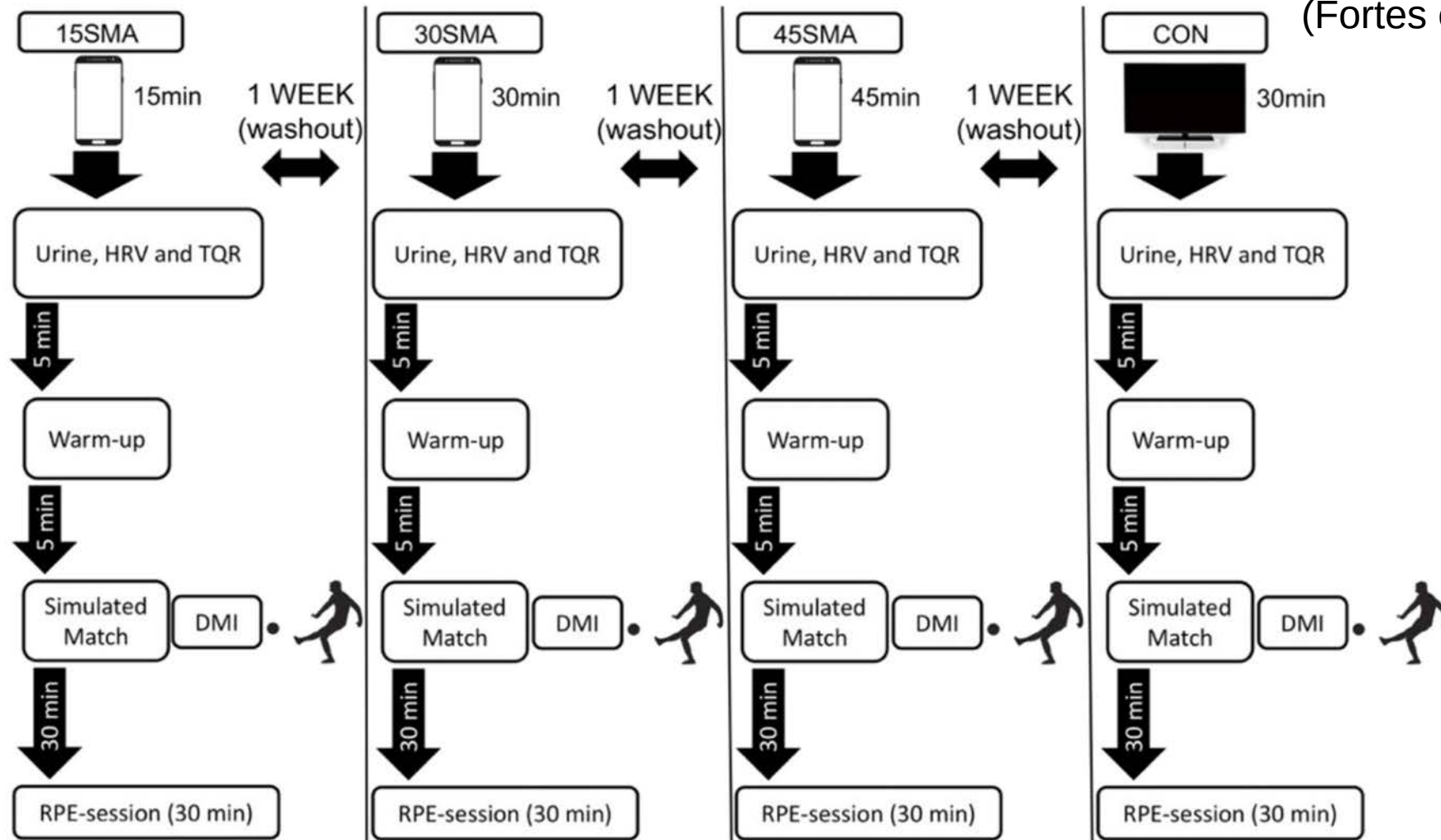


Fig. 1. Experimental design, *Note.* SMA = smartphone; CON = control; TQR = Total Quality Recovery; HRV = heart rate variability; DMI = decision-making index; RPE = rated perceived exertion.



Utilisation du smartphone et performance sportive

(Fortes et al. 2019)

30 (45) minutes de consommation de médias sociaux amène une moins bonne décision dans les passes

Mécanisme:

Consommation de médias sociaux $\geq$ 30 minutes $\rightarrow$ fatigue mentale augmentée

Fatigue mentale augmentée $\rightarrow$ **moins bonnes performances** (précision des passes, endurance cyclisme, course)

Table 2

Mean and standard deviation of DMI according to condition (15SMA, 30SMA, 45SMA, and CON).

Variables	15SMA	30SMA	45SMA	CON	Effect	F	<i>p</i>
DMI first half (%) ES (between conditions)	57.5 $\pm$ 10.7 0.7	52.1 $\pm$ 8.2 ^{*,#}	50.6 $\pm$ 9.5 ^{*,#}	60.3 $\pm$ 8.4	Group	32.8	.001
DMI second half (%) ES (between conditions)	60.4 $\pm$ 11.1 0.5	54.3 $\pm$ 7.5 ^{*,#}	52.8 $\pm$ 10.9 ^{*,#}	57.6 $\pm$ 9.8	Group	25.3	.01
DMI game (%) ES (between conditions)	59.9 $\pm$ 9.9	53.8 $\pm$ 8.6 ^{*,#} 0.6	51.4 $\pm$ 10.1 ^{*,#}	58.0 $\pm$ 9.2	Group	30.5	.001

Note. Values are presented as mean $\pm$ standard deviation; DMI = decision-making index; CON = control condition; 15SMA = 15-min smartphone; 30SMA = 30-min smartphone; 45SMA = 45-min smartphone; ES = effect size; * = $p < .05$; # = $p < .05$ vs. CON.



Consommation médias numériques: expérience psychologique et comportement

	Emotions	Cognitions	Comportement
Sélection	Ambiance → Contenus	Attitudes → Contenus	Comportement → Choix/préférences
Réception	Expérience lors de la consommation	Attention Profondeur de traitement	Réaction comportementale liée à la consommation
Effet	Conséquences de l'utilisation sur les émotions	Influence sur les attitudes	Influence sur le comportement



Involviertheit

Trepte & Reinecke (2012)



Utilisation du smartphone et conséquences négatives: implication

- Acceptation personnelle
- Détermination de la vie quotidienne
- Autorégulation
- Fonction d'utilisation
- Relatif à l'activité en cours
- Multitasking





Utilisation du smartphone et implication du smartphone

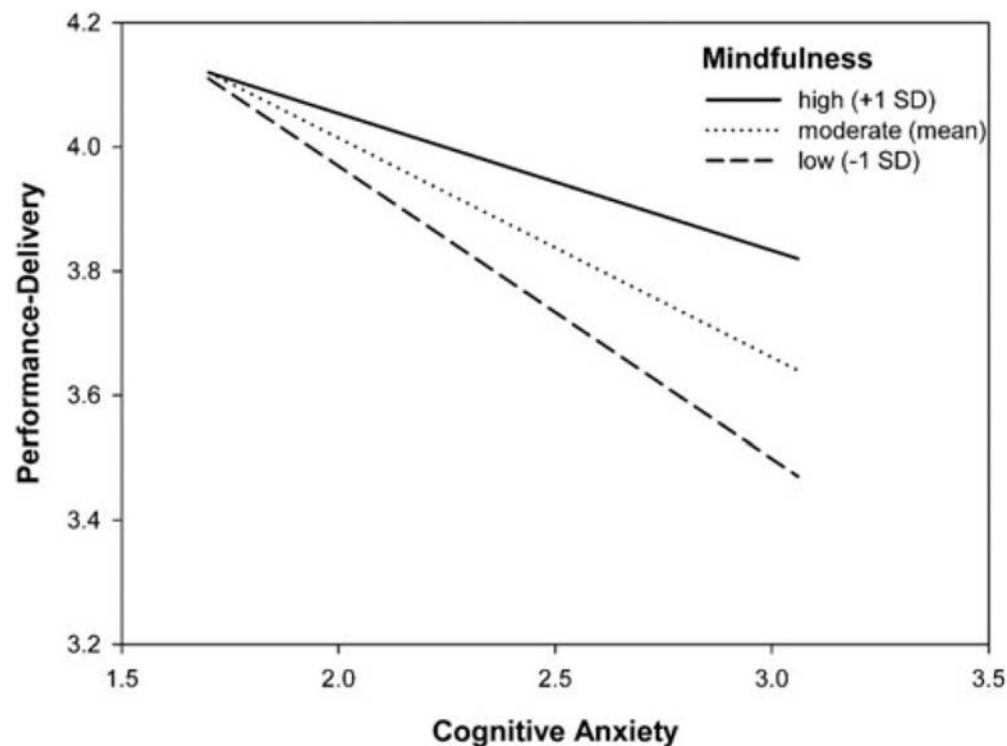


Fig. 1 Moderation of the effect of cognitive competition anxiety on performance-delivery in demanding situations by trait mindfulness

(Röthlin et al, 2016)

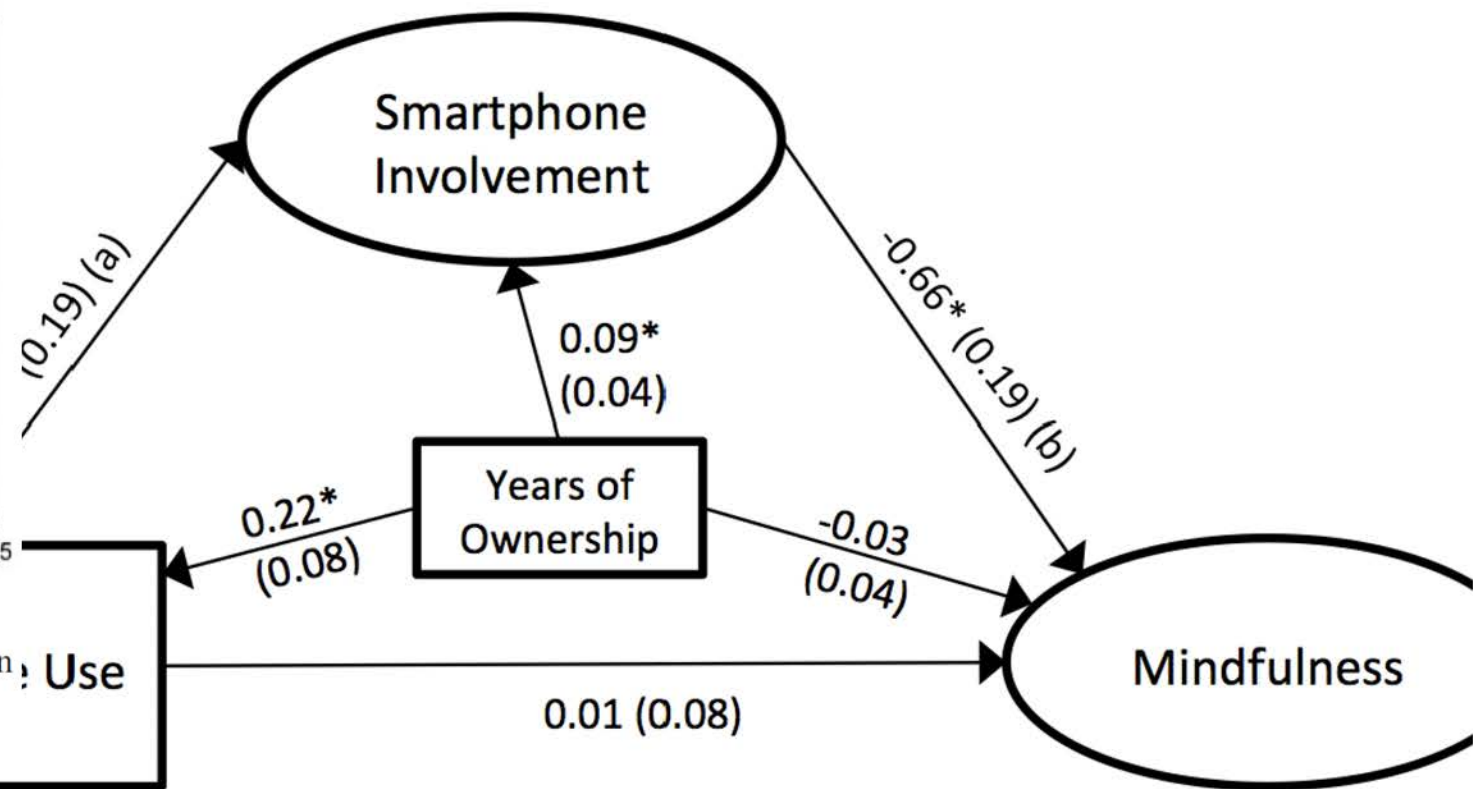


Figure 3.4. Structural Model for Testing Study 2 Mediation. Indirect effect was significant ($a*b$) = -0.25, [BC] 95% CI [-0.90, -0.05]. Unstandardized (standard errors) shown. Disturbances not shown.



Utilisation du smartphone lors d'évènements majeur: Défis et avantages (Hayes et al., 2019)

N = 57 Athlètes australiens lors d'évènements majeurs internationaux

Table 4 Time Spent on Social Media

	Several times a day	Daily	Several times a week	Once a week	Once a month	Never
Everyday use						
Twitter	7.55%	13.21%	5.66%	9.43%	9.43%	54.72%
Facebook	62.26%	24.53%	7.55%	3.77%	0.00%	1.89%
Instagram	73.58%	16.98%	3.77%	1.89%	0.00%	3.77%
Snapchat	43.40%	16.98%	5.66%	5.66%	0.00%	28.30%
others	5.66%	3.77%	5.66%	3.77%	0.00%	81.13%
Intended event use						
Twitter	3.77%	16.98%	3.77%	9.43%	3.77%	62.26%
Facebook	41.51%	37.74%	9.43%	5.66%	0.00%	5.66%
Instagram	49.06%	32.08%	9.43%	5.66%	0.00%	3.77%
Snapchat	28.30%	26.42%	5.66%	3.77%	0.00%	35.85%
others	3.77%	9.43%	1.89%	5.66%	0.00%	79.25%
Actual event use						
Twitter	7.55%	13.21%	7.55%	1.89%	0.00%	69.81%
Facebook	54.72%	24.53%	11.32%	3.77%	0.00%	5.66%
Instagram	64.15%	26.42%	5.66%	0.00%	0.00%	3.77%
Snapchat	35.85%	24.53%	7.55%	3.77%	0.00%	28.30%
others	7.55%	7.55%	5.66%	3.77%	0.00%	75.47%





Utilisation des médias sociaux lors d'évènements majeur: raisons de l'utilisation: (Hayes et al., 2019)

N = 57 Athlètes australiens lors d'évènements majeurs internationaux

- Communication avec supporters et fans
- Publicité/promotion
- Collecte d'informations
- Partage d'informations





Utilisation des médias sociaux lors d'évènements majeurs: bénéfices de l'utilisation : (Hayes et al., 2019)

N = 57 Athlètes australiens lors d'évènements majeurs internationaux

- Sentiment de solidarité
- Renforcement positif
- Détente et évasion





Utilisation des médias sociaux lors d'évènements majeurs : défis de l'utilisation (Hayes et al., 2019)

N = 57 Athlètes australiens lors d'évènements majeurs internationaux

- Anxiété
- Equilibre de la consommation des médias sociaux
- (Traiter les messages négatifs)
- (Déflexion)

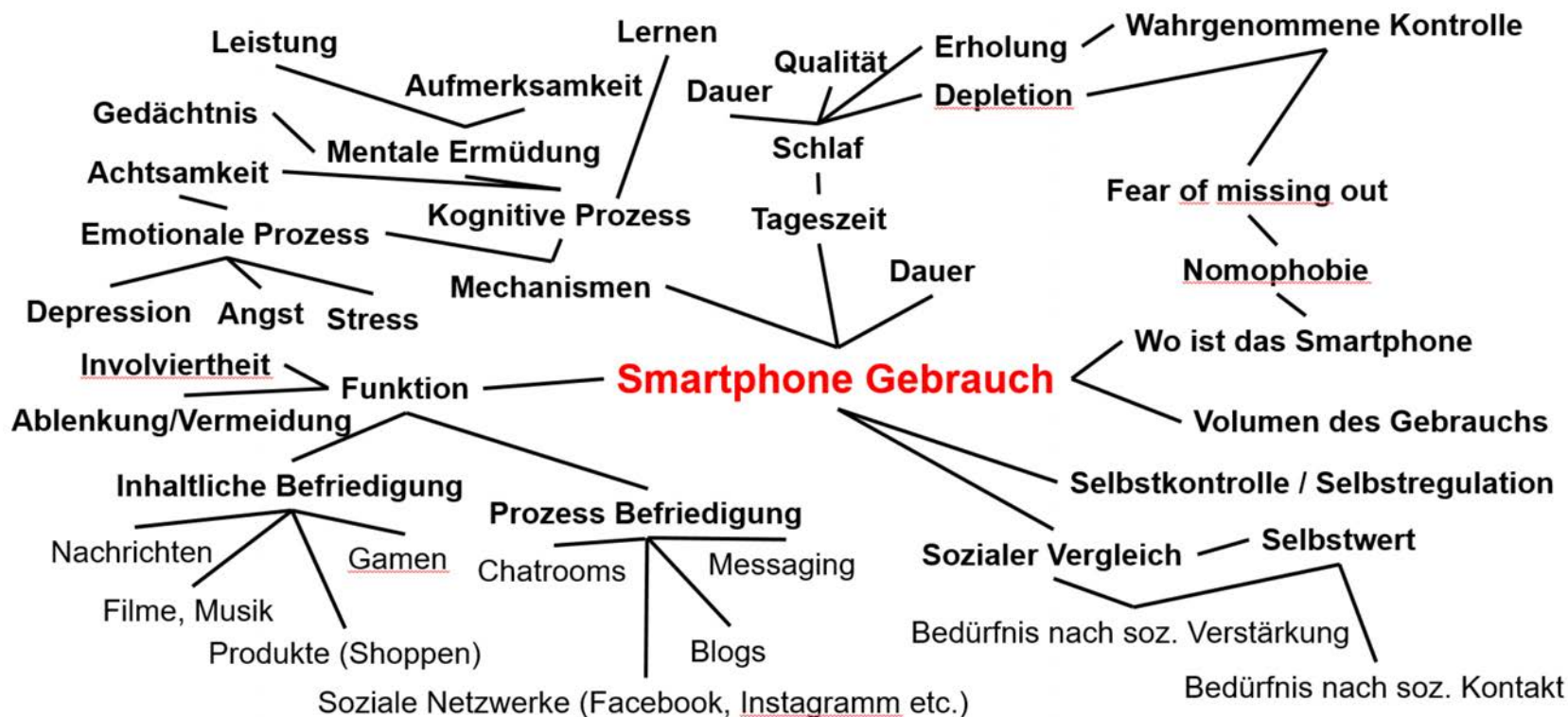




Quels sont les conséquences pratiques sur le sport au quotidien?



Aspekte des Smartphonegebrauchs (Digitale Medien)





Un grand Merci pour votre attention!





- Berger, S., Wyss, A. M., & Knoch, D. (2018). Low self-control capacity is associated with immediate responses to smartphone signals. *Computers in human behavior*, 86, 4. doi:0.1016/j.chb.2018.04.031
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