

screen adaptation theory



cjlortie

concepts



deconstruct high-level principles

screen adaptation theory (**sat**)



rich set of concepts & research that orbit our (un)natural existence

a **screen** is a place



internet mostly via screens (for now),
but we interface in others ways
music, podcasts, Facetime, Zoom,
& virtual reality

you go to your screen(s) for almost everything



we exist in physical and **digital landscapes** in tandem
with habitats, topography, highs & lows, and ALL are
absolutely real places

adaptation is **not** tolerance



adaptation = acquired traits that
typically promote higher performance/survival

a **theory** is a system of ideas that explains
and leverages/invokes principles

screen adaptation theory (**sat**)



screens are a non-singular real place,
we need traits that enable adaptation including performance,
we need to develop, test, and explore principles to thrive & survive



stop for a moment



go somewhere

A scenic landscape photograph showing a vast tea plantation on a rolling hillside. The tea bushes are arranged in neat, terraced rows, creating a rhythmic pattern of green. A winding road or path cuts through the plantation. In the background, there are more hills and mountains under a bright blue sky filled with large, white, fluffy clouds. The overall atmosphere is peaceful and natural.

context

**why does it matter where we go,
spend our time,
or focus our attention?**



development outpaces research

health & education implications profoundly
and **rapidly** push humans to tolerance
not adaptation as we use/adopt
tech



330 million use twitter

2.9 billion use Facebook/Meta

71.3% of North Americans are on Facebook

Our World
in Data

most of the world
online



is online (always) negative?



information is power

infinite and mostly accessible

challenge is not too little, but too much

internet can be an information **engine**
that **drives** change.



market changes, social changes, health changes,
decentralization of knowledge, open science, and open
cultures that enable more versatile negotiations with
meaning & with purpose

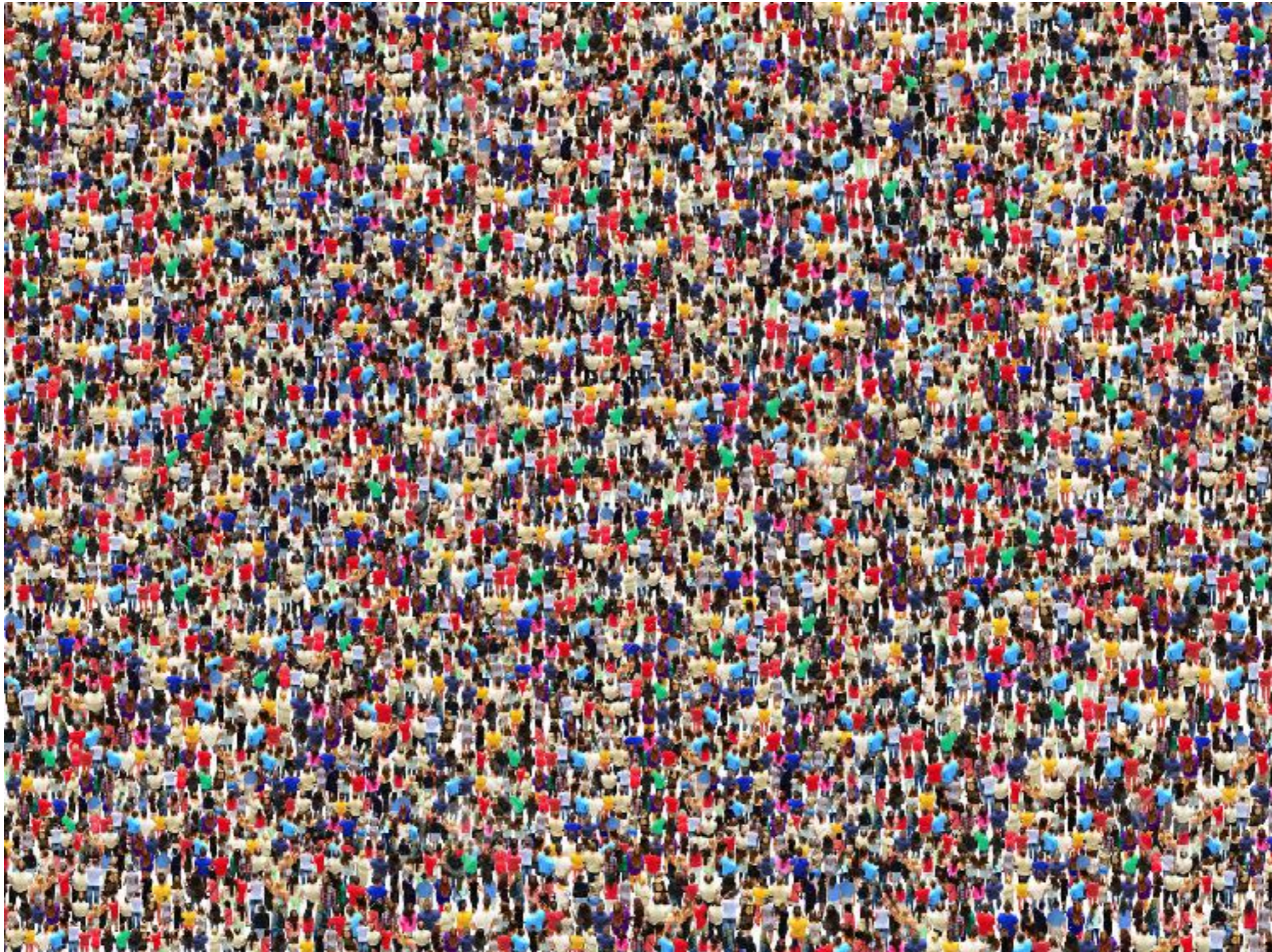
digital places are substitutes for direct
physical spaces that offer health benefits



In 2020, **60,445** children studied with screens must stop at least one hour before bed, or influenced **all** measures of sleep stability, quality, and duration

Sports Medicine synthesis study on **127,714** children
showed increasing ST increased risk of depression





4.66 billion people use the internet as of jan 2021

79% of people check Facebook within 15mins of waking people

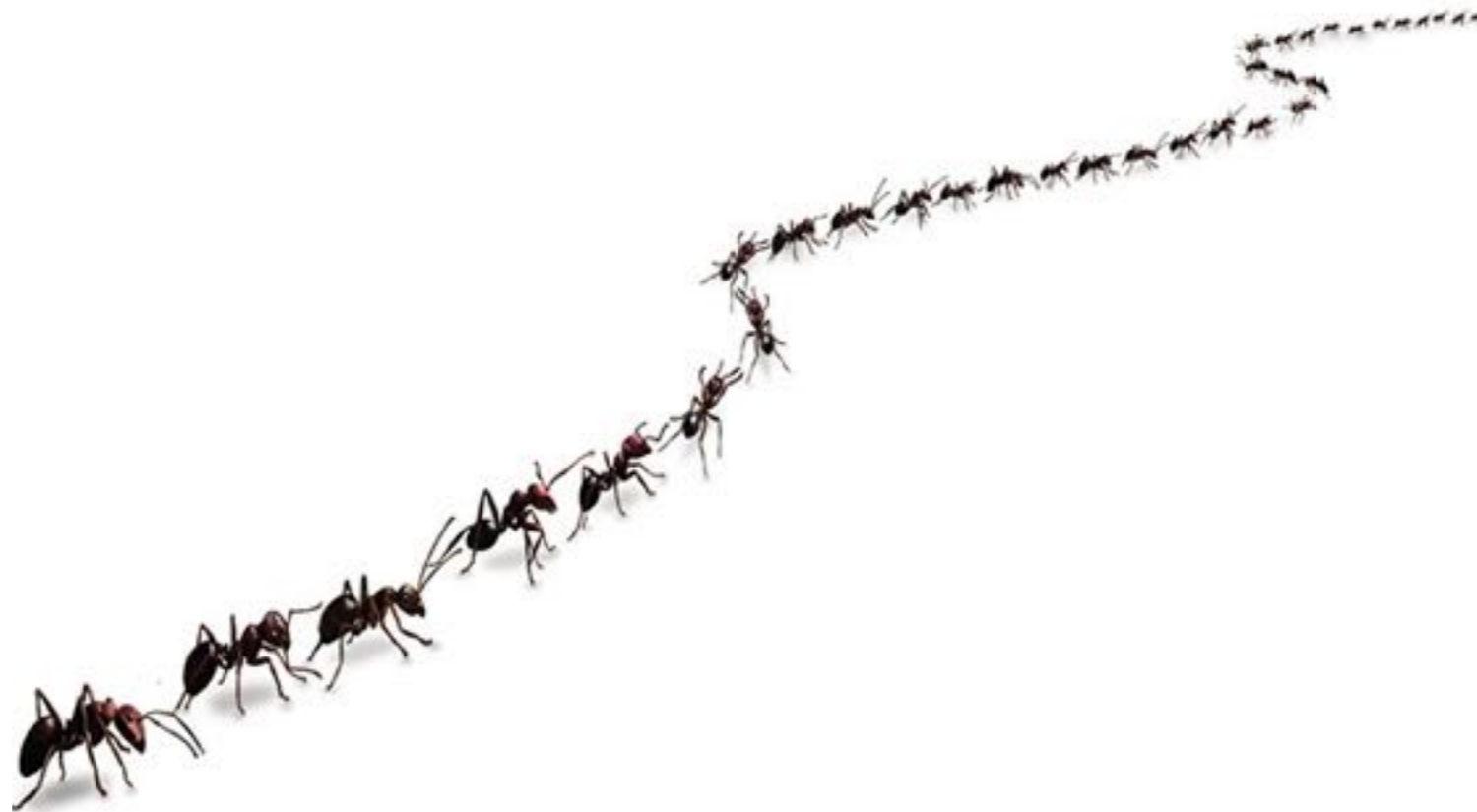


pick up phones at least 58x a day

every 6.5mins people check
banking, hospitals, electronic medical records, communication,
media, transportation, utilities,
internet of things at large scales



stop for a moment



consider time and attention

research



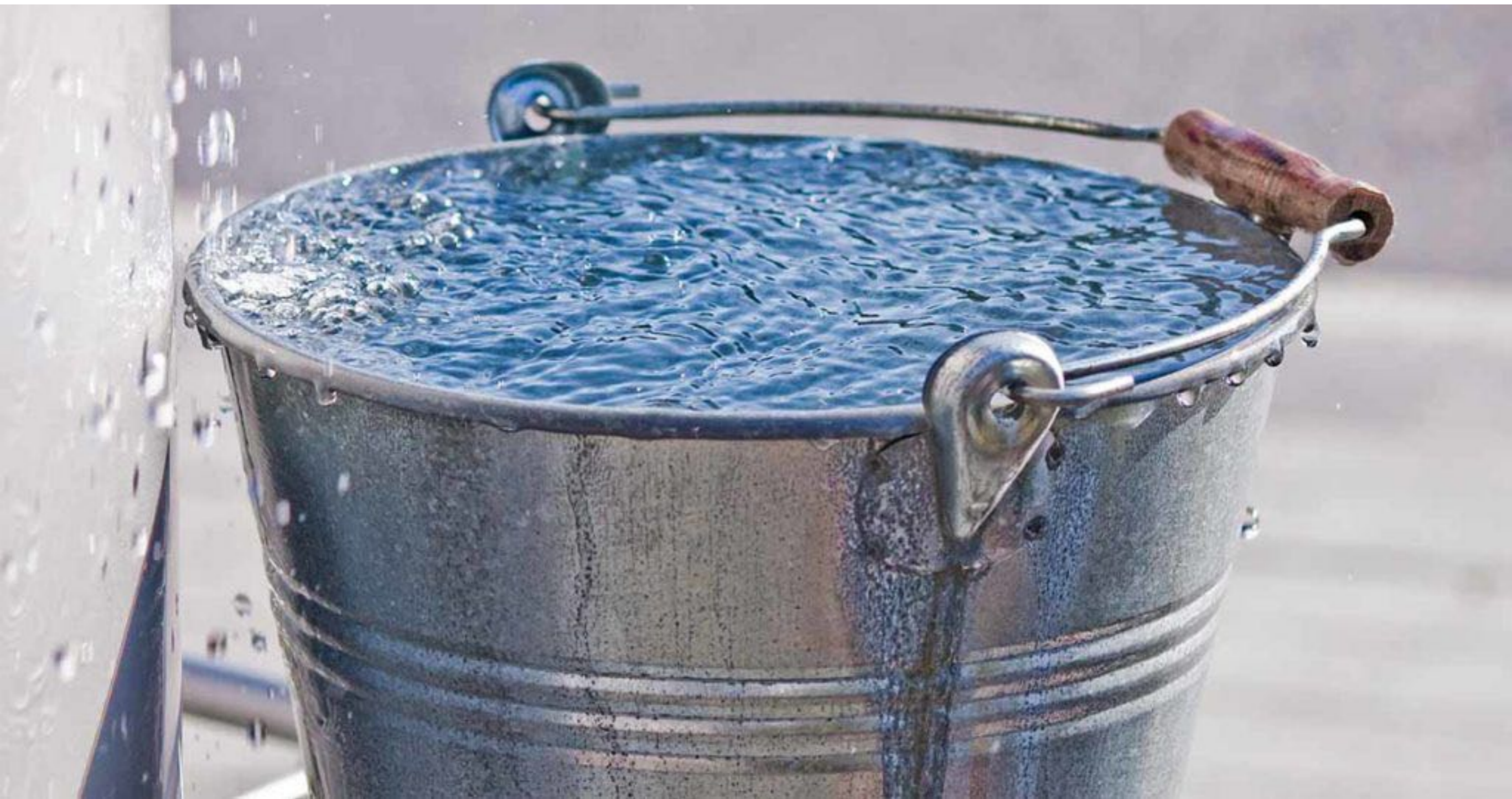


costs

benefits

adaptation

costs > benefits > adaptations



frequency of study for buckets unequal

costs ~ benefits ~ adaptations



strength of evidence for buckets relatively similar (& significant)

100 high-level syntheses digital landscape + cognition

> **6500** primary research papers

synthesis

item	search	returns	usefulness
1	cognition & digital	203	mixed
2	cognition & screen*	633	high
3	cognition & electronic*	165	high
4	cognition & track*	350	mixed
5	cognition & screen* & meta	21	very high
6	cognition & screen* & systematic	40	very high
7	cognition & recovery* & meta	9	high
8	cognition & recovery* & systematic	20	high
9	cognition & track* & meta	10	mixed
10	cognition & track* & systematic	7	high

compiled evidence with high sample sizes or many studies

costs



language delays

attention and cognition fractures

executive function impediments

focus challenges

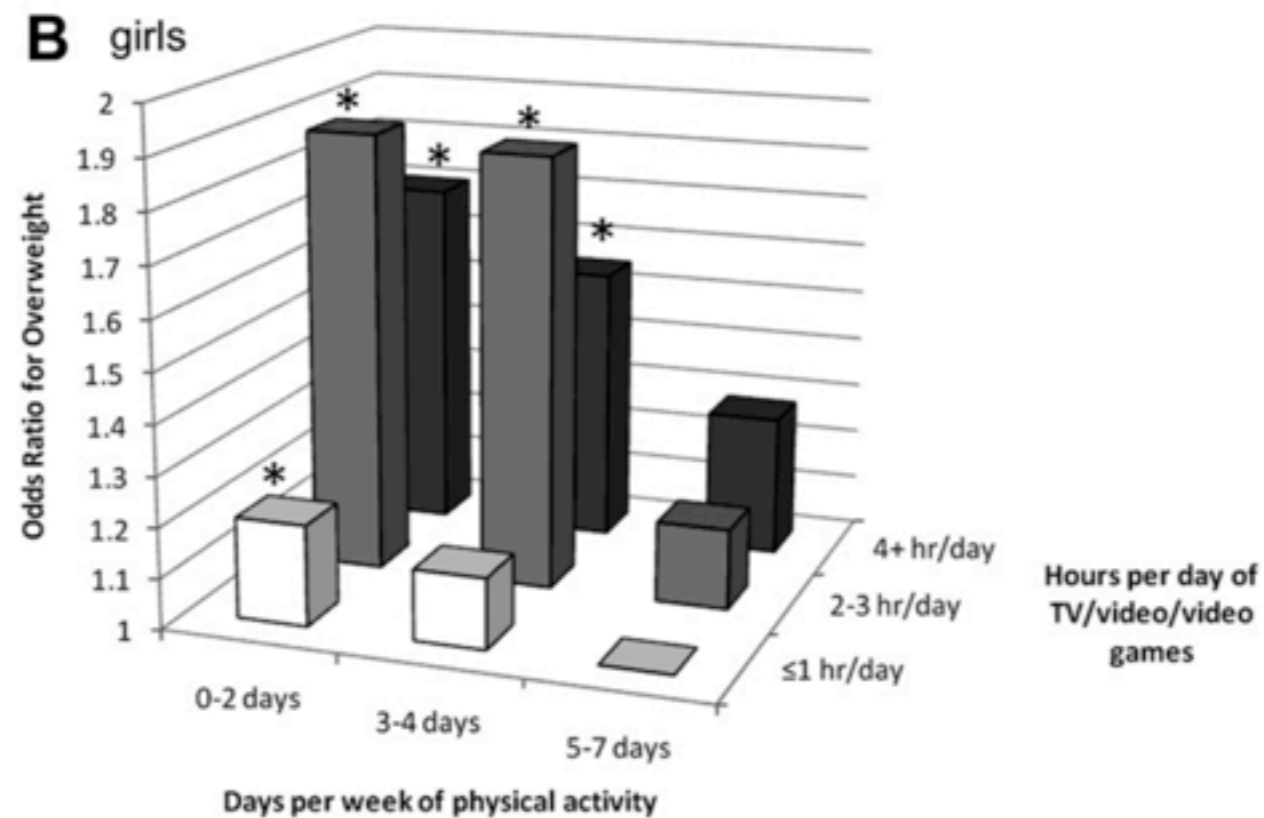
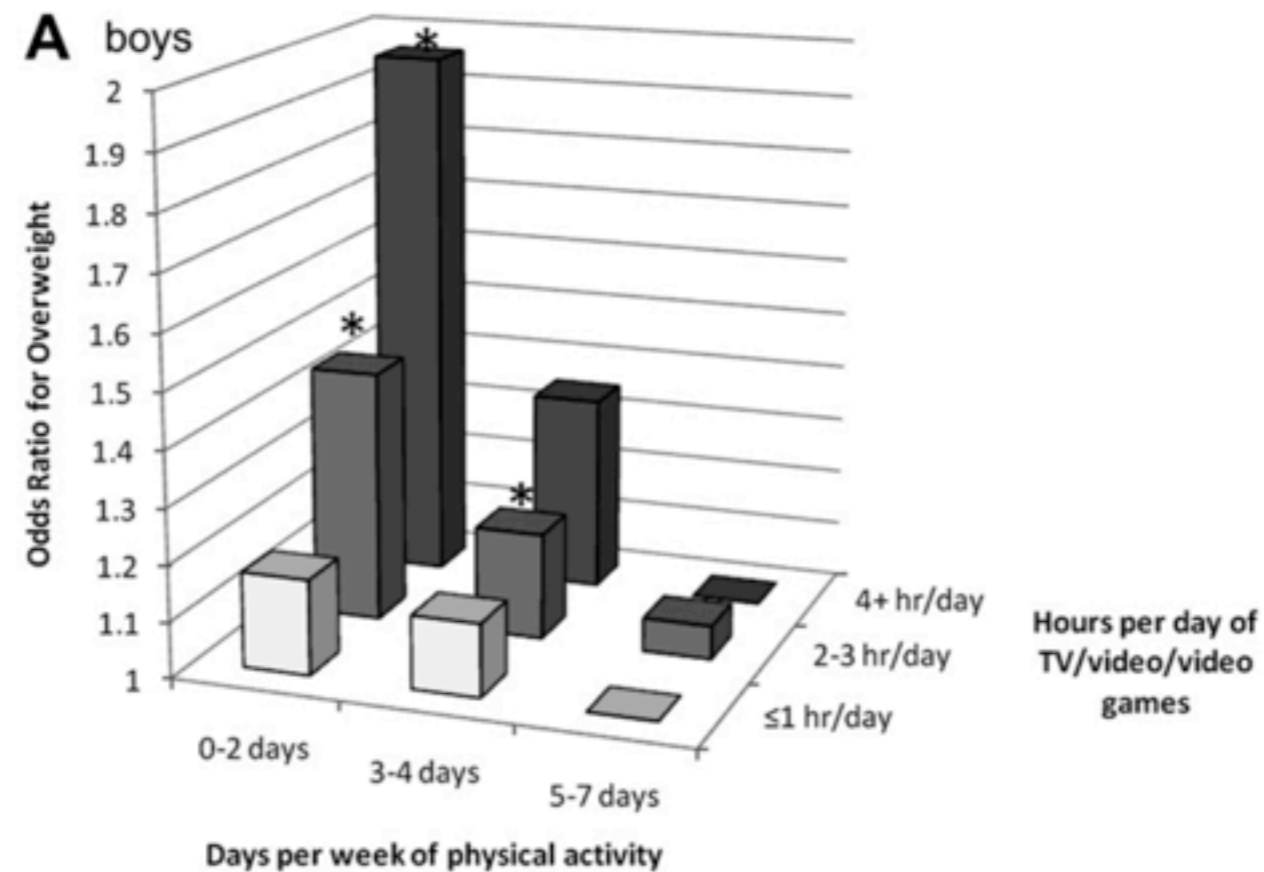
food intake & BMI

sleep

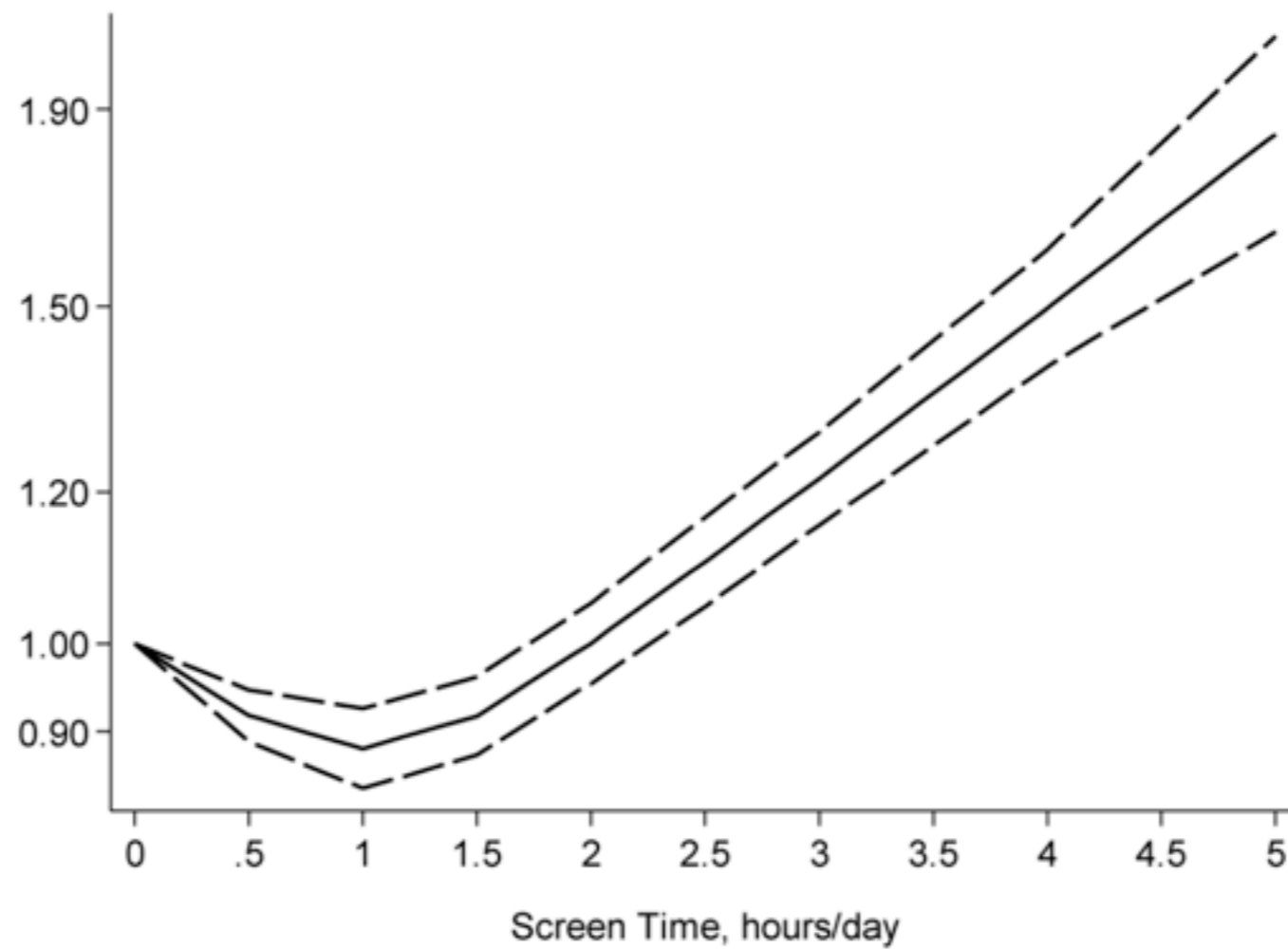
attention switching

cognitive loads

BMI & weight odds

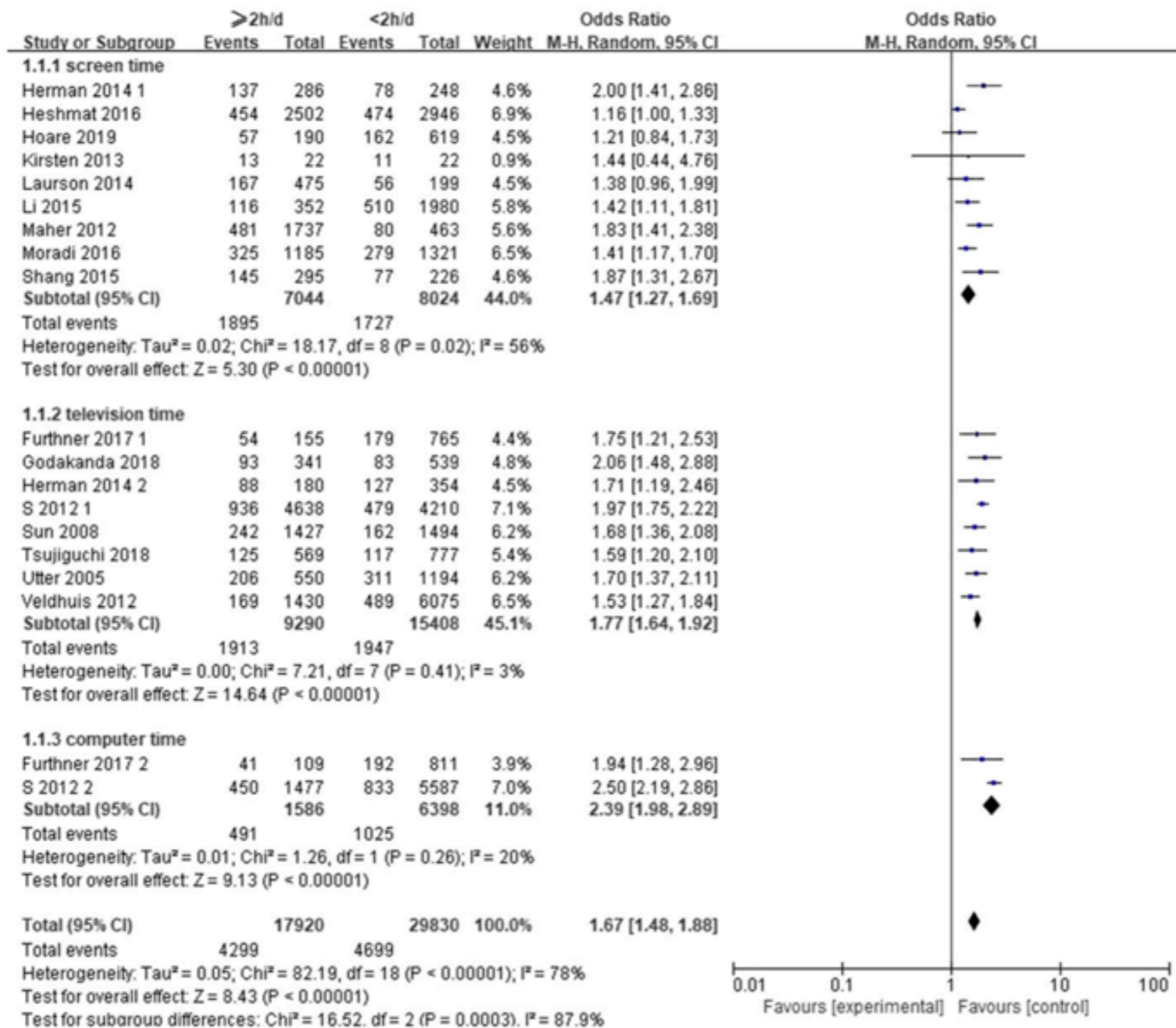


depression odds



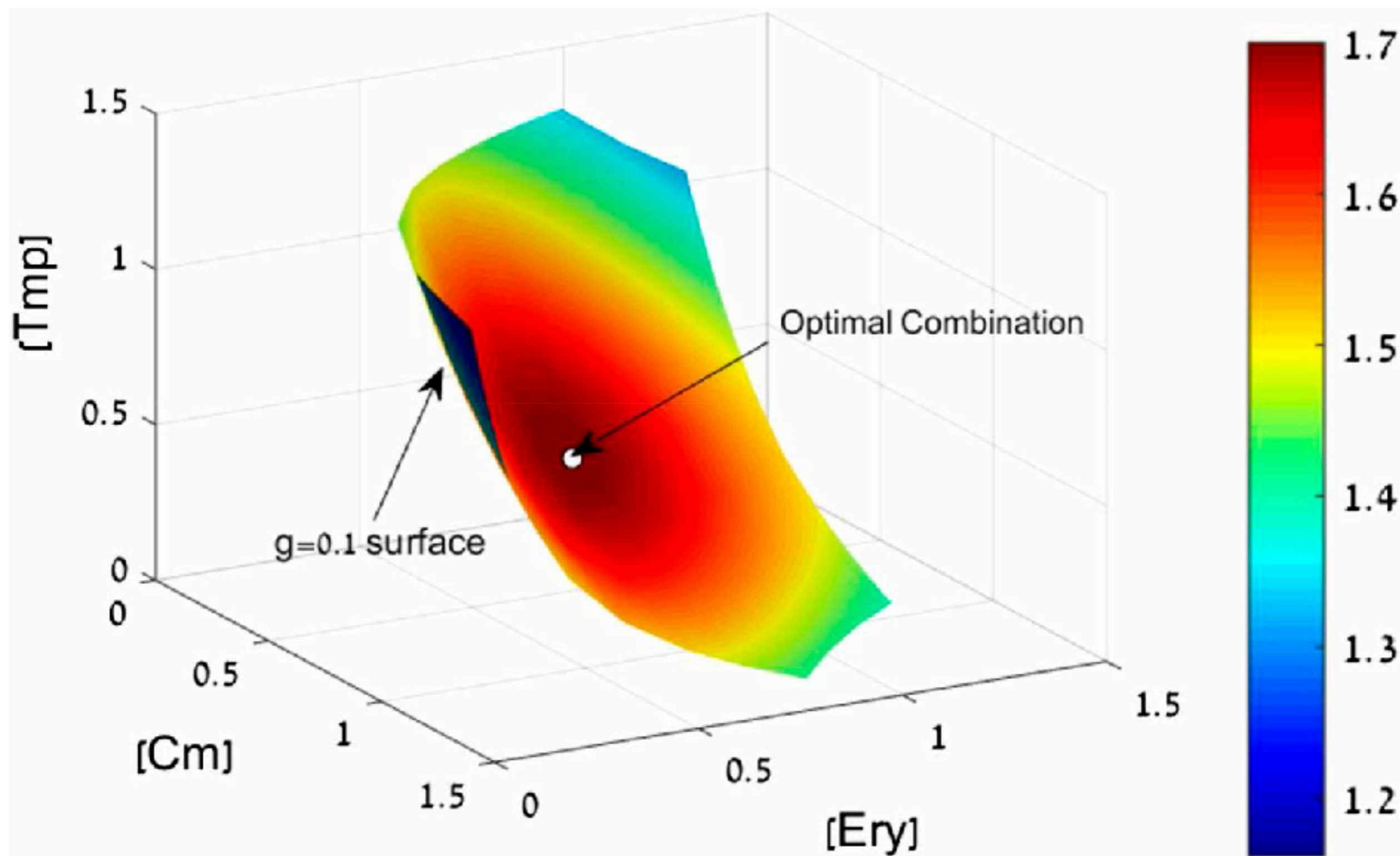
WHO recommends at most 1hr
every synthesis shows threshold at ~2hrs per day

metas on every measure consistent



increased ST = increased risks

dose-response model



benefits



social skills

emotional **recognition**

therapy

language

more **effective learning**

narratives

calming

learning opportunities

problem solving



DIGITAL NOMAD STATISTICS & TRENDS

70%

WORK NO MORE
THAN 40 HOURS PER
WEEK

49%

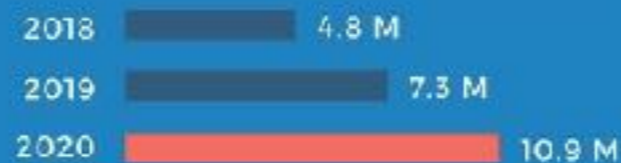
EARN SAME SALARY OR
MORE THAN PRE-NOMAD
LIFE

17%

TRAVEL TO 5 OR MORE
COUNTRIES PER YEAR



U.S. DIGITAL NOMAD GROWTH



DIGITAL NOMAD JOB SATISFACTION

HIGHLY
SATISFIED
NOMADS

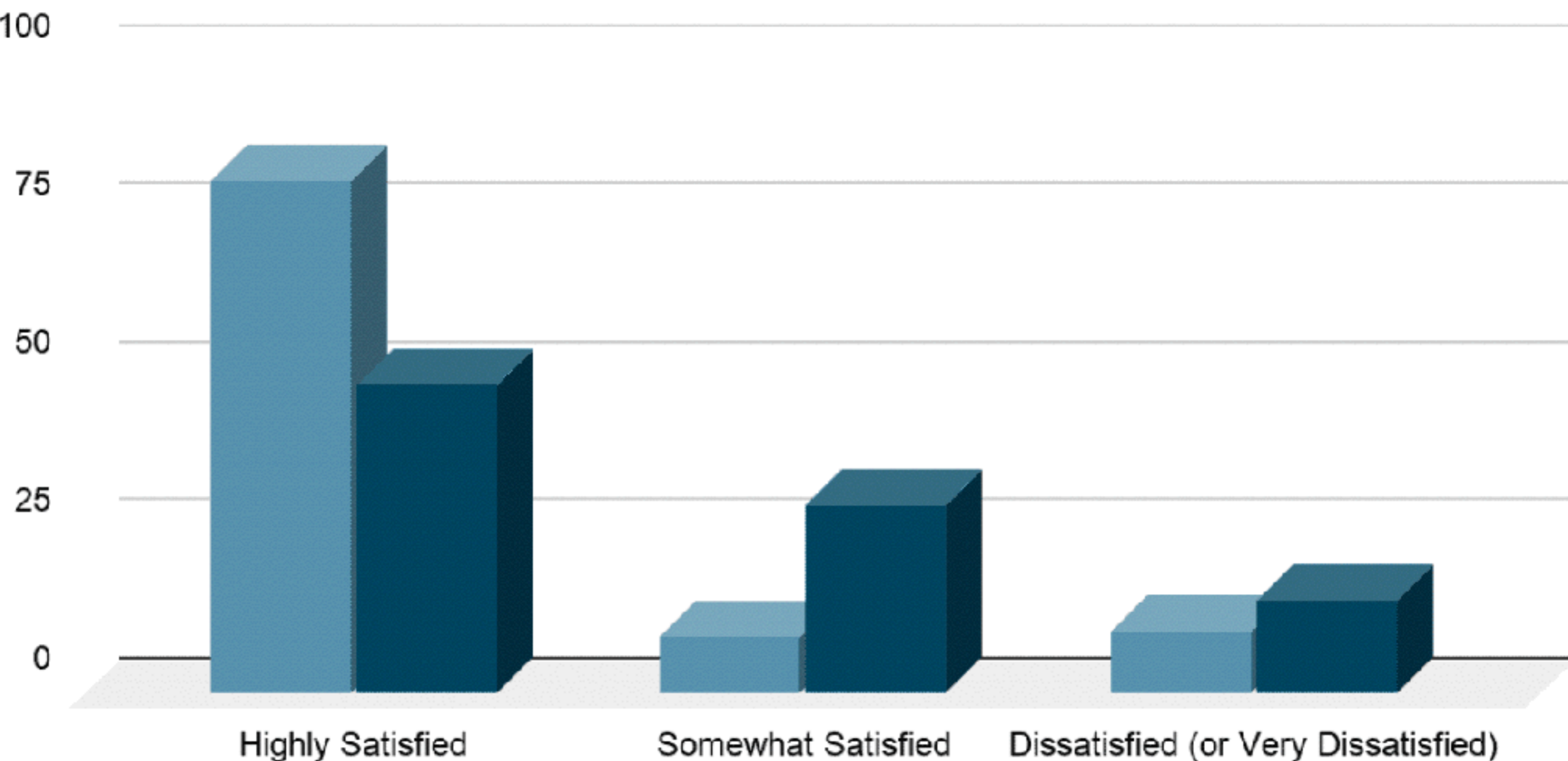


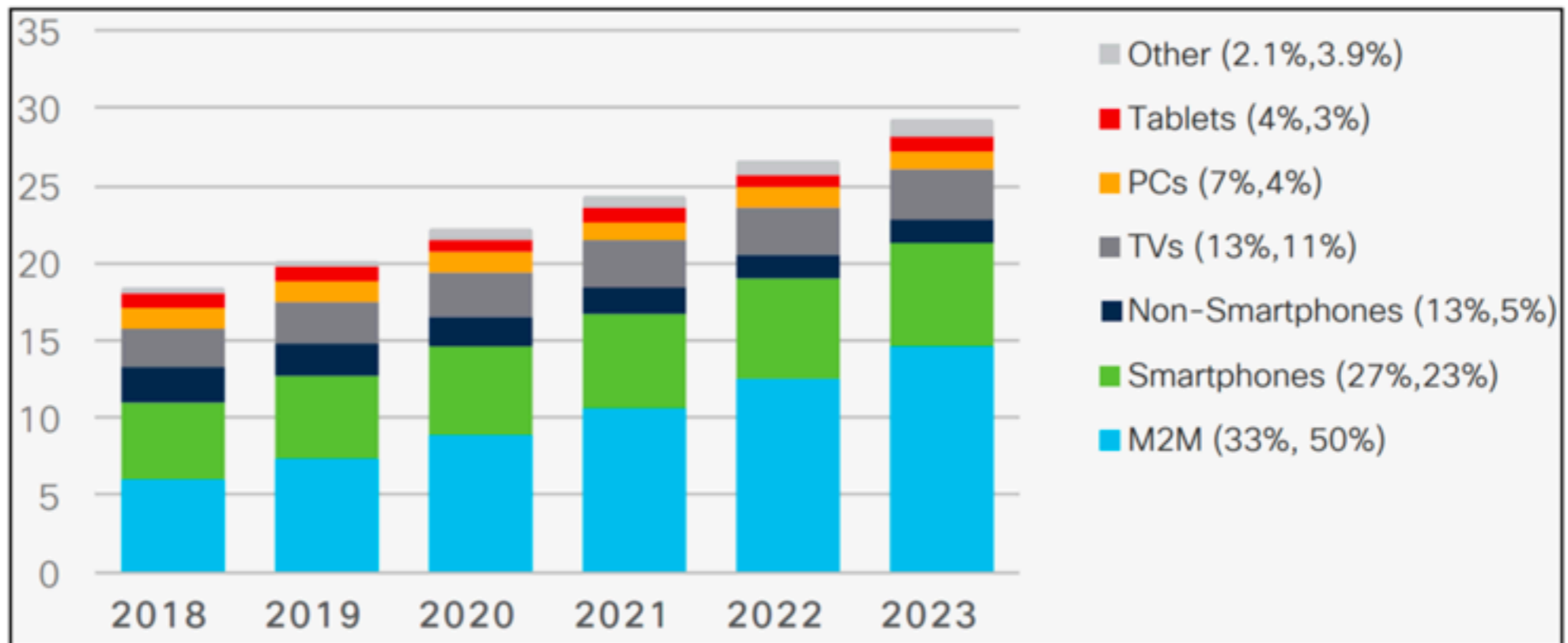
HIGHLY
SATISFIED
GENERAL
POPULATION



Job Satisfaction: Digital Nomads vs. General Population

Digital Nomads General Population





connected mobile learning peer-to-peer

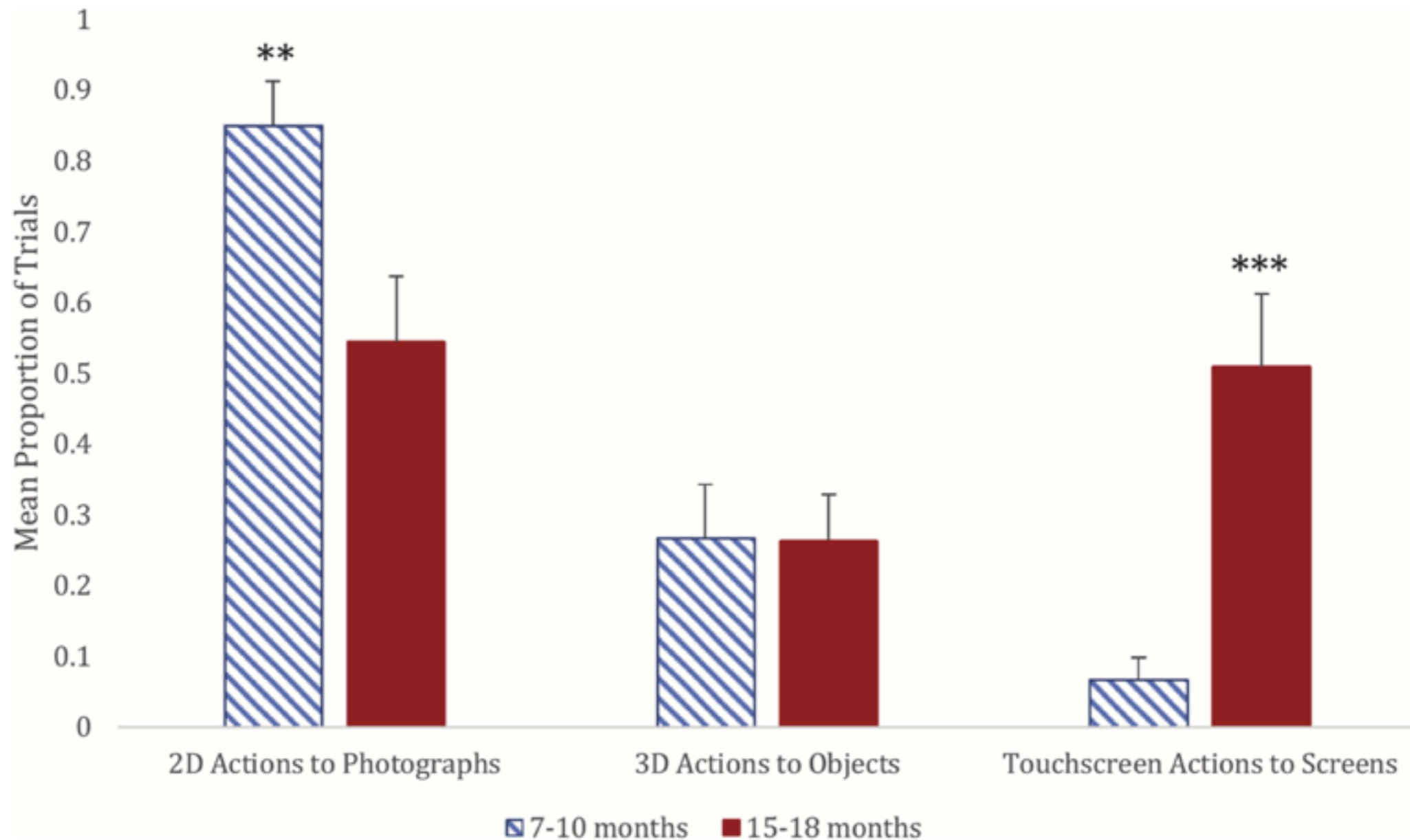
Generalization	Benefits of Mobile Learning
Constructivist Learning	Learning methods, participation, contextual learning, new learning opportunities, challenge in education
Student behavior	Improved retention, improved performance, involves the student, motivation and autonomy, experiential learning, self-directed, active participation, facilitates coordination, cooperation, collaboration
Learning spaces	learning aligned with educational objectives, strategic learning, best/innovative learning methods, portability, ubiquity, connectivity, learning in multiple, conceptual and social physical spaces, lifelong learning
Collaborative Learning	Improved interaction inside and outside the classroom, collaboration and communication interactive and accessible learning, project-based learning, improved teacher–student communication, improves student-student communication
Informal and self-directed learning	Formal and informal learning, participation, convenience, and achievement, attractive learning, self-directed learning, informal learning
Resources for teachers	Adapted to learning needs, innovative pedagogies to support teachers, natural and intuitive interface, immediate delivery of feedback, easier team work, help teachers with new literacy, new social interactions
Technology and support	Service-oriented architectures, learning moments, commercial tools for creating and deploying content, improve the learning process, free access to educational platforms, high implementation speed
Affordability and portability	Accessible and located learning, portable educational technology, affordable educational technology
Availability and flexibility	Ubiquitous access to information, local and mobile learning, availability and accessibility, content available, encourage learning and participation in multiple physical spaces
Motivational Learning	Easy and interesting learning, learning that generates achievement and enjoyment

computer-supported collaborative learning **works well**

Tool or strategy	<i>P</i>	<i>N</i>	Knowledge				Skill		Perception		Group task		Social interaction	
			<i>k</i>	\bar{g}	Q_w	Q_B	<i>k</i>	\bar{g}	<i>k</i>	\bar{g}	<i>k</i>	\bar{g}	<i>k</i>	\bar{g}
Learning environment or tool														
Basic Online Discussion	1,746	10	8	0.52 ^N	0.44	17.63*			3	0.23 ^N	2	−0.27	2	0.48 ^N
Enhanced Online Discussion	971	8	7	0.15 ^N	10.59		2	0.48 ^N	5	0.53	4	0.10 ^N	1	0.15
Visual Representation Tool	1,390	16	14	0.54	17.56		2	0.42 ^N	5	0.07 ^N	9	0.83	10	0.24
Group Awareness Tool	1,475	20	10	0.63	3.98		2	0.68	11	0.26	13	0.78	13	0.54
Graph or multimedia	295	5	4	0.67	3.82		2	1.20	1	0.22	1	0.19		
Adaptive or Intelligent System	522	6	6	0.50	6.09		1	0.85	3	0.23 ^N	1	0.88		
Virtual Environment	791	12	12	0.60	15.54		2	0.97	4	0.62	1	0.88	1	0.48
Supporting strategy														
Teacher's Facilitation	960	8	6	0.34 ^N	5.34	12.63*	2	0.36	3	0.37 ^N	1	0.51	2	0.66 ^N
Peer Feedback or Assessment	1,306	12	8	0.35	7.88		3	0.51	6	0.21 ^N	2	−0.04 ^N		
Role Assignment	997	6	3	0.36	2.85				4	0.17 ^N	3	0.08 ^N	4	0.52
Instruction and Guidance	3,006	39	25	0.41	27.81		10	0.75	13	0.23 ^N	15	0.58	22	0.60

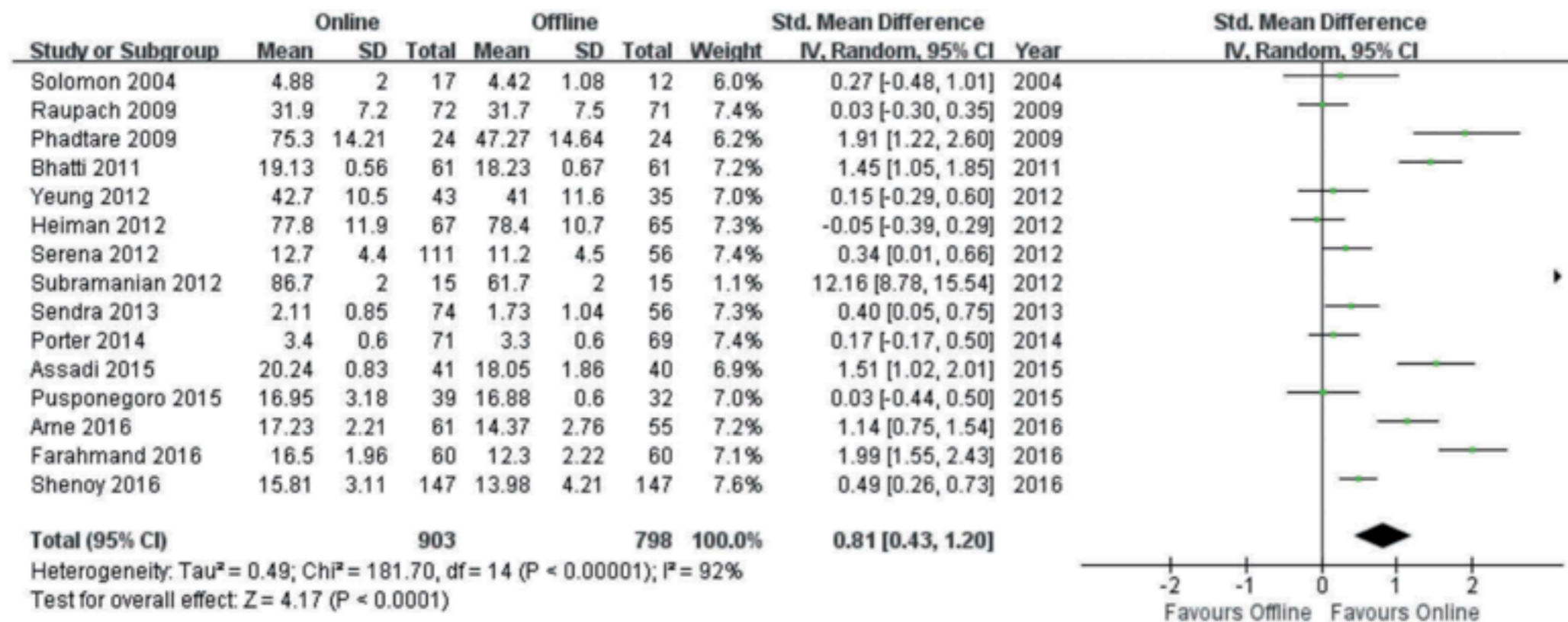
discussion, facilitation, feedback tools, adaptive challenges

visualization often powerful tool for **all** ages & touchscreens can be game changers for learners

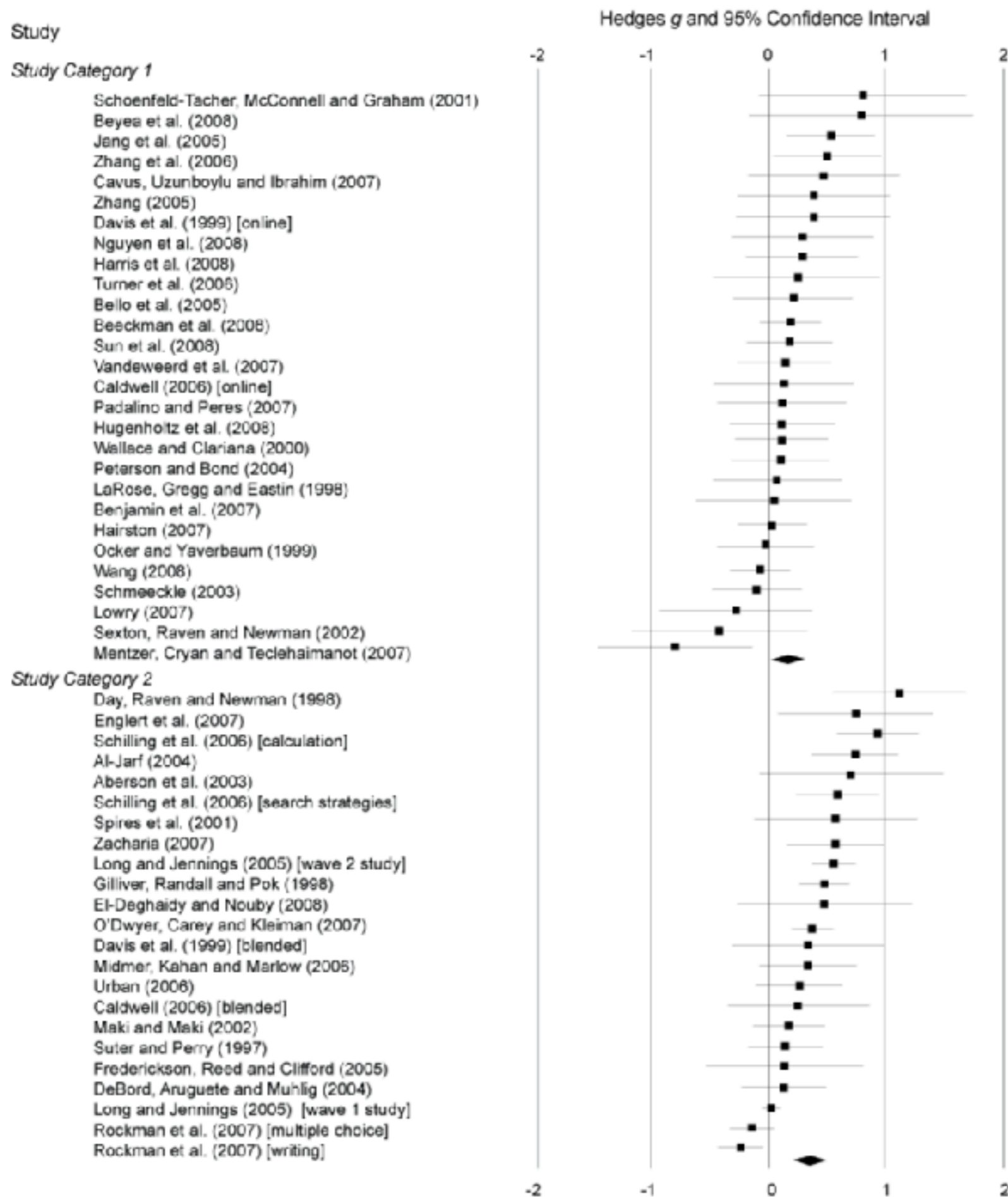


touchscreens (vs worksheets)

many challenges are **better enabled** online



scaffolding, computational work, coding, skills, memory

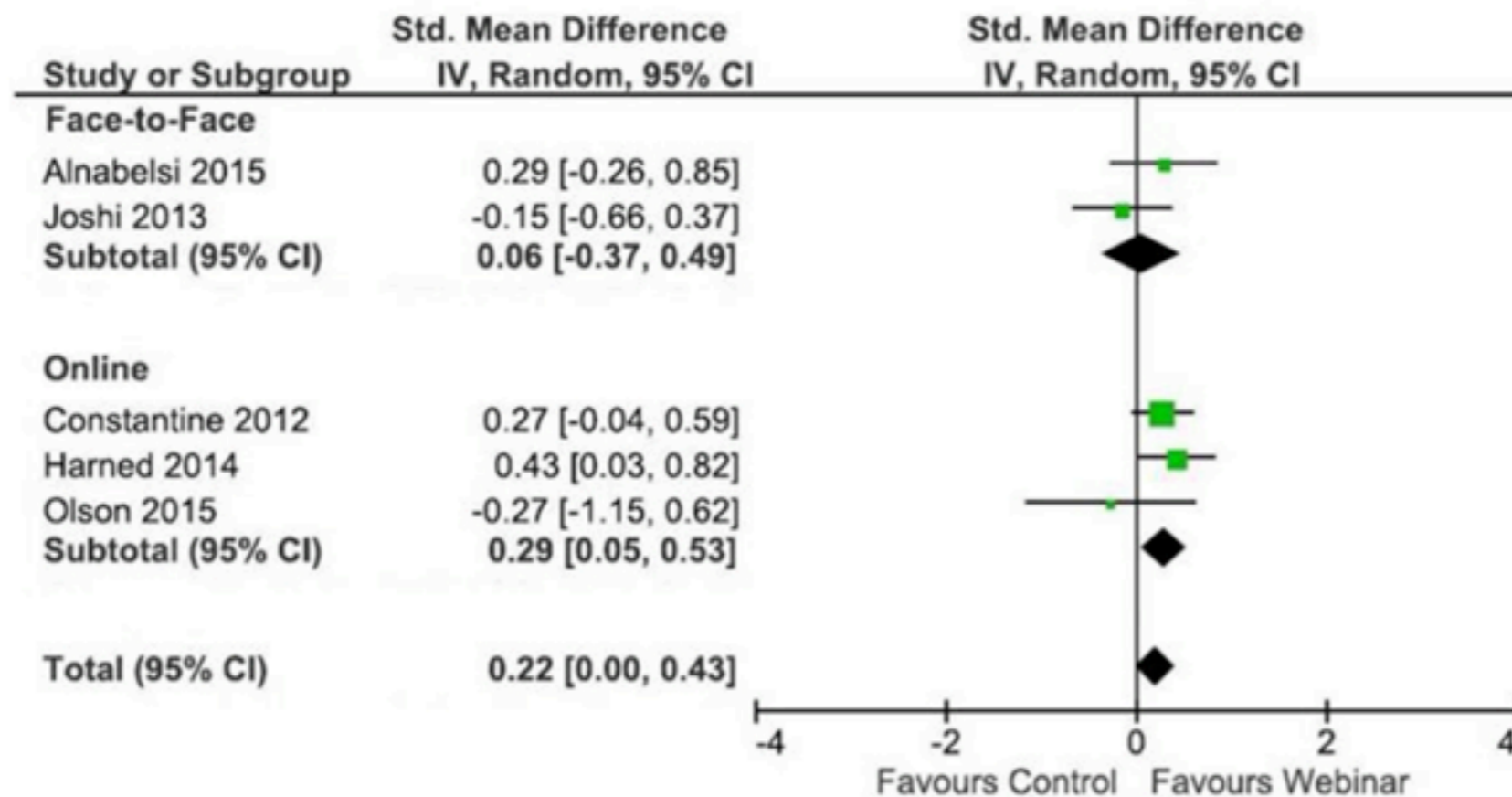


scaffolding
from home
dramatically
improving
with time

+

scaffolding
digitally
more effective
than face-to-face

webinars
learning higher, satisfaction lower *



synchronous ST > asynchronous

strategies



goal-theoretic

3Ms

scaffolding

shared goals & culture

blocking

stack micro-habits

nature

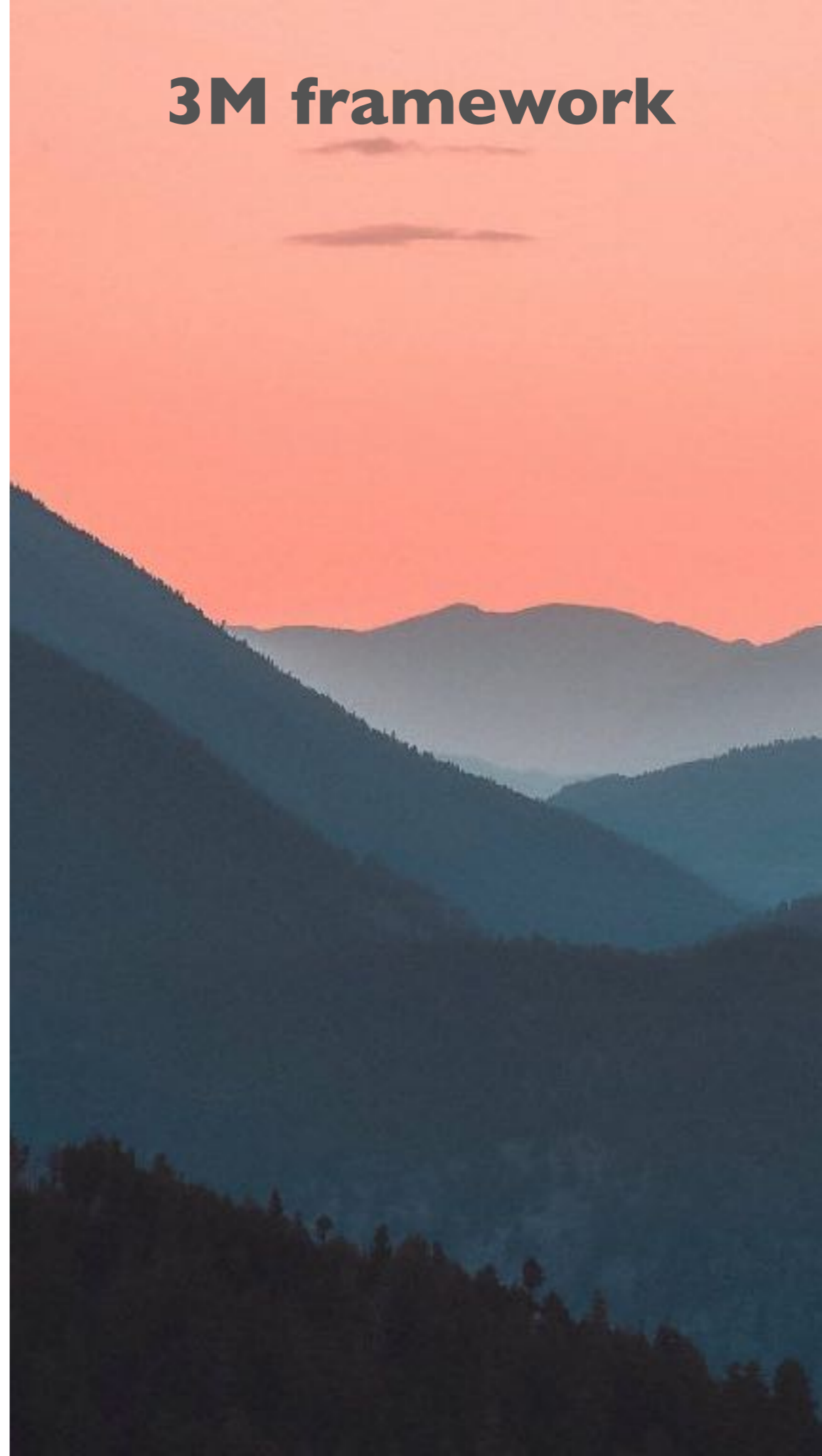
20-20-20 rule

train & strengthen key systems

(I) minimize

time is finite
attention never interchangeable
trade-offs

3M framework



3M framework

(II) mitigate

co-view

interaction

discuss

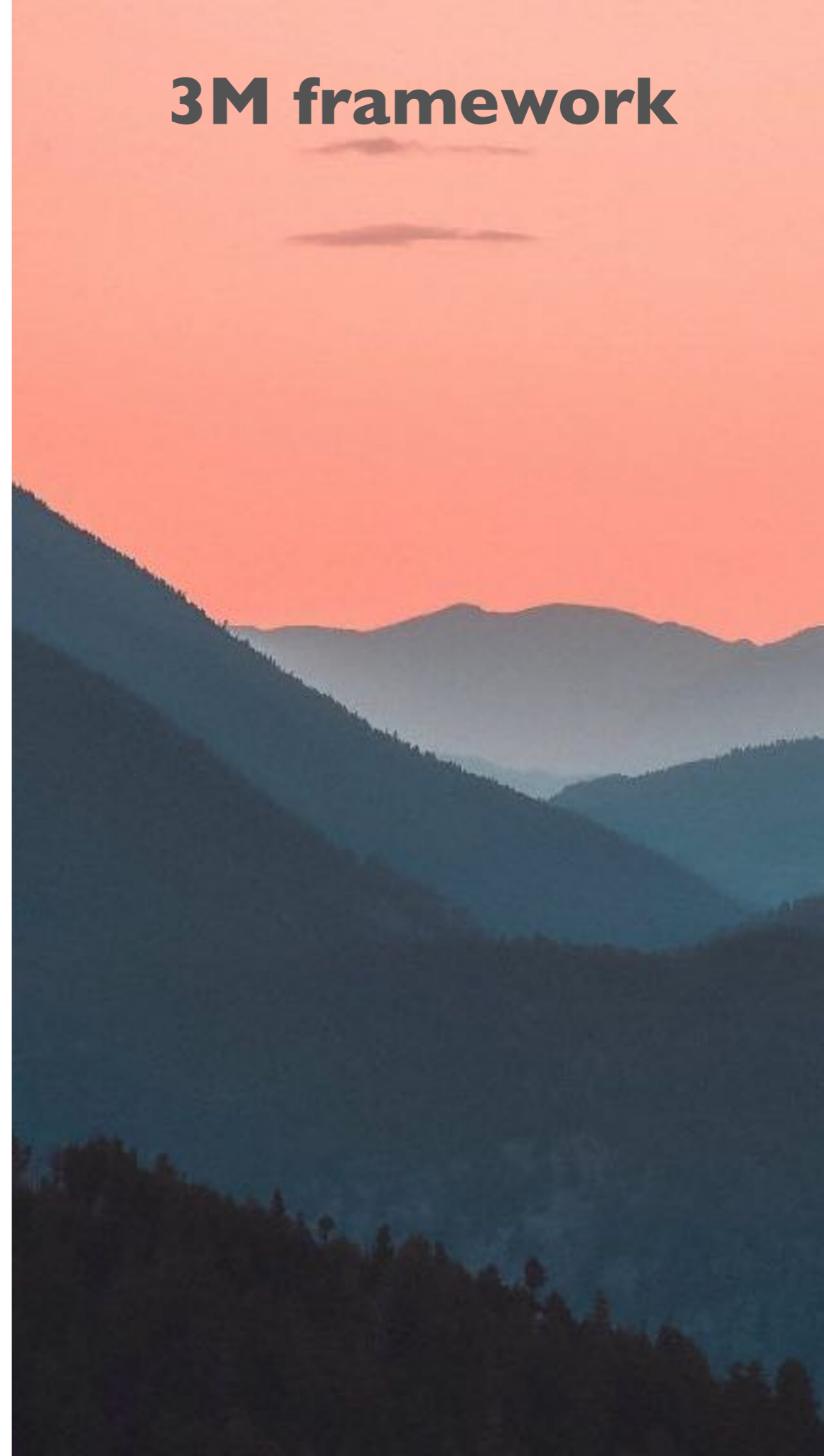
synchronous as much as you can

micro-habits

no ST 1hr before bed

no phone first thing in morning

screens in one place - remove



3M framework

(III) mindfulness

state purpose

collectively choose place

label ST

pay attention to messaging

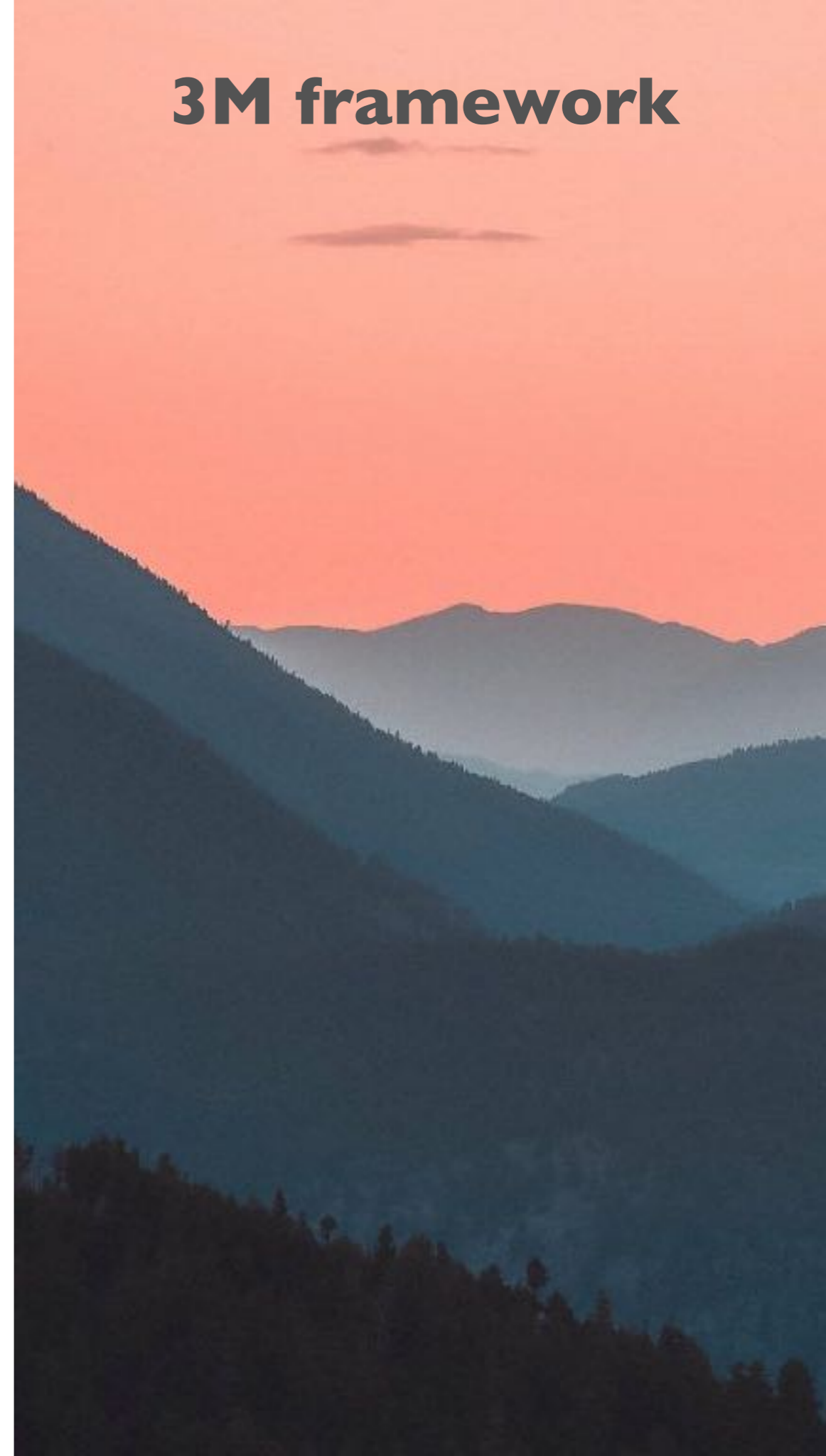
block times

set places

never leave ST ambient

model intention

track attention/cognition



SAT connections

closing the loop



screen = place
adaptation = traits
theory = principles

mitigate through place - **always chose**

SAT connections



screen = place
adaptation = traits
theory = principles

minimize through behavioral traits (**set** habits, rules, attention)

SAT connections



screen = place
adaptation = traits
theory = principles

mindfulness for principles **consistently state purpose** & label

all digital landscapes have a personal, social, and tech dimension



wise planning = higher performance