First	cteristic	s and quality assess	Sample	Review Char Year Range Earliest -	unique effects racteristics Sample Age Restrictions		istics for studies providin			Elig.	Lit.	Dual	y Assess	Studies		
	2020	Include: Experimental designs	None specified	2009– 2019	School-age Children (Early Primary, Elementary)	•	Literacy: Listening comprehension Literacy: Phonics Literacy: Phonomic awareness Literacy: Reading comprehension Literacy: Reading fluency		Intervention: Literacy (Abracadabra; in schools)	Crit. <sup>3</sup>	V	Screen	Qual. <sup>6</sup>	Listed ?	Bias <sup>8</sup>	Hetero L
Adelantado Renau	2019	Include: Cross- sectional studies	None specified	1982– 2019	Children; Adolescents (5.7-18.0)	•	Literacy: Vocabulary knowledge Learning: General Literacy: General Numeracy: General	•	Screen use: General TV programs and movies: General Video games: General	L	L	L	L	L	L	L
Andrade	7019	Include: Interventions	Include: Overweight and obese	2010– 2017	Children; Adolescents	•	Healthy behavior: Self- efficacy Psychological health: Depression Psychological health: Enjoyment Self-perceptions: General Self-perceptions: Self- esteem	•	Video games: Physically active	U	L	L	U	L	Н	L
	2020	None specified Include: Interventions	None specified  Include: Autism	2008- 2020 2013- 2015	School-age Children (Primary, Elementary, Middle School) School-age Children (Primary,	•	Learning: Motivation		Video games: Educational (with competition)  Intervention: Education (via touch	U	H	Н	Н	Н	L	L
Bartel	2015		Exclude: Atypical population (except for delayed sleep phase disorder or insomnia)	2004– 2014	Adolescents (12.2-17.7)	•	Sleep: Duration Sleep: Time to fall asleep	•	Computer use: General Internet use: General Screen use: General (mobile phone) TV programs and movies: General Video games: General	L	L	U	U	L	U	U
Benavides-	2022	Include: Randomised controlled trials and quasi-RCTs. Include: Randomised controlled trials	Exclude: Any disease Mental disorders Include: Math difficulties Include: Regular	1999– 2019 2006– 2018	Adolescents Children		Diet: Fat consumption	•	Intervention: Nutrition (in schools)  Intervention: Mathematics	L	Н	L	L H	L	H	L
Blok	2002		students, poor readers or dyslexics Exclude: Severe or multiple disabilities	1990– 2000	All (5.4-11.5)	•	Body composition Cardiometabolic		Intervention: Literacy	U	L	Н	Н	L	Н	L
	2016	Randomised controlled trials  Include: Experimental  Include: All	Include: Chronic disease  None specified	2011– 2018 2004– 2015	Children; Children; Adolescents (6.0-10.4)	•	Physical activity: General Physical health: Muscular fitness  Diet: Food intake	•	Video games: Health promoting content  Advertising: Unhealthy food	Н	L	L	U	L	L	L
	2020	quantitative designs Include: designs with control groups	None specified  Exclude: Brain damage	2006– 2014 2002– 2019	School-age Children Children (3.4-14.3)	•	Cognition: Executive functioning Cognition: Executive Functioning (cognitive		Video games: Numeracy  Computer use: Executive functioning training	U	Н	U	Н	H	H	H
		groups				•	(inhibition) Cognition: Executive Functioning (working memory)  Body composition Diet: Fat consumption Diet: Fruit and vegetable intake		craming							
Champion	2019	Include: Randomised controlled trials	None specified	2003– 2017	School-age Children (11.4-15.9)	•	Diet: Fruit intake Diet: Sugary drinks and snacks Physical activity: General Physical activity: Moderate-to-vigorous intensity Risky behavior: Alcohol		Intervention: Lifestyle risk behaviour (at school)	L	L	L	L	L	L	L
Chan	2014	Include: Experimental; Quasi- experimental Include: pre-post	None specified	2002– 2012	School-age Children School-age	•	consumption Risky behavior: Smoking Screen time: General Numeracy: General	•	Intervention: Dynamic geometry software	U	Н	Н	Н	L	L	L
Chen	2017	designs with or without control group Include: Experimental designs Include: Randomised	None specified  None specified	2001– 2016 2008– 2019	Children (Primary, Elementary) All School-age	•	Learning: General	•	Screen use: General (in schools)  Video games: Educational (with competition)  Intervention: Reading	U	H	U	Н	н	Н	L
Cheung	2013	Include: Experimental; Quasi- experimental Include: experiemental designs with	None specified  None specified	2010 1980– 2010 2008– 2013	Children  School-age Children  All	•	Numeracy: General		(in schools)  Intervention: Mathematics (in schools)  Screen use: General (mobile phone for language learning)	L	Н	H	U	L	L	L
	2022	control group Include: Longitudinal; Retrospective Include: randomised	None specified  Exclude:	2004– 2018 2011–	All	•	ADHD Symptoms (Inattention)		Screen use: General Screen use: Reading	U	L	U	Н	L	Н	L
Compress	2021	experimental designs include: randomized and non-randomized controlled trials (control group with no intervention or traditional	Exclude: Disabilities, diseases or disorders, overweight or obese	2016 2008– 2019	All (4.5-11.6)	•	performance  Rody composition: RMI	•	(vs paper)  Video games: Physically active	L	U	L	U	L	Н	L
Comeras- Chueca	2021	exercise intervention) Include: randomized and non-randomized controlled with control group with no intervention or	Include: Overweight and obese Exclude: Participants with disabilities, diseases or	2010– 2020	All (8.0-14.0)	•	Body rat percentage Body composition: Fat-		Video games: Physically active	L	L	L	U	L	Н	L
Coyne Cunninghan	2018	traditional exercise intervention	diseases of disorders other than obesity  None specified  None specified	1975– 2017 2014– 2018	Children; Adolescents All (11.2-16.8)	•	free mass Body composition: Waist circumference		Screen use: Prosocial content  Social Media: General (duration)	L	L	L	Н	L	L	L
J	2010	designs Include: All quantitative designs; Experimental Include: Intervention	None specified  None specified	1989– 2009 2006– 2016	Children; Adolescents Children; Adolescents (8.7-16.0)	•	Healthy behavior: General Body composition		Intervention: Health behaviours  Intervention: To promote health (via mobile phone)	U	L	H	H	L	Н	L
	2022	Include: experimental or observational Include: Quantitative designs	Exclude: Atypically developing Include: Healthy children	1978– 2021 2017– 2019	Children (0.5-11.0) Early childhood;	•	Psychological health:		Screen use: General	U	L	L	L	L	L	L
Ferguson	2017	designs None Include: Experimental,	children  None specified  None specified	2005– 2017 2009–	Pre-school  Children; Adolescents	•	Risky behavior: Sexual activity Risky behavior: Sexual activity (initiation of sex)		Screen use: Sexual content  Video games: Violent	U	L	L	H	L	L	L
Folkvord	2018	correlational, or longitudinal Include: Interventions Include: experimental or	None specified  Exclude: Cochlear	2013 2007– 2018 2002–	(7.8-17.5)  Children; Adolescents  Early childhood; Pre-school; School-age	•	Diet: Food intake (calories)  Literacy: Reading comprehension	•	Video games: Violent content  Advertising: Advergames  e-Books: General	U	L	L	U	L	H	L
	2021	quasi- experimental Include: Cross- sectional	implants or autism Autism  None specified	2002– 2019 2006– 2014	School-age Children (Early Primary, Elementary) Adolescents (12.5-16.2)	•	Literacy: Vocabulary learning		e-Books: General  Internet use: Cyberbullying victimization	U	L	L	U	L	L	L
	2019	Include: Experimental with control group Include: Experimental; Quasi- experimental	None specified  None specified	NA 2004– 2011	All School-age Children (Primary, Elementary, Middle School)		Learning: General		Intervention: Augmented reality (in schools)  Intervention: Writing feedback	U	H	U	Н	Н	L	L
Hammersle <u>:</u> Hao	2016	Include: Randomised controlled trials Include: Experimental	Exclude: Those with special needs, require a special diet, or have a condition that would limit physical activity  Exclude:	2003– 2013	School)  Children; Adolescents  School-age		Body composition  Learning: Second		Intervention: To promote healthy weight (obesity prevention)	L	L	Н	L	L	Н	L
Hassan- Saleh	2021	with control group Include: Experimental; Quasi- experimental Include: Randomised	Exclude: Disabilities  None specified  None specified	2012- 2018 2008- 2016 2009- 2018	Children; Adolescents Children; Adolescents	•	language vocabulary  Literacy: Pronunciation	•	Intervention: Pronunciation  Intervention: To promote physical activity (via mobile	U	L	L U	L U	L H	H H	L
Hernandez- Jimenez	2019	controlled trials Include: Experimental; Quasi- experimental	None specified	2018 2009– 2017	(9.9-16.6)  Children; Adolescents  Early childhood; Pre-school;	•	General  Body composition		activity (via mobile phone)  Video games: Physically active	U	L	Н	L	L	L	L
lvie	2020	Include: Correlational studies Include:	None specified  None specified  Include: Healthy	1997- 2018 2012- 2019	School-age Children (Early Primary, Elementary) Adolescents (14.0-18.0)	•	Psychological health: Depression	•	Intervention: Literacy videos  Social Media: General	U	L	H	H	L	L	L
Kates	2020 2018	Experimental; Cross-sectional; Longitudial	Include: Healthy children  None specified  None specified	2007- 2019 2008- 2016 2010- 2018	Children  School-age Children  School-age Children (Early	•	Learning: General Learning: Literacy and	•	Screen use: General  Screen use: General (mobile phone)  Screen use: Educational apps	U U	L H	L L	L H L	L H	U L	L
Kroesberge	2003	quasi- experimental Include: Within subject design; between subject design	Include: Math difficulties	2018 1985– 1999 2007–	Primary, Elementary) School-age Children (Primary, Elementary) (7.0-11.3) School-age Children	•	Literacy: General Numeracy: General Numeracy: General	•	Intervention: Mathematics (via computer in classrooms) Intervention:	U	L	U	H	L	H	L
Kucukalkan Li	2019	Include: Experimental Include: Experimental; Quasi- experimental Include:	Include: Dyscalculia  None specified  Include:	2016 1991– 2005	Children (Primary, Elementary) School-age Children	•	Numeracy: General  Numeracy: General  Developmental: Gross motor (locomotor)	•	Intervention: Mathematics  Intervention: Mathematics  Intervention: Active	U	L	L	U	H L	Н	L
	2022	Randomised	Include: Atypically developing None specified	2012– 2020 2014– 2021	Children; Adolescents All	•	Developmental: Gross motor (non-locomotor) Developmental: Gross motor (object control skills)		Intervention: Active video games for motor skills  Computer use: Programming exercises	U	Н	L	Н	L	H	L
	2008	experimental Include: All quantitative designs Include: Randomised controlled trials	None specified  None specified	1990– 2003 1999– 2012	School-age Children (Primary, Elementary) Children; Adolescents (4.0-14.7)	•	Learning: General  Body composition		Intervention: Education (via computer) Intervention: Screentime reduction	L	H	Н	L	H	H	H
	2019	Include: All quantitative designs Include: studies with control group	None specified  None specified	2007– 2014 NA	All (13.3-16.6)	•	Psychological health: Depression Psychological health: Satisfaction	•	Social Media: Instant messaging Video games: General Screen use: General	U	L	И	Н	Н	L	L
Lu	2021	group Include: Cross- sectional only	Include: Healthy only	2014– 2018	Adolescents		Negative coping style Psychological health: Positive coping style	•	Screen use: General (mobile phone addiction)  Intervention: Education (general) Screen use: General Screen use: General	U	L	U	L	L	L	L
Madigan	2020	Include: Observational Exclude: Qualitative	Exclude: Asd or intellectual disability	1973– 2019	Children (0.5-10.6)	•	Literacy: General	•	Screen use: General (coviewing)  TV programs and movies: Coviewing  TV programs and movies: Educational  TV programs and movies: General  TV programs and movies: General  TV programs and movies: General (in background)	U	L	L	U	L	L	L
Мајог	2021	Include: Randomised controlled trials	None specified	2007– 2020	Children; Adolescents	•	Learning: General  Cognition: Cognitive Functioning Cognition: Executive	•	•	U	L	L	Н	L	L	L
Mallawaara	2022	Include: Cross- sectional or longitudinal	Include: Non- clinical	2014– 2020	Early childhood; Pre-school (1.4-5.4)	•	Functioning Developmental:	•	Screen use: General (mobile phone or tablet)	L	L	L	L	L	L	L
Mares	2005	None	None specified	1969– 1989	Children	•	Aggression: Towards peers Cognition: Reducing stereotypes Prosocial Behavior: Altruism	•	TV programs and movies: General	U	L	Н	Н	L	Н	Н
Mares	2013	None	None specified	1973– 2010	Children	•	Cognition: Moral reasoning and perception of outgroups Learning: General Learning: Literacy and numeracy Learning: Physical and	•	Intervention: Sesame Street	U	Н	Н	Н	L	Н	L
	2004		None specified  None specified	2001–15 1985– 2002	All (6.0-12.2) Children; Adolescents	•	Body composition  Body composition  Physical activity:  General	•	Video games: General  TV programs and movies: General  Video games: General	U	L	Н	L H	L H	Н	L
	2019	Include: All quantitative designs Include: Crossover or parallel randomized controlled trials Include:	None specified  None specified  Exclude: Contraindictions to physical	2003– 2018 2006– 2017	All	•	Diet: Food intake (calories)	•	TV programs and movies: Mealtime  Intervention: To	U	L	U	H	L	Н	L
	2022	Randomised controlled trials Include: Randomised		2015– 2019 1994– 2009	All (10.3-17.8) All (6.7-16.2)		Physical activity: General		Intervention: To promote physical activity (via gamification)  Intervention: Literacy (phonics; via computer)	L	L	L	L	L	L	L
	2018	•	Include: Poor readers None specified	1994– 2015 2004– 2018	Children; Adolescents Adolescents (13.5-16.8)	•	Literacy: General  Sleep: Duration Sleep: Problems Sleep: Time to fall asleep		Intervention: Literacy  Screen use: General (excessive)	L	Н	L	L	L	Н	L
Merchant	2014	group	None specified	NA	School-age Children	•	Learning: General	•	Screen use: Virtual reality simulations (Educational) Screen use: Virtual reality worlds (Educational) Video games: Virtual reality (Educational)	U	L	Н	Н	Н	Н	L
	2022	Include: random assignment or quasi-experimental  Include: Group-control	Include: Poor readers  Include: Both typically developing and atypically	2004- 2020 2006-	School-age Children (Primary, Elementary)	•	Cognition: Cognitive Functioning Cognition: Executive Functioning Cognition: Verbal skills		Intervention: Reading (technology supported)  Intervention: Cognitive	U	L	Н	Н	L	H	H
	2020	experimental design	atypically developing with neurodevelopmer disorder  None specified	2018	Children; Adolescents	•	Cognition: Visuospatial skills Numeracy: General Psychological health: Adjustment		TV programs and movies: Violent content	U	Н	U	Н	Н	L	Н
	2016	Include: All quantitative designs None	None specified  Include: Healthy populations only	1986– 2012 2001– 2010	Children; Adolescents Children; Adolescents	•	Internalizing  Cardiometabolic health: Maximum oxygen consumption Physical activity: Energy expenditure		TV programs and movies: Scary content  Video games: Physically active	U	L	H	H	H	L	L
	2013	experimental designs	None specified  None specified	1985– 2012 2008– 2017	All (8.9-16.0)	•	Physical activity: Heart rate  Cognition: Information processing  Aggression: Towards		Video games: General  Video games: Violent content	U	L	U	Н	L	L	L
	2018	Include: Longitudinal None specified	None specified  Exclude: Neurological disorder		All (8.9-16.0)  Children; Adolescents	•	Psychological health:	•	_	Н	L	L	L	L	L	L
Rodriguez- Rocha Sadeghirad	2019	Include: Experimental; Quasi- experimental Include: Randomised controlled trials	None specified  None specified	1999– 2018 1978– 2014	All (4.5-15.4)  Children; Adolescents (3.8-11.0)	•	vegetable intake  Diet: Food intake (calories)  Diet: Food intake (grams)		Intervention: Fruit and vegetable  Advertising: Unhealthy food	И	L	L	L	L	L	L
Scherer	2020	Include: Experimental or quasi- experimental designs Include: Experimental;	Exclude: Clinical or special needs populations  None specified	1973– 2017 2001–	(3.8-11.0)  All (6.5-16.8)	•	Diet: Unhealthy food choice Learning: Programming skills		Intervention: Education (programming) Intervention: With	U	H	U	Н	L	L	L
	2013	Quasi- experimental Include: Interventions	None specified  Include: No	2009 2009– 2019	Children (4.3-6.1)	•	Cognition: Executive functioning  Body composition	•	Intervention: Cognitive training  Intervention: To promote health (via mobile phone app)	L	L	L	Н	L	L	L
	2019	Include: Interventions Include:	Include: No health conditions except obesity  None specified	2013– 2018 2003– 2021	Children; Adolescents (12.0-15.7) Adolescents (10.4-18.0)	•	Diet: Sugary drinks Physical activity: General Screen time: General	•	mobile phone app) Intervention: To promote health (via mobile phone) Intervention: To promote health (via text message)  Internet use: General	U	L	L	L	L	H	L
	2014	designs Include: Randomised controlled trials; Quasi- experimental; Observational Include:	None specified	2000– 2011	School-age Children (Primary, Elementary) Early childhood; Pre-school;		Depression		Intervention: Science (in schools)	U	Н	Н	Н	L	Н	Н
	2021	Include: experimental and quasi- experimental designs  Include: Experimental; Quasi- experimental	Include: No developmental delay None specified	1994– 2019 1980– 2014	Pre-school; School-age Children (Early Primary, Elementary) (0.8-6.5)		Learning: General		Screen use: Video (vs face-to-face) e-Books: Narration	Н	L	U	Н	H	L	L
Takacs	2019		None specified	2001– 2016	Children	•	Cognition: Executive Functioning (accuracy) Cognition: Executive Functioning (cognitive flexibility) Cognition: Executive Functioning (inhibition) Cognition: Executive	•	Intervention: Education (via computer)	L	L	U	Н	L	L	L
		Include: desgins	None specified	2010– 2015 2006–	All School-age	•	Cognition: Executive Functioning (working memory)  Learning: General  Numeracy:		Intervention: Augmented reality (in schools)  Video games:	U	Н	U	U	L	L	L
Vahedi	2019	with a control group Include: Interventions (pre-post or controlled). Exclude: Cross-sectional Include:	None specified  None specified	2016 2015– 2016	School-age Children (Middle/High School) School-age	•	Mathematics  Risky behavior: Media literacy Risky behavior: Risk taking (attitude)	•	Intervention: Media literacy (web-based)  Computer use: General	L	H L	U	U	L	L	L
	2016	Prospective design Exclude:	None specified  None specified	2005– 2015 2011– 2018	Children (2.0-16.3)	•	Risky behavior: Risk taking (general)	•	Computer use: General TV programs and movies: General  Social Media: General	U	L	L	Н	L	H	L
	2013	Include: experimental designs Include:	None specified  Exclude: Disabilities	1954– 1980 2005– 2012	School-age Children (5.0-17.0)	•	Substance abuse  Learning: General  Learning: Motivation	•	TV programs and movies: General  Video games: Educational  Video games:	U	U	H	U	L	H	H
	2013	Experimental with control group Include: Experimental; Quasi- experimental; Pre-test post- test	None specified  None specified	1993– 2007 2010– 2018	All Children (1.8-5.9)		Learning: General		Video games: Educational (with instructional support)  Intervention: Education (via touch screen)	U	H	U	Н	L	L	L
	2018	Include: experimental,	Exclude: Health conditions  None specified	2010– 2018 2006– 2016	Early childhood; Pre-school (1.8-5.8)	•	Learning: General  Psychological health: General Psychological health: Positive mental health		Screen use: Touchscreens Social Media: General	U	L	U	Н	L	L	L
Zhou	2020	Exclude: Non- empirical studies; Qualitative; Systematic reviews or meta- analyses Include:	None specified	2009–2018	All	•		•	Video games: Health promoting content	U	L	U	Н	L	L	L
<sup>1</sup> Items are fro <sup>2</sup> Where provi <sup>3</sup> Eligibility cri <sup>4</sup> Literature se	2009 om the ded teria pr	Randomised controlled trials; Quasi- experimental; Observational National Health, Lun edefined and specifi	ed	1997– 2006 e's Quality Ass	School-age Children (Primary, Elementary) sessment of Sys	•	comprehension		e-Books: General es tool. Note that we exclud	L ed the fi	L rst item o	U of the too	H ol.	L	Н	L
<sup>5</sup> Dual independent of Du	ndent s ndent c dies list bias ass	creening & review quality assessment collected with important collected	haracteristics and res	sults of each												