Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Children's behavioral problems, screen time, and sleep problems' association with negative and positive parenting strategies during the COVID-19 outbreak in Brazil

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ABSTRACT

Families' health, safety, and economic stability were jeopardized during the pandemic. Parental stress is a risk factor for hostile and less supportive parenting. Parenting styles are a set of attitudes, feelings and behaviors related to parenting that modulate the child's psychosocial functioning and might impact on the adaptability to a stressful time.

Objective: To investigate the group differences among children raised by negative and positive parenting families during COVID-19 pandemic.

Methods: We have done an online survey with 329 parents. Parents answer about parenting strategies and styles, children's behavior, Covid related questions, socio-economic information, sleep and gaming disorders.

Results: Parents' frequent use of negative strategies were a risk factor to have a negative outcome related to mental health, games, sleep, and children behavior.

Discussion: Parenting strategies are some targets pointed in this study for intervention. Parents' styles and strategies training to better manage children might be even more important to avoid negative consequences for children in stressful times.

1. Introduction

The COVID-19 pandemic, provoked by the rapid transmission of the SARS-CoV-2, increased the stress experienced by families around the world in 2020 (Bavel et al., 2020; Chung, Chan, Lanier, & Ju, 2020). Stressors related to the pandemic are jeopardizing families' health, safety, and economic stability (Brown, Doom, Lechuga-Peña, Watamura, & Koppels, 2020), even if they were not directly affected by the virus itself (Bavel et al., 2020). Profound changes in daily routines at home, school, and work, besides the uncertainties surrounding the COVID-19 infection, may underlie the stress induced by the pandemic. For parents, unemployment and

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financial strain due to economic changes associated with COVID-19 outbreak can also be a burden (Brooks et al., 2020). Adults in China showed high frequencies of Generalized Anxiety Disorder (35.1%), depressive symptoms (20.1%), and sleep disturbance (18.2%) (Huang & Zhao, 2020) during the pandemic, while Brazilian adults are showing high levels of loneliness (57.1%), sadness (40.3%), and anxiety (53.1%) (Werneck et al., 2021).

The pandemic's impact has also been shown on children and adolescents (Singh et al., 2020). During the pandemics a special interest has been directed to the child's mental health, related to their exposure to uncertainties, fears, routine changes, and social isolation. According to Liu and colleagues (Liu, Bao, Huang, Shi, & Lu, 2020), children with parental presence during the pandemics have less impact on mental health in comparison with those who experience separation from their caregivers (e.g: children who are isolated after being diagnosed in local hospitals or collective medical observation centers; and children whose caregivers are infected with SARS-CoV-2). Nonetheless, even for children who are quarantined at home separated and with restricted movement with constant contact with their parents, some factors can present a negative impact on their mental health. For example, Cohodes, McCauley, and Gee (2021) found that parent anxiety-related symptomatology moderates the association between pandemic-related stress and internalizing symptomatology in their child. As pointed out by Wu and Xu (2020), familiar stress during the pandemics could be associated with adverse outcomes such as an increased risk for child maltreatment (Wu & Xu, 2020).

1.1. Behavior problems during COVID-19 pandemic

As a result of the restrictive measures used during the covid-19 pandemic, children seem to be physically less active and more bored, alongside as showing limited social interactions (Liu et al., 2021). The effect of those lifestyle changes and psychosocial stress seem to contribute to the emergence of behavioral problems (Wang, Zhang, Zhao, Zhang, & Jiang, 2020).

According to the APA Dictionary, behavior problem can be defined as “a pattern of disruptive behavior that generally falls within social norms and does not seriously impair a person's functioning” (APA, n.d.). Research on children behavior usually adopts a broad classification, with Externalizing behaviors referring to actions in the external world, and Internalizing behaviors characterizing processes with the self (Levesque, 2011). Recent research on behavior problems during the COVID-19 pandemics have been showing an increase on behavioral complaints (Dubois-Comtois, Suffren, St-Laurent, Milot, & Lemelin, 2021; Wang et al., 2020).

In a recent meta-analysis, with a total sample of 21,330 children and adolescents, authors identified that predominant behavioral problems were anxiety (prevalence of 34.5%), depression (prevalence of 41.7%), irritability (prevalence of 42.3%), inattention (prevalence of 30.8%), and sleep disturbance (prevalence of 21.3%) (Panda et al., 2021).

1.2. Sleep disturbance

Some authors propose that children's well-being has become more dependent on family's health and well-being during the pandemic, once healthcare and school's support was no longer available (Glynn, Davis, Luby, Baram, & Sandman, 2021). Along with elevated depression and anxiety levels in adults, emotional and behavioral reactions in children and adolescents are being reported, including changes in sleep (Schmidt, Crepaldi, Bolze, Neiva-Silva, & Demenech, 2020). The escalated stress and major routine changes have contributed to an increase in children's sleep time, but not in quality, with children reporting unscheduled sleep and trouble falling or staying asleep during COVID-19 (Bates et al., 2020). Many studies have shown disruptions in sleep patterns caused by the COVID-19 pandemic triggered by routine alteration and psychiatric symptoms (Dubey et al., 2020; Huang & Zhao, 2020). Sleep is crucial for children's health and well-being. Adequate sleeping is necessary for the consolidation of memory and creation of long-term memory circuits and is indispensable for maintaining brain plasticity throughout life (Graven & Browne, 2008). In adolescence, it plays an important role in cortical maturation and cognitive functioning (Tarokh, Saletin, & Carskadon, 2016). Parenting is, hypothetically, a modifiable risk factor for childhood sleep problems (Sadeh, Tikotzky, & Scher, 2010). As a stressor, harsh parenting is able to alter the neuroendocrine regulation of sleep, which, in turn, can compromise the ability to modulate emotions (Calhoun, Ridenour, & Fishbein, 2019). Also, in ADHD children, greater parental consistency, a characteristic of positive parenting, is linked with less bedtime resistance (Sciberras, Song, Mulraney, Schuster, & Hiscock, 2017).

1.3. Gaming behavior

Pandemic's routine changes have also shown impact on gaming behavior, with increased gaming and higher volume of game downloads being observed at the time of strict lockdown measures implementation (Farhadi & Masaeli, 2021). It is proposed that school closure and hobbies inaccessibility, in addition to increased access to video games, are possible explanations for heightened risk for gaming disorders (Ko & Yen, 2020). Still, there are concerns about the impact that enduring periods of quarantine, hampered interactions, and technology-based activities might have on the risk for gaming disorders and readaptation difficulties once pandemic has passed (King, Delfabbro, Billieux, & Potenza, 2020).

Although the use of electronic devices has been encouraged, some authors stress the importance of parents controlling the reasonable use of electronic devices and the content of the games their children are playing (Panda et al., 2021). Indeed, problematic gaming seems to be related to poorer parent-child relationships, specifically, greater parental hostility and less parental affection (Schneider, King, & Delfabbro, 2017). It has been proposed that both no restriction and restriction overuse might increase aggressive behavior among children and adolescents (Clark, 2011). By contrast, more recent research has shown that higher parental restriction has a significant impact in decreased aggressive behavior (Cote, Coles, & Dal Cin, 2021).

1.4. Parenting styles and its association with behavior problem, sleep disturbance, and game usage

Albeit the encouragement for parents using the pandemic period to spend quality time with their children, to improve positive interactions and strengthen family bonds, these guidelines can be challenging. It has been suggested that some problems in the family dynamics during the pandemic should be investigated to assess the relationship between parental stress and its effect in child mental health (Wu & Xu, 2020), as, for example, the role of parental resources, perceptions, and coping strategies.

In this course of research we can mention parenting styles, a set of attitudes, feelings and behaviors that modulate the child's psychosocial functioning (Alonso-Stuyck, 2019). The Authoritarian Parenting Style (Baumrind, 1971) can be characterized by high parental control and low warmth, leading to the use of punishment, threats, verbal hostility, and physical coercion. Authoritarian parents tend to shape a child's behavior according to a high standard of conduct, tend to value obedience and respect for authority, discouraging dialogues with the child. Authoritative parents, on the other hand, exert authority and establish limits but they take the child's opinions into account (Uji, Sakamoto, Adachi, & Kitamura, 2014). The Authoritative Parenting Style (Baumrind & Black, 1967) can be defined by high parental warmth and high control, resulting in the encouragement of autonomy, high responsiveness to the child's emotional needs, and use of support and regulation as behavior control strategies.

Parenting styles are a broader concept and refer to different domains that describe this parent-to-child interaction, but literature also presents concepts to describe a set of parenting behaviors, namely positive/supportive parenting and negative/harsh parenting, which refer to warm and responsive behaviors and hostile and critical behaviors, respectively (Dallaire et al., 2006). Positive parenting has been related to reduced risk for conduct disorder, childhood depression, and socialization problems, whereas negative parenting has been associated with lower school achievement and increased risk for aggressive behavior and mental health problems (Qi, 2019; Thomson et al., 2014). Further, there is a relation between parental stress, harsh parenting, and child's behavior problems, with higher parental stress and controlling parenting attitudes promoting more behavior problems such as resistance and violence (Han & Lee, 2018).

1.5. Research question

In this study, adopting a more exploratory facet, we aim to further understand the existing problems during the pandemics on both positive and negative families. Investigating differences in children's behavior problem, gaming behavior, and sleep disturbance between positive and negative parenting families might aid awareness of important family factors which might impact children's well-being during the pandemics. Furthermore, understanding which parenting factors are associated with behavior problems, game addiction, and sleep disturbance might help to isolate targets to intervene according to family nurturing style, bringing light to the complex association between the pandemics and children's health and well-being.

Considering the impact of parenting on children's outcomes, what are the differences among houses of positive and negative parenting behaviors in children's behavior, game usage, and sleep problems during the COVID-19 pandemic? And more, what are the associations between parenting strategies and behavior problems, game addiction, and sleep disturbance during stressful times?

2. Methods

2.1. Procedures

An online survey directed to parents of school-age children and adolescents was created by the research team and distributed on social media platforms (Whats App, Facebook, and Instagram). Researchers posted about the survey on their social networks and asked colleagues and families to help with the dissemination. A “single image” format was selected for the survey's dissemination and included: 1) media (an image with the research group logo; 2) primary text; 3) headline; 4) description, and; 5) survey's URL. The online questionnaire was generated using SoSci Survey (Leiner, 2019) and was made available to users via www.soscisurvey.de.

Parents were instructed to answer the survey on only one child, and data collection occurred from July 2020 to September 2020, reaching 1032 parents. From those, there were 539 valid questionnaires of parents reporting about their children's behavior concerning use of games, sleep, and mental health. We excluded participants with one or more measures missing, remaining with 482 entries.

2.2. Participants

To identify parenting groups by its predominant parenting strategies or style, we divided the whole sample in quartiles depending on use of authoritative and authoritarian parenting. Parents in the 75th quartile in the authoritative parenting measure were classified as the Authoritative group (n = 109). Parents in the 75th quartile in the authoritarian parenting measure were classified as the Authoritarian group (n = 107). Participants in the 25th quartile on both authoritative and authoritarian measures were classified as the Control group (n = 113). All subjects simultaneously included in two or more groups were excluded (n = 25), as were subjects not pertaining any of the parenting groups (n = 128). Finally, the final sample comprised the three parenting groups (n = 329). All participants gave consent to participate in the study after being informed of all procedures. The present research was evaluated and approved by the ethical board of the Universidade Federal de Minas Gerais, Belo Horizonte, Brazil (CAAE: 31618720.4.0000.5149) and it follows the Declaration of Helsinki.

2.3. Parents' sociodemographic data

Age, gender, ethnicity, relationship status, education, current job situation were asked. It is important to highlight that racial measurement in Brazilian census is based on skin color, and not ancestry as in other countries, therefore, participants were asked to refer to themselves and their children as "Yellow", "White", "Indigenous", "Pardo", or "Black" (Travassos & Williams, 2004). Furthermore, information about possible events faced due to the pandemic, social distancing or isolation practicing mode, and period in isolation was collected.

2.4. Children's sociodemographic data

Age, gender, ethnicity, school type and level, previous disease, deficiency, and mental disorders were assessed. Also, information about daily screen time was collected as a control variable, once screen time has an impact on problematic game use (Karayağiz Muslu & Aygun, 2020).

2.5. Instruments

Brazilian Economic Classification Criteria (CCEB) — an instrument of economic classification through questions about the possession of durable goods and the educational level of the head of the household. A subject score can vary from 0 to 46 and be classified into one of six classes based on ABEP Criteria: A (average income of U$ 4.621,04), B1 (average income of U$ 2.039,63), B2 (average income of U$ 1.020,19), C1 (average income of U$ 557,95), C2 (average income of U$ 316,20), and DE (average income of U $ 135,59).

Parenting Style and Dimension Questionnaire — Short Version — the adapted Brazilian version consists of 32 items, evaluates three parenting styles and nine dimensions. Authoritative style (15 items): support and affection, regulation, and autonomy dimensions. Authoritarian style (12 items): physical coercion, verbal hostility, and punishment dimensions. The Permissive style (5 items) is composed of one dimension, indulgence (Oliveira et al., 2018; Robinson, Mandleco, Olsen, & Hart, 2001). In this study, only items assessing the Authoritative and Authoritarian styles were used, considering its more robust internal consistency (McDonald's omega 0.855 for Authoritative style and 0.838 for Authoritarian style). On each item, parents had to inform the frequency they use the specific behavior described, using a 5-point Likert-type scale ranging from 1 (never) to 5 (always). The parenting dimensions are calculated as the arithmetic mean of its items, and the parenting styles are the arithmetic mean of its dimensions. The score in all the dimensions and styles ranges from 1 to 5, with higher scores indicating more use of the dimensions or styles.

Child and Adolescent Behavior Inventory (CABI) — a parent report questionnaire developed to assess a wide range of behavior problems in children and adolescents. Consists of 75 items on which parents had to report if the behavior was "very true", "somewhat or sometimes true", and "not true". The questionnaire investigates symptoms of anxiety (including generalized, separation, phobias, social, obsessive-compulsive, and self-confidence), depression, oppositional defiant disorder, conduct disorder, and attention deficit/hyperactivity disorder (ADHD). Also, the instrument assesses child's evaluation of reality, social relationships, sphincter control, eating problems, sex, smoking, alcohol and substance abuse, school performance, and passive bullying. The instrument also allows assessment of broader groups of symptomatology, namely internalizing disorders, externalizing disorders, and ADHD. In this study all scales of the instrument were used, a total of 25 scales: Somatic, Anxiety, Phobias, Obsessive-compulsive Disorder (OCD), Insecurity, Post-traumatic Stress Disorder (PTSD), Depression, Irritability, Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), Impulsivity, Hyperactivity, Attention, Reality, Relationships, Enuresis/encopresis, Bulimia, Anorexia, Sex, Substance abuse, School, Bullism victim, Attention-Deficit/Hyperactivity Disorder (ADHD), Internalizing, and Externalizing. The ADHD scale results from the sum of Impulsivity, Hyperactivity, and Attention scores. The Internalizing scale is composed of the sum of Somatic, Anxiety, Phobia, OCD, Insecurity, PTSD, and Depression scores. Finally, the Externalizing scale results from the sum of Irritability, ODD, and CD scores. The original version presented good reliability, with Cronbach's alpha index for the Internalizing Scale of 0.822 and for the Externalizing Scale of 0.800 (Cianchetti et al., 2013). The adapted Brazilian version is in development.

Game Addiction Scale (GAS) — the instrument evaluates internet and videogame addiction and consists of 21 items, representing the seven DSM criteria for game addiction: Salience, Tolerance, Mood modification, Withdrawal, Relapse, Conflict, and Problems (Lemos, Cardoso, & Sougey, 2016). Parents had to rate gaming behavior on a 5-likert scale, ranging from 1 (never) to 5 (very often). Therefore, higher scores indicate more problematic gaming. The instrument was translated and adapted to Brazilian Portuguese for the adolescent population, with good internal consistency (Cronbach's alpha ranging from 0.55 to 0.92 among the seven criteria and 0.92 for the total items) (Lemmens, Valkenburg, & Peter, 2009). The adapted Brazilian version and its psychometric study for children is in development.

Sleep Disturbance Scale for Children (SDSC) — the parent report scale was developed as a standardized measure of sleep disturbance in children (Bruni et al., 1996). The scale consists of 26 items and 6 subscales: disorders of initiating and maintaining sleep, sleep-disordered breathing, disorders of arousal, sleep-wake transition disorders, disorders of excessive somnolence, and sleep hyperhidrosis. The instrument was translated and adapted to Brazilian Portuguese and presented good consistency (Cronbach's alpha ranging from 0.56 to 0.82 among subscales and 0.78 for the entire scale) (Ferreira et al., 2009).

2.6. Data analysis

Analyses were performed in SPSS 25.0. Descriptive statistics were calculated to assess sample characteristics. Variables were saved

Table 1
Participant's characteristics

Variable		N = 329
Parent		
Age (years, mean (SD) | Md)		39.60 (9.73) | 40
Sex (male, N (%))		33 (10)
Weekly working hours (mean (SD) | Md)		32.44 (16.74) | 40
SES (mean (SD) | Md)		36.95 (11.59) | 37
Habitants in the house (mean (SD) | Md)		3.62 (1.04) | 4
Ethnicity (N (%))	Yellow	10 (3.1)
	White	199 (61.4)
	Indigenous	1 (0.3)
	Pardo	95 (29.3)
	Black	19 (5.9)
Schooling (N (%))	Illiterate/incomplete elementary school	6 (1.8)
	Complete elementary school/incomplete middle school	8 (2.4)
	Complete middle school/incomplete high school	10 (3.0)
	Complete high school/incomplete undergraduation	71 (21.6)
	Complete undergraduation	191 (58.1)
	Masters	31 (9.4)
	PhD	12 (3.6)
Parents' relationship (N (%))	Married/common-law married	233 (72.6)
	Separated, with shared custody	23 (7.2)
	Separated, with mother's custody	43 (13.4)
	Separated, with father's custody	1 (0.3)
	Single mother	17 (5.3)
	Deceased father	3 (0.9)
	Deceased mother	1 (0.3)
Kinship (N (%))	Biological mother	275 (88.4)
	Biological father	23 (7.4)
	Adoptive mother	9 (2.9)
	Adoptive father	2 (0.6)
	Stepmother	1 (0.3)
	Stepfather	1 (0.3)
Daily time spent playing with the child (N (%))	<1 h	210 (65.4)
	2 h	86 (26.8)
	3 h	16 (5.0)
	>4 h	9 (2.8)
Covid-19 events (yes, N (%))	I was hospitalized for suspected or diagnosed COVID-19	11 (3.3)
	My child/adolescent was hospitalized for suspected or diagnosed COVID-19	2 (0.6)
	A close family member or friend has died because of COVID-19	58 (17.6)
	I received financial aid from the government	48 (14.6)
	I received help from friends, neighbors or volunteers/organizations	23 (7.0)
	Social isolation has increased violence around me (home and/or neighborhood)	20 (6.1)
	I am a health professional and I work directly to face COVID-19	30 (9.1)
Are you in isolation? (N (%))	Yes	189 (57.6)
	No	3 (0.9)
	Partially	112 (34.1)
	We were adopting isolation, but we are no longer, given the opening of activities in my city.	24 (7.3)
Isolation duration (months, mean (SD) | Md)		4.04 (1.04) | 4.00
Children		
Age (years, Mean (SD) | Md)		10.25 (4.55) | 9
Sex (male, N (%))		220 (66.9)
Ethnicity (N (%))	Yellow	6 (1.8)
	White	211 (64.5)
	Indigenous	1 (0.3)
	Pardo	93 (28.4)
	Black	16 (4.9)
School type (public, N (%))		104 (32.2)
Schooling (years, mean (SD) | Md)		5.11 (3.32) | 4
Sleep Disturbance Scale for Children (SDSC) (mean (SD) | Md)		48.56 (15.12) | 45
Screen time (per day) (N(%))	Until 2 h	46 (14.2)
	2 to 4 h	113 (34.9)
	4 to 8 h	116 (35.8)
	>8 h	49 (15.1)

Note: SD = standard deviation; Md = median.

Table 2
Group differences.

Variable		Authoritative (N = 109)	Authoritarian (N = 107)	Control (N = 113)	Z/χ^2	*p*	Effect size[1]
Parents							
Age years, mean (SD) | Md)***		41.65 (8.48) | 41	35.97 (9.74) | 37	41.07 (9.97) | 42	28.965	<0.000	0.08
Sex (male, N (%))*		5 (4.6)	16 (15)	12 (10.6)	6.496	0.039	0.14
Weekly working hours (mean (SD) | Md)		30.98 (16.64) | 31.5	33.66 (17.90) | 40	32.86 (15.78) | 40	4.214	0.122	0.00
SES (mean (SD) | Md)***		40.09 (10.42) | 40	33.15 (11.20) | 29	37.53 (12.09) | 37	20.752	<0.000	0.05
Number of house habitants (mean (SD) | Md)		3.69 (0.96) | 4	3.60 (1.17) | 4	3.57 (0.99) | 4	0.801	0.670	−0.01
Ethnicity (N (%))	Yellow	2 (1.8)	5 (4.7)	3 (2.8)	7.203	0.515	0.11
	White	75 (68.8)	58 (54.7)	66 (60.6)			
	Indigenous	0	1 (0.9)	0			
	Pardo	26 (23.9)	35 (33)	34 (31.2)			
	Black	6 (5.5)	7 (6.6)	6 (5.5)			
Schooling (N (%))**	Illiterate/incomplete elementary school	1 (0.9)	3 (2.8)	2 (1.8)	31.980	0.001	0.22
	Complete elementary school/ incomplete middle school	1 (0.9)	7 (6.5)	1 (0.9)			
	Complete middle school/incomplete high school	0	6 (5.6)	3 (2.7)			
	Complete high school/incomplete undergraduation	19 (17.4)	32 (29.9)	20 (17.7)			
	Complete undergraduation	68 (62.4)	54 (50.5)	69 (61.1)			
	Masters	15 (13.8)	3 (2.8)	13 (11.5)			
	PhD	5 (4.6)	2 (1.9)	5 (4.4)			
Parents' relationship (N (%))	Married/common-law married	77 (71.3)	75 (71.4)	81 (75.0)	7.807	0.800	0.16
	Separated. with shared custody	8 (7.4)	9 (8.6)	6 (5.6)			
	Separated. with mother's custody	17 (15.7)	14 (13.3)	12 (11.1)			
	Separated. with father's custody	0	1 (1.0)	0			
	Single mother	5 (4.6)	6 (5.7)	6 (5.6)			
	Deceased father	1 (0.9)	0	2 (1.9)			
	Deceased mother	0	0	1 (0.9)			
Covid events (yes, N (%))	I was hospitalized for suspected or diagnosed COVID-19	4 (3.7)	1 (0.9)	6 (5.3)	3.309	0.191	0.10
	My child/adolescent was hospitalized for suspected or diagnosed COVID-19	2 (1.8)	0	0	4.061	0.131	0.11
	A close family member or friend has died because of COVID-19	16 (14.7)	20 (18.7)	22 (19.5)	1.000	0.607	0.06
	I received financial aid from the government	14 (12.8)	17 (15.9)	17 (15.0)	0.430	0.807	0.04
	I received help from friends. Neighbors or volunteers/ organizations	4 (3.7)	12 (11.2)	7 (6.2)	4.895	0.086	0.12
	Social isolation has increased violence around me (home and/or neighborhood)	3 (2.8)	12 (11.2)	5 (4.4)	7.598	0.022	0.15
	I am a health professional and I work directly to face COVID-19	9 (8.3)	10 (9.3)	11 (9.7)	−0.156	0.925	0.02
Are you in isolation? (N (%))	Yes	75 (68.8)	52 (48.6)[1]	62 (55.4)	12.513	0.051	0.20
	No	1 (0.9)	1 (0.9)	1 (0.9)			
	Partially	28 (25.7)	41 (38.3)	43 (38.4)			
	We were adopting isolation. But we are no longer. Given the opening of activities in my city.	5 (4.6)	13 (12.1)	6 (5.4)			
Isolation time (months, mean (SD) | Md)		4.03 (0.84) | 4.00	4.00 (1.17) | 4.00	4.08 (1.10) | 4.00	1.638	0.441	−0.01
Authoritative style PSDQ (mean (SD) | Md)***		4.80 (0.10) | 4.80	3.74 (0.60) | 3.87	3.78 (0.71) | 3.80	218.687	<0.000	0.66
Warmth/support***		4.84 (0.16) | 4.80	3.87 (0.66) | 4.00	3.90 (0.76) | 4.00	171.058	<0.000	0.51
Regulation***		4.94 (0.13) | 5.00	3.96 (0.75) | 4.00	3.86 (0.86) | 4.00	161.601	<0.000	0.48
Autonomy***		4.60 (0.23) | 4.60	3.40 (0.64) | 3.40	3.57 (0.78) | 3.60	184.706	<0.000	0.55
Authoritarian style PSDQ (mean (SD) | Md)***		1.69 (0.38) | 1.67	2.94 (0.40) | 2.83	1.68 (0.45) | 1.67	216.422	<0.000	0.65

(*continued on next page*)

Table 2 (*continued*)

Variable		Authoritative (N = 109)	Authoritarian (N = 107)	Control (N = 113)	Z/χ^2	*p*	Effect size[1]
Physical coercion***		1.38 (0.48) | 1.00	2.61 (0.76) | 2.75	1.36 (0.46) | 1.25	156.285	<0.000	0.47
Verbal hostility***		2.13 (0.67) | 2.00	3.55 (0.54) | 3.50	2.09 (0.68) | 2.00	174.328	<0.000	0.52
Punishment***		1.56 (0.45) | 1.50	2.65 (0.57) | 2.75	1.58 (0.51) | 1.50	154.236	<0.000	0.46
Children							
Age (years, mean (SD) | Md)***		10.41 (4.41) | 10	9.22 (4.06) | 8	11.10 (4.98) | 10	9.346	0.009	0.02
Sex (male, N (%))		69 (63.3)	78 (72.9)	73 (65.8)	2.432	0.296	0.09
Ethnicity (N (%))	Yellow	1 (0.9)	3 (2.8)	2 (1.8)	4.474	0.812	0.12
	White	73 (67.0)	65 (60.7)	73 (65.8)			
	Indigenous	0	0	1 (0.9)			
	Pardo	30 (27.5)	32 (29.9)	31 (27.9)			
	Black	5 (4.6)	7 (6.5)	4 (3.6)			
School type (public, N (%))*		25 (23.4)	41 (38.3)	38 (34.9)	6.015	0.049	0.14
Schoolling (years, mean (SD) | Md)		5.43 (3.26) | 5.00	4.46 (3.21) | 4.00	5.39 (3.43) | 5.00	5.902	0.052	0.01
Screen time (N(%))	Until 2 h	19 (17.6)	10 (9.4)	17 (15.5)	6.628	0.357	0.14
	2 to 4 h	43 (39.8)	34 (32.1)	36 (32.7)			
	4 to 8 h	32 (29.6)	43 (40.6)	41 (37.3)			
	>8 h	14 (13.0)	19 (17.9)	16 (14.5)			
Game Addiction Scale (mean (SD) | Md) (scores vary from 0 to 5)	Total score**	−0.55 (0.09) | -0.29	0.27 (0.11) | 0.28	−0.20 (−0.88)| -0.20	10.370	0.006	0.03
	Salience**	2.88 (1.38) | 2.67	3.16 (1.41) | 3.33	2.55 (1.36) | 2.67	10.338	0.006	0.02
	Tolerance**	2.58 (1.29) | 2.33	2.97 (1.44) | 3.33	2.35 (1.31) | 2.33	11.124	0.004	0.02
	Mood modification	1.91 (1.13) | 1.67	2.18 (1.33) | 2.00	1.91 (1.20) | 1.67	2.258	0.323	−0.01
	Relapse**	1.89 (1.12) | 1.33	2.27 (1.27) | 2.00	1.80 (1.13) | 1.33	10.130	0.006	0.02
	Withdrawal**	2.08 (1.33) | 1.67	2.50 (1.47) | 2.33	1.84 (1.23) | 1.33	12.742	0.002	0.03
	Conflict**	1.88 (1.13) | 1.33	2.32 (1.40) | 2.00	1.65 (1.01) | 1.33	13.405	0.001	0.03
	Problems*	1.54 (0.88) | 1.00	1.86 (1.15) | 1.67	1.54 (0.90) | 1.33	7.692	0.021	0.01
Sleep Disturbance Scale (SDCS) (mean (SD) | Md)	Total score (26–130)***	44.53 (14.34) | 40.50	54.93 (14.39) | 53.00	46.44 (14.73) | 44.00	29.575	<0.000	0.08
	Disorders of initiating and maintaining sleep (7–35)***	15.01 (5.78) | 13.50	18.26 (5.61) | 17.50	15.46 (5.57) | 15.00	21.423	<0.000	0.05
	Sleep breathing disorders (3–15)***	4.14 (2.01) | 3.00	5.20 (2.47) | 5.00	4.48 (2.18) | 4.00	20.271	<0.000	0.05
	Disorders of arousal/nightmares (3–15)*	4.08 (1.66) | 3.00	4.51 (2.02) | 4.00	4.02 (1.68) | 3.00	6.619	0.037	0.01
	Sleep wake transition disorders (6–30)***	10.21 (4.47) | 9.00	12.95 (4.76) | 12.00	10.26 (4.63) | 9.00	27.980	<0.000	0.07
	Disorders of excessive somnolence (5–25)*	6.94 (3.64) | 6.00	8.17 (3.96) | 6.50	7.86 (3.84) | 7.00	8.061	0.018	0.01
	Sleep hyperhidrosis (2−10)***	3.42 (2.22) | 2.00	4.63 (2.54) | 4.00	3.36 (2.21) | 2.00	23.634	<0.000	0.06
Behavior Problems CABI (mean (SD) | Md) (scores vary from 0 to 2)	Internalizing***	0.53 (0.35) | 0.46	0.76 (0.33) | 0.71	0.68 (0.39) | 0.64	23.441	<0.000	0.06
	Externalizing***	0.41 (0.43) | 0.21	0.94 (0.47) | 0.93	0.54 (0.48) | 0.36	65.964	<0.000	0.19
	ADHD***	0.63 (0.78) | 0.00	1.35 (0.67) | 1.00	0.75 (0.70) | 1.00	51.486	<0.000	0.15

1 = correlation coefficient r (0.10 small, 0.30 average, 0.50 high).
* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.00$.

as standardized scores and missing data were replaced by the sample mean.

Kruskal-Wallis and Chi-Square tests were used to investigate if variable distribution was the same among Authoritative, Authoritarian, and Control groups. For effect size, we used epsilon-squared and Cramer's V, which can be interpreted as *r* (0.10 small, 0.30 medium, 0.50 large) (Kwak & Kim, 2017). Next, using the Enter method, Multiple Regression Analysis was used to test which parenting dimensions were significantly associated with game addiction, sleep disturbance, and behavior problems. Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern. In this association investigation, analyses were taken with the entire sample, considering that parenting was the independent variable. Dependent variables used were total scale scores, namely game addiction, sleep disturbance, internalizing behavior, externalizing behavior, and ADHD behavior problems. Analyses were controlled for parent's age, children's age, family socio-economic score, and screen time.

Considering that significant differences in children's behavior, game usage, and sleep problems were found between groups, association analyses were executed between those characteristics and all six parenting domains (warmth and support, regulation, autonomy, physical coercion, verbal hostility, and punishment). In order to reduce the number of factors and avoid multicollinearity, only the three broader groups of CABI were used to analyze associations of parenting dimensions and behavior problems. Finally, all association models were controlled for parent's age, children's age, and socio-economic status, once those variables have shown significant difference between parenting groups. Screen time was also controlled due to its known impact on gaming behavior (Karaca, Karakoc, Can Gurkan, Onan, & Unsal Barlas, 2020).

3. Results

Overall, the final sample was composed of 329 parents (33 (10%) male) aged 20 to 65 years (mean 39.60, SD 9.73). Sample characteristics are shown on Table 1.

Briefly, results on differences between Authoritative and Authoritarian families, as shown on Table 2, indicate that Authoritative families have most children studying in private schools and report lower scores in internalizing behavior problems. Turning now to the Authoritarian group, the families have the youngest parents, lowest socioeconomic level, more parents with low schooling, the youngest children, highest scores on behavior problems, the highest scores on game addiction, and, finally, the highest scores on sleep disturbance. Interestingly, among COVID-19 related events, significant difference was only found on the perception of increased violence, with Authoritarian families reporting more frequently the perception of violence increase during the pandemic.

Regarding game addiction, sleep disturbance, and behavior problems, results mainly demonstrated significant differences between the authoritative and authoritarian groups, with more behavior problems being observed in the authoritarian group. Referring to game addiction, the authoritarian group had the highest scores when compared to both authoritative and control groups on total score and relapse ($Z = 10.370$, $p = 0.006$; 10.130, $p = 0.006$ respectively), with a small effect size. Still on game addiction, the authoritarian group showed significantly more problems caused by excessive game play when compared to the authoritative group ($Z = 7.692$, $p = 0.021$), with a small effect size. Finally, about game play, the authoritarian group showed higher scores, also with small effect size, on withdrawal, conflict, salience, and tolerance when compared to the control group ($Z = 12.742$, $p = 0.002$; $Z = 13.405$, $p = 0.001$; $Z = 10.338$, $p = 0.006$; $Z = 11.124$, $p = 0.004$ respectively).

Concerning sleep disturbance, the authoritarian group showed significantly more problems than both authoritative and control groups in almost all dimensions, except in excessive somnolence where the difference appeared only with the authoritative group ($Z = 8.061$, $p = 0.018$).

About internalizing behavior, although with a small effect size, the authoritative group had significantly less problems compared to both authoritarian and control groups ($Z = 23.441$, $p < 0.000$). The same pattern was observed for anxiety, post-traumatic stress disorder, depression, and relations scales alone. As concerned to externalizing and ADHD behavior, the authoritarian group had significantly more problems compared with both authoritative and control groups, with a small effect size ($Z = 65.964$, $p < 0.000$; $Z = 51.486$, $p < 0.000$ respectively). The same pattern was observed for irritability, oppositional defiant disorder, impulsivity, hyperactivity, inattention, reality, and enuresis/encopresis scales alone.

On Table 3 models summary are presented and on Table 4 association coefficients are shown. Game addiction was significantly associated with regulation and punishment dimensions. Sleep disturbance was significantly associated only with verbal hostility. All behavior problems were significantly associated with autonomy, physical coercion, and verbal hostility, although only externalizing behavior associated with regulation. Interestingly, regulation was positively associated with game addiction and externalizing behavior, meaning that the use of more regulation strategies is related to increase in those behaviors.

Table 3
Shared variance of children's game addiction, sleep disturbance, and behavioral problems with parenting dimensions [DC2].

	R^2	Adjusted R^2	SE	F	df1	df2	Sig.
Game addiction	0.205	0.180	0.895	4.906	6	310	<0.001
Sleep disturbance	0.187	0.161	0.908	5.544	6	310	<0.001
Internalizing behavior	0.191	0.165	0.920	5.043	6	310	<0.001
Externalizing behavior	0.390	0.371	0.810	16.477	6	310	<0.001
ADHD behavior	0.321	0.299	0.867	10.518	6	310	<0.001

Table 4
Association of children's game addiction, sleep disturbance, and behavioral problems with specific parenting dimensions.

Outcome	Predictor/parenting dimension	B	Error	Beta	*p*
Game addiction	Warmth and support	−0.096	0.091	−0.100	0.292
	Regulation*	0.205	0.084	0.216	0.015
	Autonomy	0.004	0.083	0.005	0.959
	Physical coercion	0.043	0.071	0.048	0.540
	Verbal hostility	0.112	0.070	0.120	0.111
	Punishment*	0.136	0.067	0.146	0.044
Sleep disturbance	Warmth and support	−0.058	0.092	−0.060	0.531
	Regulation	0.093	0.085	0.098	0.271
	Autonomy	−0.053	0.084	−0.056	0.527
	Physical coercion	0.018	0.072	0.019	0.804
	Verbal hostility**	0.217	0.071	0.231	0.003
	Punishment	0.060	0.068	0.064	0.381
Internalizing behavior	Warmth and support	−0.080	0.093	−0.082	0.391
	Regulation	0.091	0.086	0.094	0.291
	Autonomy*	−0.190	0.085	−0.199	0.026
	Physical coercion*	−0.157	0.073	−0.169	0.032
	Verbal hostility**	0.184	0.072	0.193	0.012
	Punishment	0.062	0.069	0.065	0.373
Externalizing behavior	Warmth and support	−0.139	0.082	−0.140	0.091
	Regulation*	0.158	0.076	0.161	0.038
	Autonomy*	−0.149	0.075	−0.154	0.047
	Physical coercion***	0.284	0.064	0.302	<0.001
	Verbal hostility**	0.155	0.064	0.160	0.016
	Punishment	−0.040	0.061	−0.042	0.511
ADHD behavior	Warmth and support	−0.004	0.088	−0.004	0.967
	Regulation	0.156	0.081	0.156	0.055
	Autonomy*	−0.195	0.080	−0.199	0.015
	Physical coercion***	0.194	0.068	0.204	0.005
	Verbal hostility**s	0.181	0.068	0.184	0.009
	Punishment	−0.003	0.065	−0.003	0.960

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.00$.

4. Discussion

It is important to consider that when this data was collected, most Brazilian cities were living social distancing and school closures effects. Because of the school new scenario, some children kept having school classes based on a hybrid system with remote and online educational activities, and some were having episodic exercises and school classes made with television transmission. Previous studies have shown that the online school activities have been highly impacting in family's dynamic, increasing the exposition to family dynamics and the in-home relationships (Thorell et al., 2021). This increase in exposition might lead to an improved or declined family dynamics' quality in a pandemic scenario. Therefore, in our study, we aimed to explore if there is a difference in children's behavior problems, game usage, and sleep disturbance according to the predominant parenting style in the household. Furthermore, we also aimed to explore which parenting strategies were associated with behavior problems, game usage, and sleep disturbance.

In the Brazilian pandemic scenario, considering health and economic critical conditions, there was a large amount of infected population with a frequent awareness of knowing or losing someone for the COVID-19, in addition to the huge economic burden with an extensive time of lockdowns and social distancing recommendations being ineffective, making the process long and stressful for all (Lancet, 2020). For these reasons we tried to understand the family dynamic and characteristics while they were living under such stress.

Parental stress is a known risk factor for hostile and less supportive parenting (Beckerman, van Berkel, Mesman, & Alink, 2017; Choi & Becher, 2019). It is proposed that harsh parenting comes in response to experienced distress, with parents displaying dysfunctional emotion-focused coping behaviors towards the child, behaviors that appear as yelling, insulting, threatening, and punishing (Le, Fredman, & Feinberg, 2017). In an intervention study, researchers found that parents experiencing burnout were more likely to be neglectful and abusive. On the other hand, there was a decrease in neglect and abuse when the intervention focused on reducing parental burnout (Brianda et al., 2020).

Firstly, Authoritarian parenting seemed to be a risk factor to mental disorders, more dysfunctional gaming, and sleep disorders. The Authoritarian Parents reported significantly more use of physical coercion, verbal hostility, and punishment. Previously, other studies in different cultures showed a difference in latter mental health outcomes of children and adolescents depending on the parental style (Uji et al., 2014).

Anyway literature is quite consistent about how impacting it is to have a parent using authoritarian or authoritative strategies (Coe, Davies, Hentges, & Sturge-Apple, 2020; Wood, McLeod, Sigman, Hwang, & Chu, 2003). The common ideal of parenting is marked by warmth and closeness between parent–child (Alonso-Stuyck, 2019). The parenting effect is quite variable from age, children

temperament, development staging, present diagnosis and others. Previously in a Chinese study, they identified that impulsivity symptoms mediated the relation of physical punishment to externalizing symptoms (Eisenberg, Chang, Ma, & Huang, 2009). In longitudinal studies, the loss of supportive parenting in unstable conditions was associated with emergence of externalizing symptoms in children (Coe et al., 2020). Here we observe a consistent negative effect of authoritarian parenting more evident in externalizing and ADHD symptoms. Among the strategies used in children and adolescents presenting externalizing and ADHD behavior, we observed a relationship with the report of less autonomy and more parental use of physical coercion and verbal hostility in order to control children's behavior.

Children and adolescents from authoritarian parents have higher scores of symptoms of gaming addiction, having a higher risk to present social and academic compromise (Siste et al., 2020). The parental use of regulation and punishment strategies were related to a high score of gaming addiction. Similarly, positive parenting seems to reduce severity of game addiction, as seen in a recent Chinese study, where parental warmth was associated with diminished risk for pathological internet use (Chen, Lee, Dong, Gamble, & Feng, 2020). Parental restriction rules for video game use seems to be an important factor in the relation between parenting and game usage.

In adolescents under authoritarian parenting, there is a report of feeling more stress (Fitriani, 2019). Insomnia and sleep quality mediates in adults the distress symptoms (Lin et al., 2021) and problematic social media use, showing a close relationship between sleep, screen use and mental health symptoms that deserves to be better investigated in studies with repeated measures. Sleep disorders might be indicative of psychiatric symptoms and these symptoms might persist through time (Hansen, Skirbekk, Oerbeck, Wentzel-Larsen, & Kristensen, 2013). In a recent study, researchers found that toddlers' sleep quality might be related to parental distress, indicating that sleep disturbances might decrease with strategies focused on parental stress control and paternal participation in the childcare (De Stasio, Boldrini, Ragni, & Gentile, 2020). Here a tendency of disrupted sleep patterns was also observed in children living with authoritarian parents, specially parents who use verbal hostility as main strategie of behavioral control, even the presence of enuresis is more frequent in these children. However, there is a need for further studies to understand how sleep was modified by parental styles and how important it is in populational evaluation.

The findings of this study must be seen in light of some limitations. Firstly, we have a sampling issue without any baseline data. Since our sample was collected during the pandemic times, we used the snowballing strategy. In this survey we reached a more educated population than the Brazilian standards and we have no previous data to say how the pandemic changed the habits, activities, and behaviors. The sampling issue might result from two points: we might have assessed people who have access to the internet, and we might have access to people that could worry about mental health and education in critical conditions. Brazil is a country marked by inequalities in internet access, so we had to observe this data under a careful evaluation and avoid generalization. Further on the sampling issue, the difference between sex of respondents (90% of mothers and 10% of fathers) is a limitation and should be addressed in future research. Another limitation is the information collection on children's behavior based on parents' report, once the perception of an external informant is based on the subject's and the rater's characteristics (Smith, 2007). Besides, in pandemic times, parents are working from home and, although staying more time at home, they are not available to monitor children's behavior and electronical usage. Furthermore, our children sample had a wide age range. When accessing behavior problems, it is known that agreement among informants decreases when the subject becomes older, with self-report reaching higher rates for internalizing problems in adolescence (van der Ende, Verhulst, & Tiemeier, 2012). This means that, specially for internalizing behavior problems, the adolescent self-report could bring a broader understanding of the pandemic's impact on the family household. Finally, on limitations, we also acknowledge the fact that only Authoritative and Authoritarian styles were investigated, which limits family's dynamics understanding by only two dimensions. Narrowing the parenting strategies investigated, we might overlook the impact and possible intervention targets related to the Permissive style, for example.

Parenting style has long term effects (Coe et al., 2020; Sandler, Ingram, Wolchik, Tein, & Winslow, 2015), unconsciously it seems to be transmitted to the next generation, evaluations are important since parental styles might be trained to be more adaptive. Here we describe our findings about the parental characteristics and effects on gaming, sleep and children behavior. It is the first of four waves, in the longitudinal follow up we may understand better the relationship of the gaming use, parenting styles, sleep and children's mental health under stressful conditions.

Children and adolescents might have an amplified impact during pandemic depending on the parenting strategies mostly used. Considering parental management training is an effective strategy to improve parenting strategies and it is available even online, it might consist of ground to have a potential improvement in developmental competencies and in children and adolescent's mental health even during pandemic times (Comer et al., 2017; Daley et al., 2018). It is still an alert: stressful and isolated conditions might amplify for good and for bad the parenting effects on children.

Finally, our results add to others reported in the literature and reinforce the importance of assessment and interventions aimed at parenting styles as a therapeutic target in child mental health. Future studies should evaluate intervention strategies in relation to best parent-child relationship practices.

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Data statement

The data is available under reasonable request to the corresponding author.

Declaration of competing interest

None.

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References

Alonso-Stuyck, P. (2019). Which parenting style encourages healthy lifestyles in teenage children? Proposal for a model of integrative parenting styles. *International Journal of Environmental Research and Public Health, 16*(11), 2057. https://doi.org/10.3390/ijerph16112057

APA. Behavior problem. Retrieved September 15, 2021, from https://dictionary.apa.org/behavior-problem (n.d.).

Bates, L. C., Zieff, G., Stanford, K., Moore, J. B., Kerr, Z. Y., Hanson, E. D., … Stoner, L. (2020). COVID-19 impact on behaviors across the 24-hour day in children and adolescents: Physical activity, sedentary behavior, and sleep. *Children (Basel, Switzerland), 7*(9). https://doi.org/10.3390/children7090138

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology, 4*(1 PART 2), 1–103. https://doi.org/10.1037/h0030372

Baumrind, D., & Black, A. E. (1967). Socialization practices associated with dimensions of competence in preschool boys and girls. *Child Development, 38*(2), 291. https://doi.org/10.2307/1127295

Bavel, J. J. V., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., … Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour, 4*(5), 460–471. https://doi.org/10.1038/s41562-020-0884-z

Beckerman, M., van Berkel, S. R., Mesman, J., & Alink, L. R. A. (2017). The role of negative parental attributions in the associations between daily stressors, maltreatment history, and harsh and abusive discipline. In *, Vol. 64. Child abuse & neglect* (pp. 109–116). Elsevier Science. https://doi.org/10.1016/j.chiabu.2016.12.015.

Brianda, M. E., Roskam, I., Gross, J. J., Franssen, A., Kapala, F., Gérard, F., & Mikolajczak, M. (2020). Treating parental burnout: Impact of two treatment modalities on burnout symptoms, emotions, hair cortisol, and parental neglect and violence. *Psychotherapy and Psychosomatics, 89*(5), 330–332. S. Karger AG. https://doi.org/10.1159/000506354

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet (London, England), 395*(10227), 912–920. https://doi.org/10.1016/S0140-6736(20)30460-8

Brown, S. M., Doom, J. R., Lechuga-Peña, S., Watamura, S. E., & Koppels, T. (2020). Stress and parenting during the global COVID-19 pandemic. *Child Abuse & Neglect, 110*(Pt 2), Article 104699. https://doi.org/10.1016/j.chiabu.2020.104699

Bruni, O., Ottaviano, S., Guidetti, V., Romoli, M., Innocenzi, M., Cortesi, F., & Giannotti, F. (1996). The Sleep Disturbance Scale for Children (SDSC). Construction and validation of an instrument to evaluate sleep disturbances in childhood and adolescence. *Journal of Sleep Research, 5*(4), 251–261. https://doi.org/10.1111/j.1365-2869.1996.00251.x

Calhoun, B. H., Ridenour, T. A., & Fishbein, D. H. (2019). Associations between child maltreatment, harsh parenting, and sleep with adolescent mental health. *Journal of Child and Family Studies, 28*(1), 116–130. https://doi.org/10.1007/s10826-018-1261-7

Chen, I.-H., Lee, Z.-H., Dong, X.-Y., Gamble, J. H., & Feng, H.-W. (2020). The influence of parenting style and time management tendency on internet gaming disorder among adolescents. *International Journal of Environmental Research and Public Health, 17*(23), 9120. https://doi.org/10.3390/ijerph17239120

Choi, J. K., & Becher, E. H. (2019). Supportive coparenting, parenting stress, harsh parenting, and child behavior problems in nonmarital families. *Family Process, 58*(2), 404–417. https://doi.org/10.1111/famp.12373

Chung, G., Chan, X. W., Lanier, P., & Ju, P. (2020). *Associations between work-family balance, parenting stress, and marital conflicts during COVID-19 pandemic in Singapore*. https://doi.org/10.31219/osf.io/nz9s8

Cianchetti, C., Pittau, A., Carta, V., Campus, G., Littarru, R., Ledda, M. G., … Fancello, G. S. (2013). Child and Adolescent Behavior Inventory (CABI): A new instrument for epidemiological studies and pre-clinical evaluation. *Clinical Practice and Epidemiology in Mental Health: CP & EMH, 9*, 51–61. https://doi.org/10.2174/1745017901309010051

Clark, L. S. (2011). Parental mediation theory for the digital age. *Communication Theory, 21*(4), 323–343. https://doi.org/10.1111/j.1468-2885.2011.01391.x

Coe, J. L., Davies, P. T., Hentges, R. F., & Sturge-Apple, M. L. (2020). Understanding the nature of associations between family instability, unsupportive parenting, and children's externalizing symptoms. *Development and Psychopathology, 32*(1), 257–269. https://doi.org/10.1017/S0954579418001736

Cohodes, E. M., McCauley, S., & Gee, D. G. (2021). Parental buffering of stress in the time of COVID-19: Family-level factors may moderate the association between pandemic-related stress and youth symptomatology. *Research on Child and Adolescent Psychopathology*, 1–14. https://doi.org/10.1007/s10802-020-00732-6

Comer, J. S., Furr, J. M., Miguel, E. M., Cooper-Vince, C. E., Carpenter, A. L., Elkins, R. M., … Chase, R. (2017). Remotely delivering real-time parent training to the home: An initial randomized trial of Internet-delivered parent-child interaction therapy ({I-PCIT}). *Journal of Consulting and Clinical Psychology, 85*(9), 909–917.

Cote, A. C., Coles, S. M., & Dal Cin, S. (2021). The interplay of parenting style and family rules about video games on subsequent fighting behavior. *Aggressive Behavior, 47*(2), 135–147. https://doi.org/10.1002/ab.21931

Daley, D., Van Der Oord, S., Ferrin, M., Cortese, S., Danckaerts, M., Doepfner, M., … Sonuga-Barke, E. J. (2018). Practitioner review: Current best practice in the use of parent training and other behavioural interventions in the treatment of children and adolescents with attention deficit hyperactivity disorder. *Journal of Child Psychology and Psychiatry, 59*(9), 932–947.

Dallaire, D. H., Pineda, A. Q., Cole, D. A., Ciesla, J. A., Jacquez, F., Lagrange, B., & Bruce, A. E. (2006). Relation of positive and negative parenting to children's depressive symptoms. *Journal of Clinical Child and Adolescent Psychology, 35*(2), 313–322. https://doi.org/10.1207/s15374424jccp3502_15

De Stasio, S., Boldrini, F., Ragni, B., & Gentile, S. (2020). Predictive factors of toddlers' sleep and parental stress. *International Journal of Environmental Research and Public Health, 17*(7).

Dubey, S., Biswas, P., Ghosh, R., Chatterjee, S., Dubey, M. J., Chatterjee, S., … Lavie, C. J. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome, 14*(5), 779–788. https://doi.org/10.1016/j.dsx.2020.05.035

Dubois-Comtois, K., Suffren, S., St-Laurent, D., Milot, T., & Lemelin, J.-P. (2021). Child psychological functioning during the COVID-19 lockdown: An ecological, family-centered approach. *Journal of Developmental and Behavioral Pediatrics: JDBP, 42*(7), 532–539. https://doi.org/10.1097/DBP.0000000000000935

Eisenberg, N., Chang, L., Ma, Y., & Huang, X. (2009). Relations of parenting style to Chinese children's effortful control, ego resilience, and maladjustment. *Development and Psychopathology, 21*(2), 455–477. https://doi.org/10.1017/S095457940900025X

van der Ende, J., Verhulst, F. C., & Tiemeier, H. (2012). Agreement of informants on emotional and behavioral problems from childhood to adulthood. *Psychological Assessment, 24*(2), 293.

Farhadi, H., & Masaeli, N. (2021). Prevalence of Internet-based addictive behaviors during COVID-19 pandemic: a systematic review prevalence of Internet-based addictive behaviors during COVID-19 pandemic: a systematic review prevalence of Internet-based addictive behaviors during COVID-19 pandemic: a systematic review. *Journal of Addictive Diseases.*. https://doi.org/10.1080/10550887.2021.1895962

Ferreira, V. R., Carvalho, L. B. C., Ruotolo, F., de Morais, J. F., Prado, L. B. F., & Prado, G. F. (2009). Sleep disturbance scale for children: translation, cultural adaptation, and validation. *Sleep Medicine, 10*(4), 457–463. https://doi.org/10.1016/j.sleep.2008.03.018

Fitriani, D. R. (2019). The effects of the authoritarian parenting toward stress and self-steem of teens. *Jurnal Ilmu Kesehatan, 7*(1), 58–67.

Glynn, L. M., Davis, E. P., Luby, J. L., Baram, T. Z., & Sandman, C. A. (2021). A predictable home environment may protect child mental health during the COVID-19 pandemic. *Neurobiology of Stress, 14*, Article 100291. https://doi.org/10.1016/j.ynstr.2020.100291

Graven, S. N., & Browne, J. V. (2008). Sleep and brain development. The critical role of sleep in fetal and early neonatal brain development. *Newborn and Infant Nursing Reviews, 8*(4), 173–179. https://doi.org/10.1053/j.nainr.2008.10.008

Han, J. W., & Lee, H. (2018). Effects of parenting stress and controlling parenting attitudes on problem behaviors of preschool children: Latent growth model analysis. *Journal of Korean Academy of Nursing, 48*(1), 109–121. https://doi.org/10.4040/jkan.2018.48.1.109

Hansen, B. H., Skirbekk, B., Oerbeck, B., Wentzel-Larsen, T., & Kristensen, H. (2013). Persistence of sleep problems in children with anxiety and attention deficit hyperactivity disorders. *Child Psychiatry and Human Development, 44*(2), 290–304.

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Research, 288*, Article 112954. https://doi.org/10.1016/j.psychres.2020.112954

Karaca, S., Karakoc, A., Can Gurkan, O., Onan, N., & Unsal Barlas, G. (2020). Investigation of the online game addiction level, sociodemographic characteristics and social anxiety as risk factors for online game addiction in middle school students. Community Mental Health Journal, 56(5), 830—838. doi:https://doi.org/10.1007/s10597-019-00544-z.

Karayağiz Muslu, G., & Aygun, O. (2020). An analysis of computer game addiction in primary school children and its affecting factors. *Journal of Addictions Nursing, 31*(1), 30–38. https://doi.org/10.1097/JAN.0000000000000322

King, D. L., Delfabbro, P. H., Billieux, J., & Potenza, M. N. (2020). Problematic online gaming and the COVID-19 pandemic. *Journal of Behavioral Addictions, 9*(2), 184–186. https://doi.org/10.1556/2006.2020.00016

Ko, C.-H., & Yen, J.-Y. (2020). Impact of COVID-19 on gaming disorder: Monitoring and prevention. *Journal of Behavioral Addictions, 9*(2), 187–189. https://doi.org/10.1556/2006.2020.00040

Kwak, S. K., & Kim, J. H. (2017). Statistical data preparation: Management of missing values and outliers. *Korean Journal of Anesthesiology, 70*(4), 407–411. https://doi.org/10.4097/kjae.2017.70.4.407

Lancet, T. (2020). COVID-19 in Brazil: "So what?". *Lancet (London, England), 395*(10235), 1461. https://doi.org/10.1016/S0140-6736(20)31095-3

Le, Y., Fredman, S. J., & Feinberg, M. E. (2017). Parenting stress mediates the association between negative affectivity and harsh parenting: A longitudinal dyadic analysis. *Journal of Family Psychology, 31*(6), 679–688. https://doi.org/10.1037/fam0000315

Leiner, D. J. (2019). SoSci Survey (Version 3.1.06). https://www.soscisurvey.de.

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology, 12*(1), 77–95. https://doi.org/10.1080/15213260802669458

Lemos, I. L., Cardoso, A., & Sougey, E. B. (2016). Validity and reliability assessment of the Brazilian version of the game addiction scale (GAS). *Comprehensive Psychiatry, 67*, 19–25. https://doi.org/10.1016/j.comppsych.2016.01.014

Levesque, R. J. R. (2011). In R. J. R. Levesque (Ed.), *Externalizing and internalizing symptoms BT - Encyclopedia of adolescence* (pp. 903–905). Springer New York. https://doi.org/10.1007/978-1-4419-1695-2_539.

Lin, C.-Y., Imani, V., Griffiths, M. D., Broström, A., Nygårdh, A., Demetrovics, Z., & Pakpour, A. H. (2021). Temporal associations between morningness/eveningness, problematic social media use, psychological distress and daytime sleepiness: Mediated roles of sleep quality and insomnia among young adults. *Journal of Sleep Research, 30*(1), Article e13076. https://doi.org/10.1111/jsr.13076

Liu, J. J., Bao, Y., Huang, X., Shi, J., & Lu, L. (2020). Mental health considerations for children quarantined because of {COVID-19}. *Lancet Child Adolesc Health, 4*(5), 347–349.

Liu, Q., Zhou, Y., Xie, X., Xue, Q., Zhu, K., Wan, Z., Wu, H., Zhang, J., & Song, R. (2021). The prevalence of behavioral problems among school-aged children in home quarantine during the COVID-19 pandemic in china. *Journal of Affective Disorders, 279*, 412–416. https://doi.org/10.1016/j.jad.2020.10.008

Oliveira, T., Costa, D., Albuquerque, M., Malloy-Diniz, L., Miranda, D., & de Paula, J. (2018). Transcultural adaptation, validity, and reliability of the Parenting Styles and Dimensions Questionnaire — Short Form (PSDQ) to Brazil. *Revista Brasileira de Psiquiatria, 40*(4), 410–419.

Panda, P. K., Gupta, J., Chowdhury, S. R., Kumar, R., Meena, A. K., Madaan, P., … Gulati, S. (2021). Psychological and behavioral impact of lockdown and quarantine measures for COVID-19 pandemic on children, adolescents and caregivers: A systematic review and meta-analysis. *Journal of Tropical Pediatrics, 67*(1), Article fmaa122. https://doi.org/10.1093/tropej/fmaa122

Qi, W. (2019). Harsh parenting and child aggression: Child moral disengagement as the mediator and negative parental attribution as the moderator. *Child Abuse and Neglect, 91*, 12–22. https://doi.org/10.1016/j.chiabu.2019.02.007

Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (2001). The parenting styles and dimensions questionnaire (PSDQ). In *Handbook of family measurement techniques* (pp. 319–321).

Sadeh, A., Tikotzky, L., & Scher, A. (2010). Parenting and infant sleep. In *, Vol. 14. Sleep medicine reviews* (pp. 89–96). W.B. Saunders. https://doi.org/10.1016/j.smrv.2009.05.003. Issue 2.

Sandler, I., Ingram, A., Wolchik, S., Tein, J.-Y., & Winslow, E. (2015). Long-term effects of parenting-focused preventive interventions to promote resilience of children and adolescents. *Child Development Perspectives, 9*(3), 164–171. https://doi.org/10.1111/cdep.12126

Schmidt, B., Crepaldi, M. A., Bolze, S. D. A., Neiva-Silva, L., & Demenech, L. M. (2020). Saúde mental e intervenções psicológicas diante da pandemia do novo coronavírus (COVID-19). *Estudos de Psicologia (Campinas), 37*. https://doi.org/10.1590/1982-0275202037e200063

Schneider, L. A., King, D. L., & Delfabbro, P. H. (2017). Family factors in adolescent problematic Internet gaming: A systematic review. *Journal of Behavioral Addictions, 6*(3), 321–333. Akadémiai Kiadó https://doi.org/10.1556/2006.6.2017.035.

Sciberras, E., Song, J. C., Mulraney, M., Schuster, T., & Hiscock, H. (2017). Sleep problems in children with attention-deficit hyperactivity disorder: associations with parenting style and sleep hygiene. *European Child and Adolescent Psychiatry, 26*(9), 1129–1139. https://doi.org/10.1007/s00787-017-1000-4

Singh, S., Roy, D., Sinha, K., Parveen, S., Sharma, G., & Joshi, G. (2020). Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with recommendations. In *, Vol. 293. Psychiatry research* (p. 113429). Elsevier Ireland Ltd. https://doi.org/10.1016/j.psychres.2020.113429.

Siste, K., Hanafi, E., Jamtani, D., Murtani, B. J., Beatrice, E., Christian, H., … Ismail, R. I. (2020). Gaming disorder and parenting style: A case series: A case series. *Addiction Disorder and Their Treatment, 19*(3), 185–190.

Smith, S. R. (2007). Making sense of multiple informants in child and adolescent psychopathology: A guide for clinicians. *Journal of Psychoeducational Assessment, 25*(2), 139–149.

Tarokh, L., Saletin, J. M., & Carskadon, M. A. (2016). Sleep in adolescence: Physiology, cognition and mental health. In *, Vol. 70. Neuroscience and Biobehavioral Reviews* (pp. 182–188). Elsevier Ltd. https://doi.org/10.1016/j.neubiorev.2016.08.008.

Thomson, R. M., Allely, C. S., Purves, D., Puckering, C., McConnachie, A., Johnson, P. C. D., … Wilson, P. (2014). Predictors of positive and negative parenting behaviours: Evidence from the ALSPAC cohort. *BMC Pediatrics, 14*(1), 1–10. https://doi.org/10.1186/1471-2431-14-247

Thorell, L. B., Skoglund, C., de la Peña, A. G., Baeyens, D., Fuermaier, A. B. M., Groom, M. J., & Christiansen, H. (2021). Parental experiences of homeschooling during the {COVID-19} pandemic: differences between seven European countries and between children with and without mental health conditions. *European Child & Adolescent Psychiatry, 7*, 7–13.

Travassos, C., & Williams, D. R. (2004). The concept and measurement of race and their relationship to public health: a review focused on Brazil and the United States. *Cadernos de Saúde Pública, 20*, 660–678.

Uji, M., Sakamoto, A., Adachi, K., & Kitamura, T. (2014). The impact of authoritative, authoritarian, and permissive parenting styles on children's later mental health in Japan: Focusing on parent and child gender. *Journal of Child and Family Studies, 23*(2), 293–302.

Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *Lancet (London, England), 395*(10228), 945–947. https://doi.org/10.1016/S0140-6736(20)30547-X

Werneck, A. O., Silva, D. R., Malta, D. C., Souza-Júnior, P. R. B., Azevedo, L. O., Barros, M. B. A., & Szwarcwald, C. L. (2021). Physical inactivity and elevated TV-viewing reported changes during the COVID-19 pandemic are associated with mental health: A survey with 43,995 Brazilian adults. *Journal of Psychosomatic Research, 140*, Article 110292. https://doi.org/10.1016/j.jpsychores.2020.110292

Wood, J. J., McLeod, B. D., Sigman, M., Hwang, W.-C., & Chu, B. C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 44*(1), 134–151. https://doi.org/10.1111/1469-7610.00106

Wu, Q., & Xu, Y. (2020). Parenting stress and risk of child maltreatment during the {COVID-19} pandemic: A family stress theory-informed perspective. *Developmental Child Welfare, 2*(3), 180–196.