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#stayathome?: Increased children's emotion regulation in covid-19 pandemic

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Abstract

Emotion Regulation is an important resource over children development, especially when facing adversities. The arrival of Convid-19 pandemic has resulted in procedures as quarantine and social distancing, which may cause mental health status challenges for children. The aim of this study was to compare parents' perception on their children's emotional regulation before and during quarantine. The results showed positive correlation between Covid's behavioral and cognitive variables, as risk perception, virus exposure, preventive care, social distancing and Covid-19 knowledge with emotion regulation. Unexpectedly there was an increment on children's emotion regulation during quarantine period perceived by their parents. This data can provide clues regarding the emotion development, the route of how mental health preventive measures should go, prioritizing parents support and psychoeducation.

Keywords: emotinal regulation; developmental psychology; childhood; covid-19; pandemic.

Resumo

#ficaemcasa?: aumento da regulação emocional de crianças na pandemia da covid-19. A Regulação Emocional é um importante recurso no desenvolvimento infantil, especialmente em contextos de adversidades. A chegada da pandemia da Covid-19 trouxe necessidade de medidas como quarentena e distanciamento social, gerando possíveis desafios à saúde mental de crianças. O objetivo deste estudo foi comparar a percepção de pais sobre a regulação emocional dos filhos antes e durante a quarentena. Os resultados mostraram correlações positivas entre variáveis cognitivas e comportamentais sobre a Covid-19, como percepção de risco, exposição ao vírus, cuidados preventivos, distanciamento social e conhecimento sobre a Covid-19 com a regulação emocional. Inesperadamente, na percepção dos pais, foi identificado um aumento da regulação emocional das crianças durante o período da quarentena. Estes dados podem fornecer informações sobre o desenvolvimento emocional infantil, direcionando as medidas de prevenção a saúde mental para o contexto de suporte parental e psicoeducação.

Palavras-chave: regulação emocional; psicologia do desenvolvimento; infância; covid-19; pandemia.

Resumen

#quedateencasa?: Aumento de la regulación emocional de los niños en la pandemia de covid-19. La regulación emocional es un importante recurso en él desarrollo infantil, especialmente en contextos de adversidades. La llegada del Covid-19 provocó la necesidad de medidas como la cuarentena y el distanciamiento social, generando posibles desafíos a la salud mental de los niños. El objetivo de este estudio fue comparar la percepción de padres sobre la regulación emocional de sus hijos antes y durante la cuarentena. Los resultados mostraron correlaciones positivas entre variables cognitivas y conductuales del Covid-19, como la percepción del riesgo, exposición al virus, cuidados preventivos, distanciamiento social y conocimiento sobre el COVID-19, con la regulación emocional. Inesperadamente, en la percepción de los padres, fue identificado un aumento de la regulación emocional de los niños durante el periodo de la cuarentena. Estos datos pueden proporcionar informaciones sobre el desarrollo emocional infantil, dirigiendo las medidas de prevención de salud mental al contexto de soporte parental y psicoeducación.

Palabras-clave: regulación emocional; psicología del desarrollo; infancia; covid-19; pandemia.

Scientists from the city of Wuhan, China, discovered a new virus from the corona family (Ge et al., 2020). The newly detected virus, SARS-CoV-2, that may cause COVID-19 – Coronavirus Disease-19, is a respiratory illness that may cause a series of conditions and can be presented by several symptoms such as fever, cough and difficulty in breathing, and death. Despite in some cases can be asymptotic, the virus is considered dangerous due to its high infection rate effect (Organização Pan-Americana da Saúde, 2020).

The disease was defined by the World Health Organization (WHO) as pandemic due to the characteristics mentioned above. According to WHO (2020), as of May 2020, over 6 million cases of COVID-19 have been confirmed. Brazil reported its higher number of cases per day on May 2020 and is the second in total number of people infected. Social distancing and quarantine were some of the strategies taken by the authorities in order to mitigate and keep the disease from spreading (Portaria N° 356, 2020).

Quarantine and social distancing feature different configurations and historically seem to go together on a pandemic context. Quarantine refers to movement restriction of people who are presumed to have been exposed to a contagious disease (Brooks et al., 2020), while social distancing is designed to decrease social interactions between individuals of a given community (Wilder-Smith & Freedman, 2020). For COVID-19, the WHO determined that individuals must maintain at least 1 meter (3 feet) distance between each other in a wide range of contexts (WHO, 2020).

Quarantine may result in a variety of changes in life routine: closure of schools, universities, churches, malls, gyms, beaches, parks, country borders and the prohibition of events and meetings that cause agglomeration. Due to studies of past pandemic episodes (i.e. H1N1, Ebola), it is known that the sudden spread of infectious diseases impacted people psychologically, mainly when associated with quarantine (Dryhurst et al., 2020).

De Vos (2020) highlighted that social distancing might negatively affect well-being and health status as it might result in social isolation and limited physical activity. Another research on COVID-19 showed that staying at home or experimenting changes in daily life habits can increase the perceived risk of physical health, reducing social contact and increasing feelings of loneliness and social isolation. Nevertheless, findings suggested possible potential positive outcome related to social support as individuals try to adjust to these changes in their daily life (Tull et al., 2020).

Another relevant aspect is related to the perceived risk and pandemic knowledge. In this sense, it is also important to understand the risk of perception among people, as a tool for authorities to plan strategies to suppress the spread of the virus (Huynh, 2020). A literature review from Brooks et al. (2020) about the psychological impact during pandemic concluded that lack of information increases stress during quarantine, while providing the maximum knowledge possible to public helps mitigate effect caused by quarantine.

Risk exposure levels were suggested by China's researches, based on their guiding principles of emergent psychological crisis intervention on COVID-19 (Jiang, Nan, Lv, & Yang, 2020). People affected by COVID-19 were divided into four levels associated with risk exposure. On the first level are patients with severe symptoms, front-line medical workers, CDC researchers or administrative staff; second level is comprised by patients with mild symptoms, close contacts, suspects, or patients with fever who seek hospitals for treatment; on the third level are people related/associated to the first and second-level population, such as family members, colleagues or friends, rescuers, commanders, administrative staff, or volunteers; lastly on the fourth level are people that attend affected areas, susceptible groups or the general public.

According to Sprang and Silman (2013), lack of structure and support from school, social isolation and parents risk on COVID-19 pandemic will very likely result in a negative impact on children and young adults mental health status. The same study found that parents and children, who had been quarantined, reported sufficient symptoms to diagnose a trauma-related mental health disorder (Sprang & Silman, 2013). In a similar direction, Crawley et al. (2020) suggested that social isolation and loneliness in children, parents job loss and increased parental distress may lead to subsequent mental health problems, resulting in a substantial increase in need for Child and Adolescent Mental Health Service (CAMHS). On top of that, adverse environmental experiences in childhood have powerful and lasting influence on infancy being able to change emotional pattern of development (McLaughlin, Weissman, & Bitrán, 2019).

Emotion regulation (ER) comprehends on the adequate emotional activation management to achieve effective social functioning (Reis et al., 2016). It

includes initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states and emotion-related physiological reactions (Gross, 2015; Reis et al., 2016). The Emotion Regulation Checklist (ERC) is an instrument for the hetero-evaluation of the level of emotion regulation of children. This evaluation is made by two factors: Emotion Regulation (ER) and Lability/Negativity (L/N). The ER assesses the expression of emotions, empathy, and emotional self-awareness and Lability/Negativity assesses the lack of flexibility, anger dysregulation and mood lability (Reis et al., 2016). One study using the same instrument (Cadima et al., 2016) has discovered that children with socio-cultural risk features higher levels of emotion regulation in a classrooms context.

One investigation conducted by Harvard Medical School analyzed the relations between family risk (i.e. economic disadvantage, family stress, and maltreatment), maternal emotion coaching, and emotion regulation in preschoolers. It demonstrated a positive correlation between the increase of family risk and the decrease of child emotion regulation and maternal emotion coaching. It also found that maternal emotion coaching partially mediated the relation between family risk and child emotion regulation. However, when looking at the two elements of child emotion regulation (emotional lability and adaptive regulation) separately, maternal emotion coaching was only associated with a reduction in child emotional lability, but not with increased adaptive regulation (Ellis, Alisic, Reiss, Dishion, & Fisher, 2014).

At the present time, there is a low number of researches about the potential impacts of COVID-19 pandemic in Brazil on child behavior and development. Efforts on investigations about repercussion and possible changes in children emotion regulation allow the identification of risk and vulnerability threatening the health psychological and emotional development. In addition, it could lead to more precise preventive measures and interventions plans.

Thus, the goal of this article is to compare parents' perception on their children's emotional regulation. Two hypotheses were raised: the existence of relations between COVID-19's variables as known risk perception, attitudes (virus exposure risk; preventive care; social distancing) and knowledge with emotion regulation and a decrease of emotion regulation, when comparing quarantine period and the moment right before it took place.

Method

Study Design

The study followed an empirical, longitudinal and comparative design, in which all participants answered the questionnaire with the same interval of time, before quarantine started and 60 days after quarantine was in place. The goal is to investigate if there would be changes on the perception of children's emotion regulation.

Participants

Participants included: one parent of an elementary school child, with a total of 95 respondents, being 86.3% female and 13.7% male. The parents' age ranged from 18 to 62 years (M = 38.77%, SD= 7.6%). When considering their labor and education conditions, 57.9% of the parents had a job and 52.6% of the mothers completed high school. Socioeconomic status (SES) was distributed as follows: 1.1% class A (family income greater than or equal to 13 minimum monthly wages, ≥ USD 3,900.00), 23.2% class B (family income of around 6 minimum monthly wages, ≈USD 1,800.00), 61.0% class C (family income of two minimum monthly wages, ≈ USD 600.00), 14.7% classes D (family income of around one minimum monthly wage, ≈ USD 300.00) and E (family income of less than one minimum monthly wage). Data was defined according to Brazilian Social Economic Classification of ABEP (Associação Brasileira de Empresas de Pesquisa [ABEP], 2018). A questionnaire that identifies social economic distribution. Children were 54.7% male and 45.3% female; 73.7 % attended four different public schools, and 26.3% attended one private school, all in Salvador, Brazil. Children that participated aged 05 to 12 years old (M = 8.39, SD = 1.83).

Instruments

Socio Demographic Questionnaire. In this questionnaire parents were asked for their age, gender, if currently working, education level, and also their children's age, gender, education, and school type (whether private or public).

ABEP Questionnaire. The ABEP is a scale that searches for socio economic level for participants through some questions (ABEP, 2018). Parents were requested to fill in the questionnaire with their child's information. The classification is obtained based on a questionnaire that determines the number of assets or services that the participant has at home. It also recorded the head of the

household schooling level. Each answer awards a number of points and a final score is recorded for each participant according to their socioeconomic level.

Emotion Regulation Checklist (ERC). ERC comprises of 24 items describing children's behaviors and the frequency, which is hetero-evaluated by parents on a four-point Likert scale (1 = "Never" to 4 = "Almost Always"). The items are distributed across two scales: Emotion Regulation (ER) and Emotional Lability/Negativity (L/N). ER is related to emotion expressions, empathy and emotional self-awareness and L/N is related to inflexibility, rage dysregulation and mood lability. The original scale was developed by Shields and Cicchetti (1995). Data on the psychometric properties and validity of the ERC in Brazil are available in Reis et al. (2016).

COVID- 19 Questionnaire. This questionnaire has 58 items and was developed based on the following two studies, McFadden, Malik, Aguolu, Willebrand and Omer (2020) and Oliver, Barber, Roomp and Roomp (2020). It includes questions about risk perception and virus exposure risk, answered on a five-point Likert scale (1 = "Totally Disagree" to 5 = " Totally Agree") and questions about social distancing and Covid - 19 knowledge, on dichotomous items (yes or no answers).

Procedures

The original project and its amendment to allow this investigation were approved by the Research Ethics Committee of the Institute of Psychology of a public institution (Universidade Federal da Bahia [UFBA], number 3.895.888). The first data set was collected in schools, during a family meeting scheduled with the school's coordinators, parents and researcher, on February 2020, before the dissemination of COVID-19 virus in Brazil. Parents who agreed to be part of the study, signed the TCLP consent form before answering the questionnaire. Because of social distancing, the second part of the data was collected only by phone and internet calls, on May 2020, with a minimum of 60 days and no more than 75 days after quarantine was already in place. Parents were asked if they still wanted to continue to participate in the research. During both stages, researchers read the instructions and questions carefully and asked that participants answered according to their thoughts and behaviors of their child. Parents completed the protocol in approximately 45 minutes.

Data Analysis

The database preparation stage started from the input process, with missing data analysis and verifying the sample distribution with *Kolmogorov-Smirnov* and *Shapiro-Wilk Tests*. Both tests indicated a non-normal distribution of the sample leading to a non-parametric test to proceed the analysis. To achieve the goal of the present study, we run descriptive statistics for analysis of frequency, mean, standard deviation, minimum and maximum scoring and nonparametric inferential statistics, for the intragroup comparisons (Wilcoxon test) and correlation (Spearman Correlation), which includes Group B1 (group before quarantine) and group Group B2 (during quarantine). The SPSS Statistics 25.0 for Windows ® (Statistical Package for Social Sciences, SPSS Corp., 2017) was used for all the data analysis.

Results

Table 1 shows results considering the correlation between Emotion Regulation and variables related to the COVID-19. The risk perception was not correlated with the key study variables (p's > 0.05). Moreover, the results showed a low negative significant correlation between the item "I believe that I am capable of protecting myself against Coronavirus better than others" from risk perception variable with total emotion regulation. (rs (95) = -0.209; $p < 0.05$).

Virus exposure was not correlated with the key study variables ($p > 0.05$). However, a weak, positive significant correlation was found between the item (level 4) of virus exposure and emotion regulation factor. (rs (95) = 0.230; $p < 0.05$).

Preventive care was not correlated with the key study variables ($p > 0.05$). The item "Avoid travelling" of preventive care had two significant correlations. One of them was a low, negative correlation with Lability/Negativity factor (rs (95) = -0.225; $p < 0.05$), and the other was a weak, positive correlation with total emotion regulation (rs (95) = -0.206; $p < 0.05$).

Social Distancing was not correlated with the key study variables ($p > 0.05$). The dimension "places that people leave home for" have two relevant items, physical activity and walking the dog. Physical activity had a low, negative significant correlation with emotion regulation factor (rs (95) = -0.355; $p < 0.01$) and total emotion regulation (rs (95) = -0.229; $p < 0.05$) and walking the dog showed a low, negative significant correlation with emotion regulation factor (rs (95) = -0.282; $p < 0.01$). The dimension "child being cared for by others" (grandparents, neighbors) demonstrates a low, negative correlation with emotion

regulation factor (rs (95) = -0.286; $p < 0.01$). There were weak, negative significant correlation between total emotion regulation and the dimension, "People attending the family house" (rs (95) = -0.215; $p < 0.05$). Two items from these dimensions had more statistical relevance. The first one was a weak positive correlation between relatives attending the family house with Lability/ Negativity factor (rs (95) = 0.268; $p < 0.01$). The second one, showed a moderate negative correlation between relatives attending the family house and total emotion regulation (rs (95) = -0.306; $p < 0.01$). There was another weak, negative and significant correlation found in these same dimensions, between neighbors attending the family house and Lability/ Negativity factor (rs (95) = -0.224; $p < 0.05$).

The item "I will wait the necessary time" from the dimension "capacity to tolerate time" in social distancing was found on a weak, positive significant correlation with both emotion regulation factor (rs (95) = 0.298; $p < 0.01$) and total emotion regulation (rs (95) = 0.256; $p < 0.01$). About the last Covid-19 aspect, there was a positive significant correlation verified between emotion regulation factor and Covid-19 Knowledge (rs (95) = 0.222; $p < 0.05$).

Table 1. Correlation between Emotion Regulation and Variables Related To the COVID-19

VARIABLES	DIMENSIONS	Total Emotion Regulation	Emotion Regulation	Lability/ Negativity
Risk perception	-	-0.062	0.033	0.109
Virus exposure risk	-	-0.037	-0.039	0.023
Preventive care	-	0.020	-0.047	-0.062
Social distancing	Places that people leave home for	0.002	-0.022	-0.021
	Child being cared by others	-0.175	-0.286**	0.71
	People attending the family house	-0.215*	-0.151	0.168
	Capacity to tolerate time	0.256*	0.298**	-0.143
Covid-19 knowledge	-	-0.220	0.222*	0.125

*p = 0.05

The non-parametric Wilcoxon test revealed a difference statistically significant, with an increase of the total Emotion Regulation scores over time comparing two groups, Group B1 (group before quarantine) and group Group B2 (during quarantine). Group B1 presented a lower score (*M*= 67.6; *SD*= 8.14) than Group B2 (*M*= 71.2; *SD*= 8.91) (*Z* = -4.339; *p*<0.001).The same result was found on Emotion Regulation factor being Group B1 (*M*= 30.77; *SD*= 4.16) and Group B2 (*M*= 33.3; *SD*= 4.09) (Z= -5.272; *p*<0.001). However this was not observed in Lability/Negativity factor, where the analysis showed a decrease with Group B1 (*M*= 28.1; *SD*= *5.89*) and Group B2 (*M*= 27.1; *SD*= 6.42) (Z= -2.405; *p*<0.05), as demonstrated in Table 02.

Table 2. Comparison between Group B and Group D on Total Emotion Regulation, and the Two Factors, Emotion Regulation and Lability/ Negativity (N = 95)

	GROUP B1	GROUP B2	Z
	M (SD)	M (SD)	
Total Emotion Regulation	67.6 (8.14)	71.2 (8.91)	- 4.339***
Emotion Regulation	30.7 (4.16)	33.3 (4.09)	-5.272***
Lability/Negativity	28.1 (5.89)	27.1 (6.42)	-2.405*

*p = 0.05; ***p = 0.001

Discussion

This study aimed to compare parents' perception on their children's emotional regulation before and during quarantine. In that way, one of the hypothesis was the existing relations between the COVID-19's variables as know, risk perception; attitudes (virus exposure risk; preventive care; social distancing including the following aspects: places that people leave home for, people attending the family house, pandemic impact) and Covid-19 knowledge with emotion regulation and it factors.

The results showed a negative significant correlation between the item "I believe that I am capable of protecting myself against Coronavirus better than others" from risk perception variable with total emotion regulation. It is understood that believing on self-protection needs reveals more perceived risk, decreasing emotion regulation resources. Those results are in line with Abdelhafiz et al. (2020), where most participants believe that Covid-19 virus represents a life-threatening danger, and were concerned about the potential risk of infection of any member of their families. Therefore, Covid -19 can provide a vulnerable psychological condition weakening individuals emotional repertoire with possible rebound effects over the family context, including their children management.

Considering virus exposure variable, a low, positive significant correlation was found between the level 4 of virus exposure and emotion regulation factor. Level 4 consists in knowing people contaminated in the neighborhood, which is the lowest level of risk contamination. It demonstrates the probability of more resources of children's emotion regulation when there is a less risk of exposure to the virus. In a complementary way, Jiang et al. (2020) signalized increasingly exposure to COVID-19 is recognized as a cause of trauma, therefore bringing negative impact to emotion conditions. Results from the study provided empirical support for significant correlations of COVID-19 exposure severity and emotion regulation on PTS (Post-Traumatic Stress Symptoms).

Making an allowance for the variable preventive care, the item "Avoid travelling" had two significant correlations in this study. One of them was a negative correlation with Lability/Negativity factor, and the other was a positive correlation with total emotion regulation. Both findings indicate that preventive behaviors against contamination seems to favor a better contexts for emotion regulation, and less emotional lability. A study conducted in China found that travel restrictions are particularly useful in the early stage of an outbreak as an efficient tool against spread of the virus (Kraemer et al., 2020). This is an important aspect to target about quarantine periods, considering several theories of preventive health behavior positing a central role for emotions (Leventhal, Diefenbach, & Leventhal, 1992). Decision makers seek to regulate not only the health threat but also their own emotional response, and the cognitive–social health information processing (S. M. Miller, Shoda, & Hurley, 1996), which lays out the conditions under which affective responses decrease or increase preventive health behaviors.

The most significant result of this study was related to the social distancing contexts and emotion regulation. Considering the idea of a possible trauma (Jiang et al., 2020) unleashed by Covid-19, quarantine literature suggests that under conditions of high stress, emotion regulation may be crucial. When sustained emotional arousal is prolonged it could collaborate to a healthy functioning (Deater-deckard, Li, & Bell, 2016). Strategies of emotion regulation seem to offer minimally the primary behavioral repertoire facing quarantine challenges.

The dimension "places that people leave home for" has two relevant items, physical activity and walking the dog. Physical activity had a negative correlation with emotion regulation factor and total emotion regulation. In the same direction walking the dog showed a weak, negative correlation with emotion regulation factor. These results suggest that, even for a supposed health propose as the conditions above, leaving home may be a risk condition for emotion regulation during quarantine, once is related to risk perception and virus exposure as said before (Abdelhafiz et al., 2020).

Another dimension related to social distancing that showed significant results was child being cared for other (grandparents, neighbors). It demonstrates a negative correlation with emotion regulation factor. It opens for consideration of the negative impact of different adults guiding children care in development of emotion regulation. As described by Zang and Lee (2020) children are attentive observers of people and environments, and they notice and react to stress in their parents, other caregivers and community members. Although the risk of severe illness due to COVID-19 is lower for children, they are more vulnerable than adults to the emotional impact of traumatic events that disrupt their normal lives (Zhang & Lee, 2020). With consistent support and age-appropriate responses, children

can be resilient. However, children who do not receive appropriate support and nurturance during this time could increase the risk of developing significant mental health disorders.

Still on the social distancing context, there was another dimension named "people attending the family house". There was a negative significant correlation between it and total emotion regulation score. In addition, two items from this variable had more statistical relevance. The first one was a weak, but positive correlation between relatives attending the family house with Lability/ Negativity factor. The second one, showed a moderate negative correlation between relatives attending the family house and total emotion regulation, this last one was the most significant data on this study. It means that more relatives attending the family house decrease on total emotion regulation. This findings support the idea of some previous studies indicating that family risk factors such as ineffective parenting (e.g., harsh discipline, low parent involvement and low monitoring) are powerful early predictors for the development and maintenance of behavioral and emotional problems in children and adolescents (Patterson, Reid, & Dishion, 1992).

The idea of "people attending the family house" as a possible routine family break (chaos) has a literature support. A. L. Miller et al. (2017) tested whether biological stress profile (cortisol) moderated the association among positive and negative home environment factors (routines; chaos) and emotion regulation (negative lability; positive regulation). Results showed that home chaos was negatively associated with emotion regulation outcomes. Child cortisol level moderates the routines-emotion regulation and lack of routine was most strongly associated with poor emotion regulation among children with lower cortisol output.

A study conducted by Zajicek-Farber, Mayer and Daughtery (2012) indicated that parental engagement in bedtime routines significantly contributed to children's emotional regulation, supporting the concept that engaging in parent–child routine behaviors can play an important protective role in the parenting process. Another interesting consideration among these findings is that the coexistence of elderly with youngers could lead to conflicts because of the transgenerational changes in the XXI century, suggesting challenges on the grandparents relations and grandsons (De Paula, Silva, Bessa, Moraes, & Marques, 2011). Despite this evidence, there was another negative and significant correlation found in the same dimension between neighbors attending the family house and Lability/ Negativity factor. These data suggest that more neighbors attending the family house more decreasing e on Lability/ Negativity factor. Even though these results are in the contrary direction from the last discussion, the low SES of the sample brings same relevant issues and characteristics. Amazonas, Damasceno, Terto and Silva (2003) explain that people from these population need to develop surviving strategies, and all the family network should participate on the material and care maintenance, providing solidarity through the group coexistence. Solidarity is a way of low SES social class guarantee their functioning against contexts which overwhelmed development. This configuration is not restricted to the family: oftentimes the neighbor helps taking care of the children, parents are able to work and sustain the family, reducing the intrafamiliar distress. There is indifference between private and public contexts, streets become a house extension where children live together with parents, relatives and neighbors (Amazonas et al., 2003).

Last but not least, the item "I will wait the necessary time" from the capacity to tolerate time in social distancing was found on a weak positive significant correlation with both emotion regulation factor and total emotion regulation. This result means that the capacity to tolerate the quarantine period may be associated with potential emotion regulation resources over time. Quarantine requires general efforts in many directions; this data indicates the idea of Grit and Resilience concepts, both related to emotion regulation. Prospective longitudinal studies have shown that grit predicts the completion of challenging goals despite obstacles and setbacks (Duckworth & Gross, 2014). Individuals who report more grit may develop mechanisms for coping with adversity that foster well-being and protect against psychopathology. Alternatively, resilient individuals are those who persist in the face of obstacles and continue to pursue their passions, so their resilience may lead to greater grit over time (Musso et al., 2019).

Moving to the last Covid-19 dimension investigated, there was a positive significant correlation verified between emotion regulation factor and Covid-19 knowledge, showing that having information about virus and quarantine orientations are in agreement with use of emotion regulation. A literature review from Lemes and Neto (2017) showed that psychoeducation is an approach extensively used to promote health care in

different contexts. It relates to psychological and pedagogical tools having as its objective the teaching directioned providing not only knowledge about the health/illness status, but also improving accession to treatments and autonomy in the decision-making process. Thus, it is possible to develop prevention and awareness work in health, which reverberate positively in emotions conditions. Another relevant aspect is that appropriate information about the virus may help to reduce panic and stress (Buheji, Jahrami, & Dhahi, 2020).

The second main hypothesis of this study expected a decrease on emotion regulation, when comparing quarantine period and the moment right before it took place. Despite all the evidences on the literature showing that children who experience adversity are about twice as likely to develop a mental disorder as those who have not, and the odds of developing psychopathology increase dramatically as exposure to adversity increases (Lewis et al., 2019; McLaughlin et al., 2019) the present study brings a different point of view. A significant difference was found, with an increase of the total Emotion Regulation scores over time comparing two groups, Group B1 (group before quarantine) and Group B2 (during quarantine) and in the Lability/Negativity factor the analysis showed a decrease between Group B1 and Group B2.

These non expected results indicate a valuable data about children emotion regulation development. This scenario unfolds two possible rationales. The first one is related to General Adaptation Syndrome (GAS) primarily described by Selye (1956) and update by (Sadir, Bignotto, & Lipp, 2010) which describes the syndrome as all the organism reactions that follows the prolonged exposure to stressor. This condition includes 3 stages: 1. Alarm; 2. Resistance; 3. Exhaustion. The Alarm stage consists on recruiting resources, on a natural reaction preparing the organism for "fight-or-flight" responses perceived as dangerous situations. The Resistance indicates a recovery phase, even though it remains on high alert for a while. Individuals are capable to adapt and learn how to live with a higher stress level. In this stage, the body goes through changes that were unaware of an attempt to cope with stress. Exhaustion describes the situation in which individuals struggle with stress for long periods, which can cause drainage of physical, emotional and mental resources when they no longer have the strength to fight stress (Selye, 1986). This evidence suggests that the sample analyzed, once in quarantine, are experimenting everyday challenging and struggling stress situations. Despite of quarantine be referred as a potential stressor by the literature (Brooks et al., 2020) decreasing resources of emotion regulation (Buheji et al., 2020) this knowledge was not confirmed by this research.

The present study reveals that children's emotional regulation improves in the quarantine period. According to GAS, after being exposure to stress, on stage 2 - Resistance the person begins a process to deal and habituate with it. The intensity and time of exposure to adverse contexts and psychological resources can influentiate in how the individuals will manage with it and which stage of stress they are (Selye, 1986). So, this data suggests that children on this period of quarantine may have to recruit emotional, mental and physical resource. Thus, from parent's perception, children seem to be under the GAS's Resistance Stage. Uncertain COVID -19 scenario may promote insecurity feelings about the future, on a hand creating high levels of stress. In the other hand, management to reduce the undetermined situation or deal with the context may create an opportunity to change and move in a goal direction and promote a better resilience and reduce stress levels.

The other possible rationale to interpret these findings is the imposed time permanence of parent at home providing more opportunities to mediate children behavior and routine. There is a strong body of evidence to support that parents play an important role in children's development of regulating emotions. The presence of parents on children daily care has shown to influences encompass children's developing neurobiology, the growth of attentional processes, advances in conceptual understanding of emotions, and developing temperamental individuality and the growth of personality. Parents provide a range of proactive socializations such as providing warm, nurturing, and safe family emotional climates; engaging in stimulating child activities; facilitating family and wider social acculturating experiences; providing high-quality parenting care; and responding sensitively to children's needs and wants (Bocknek, Brophy-Herb, Fitzgerald, Schiffman, & Vogel, 2014; Denham, 2003; Fiese et al., 2002; Sadeh, Tikotzky, & Scher, 2010; Zajicek-Farber et al., 2012).

Conclusion

First of all, this study contributed as a new data from a Brazilian sample on children emotion regulation field, which still scarce in Brazil. Second, there is a

lack of similar performed studies describing the specific impacts and correlations about children's emotion regulation during quarantine. The previous data from this study before quarantine allowed to assess and compare children ER status with a unique perspective. As an unexpected finding, due to stress environment established by Covid-19 pandemic, emotion regulation increased during quarantine period reminding the invaluable presence of parents on children's development.

Regarding the limitations of this study, we can mention the sample composition, which included mostly children attending public schools from a single Brazilian state and, therefore, the results cannot be generalized. Future studies may consider a population with different socioeconomic levels, as well as a greater diversity of regions in the country, besides different cultural background. Also, further studies could focus on the role gender plays on children emotion regulation, and investigate the different use of emotion regulation strategies. Despite these limitations, this data can provide meaningful clues regarding the emotion development, the route of how mental health preventive measures should go, prioritizing parent's support and psychoeducational strategies in adversity situations.

References

Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., Ziady, H. H., Alorabi, M., Ayyad, M., & Sultan, E. A. (2020). Knowledge, perceptions, and attitude of Egyptians towards the novel Coronavirus disease (COVID-19). *Journal of Community Health, 45,* 881-890. doi: 10.1007/s10900-020-00827-7

Amazonas, M. C. L. A., Damasceno, P. R., Terto, L. M. S., & Silva, R. R. (2003). Arranjos familiares de crianças das camadas populares. *Psicologia em Estudo*, *8*(spe), 11-20. doi: 10.1590/s1413-73722003000300003

Associação Brasileira de Empresas de Pesquisa (ABEP). (2018). *Critério de classificação econômica Brasil*. Retrieved from http://www.abep.org/

Bocknek, E. L., Brophy-Herb, H. E., Fitzgerald, H. E., Schiffman, R. F., & Vogel, C. (2014). Stability of biological father presence as a proxy for family stability: Cross-racial associations with the longitudinal development of emotion regulation in toddlerhood. *Infant Mental Health Journal*, *35*(4), 309-321. doi: 10.1002/imhj.21454

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. *The Lancet*, *395*(10227), 912-920. doi: 10.1016/S0140-6736(20)30460-8

Buheji, M., Jahrami, H., & Dhahi, A. S. (2020). Minimising stress exposure during pandemics similar to COVID-19. *International Journal of Psychology and Behavioral Sciences*, *10*(1), 9-16. doi: 10.5923/j.ijpbs.20201001.02

Cadima, J., Ferreira, T., Guedes, C., Vieira, J., Leal, T., & Matos, P. M. (2016). Risco e regulação emocional em idade pré-escolar: a qualidade das interações dos educadores de infância como potencial moderador. *Análise Psicológica*, *34*(3), 235-248. doi: 10.14417/ap.1079

Crawley, E., Loades, M., Feder, G., Logan, S., Redwood, S., & Macleod, J. (2020). Wider collateral damage to children in the UK because of the social distancing measures designed to reduce the impact of COVID-19 in adults. *BMJ Paediatrics Open*, *4*(1), e000701. doi: 10.1136/bmjpo-2020-000701

De Paula, F. V., Silva, M. J., Bessa, M. E. P., Moraes, G. L. A., & Marques, M. B. (2011). Avós e netos no século XXI: autoridade, afeto e medo. *Revista da Rede de Enfermagem do Nordeste*, *12*, 913-921. doi: 10.15253/rev

De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behavior. *Transportation Research Interdisciplinary Perspectives*, *5*(*May*), 1-6. doi: 10.1016/j.trip.2020.100121

Deater-deckard, K., Li, M., & Bell, M. A. (2016). Multi-faced emtion regulation, stress, and affect in mothres of young children. *Cognition & Emotion*, *176*(3), 139-148. doi: 10.1016/j.physbeh.2017.03.040

Denham, S. A. (2003). Relationships between family rituals, family routines, and health. *Journal of Family Nursing*, *9*(3), 305-330. doi: 10.1177/1074840703255447

Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L. J., Recchia, G., van der Bles, A. M., … van der Linden, S. (2020). Risk perceptions of COVID-19 around the world. *Journal of Risk Research*, *23*(7-8), 1-13. doi: 10.1080/13669877.2020.1758193

Duckworth, A., & Gross, J. J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science*, *23*(5), 319-325. doi: 10.1177/0963721414541462

Ellis, B. H., Alisic, E., Reiss, A., Dishion, T., & Fisher, P. A. (2014). Emotion regulation among preschoolers on a continuum of risk: The role of maternal emotion coaching. *Journal of Child and Family Studies*, *23*(6), 965-974. doi: 10.1007/s10826-013-9752-z

Fiese, B. H., Tomcho, T. J., Douglas, M., Josephs, K., Poltrock, S., & Baker, T. (2002). A review of 50 years of research on naturally occurring family routines and rituals: Cause for celebration? *Journal of Family Psychology*, *16*(4), 381-390. doi: 10.1037/0893-3200.16.4.381

Ge, H., Wang, X., Yuan, X., Xiao, G., Wang, C., Deng, T., … Xiao, X. (2020). The epidemiology and clinical information about COVID-19. *European Journal of Clinical Microbiology and Infectious Diseases*, *39*(6), 1011-1019. doi: 10.1007/s10096-020-03874-z

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*(1), 1-26. doi: 10.1080/1047840X.2014.940781

Huynh, T. L. D. (2020). The COVID-19 risk perception: A survey on socioeconomics and media attention. *Economics Bulletin*, *40*(1), 758-764. Retrieved from http://www.accessecon.com/Pubs/EB/2020/Volume40/EB-20-V40-I1-P64.pdf

Jiang, H., Nan, J., Lv, Z., & Yang, J. (2020). Psychological impacts of the COVID-19 epidemic on Chinese people : Exposure , post-traumatic stress symptom , and emotion regulation. *Asian Pacific Journal of Tropical Medicine*, *13*(6), 252-259. doi: 10.4103/1995-7645.281614

Kraemer, M. U. G., Yang, C.-H., Gutierrez, B., Wu, C.-H., Klein, B., & Pigott, D. M. (2020). The effect of human mobility and control

measures on the COVID-19 epidemic in China. *Science*, *368*(6490), 493-497. doi: 10.1126/science.abb4218

Lemes, C. B., & Neto, J. O. (2017). Aplicações da psicoeducação no contexto da saúde. *Temas em Psicologia*, *25*(1), 17-28. doi: 10.9788/TP2017.1-02

Leventhal, H., Diefenbach, M., & Leventhal, E. A. (1992). Illness cognition: Using common sense to understand treatment adherence and affect cognition interactions. *Cognitive Therapy and Research*, *16*(2), 143-163. doi: 10.1007/BF01173486

Lewis, S. J., Arseneault, L., Caspi, A., Fisher, H. L., Matthews, T., Moffitt, T. E., … Danese, A. (2019). The epidemiology of trauma and posttraumatic stress disorder in a representative cohort of young people in England and Wales. *The Lancet Psychiatry*, *6*(3), 247-256. doi: 10.1016/S2215-0366(19)30031-8

McFadden, S. A. M., Malik, A. A., Aguolu, O. G., Willebrand, K. S., & Omer, S. B. (2020). Perceptions of the adult US population regarding the novel coronavirus outbreak. *PLoS ONE*, *15*(4), 1-6. doi: 10.1371/journal.pone.0231808

McLaughlin, K. A., Weissman, D., & Bitrán, D. (2019). Childhood adversity and neural development: A systematic review. *Annual Review of Developmental Psychology*, *1*(1), 277-312. doi: 10.1146/annurev-devpsych-121318-084950

Miller, A. L., Song, J. H., Sturza, J., Lumeng, J. C., Rosenblum, K., Kaciroti, N., & Vazquez, D. M. (2017). Child cortisol moderates the association between family routines and emotion regulation in low-income children. *Developmental Psychobiology*, *59*(1), 99-110. doi: 10.1002/dev.21471

Miller, S. M., Shoda, Y., & Hurley, K. (1996). Applying cognitive-social theory to health-protective behavior: Breast self-examination in cancer screening. *Psychological Bulletin*, *119*(1), 70-94. doi: 10.1037/0033-2909.119.1.70

Musso, M., Tatum, D., Hamer, D., Hammarlund, R., Son, L., & McMahon, P. (2019). The relationship between grit and resilience in emergency medical service personnel. *Ochsner Journal*, *19*(3), 199-203. doi: 10.31486/toj.18.0144

Oliver, N., Barber, X., Roomp, K., & Roomp, K. (2020). The Covid19 impact survey: Assessing the pulse of the COVID-19 pandemic in Spain via 24 questions. *Computer and Society (Online).* Retrieved from https://arxiv.org/ftp/arxiv/papers/2004/2004.01014.pdf

Organização Pan-Americana de Saúde / Organização Mundial de Saúde. (2020). *COVID-19 (doença causada pelo novo coronavírus)*. Retrieved from https://www.paho.org/bra/index.php?option=com_content&view=article&id=6101:covid19&Itemid=875

Patterson, G. R., Reid, J. B., & Dishion. (1992). *Antisocial boys: A social interactional approach.* Eugene, OR: Castalia.

Portaria Nº 356 (2020, 11 de março). Dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus (COVID-19). *Diário Oficial da União*, *edição 49*, *seção 1*. Retrieved from http://www.planalto.gov.br/CCIVIL_03/Portaria/PRT/Portaria%20n%C2%BA%20356-20-MS.htm

Reis, A. H., Oliveira, S. E. S., Bandeira, D. R., Andrade, N. C., Abreu, N., & Sperb, T. M. (2016). Emotion Regulation Checklist (ERC): estudos preliminares da adaptação e validação para a cultura brasileira. *Temas em Psicologia*, *24*(1), 77-96. doi: 10.9788/TP2016.1-06

Sadeh, A., Tikotzky, L., & Scher, A. (2010). Parenting and infant sleep. *Sleep Medicine Reviews*, *14*(2), 89-96. doi: 10.1016/j.smrv.2009.05.003

Sadir, M. A., Bignotto, M. M., & Lipp, M. E. N. (2010). Stress e qualidade de vida: influência de algumas variáveis pessoais. *Paidéia*, *20*(45), 73-81. doi: 10.1590/s0103-863x2010000100010

Selye, H. (1956). *The stress of life*. New York: McGraw-Hill.

Selye, H. (1986). *History and present status of the stress concept*. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 7-20). New York: Free Press.

Shields, A. M., & Cicchetti, D. (1995). The development of an emotion regulation assessment

battery: Reliability and validity among at-risk grade-school children. Paper presented at the biennial meeting of the Society for Research on Child Development, Indianapolis, IN, USA

Sprang, G., & Silman, M. (2013). Posttraumatic stress disorder in parents and youth after health-related disasters. *Disaster Medicine and Public Health Preparedness*, *7*(1), 105-110. doi: 10.1017/dmp.2013.22

Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Gratz, K. L. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. *Psychiatry Research*, *289*(May), 113098. doi: 10.1016/j.psychres.2020.113098

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, *27*(2), 1-4. doi: 10.1093/jtm/taaa020

World Health Organization (2020). *WHO Coronavirus Disease (COVID-19) Dashboard*. Retrieved from https://covid19.who.int/

Zajicek-Farber, M. L., Mayer, L. M., & Daughtery, L. G. (2012). Connections among parental mental health, stress, child routines, and early emotional behavioral regulation of preschool children in low-income families. *Journal of the Society for Social Work and Research*, *3*(1), 31-50. doi: 10.5243/jsswr.2012.3

Zhang, X., & Lee, M. K. (2020). How to help children develop emotional resilience during Coronavirus. *North Carolina Medical Journal*, *81*(2), 137-140. doi: 10.18043/ncm.81.2.137

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#stayathome?: Increased children's emotion regulation in covid-19 pandemic

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