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WHAT MAKES PHYSICAL PUNISHMENT BENEFICIAL OR HARMFUL?

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Doctor's Degree Thesis presented in the
Postgraduate Program in Medicine and Health Sciences,
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do Rio Grande do Sul, as part of the requirements for obtaining
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Dedico esta tese especialmente à minha esposa Mônica e aos meus filhos Marina e Pedro. Desculpas pelas minhas ausências. Por vezes eu estava presente só de corpo, mas com a mente nas pesquisas. Do que adianta pesquisar sobre negligência se você não consegue estar presente na sua própria casa ? Prometo melhorar após esta defesa.

À minha querida vó Neusa, que nos deixou em 2016. Com certeza esta minha genética de professor e pesquisador veio de ti minha vó. De onde você estiver, sei que está orgulhosa de mim, como sempre esteve. Só estou trilhando um caminho que você começou ao ser uma das únicas mulheres dentro de uma Faculdade pública de Medicina. Que este seja o primeiro de muitos Doutorados de nossa família, que não se envergonha de falar que possui origem nordestina.

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ABSTRACT

Child maltreatment (abuse and neglect) is a global public health problem, with serious consequences to the mental health of those who suffer it. Most studies on abuse have not accounted for the different types of physical punishment (physical abuse, spanking), the interaction between different types of abuse (emotional and sexual), awareness of the children on the motivation for being punished, or their long-term subjective impact in the life of those abused. This study aim is to describe the subjective impact in adulthood of abuse occurred in childhood and adolescence, and to analyze the association of abuse experiences in childhood and adolescence, and the use of psychoactive medication as adults. We analyzed data from a large and anonymous online survey (BRAINSTEP). To assess the history of childhood sexual, physical and emotional abuse, we used the CTQ (Childhood Trauma Questionnaire). For those who did not suffer physical abuse from objects, we asked about spanking frequency. Also, for those with any physical punishment history, we assessed if he/she knew the reason for being punished. The subjective impact was assessed in all participants that suffered any abuse. The outcome was assessed, inquiring on their lifetime psychiatric medication use. We found that emotional and sexual abuse were associated with a negative subjective impact, regardless of intensity. In turn, physical punishment not always was associated with a negative subjective impact, and this was greater for those individuals that did not know the reason for being punished. Emotional abuse showed the highest association with increased psychiatric medication use. Subjects that stated a positive subjective impact from physical punishment used less psychiatric medication. These findings suggest that the mechanisms, which associate abuse to negative consequences, are more complex than previously described; its

subjective impact and the simultaneous occurrence of emotional abuse must also be taken into consideration.

Keywords: Child. Abuse. Maltreatment. Punishment. Physical.

RESUMO

Os maus-tratos infantis (abuso e negligência) são considerados como problemas de saúde pública globais, com graves consequências para a saúde mental de quem sofre. A maioria dos estudos sobre abuso não faz distinção entre os diferentes tipos de punição física (abuso físico, palmadas), a interação com os outros tipos de abuso (emocional e sexual), se a criança sabia sobre o motivo por estarem sendo punidas, ou o impacto subjetivo a longo prazo na vida de quem sofreu algum tipo de abuso. O objetivo deste estudo é descrever o impacto subjetivo na idade adulta do abuso ocorrido na infância e/ou na adolescência, analisar a associação de experiências abusivas na infância e/o na adolescência com o uso de medicações psicotrópicas ao longo da vida. Para este fim, analisamos os dados de uma grande pesquisa anônima on-line (BRAINSTEP, *Brazilian Internet Study on Temperament and Psychopathology*). Para avaliar a história de abuso sexual, físico e emocional na infância e/ou adolescência, utilizamos o QUESI (Questionário Sobre Traumas na Infância). Para aqueles que não sofreram abusos físicos com objetos, perguntamos sobre frequência de palmadas. Além disso, para aqueles que reportaram algum tipo de punição física (com objetos ou palmadas), avaliamos se ele sabia o motivo da punição. O impacto subjetivo foi avaliado em todos os participantes que sofreram algum tipo de abuso. O desfecho foi avaliado, o uso de medicações psicotrópicas ao longo da vida. Encontramos que o abuso emocional e sexual estava associado a um impacto subjetivo negativo, independentemente da intensidade. Por sua vez, a punição física nem sempre esteve associada a um impacto subjetivo negativo, sendo que foi maior para aqueles indivíduos que não sabiam o motivo da punição. O abuso emocional mostrou a maior associação com o uso de medicações psiquiátricas ao longo da vida. Os participantes que reportaram um impacto subjetivo positivo da punição física utilizaram menos frequentemente medicações psiquiátricas ao longo da vida. Esses achados sugerem que os mecanismos, que associam abuso a consequências negativas, são mais complexos do que os descritos anteriormente; seu impacto subjetivo e a coocorrência de abuso emocional também devem ser levados em consideração.

Palavras-chave: Criança. Abuso. Maus-tratos. Punição. Física.

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INTRODUCTION

Presentation

This thesis is part of the Brazilian Internet Study on Temperament and Psychopathology (BRAINSTEP). It is a large enterprise collecting reliable self-report data for the study of behavior, psychology and psychiatry. The website in Brazilian Portuguese (www.temperamento.com.br) was developed to evaluate volunteers. Professor Diogo Rizzato Lara is the coordinator of the BRAINSTEP.

From ordinary stress to trauma

Although they have been used interchangeably, stress and trauma are defined differently. Stress might be considered an expected normal and healthy reaction of the organism, whether caused by or resulting from pleasant or unpleasant conditions (SELYE, 1977). Trauma, despite having been widely studied, does not have a single and clear definition, not even a description normally used. According to the Abridged Dictionary of the Portuguese Language, trauma is defined as a synonym for traumatism, which means: condition resulting from wounds or serious blows, mental shock or violent emotions that may lead to neurosis (ROSA, 1993). The latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), according to the “criterion A” for diagnosing Post-traumatic stress disorder (PTSD), consider a trauma as the exposure to a concrete episode or threat of death, serious injury or sexual violence. This exposure might happen in a variety of forms: experiencing firsthand a traumatic event, witnessing as it occurs to other people, learning about the traumatic event (violent or accidental) that occurred to a family member or a close friend, or being repeatedly and intensely exposed to aversive details of the traumatic event (ASSOCIATION, 2014). There are several instruments to assess trauma in humans; although they assess the same latent variable, they use different domains. Some of these those tools have been translated and/or validated to Brazilian Portuguese (AMBROSINI, 1987; AMORIM, 2000; DEL-BEN et al., 2001; DUARTE; BORDIN, 2000; FIRST, 2017; GOODMAN et al., 2000; GRASSI-OLIVEIRA; STEIN; PEZZI, 2006b; KLUWE-SCHIAVON; WENDT; GRASSI-OLIVEIRA, 2016).

Emotional neglect and abuse are considered traumatic experiences similar to other well-known experiences such as sexual abuse, intense fear or threats to physical integrity. The Childhood Trauma Questionnaire (BERNSTEIN et al., 1994; GRASSI-OLIVEIRA; STEIN; PEZZI, 2006b) was the first of its kind to include questions that assess emotional abuse in its verbal subtypes (“People in my family called me things such as “stupid”, “lazy”, “ugly”; “...they said things that offended me or hurt me”), as well as in a subjective or general manner (“I believe I was emotionally abused”), or through their cognitive correlates, (“I thought that my parents would prefer I had not been born”) and emotional (“I felt that someone in my family hated me”).

Although adverse experiences do not always constitute a synonym for trauma, they are also stressful events usually experienced in a painful way by individuals. Some of these depict adversities: parents’ break up, divorce, living in the same house with individuals with addiction problems or mental illness, having a family member arrested (DUBE et al., 2001, 2003; FELITTI et al., 1998), or a death in the family (BOLTON et al., 2016; JEON et al., 2014).

By gathering all these definitions, we may define trauma as the experience of a specific situation that triggers unpleasant emotions in an individual, namely pain, fear, helplessness, disaffection, shame, and humiliation, in great intensity. When assessing trauma, the subjective impact on the subject must be taken into account (RASMUSSEN et al., 2007), once an intense emotional reaction upon experiencing the trauma is associated with the development of psychopathologies, even in individuals who did not present PTSD (CREAMER; MCFARLANE; BURGESS, 2005).

Child maltreatment as a form of trauma

The report Child Maltreatment 2012, by the Children’s Bureau of the U.S. Department of Health and Human Services, consider child abuse and neglect as child maltreatment, and use the following definition (THE CHILD ABUSE PREVENTION AND TREATMENT ACT, 2010):

The term ‘child abuse and neglect’ means, at a minimum, any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm.

The Department of Health and Human Services (DHHS) defines four main types of maltreatment: (1) neglect, (2) physical abuse, (3) sexual abuse, and (4)

psychological maltreatment. Although the definition of child maltreatment may be found separately, they can occur in combination (U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, 2013).

Child abuse has been documented in various forms since the beginning of recorded history. Unfortunately, little public attention was given to it until a little over a century ago. In fact, in the United States, the first organized society addressing child abuse issues was the Society for the Prevention of Cruelty to Children, created in 1874 when New York citizens found an abused child in a church. The only resource they could find to help the girl was the Society for the Prevention of Cruelty to Animals. The Society intervened on the child's behalf under the premise that children are also animals and, therefore, should be protected against abusive acts (THE NEW YORK SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN, [s.d.]). In Brazil, with the enactment of the Statute of the Child and Adolescent in 1990, a new view on fully protecting children and adolescents led to changes in the population's assistance policies (ESTATUTO DA CRIANÇA E DO ADOLESCENTE - LEI NÚMERO 8.069 DE 13 DE JULHO DE 1990, 1990; SALIBA et al., 2007).

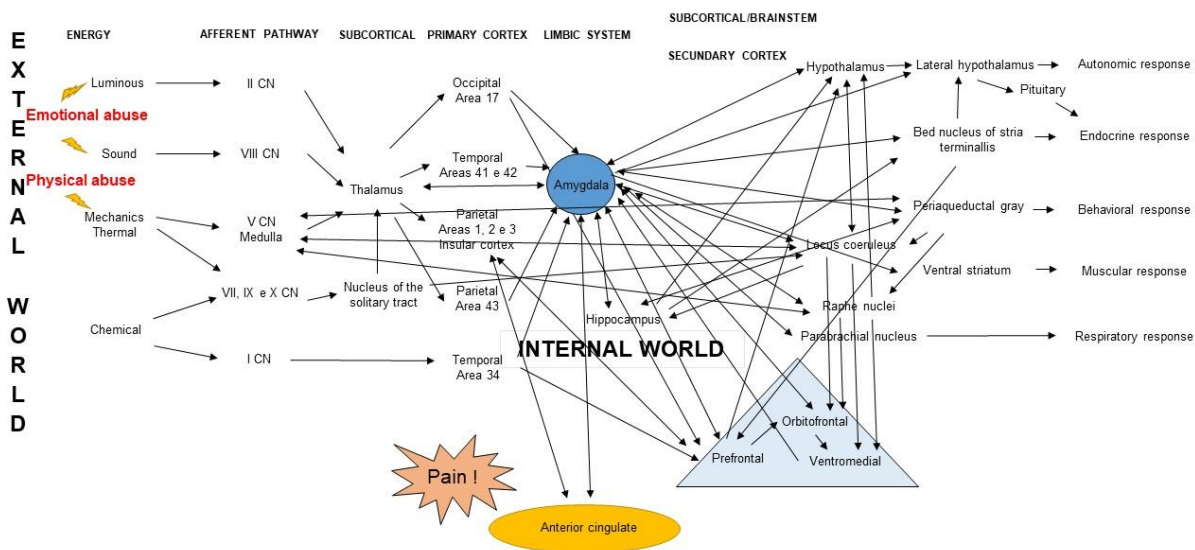
Signs of neglect are not as objective and often do not carry the same visual impact as signs of physical abuse. Neglected children are not identified or reported as readily as are abused children (JAIN, 1999). Emotional abuse, when occurs alone, can also be even harder to identify (HIBBARD; BARLOW; MACMILLAN, 2012). Once sexual abuse can occur without penetration (HABIGZANG; CAMINHA, 2004), it is also a challenge for the professional to identify and realize an intervention. In any case, all forms of abuse can lead to comparably devastating long-term outcomes, therefore we should not place priorities on a form of abuse (JAIN, 1999).

Thus, child maltreatment can be defined as the trauma (abuse or neglect) perpetrated by an adult family member (in 81.5% of the cases, the perpetrator is at least one of the parents) (U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, 2013) or someone close to the victim (teacher, neighbor, etc.). Also, the place where it occurs is usually home (SALIBA et al., 2007), but it may be extended to other venues in the city, rural areas, school. Regarding period, it usually happens in childhood, but it can also encompass adolescence.

Child maltreatment: concepts, neural aspects, and emotional correlates

Figure 1 illustrates the pathways of child abuse according to sense perceptible neural circuits (DAMÁSIO, 1996; LI, 2014; SHEPHERD, 2006; STAHL, 2010; SUNDSTRÖM, 2006; TEICHER; SAMSON, 2013). The sensory aspects of painful stimulus are tracked by two brain regions: somatosensory cortex (whole body) and the posterior insula (internal organs and viscera) (LIEBERMAN, 2013).

Figure 1 - Child abuse neural circuits according to the afferent pathway



Notes: The limbic system consists of: limbic cortex (para-hippocampal gyrus, cingulate gyrus, medial orbitofrontal, temporal pole and anterior insula), hippocampus, amygdala, olfactory cortex, diencephalon (hypothalamus, thalamus, habenula), basal ganglia (ventral striatum, ventral pallidum), septal nuclei, and midbrain. The brainstem consists of: medulla oblongata, pons (locus coeruleus, parabrachial nucleus), and midbrain (periaqueductal gray).

Source: The author (2018).

Each sensory pathway is associated with specific emotions. Thus, each type of maltreatment (physical, emotional or sexual abuse and neglect) triggers both specific emotions and cognitions, in spite of sharing a common neurobiological basis.

The terms neglect and abuse refer to, respectively, the lack of sensory experiences (touch, hearing, sight, smell, and taste) at some crucial point of the neurodevelopment, and abuse, to abnormal or atypical sensory stimuli due to extreme experiences (CARLSON et al., 1989).

Abuse

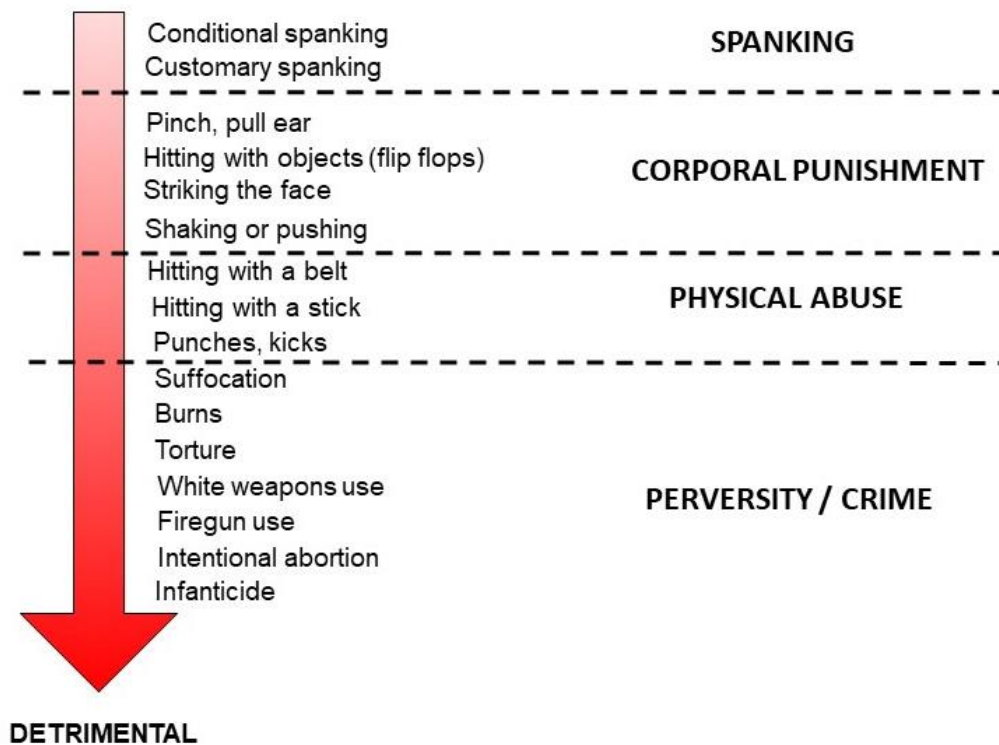
Physical

Physical abuse is the intentional use of physical force or implements against a child that results in or has the potential to result in physical injury. It includes hitting, kicking, punching, beating, stabbing, biting, pushing, shoving, throwing, pulling, dragging, shaking, strangling, smothering, burning, scalding, and poisoning (LEEB et al., 2008).

Physical abuse involves the brain circuit of pain, and its triggering factor is a physical agent or object (sensorially captured by touch through mechanic, thermal or electric energy). Pain is the perception of a sensory representation of a local dysfunction in a living tissue, which in turn, may generate an emotional reaction (DAMÁSIO, 2000). The painful impulse caused by an external agent (object), after ascending the medulla or the fifth cranial nerve, is finally represented in the primary somatosensory cortices (areas 1, 2, 3 and insular cortex). This signaling triggers an array of chemical and neural reactions, as an articulated emotional reaction. The neural patterns representing these bodily and brain changes constitute an emotion. As an external object has its neural representations, so does an emotion, and it may be characterized as an object as well. When it comes to the human body, it is commonly represented in the brain in cortical areas (insular cortex, mid-parietals and part of area 40) and subcortical (brainstem nucleus, hypothalamus, and basal prosencephalon). Proto-self is the name used by Damásio to refer to this internal mapping of the status of the organism's physical structure in its various dimensions (DAMÁSIO, 2000). The central self is inherent to the non-verbal image account, to the relationship between object and organism. It occurs whenever an object alters the proto-self. In the end, this relationship between proto-self and object (emotion) generates a feeling, which is the subjectivity of the perceived emotion (DAMÁSIO, 1996). The feeling of physical pain arises in the brainstem (the nucleus of the solitary tract and parabrachial nucleus), an area involved in feeling any emotion (DAMÁSIO, 2011). Pain also activates the dorsal anterior cingulate cortex (dAAC), one of the brain areas involved in perceiving threats to the body. Particularly, the dAAC and anterior insula mediate the effective and subjective components of pain (distressing aspects) (LIEBERMAN, 2013; P. RAINVILLE, G. H. DUNCAN, D. D. PRICE, B. CARRIER, 1997).

Spanking is usually defined as a mild open-handed strike to the buttocks or extremities (FRIEDMAN; SCHONBERG, 1996; MCLOYD; SMITH, 2002), and corporal punishment includes more severe use of physical punishment, such as striking the face, hitting with an object or shaking or pushing a child (FERGUSON, 2013). Thus, spanking, corporal punishment and physical abuse are not synonymous. The **Figure 2** illustrates these differences.

Figure 2 - The spectrum of physical punishment



Source: The author (2018).

In a research carried out with Brazilian school children, the majority reported having received corporal punishment (88.1%) and having been grounded (64.8%). Regarding the corporal punishment, 86.1% received it from their mother and 58.6% from their father; 36.9% of the participants reported having been injured. Most participants were spanked in the buttocks, and the punishers used more often their own hands (62.3%), although belts (43.0%) and slippers (42.3%) had also been used to punish. Assessment by the participants of the punishing methods revealed a contradiction: 75.2% of them stated that, whenever children do something wrong, they should be physically punished, but only 34.5% of them reported they would use

corporal punishment with their children, and a reasonable part (27.1%) reported not to be sure about it (WEBER; VIEZZER; BRANDENBURG, 2004). Even though it produces pain, the use of corporal punishment is still a controversial topic.

Emotional

Emotional abuse, or psychological abuse, encompasses several forms of violence, such as spurning, terrorizing, isolating, exploiting, corrupting, denying emotional responsiveness, mental health/medical/educational neglect (HIBBARD; BARLOW; MACMILLAN, 2012), witnessing domestic violence (WDV) (TEICHER; SAMSON, 2013). This kind of abuse can be categorized into two distinct latent constructs: verbal and non-verbal (TEICHER; PARIGGER, 2015). According to the MACE scale, parental and peers are the possible aggressors (TEICHER; PARIGGER, 2015).

Moreover, the neurobiological basis for this kind of abuse has been little studied when compared to physical and sexual abuse. Psychological forms of abuse are not connected with physical contact; their triggering factors are verbal language (captured sensorially through hearing via sound energy, or generated by the individual cognitive processing) and non-verbal language (captured sensorially through sight via electromagnetic energy, or generated by the individual cognitive processing). During childhood, more specifically in the pre-operational stage, with the development of language and information processing through thought (PIAGET, 1983), emotional abuse also acquires a cognitive and social-emotional component. Thus, individuals start to allocate meanings (semantics) to the events experienced along their lives (BECK; FREEMAN; DAVIS, 2005). According to Jeffrey E. Young, the early maladaptive schema are stable and lasting structures, characterized as cognitive and emotional patterns that develop and crystalize early in one's personality and/or along individuals' lives, and are associated with various psychopathologies (YOUNG, 2003). These early maladaptive schemas are, in their vast majority, caused by experiencing toxic events that repeat themselves somehow regularly along one's life, and that prevent essential emotional needs from being met in a human being (CAZASSA, 2007).

Emotional abuse is closely related to the triggering of unpleasant (or secondary) social emotions such as shame, loneliness, guilt, anxiety and disaffection. Fear, as a primary emotion, might also be associated with emotional abuse, mainly in situations

of threat to physical integrity, once physical abuse often occurs simultaneously (CHAMBERLAND et al., 2011). Fear has the basic function to preserve life by anticipating physical and psychological damages (CAMINHA; CAMINHA, 2011). Nonetheless, whenever intensely manifested, it may represent an anxiety disorder (e.g. panic disorder, specific phobia and social phobia) (TEICHER; SAMSON, 2013).

Social cognition, as thinking about other people, oneself, and the relation of oneself with other people (LIEBERMAN, 2013), may be associated with the perception of psychological abuse. The feelings associated with the interpretation of a specific situation (e.g. a verbal assault) can influence the formation of dysfunctional beliefs about oneself, the others and the world. The cognitive-behavioral theory supports this hypothesis (BECK; FREEMAN; DAVIS, 2005).

Sexual

Sexual is a type of maltreatment that refers to the involvement of the child in sexual activity to provide the perpetrator with sexual gratification or financial benefit, including contacts for sexual purposes, molestation, statutory rape, prostitution, pornography, exposure, incest, or other sexually exploitative activities (U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, 2013). It might range from activities without physical contact (voyeurism, harassment, exhibitionism) to a variety of activities with physical contact, with or without penetration (HABIGZANG; CAMINHA, 2004). Every sexual stimulus incited in the prepubertal stage, whether a visual, hearing or tactile one, is harmful to the child's development.

The consequences of this kind of trauma seem to differ according to the complexity of the experience. If it is perpetrated by a family member, which is common (U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, 2013), the victim has a higher chance of developing drinking and drug problems, but not PTSD (BOROUGHES et al., 2015). When there is penetration, as well as physical abuse and an intense fear reaction, there is an increased risk of PTSD. If it happens for the first time in adolescence, there is a higher risk of Major Depressive Disorder (MDD) (BOROUGHES et al., 2015).

Neglect

Attachment behaviors are interpersonal actions that are intended to increase an individual's sense of security, particularly in times of stress or need (RAVITZ et al.,

2010). Bowlby and Ainsworth first developed this concept (BRETHERTON, 1992), and then Harlow studied it in primates (HARLOW, 1958). Recently, the social neuroscientist Matthew Lieberman reported: “Human beings are driven by deep motivations to stay connected with friends and family” (LIEBERMAN, 2013). In his book, “Social: why our brains are wired to connect”, he states that the social brain developed in the first mammals more than 250 million years ago and that humans present unique social minds when compared with other mammals. This social brain gave us the capacity to feel social pains and pleasures, and consequently, the capacity to connect (LIEBERMAN, 2013). For instance, friendship has been documented in only a few species, but it is nearly universal in humans.

Neglect is a form of maltreatment that refers to the failure, by the caregiver, to provide needed, age-appropriate care, whether by his/her own means or with the help of others (U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, 2013). Social psychologist Abraham Maslow establishes that human beings have hierarchized basic needs, and represented them in the form of a pyramid; the physiological needs are at the bottom of the pyramid, followed, upwards by protection and safety, then love and feeling of belonging, self-respect, and self-esteem, and at the top, self-actualization. When these needs are not met, human beings have their personal development impaired, preventing them from reaching self-actualization (MASLOW, 1954).

Physical and educational

Physical neglect can be defined as every omission regarding basic care by the one who is in charge of the child or adolescent. It includes attitudes such as depriving the child of food, protection against harsh environmental conditions (cold, heat), hygiene – all of them necessary to physical integrity (HABIGZANG; CAMINHA, 2004; STOLTENBORGH; BAKERMANS-KRANENBURG; VAN IJZENDOORN, 2013). Physical neglect is related to the human being’s most basic needs: those regarding physiology and security. Each basic need has a physical pain related to it when this need is not being met. A lack of food leads to hunger, and a lack of water leads to thirst (LIEBERMAN, 2013).

Educational neglect refers to the failure to provide the care and supervision that are necessary to secure a child’s education. It includes for example, failing to enroll a child of mandatory school age in school, permitting chronic absence from school,

and failing to attend to special educational needs (STOLTENBORGH; BAKERMANS-KRANENBURG; VAN IJZENDOORN, 2013).

Emotional

Emotional neglect is related to attitudes such as depriving children of affection and protection (HABIGZANG; CAMINHA, 2004), causing them to have feelings of helplessness and rejection (BECK; FREEMAN; DAVIS, 2005). Emotional neglect refers to the failure to meet children's emotional needs, and includes for example the failure to provide adequate nurturance and affection, allowing children to be witnesses of domestic violence, to knowingly permit maladaptive behavior by the child, the failure to seek care for emotional or behavioral problems, and the failure to provide adequate structure (STOLTENBORGH; BAKERMANS-KRANENBURG; VAN IJZENDOORN, 2013). Sadness is an emotion associated with the separation from an object, represented by a loved one, a physical belonging or a life purpose. It is considered the most negative and unpleasant emotion and leads to individuals' global withdrawal. On the other hand, it is relevant to the reflexive process to rectify past mistakes and stimulate changes in the way of life (CAMINHA; CAMINHA, 2011).

Love is an emotion closely related to attachment. It is a wondrous state, deep, tender, and rewarding (HARLOW, 1958). Its function is keeping friendship and family bonds, which in turn enable us to express social plasticity, an important stress reducer (CAMINHA; CAMINHA, 2011). In mammals, oxytocin a key peptide for advanced reproductive behavior, as well as for the formation of effective bonds, attachment and parental care (KNOBLOCH; GRINEVICH, 2014). Therefore, emotional neglect is associated with these two primary emotions, sadness and love, more specifically with disaffection. Social pain - for instance, when we lose a loved one_(death or broken heart) or experience a public humiliation - is felt when a social need is unmet. The sense of separation generates pain (LIEBERMAN, 2013). Furthermore, given that all mammals are born incapable of caring for themselves, nature created social alarms to promote protection, as separation distress vocalizations (e.g., crying in humans).

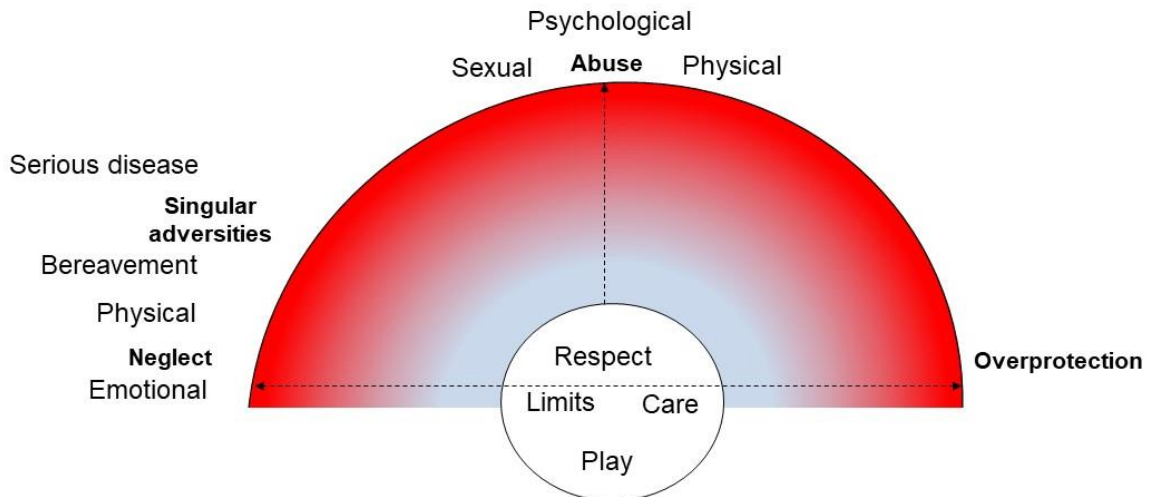
Overprotection

The opposite of neglect can be said to be overprotection. Care, that up to a certain intensity can be appropriate to one's development, when offered excessively may harm it. Overprotective behaviors, unlike promoting autonomy, may make implicit

to the child that the world is dangerous, reinforcing an avoidance behavior (CLARKE; COOPER; CRESWELL, 2013). Excessive food, clothing (e.g., wearing too warm clothes on a day with mild temperature) and hygiene (e.g., not allowing your child to get dirty or to play in certain places considered dirty) are some of the examples. Not allowing the children to play in their friends' house may manifest an excessive need to keep them always close to their reference figures, probably because these are insecure. Not providing children with situations where they should try to solve their daily problems by themselves (e.g., small school conflicts, feeding themselves, getting dressed, helping in house chores, personal hygiene) is also a way overprotection is manifested. Avoiding every possible frustration to the children is an attitude typical of overprotecting parents. Parental control (considered as the pressure parents put on their children to think, feel and behave in desired ways) is associated with the development and maintenance of anxiety disorders in childhood (CLARKE; COOPER; CRESWELL, 2013; VAN DER BRUGGEN; STAMS; BÖGELS, 2008). Also, overscheduling (e.g., schedule highly packed with adult-supervised or adult-driven activities) may lead to less emotionally competent children (GINSBURG, 2007).

Figure 3 summarizes the spectrum from maltreatment to overprotection. Life single events refer to unique adverse experiences, or those not often occurring, usually not intentional, but that can also influence directly in individuals' development. Among these are included the passing of a family member, parents' break up, divorce and extended separation from a family member (e.g., due to work or imprisonment). It should be pointed out that, as previously mentioned, emotions are involved in all forms of abuse. For that reason, I will use the phrase psychological abuse to name emotional abuse.

Figure 3 - The spectrum of maltreatment-overprotection



Source: The author (2018).

Finally, it could be said that parental style might be both a risk and a protection factor for children's development. The parental style is the way parents influence their children through practices according to values and beliefs, demand and responsiveness (DARLING; STEINBERG, 1993; WEBER et al., 2004). The study on parental style categorizes relationships among parents and children (of any age) in four basic types: authoritative (centered on the child's relationship and socialization); negligent (absent parents); authoritarian (centered on the parents) and permissive (centered on the children) (MACCOBY; MARTIN, 1983). Thus, parental style seems to be involved in the frequency and intensity of the occurrence of child maltreatment.

Neurobiological aspects of child maltreatment

When a tissue injury caused by an agent (biological, chemical and/or physical – thermal, mechanical) occurs, as it is the case in physical aggression, multiple immunological substances that cause dramatic changes in the tissues, are released by the injured tissue (e.g. histamine, bradykinin, proteolytic enzymes, prostaglandins and leukotrienes). The set of tissue changes is called inflammation. The intensity of the inflammatory process is usually proportional to the injury degree of the tissue

(GUYTON; HALL, 1996). Several hormones and neurotransmitters mediate inflammatory responses, and as a response to the tissue injury, the innate immune system (mononuclear phagocytic cells – macrophages, neutrophils, natural killer – NK) produce local and systemic responses related to cytokine secretion. As others, human body systems, the nerve tissue of the central nervous system (CNS) also presents complex interactions with the immune system. Therefore, other physical agents considered relatively “sterile” (MILLER; RAISON, 2015), such as the sound agents (through hearing) and electromagnetic ones (through sight), may also cause inflammation. This is the case of psychological abuse, where words (a “sterile” agent) usually were the stressor agent.

The systemic responses may be divided into target-sites: brain and liver. In the brain, pro-inflammatory cytokines (IL-1, IL-6, IFN- α or type I, TNF) activate the hypothalamic-pituitary-adrenal (HPA) axis and lead to behavioral changes such as fatigue, anorexia (TNF especially), anhedonia, sleep disturbances, social isolation, hypervigilance and cognitive disorder. Social avoidance and anhedonia, characteristic of depression, serve to shunt energy resources to fighting infection and wound healing (MILLER; RAISON, 2015). The activation of the HPA axis results in the production of glucocorticoids by the adrenals. Neurons in the medial parvocellular region of the paraventricular nucleus of the hypothalamus release corticotropin-releasing hormone (CRH) and arginine vasopressin (AVP). This triggers the subsequent secretion of adrenocorticotrophic hormone (ACTH) from the anterior pituitary gland, leading to the production of glucocorticoids by the adrenal cortex in a few minutes, and catecholamines (adrenaline and noradrenaline) by the adrenal medulla (LUPIEN et al., 2009; TOMAS; NEWTON; WATSON, 2013). To regulate this system, feedback loops are triggered at various levels of this same system (adrenal gland, hypothalamus) and in other parts of the brain (hippocampus and frontal cortex), to shut the HPA axis down and return to a set homeostatic point (LUPIEN et al., 2009). Glucocorticoids are crucial for animal life. At least 95% of glucocorticoid activity is mediated by cortisol (hydrocortisone). Cortisol causes rapid changes in metabolism with objective to synthesize other essential substances for the maintenance of life at that time. These include changes in the carbohydrate (stimulation of gluconeogenesis, decreased use of glucose by cells, increased blood glucose concentration), protein (reduction of cellular protein, increase in hepatic protein and plasma proteins, increased blood amino acids, decreased transport of amino acids into extrahepatic cells and increased

into hepatocytes), and lipid (mobilization of fatty acids, centripetal fat distribution) metabolism. This hormone also presents anti-inflammatory effects blocking the initial steps of the inflammation process or increasing the rate of resolution of inflammation. This effect is caused by several causes: stabilization of the lysosomal membrane (intracellular organelles where the proteolytic enzymes are stored), decreased formation of leukotrienes and prostaglandins, reduced lymphocyte (e.g. Th cells) and eosinophils production, and reduced IL-1 production (GUYTON; HALL, 1996). The cellular actions of cortisol are mediated by its binding to the glucocorticoid receptor (GR), and the mineralocorticoid receptor (MR), which act as transcription factors and are expressed in most tissues (PROVENCAL; BOOIJ; TREMBLAY, 2015). Thus, stressed individuals become susceptible to a wide spectrum of pathogens, such as fungi (*Candida*), and viroses (*Herpes Simplex*). The nervous system is also affected, as demonstrated by memory loss (SADOCK; SADOCK; RUIZ, 2009) and aggressiveness (PROVENCAL; BOOIJ; TREMBLAY, 2015).

The brain extensively shows a receptor for glucocorticoids (cortex, limbic system, and subcortical areas) and it can regulate gene expression in a comprehensive way (LUPIEN et al., 2009). DNA methylation and hydroxymethylation (chemical modifications) play an important role in epigenetic mechanisms, the ways by which environmental factors influence gene transcription (G x E interaction) (CHIARELLA et al., 2015; SZYF, 2013). Prenatal stress experienced by mothers is associated with increased HPA axis activity in the offspring and disturbances in child development (GLOVER, 2014). One key regulator of fetal glucocorticoid exposure is placental 11 β hydroxysteroid dehydrogenase type 2 (11 β HSD2) (STROUD et al., 2016). This enzyme converts cortisol to inactive cortisone, protecting the fetus from increasing maternal glucocorticoids over pregnancy (TOGHER et al., 2014), and its methylation moderated links between prenatal stress (depression) and baseline cortisol response in offsprings (STROUD et al., 2016). Postnatal human studies show that children exposed to severe deprivation (e.g., orphanages), neglect and sexual abuse have lower basal levels of glucocorticoids (GUNNAR; DONZELLA, 2002). Hypocortisolism can be explained by the downregulation of the HPA axis at the level of the pituitary after a prolonged period of hyperactivity due chronic stress (FRIES et al., 2005) and/or by target tissue hypersensitivity to glucocorticoids, as observed in PTSD patients (YEHUDA et al., 2006). However, hypocortisolism is associated with protective consequences for the organism as prevention of harmful stimulatory effects of

maternal cortisol on placental CRF and prevention of high allostatic load scores (FRIES et al., 2005).

Also, when a stressful stimulus reaches the hypothalamus, its side part will activate the autonomic nervous system (ANS), the HPA axis and the locus coeruleus. Initially, within the ANS a sympathetic discharge of noradrenalin occurs, followed by a parasympathetic discharge of acetylcholine. This response triggers several somatic, emotional and psychological symptoms that are associated with the unpleasant sensations of a traumatic experience.

The mechanisms by which the immune system detects diverse danger signals were only recently elucidated with the discovery of Toll-like receptors (TLRs). TLRs are pattern recognition receptors (PRRs) on the cell surface of immune cells, characterized by extracellular leucine-rich repeats (LRRs) and an intracellular Toll/IL-1 receptor (TIR) domain. TLRs recognize invariant molecular structures called pathogen-associated molecular patterns (PAMPs) (IWATA; OTA; DUMAN, 2013). PRRs can be classified into two main groups, membrane-associated and cytosolic. NOD-like receptors (NLRs) are cytosolic PRRs, and can detect diverse ligands including ATP, fatty acids, and amyloid β . NLRP3, one of the best characterized NLRs, forms large multiprotein complexes termed inflammasomes. The inflammasome is a protein complex that can detect diverse danger signals (e.g., pathogenic micro-organisms and non-pathogenic or "sterile" stressors) and produce the accompanying immune-inflammatory reactions (IWATA; OTA; DUMAN, 2013; MILLER; RAISON, 2015). It can be a central mediator by which psychological and physical stressors can contribute to the development of depression, and as well as a bridge to systemic diseases. Therefore, it could be proposed that these general medical conditions are part of a spectrum of degenerative-chronic-inflammatory diseases (e.g., metabolic disorders, autoimmune diseases), with a common pathophysiological origin (IWATA; OTA; DUMAN, 2013).

The serotonin (5-HT) system is also affected by cortisol exposure. However, it is unclear whether serotonergic genes also undergo epigenetic remodeling as a result of cortisol exposure and how this influences the behavioral outcome (PROVENCAL; BOOIJ; TREMBLAY, 2015). Anyway, altered or low 5-HT neurotransmission may represent a risk factor for psychopathology (BOOIJ et al., 2015). Many polymorphisms in genes related to 5-HT receptors and enzymes were associated with clinical psychiatric disorders (impulse control disorders, drug use and addiction, depression)(BREWER; POTENZA, 2008; CASPI et al., 2003; CASPI; MOFFITT, 2006;

MÜLLER; HOMBERG, 2015), psychiatric outcomes (e.g. suicide)(ROY et al., 2007) and psychiatric symptomatology (e.g. anxiety-related traits, antisocial problems)(CASPI, 2002; LESCH et al., 1996). The diathesis-stress model of psychopathology can explain this association. Exposure to psychosocial stress (maternal deprivation, neglect, family dysfunction, abuse) at critical times during development, could affect the 5-HT system and, in turn, could have a long-term effect, as brain development impairment (BOOIJ et al., 2015).

Regarding psychological abuse, as previously described, the dangerous stimuli come from visual and auditory pathways, activating the amygdala, which is involved in many emotional processes, including fear. Although psychological stress is known to increase plasma levels of IL-1 β , the mechanism by which the innate immune system detects psychological stress is not known (IWATA; OTA; DUMAN, 2013). Andrew Miller et al. proposed that stress-induced damage-associated molecular patterns (DAMPs) activate inflammatory signaling pathways such as nuclear factor- κ B (NF- κ B) and the NOD-, LRR- and pyrin domain-containing protein 3 (NLRP3) inflammasome. Moreover, psychosocial stress can also lead to the activation of microglia (brain macrophage cell) to an M1 pro-inflammatory phenotype, which releases CC-chemokine ligand 2 (CCL2), that in turn attracts activated myeloid cells to the brain via a cellular route. Once in the brain, activated macrophages can perpetuate central inflammatory responses (MILLER; RAISON, 2015). We hypothesized that glutamate is the central neurotransmitter involved in this immune system activation. Since glutamate release is proportional to the perceived stimulus, excessive glutamate release and overactivation of NMDA receptors can induce excitotoxic neuronal death during high levels of stress (HARDINGHAM; FUKUNAGA; BADING, 2002). This excitotoxicity leads to catastrophic neurodegeneration thus activating the inflammation cascade (STAHL, 2010).

Epidemiology of child maltreatment

Child maltreatment is one of the most serious problems in public health worldwide (GILBERT et al., 2009; NORMAN et al., 2012), affecting up to 33% of the population (STOLTENBORGH; BAKERMANS-KRANENBURG; VAN IJZENDOORN, 2013). Viola et al. found that South America presented the highest estimates of childhood maltreatment. Asia showed the lowest estimates (VIOLA et al., 2016).

However, high-income countries also have child maltreatment as a major public-health and social-welfare problem (GILBERT et al., 2009).

Regarding child physical abuse, a meta-analysis of global prevalence estimated the overall rate of 22.6% (95%CI 19.6-26.1%) for self-reported measures. No apparent gender differences were found, as well as cultural–geographical factors did not seem to affect prevalence rates. Costa Rica showed the highest prevalence, near to 80%. Africa (only four studies) and South America (only three studies) were the countries with fewer studies (STOLTENBORGH et al., 2013).

A worldwide meta-analysis found that, in children below 18 years, the prevalence of sexual abuse (noncontact, contact, forced intercourse, and mixed) ranged from 8 to 31% for girls and 3 to 17% for boys. For girls, the prevalence of forced intercourse was 9% (95%CI 6-14%), and for mixed sexual abuse was 15% (95%CI 9-24%). Two African countries showed the highest prevalences, Nigeria for forced intercourse (47%), and Ethiopia for mixed sexual abuse (69%). For boys, the prevalence of forced intercourse was 3% (95%CI 1-9%) and for mixed sexual abuse was 8% (95%CI 4-16%). South Africa showed the highest rate of forced intercourse (47%) and Canada for mixed sexual abuse (38%). However, regarding regional distribution and degree of development of the country, this study did not show any statistical differences between included studies concerning prevalence estimates of childhood sexual abuse (BARTH et al., 2013).

There were few studies reporting emotional abuse prevalence worldwide, consequently there is no meta-analytic study published until now. A small number of large population-based, self-report studies in the United Kingdom and the United States found that approximately 8% to 9% of women and 4% of men reported exposure to severe psychological abuse during childhood (GILBERT et al., 2009). In Canada, the rate of emotional-abuse-only investigations increased almost threefold from 1998 (0.96/1,000 children) to 2003 (2.42/1,000 children). Substantiated childhood emotional abuse, a single form, increased from 5% to 9%, at the same period. Also, reports of emotional abuse are two and a half times more frequent than reports of emotional neglect (CHAMBERLAND et al., 2011). In Asia, the lifetime prevalence of emotional abuse ranges from 31.3% in the Democratic People's Republic of Korea to 68.5% in China suggesting widespread emotional abuse (UNITED NATIONS CHILDREN'S FUND, 2012). The loss attributable to emotional abuse in childhood were 0.47% of the gross domestic product (FANG et al., 2015). In Australia, the pooled prevalence of

childhood emotional abuse was 8.7% (95%CI 3.9-15.0%), using the results of a meta-analytic analysis (MOORE et al., 2015). Africa and Latin America have few epidemiological data about this type of maltreatment. However, Araújo et al. found that emotional abuse and neglect were the most prevalent types of trauma in a large web-based Brazilian sample (DE ARAÚJO; LARA, 2016).

Stoltenborgh et al., in a comprehensive meta-analysis, found the overall estimated prevalence for child physical neglect of 16.3% (95%CI 12.1-21.5%), and for emotional neglect of 18.45% (95%CI 13.0-25.4%). No apparent gender differences were found. The body of research in low-resource countries is even more limited than in high-resource countries (STOLTENBORGH; BAKERMANS-KRANENBURG; VAN IJZENDOORN, 2013). High-income countries presented lower physical neglect estimates in comparison to low-or middle-income countries. Probably due to the per-capita gross domestic product of countries, since it was negatively associated with childhood physical neglect estimates (VIOLA et al., 2016).

Co-occurrence of multiple categories of childhood abuse is very common, with reported rates of co-occurrence ranging from 3-55% (EDWARDS et al., 2003). For instance, emotional abuse is the type of maltreatment that most of the times co-occurred with other types (MOORE et al., 2015).

Unfortunately, although there have been several policy initiatives for child protection since the 1970s, one study did not find decrease in any type of indicators of child maltreatment in six developed countries (Sweden, United Kingdom, Australia, New Zealand, Canada – Manitoba, and USA) (GILBERT et al., 2012).

Tools used in research about trauma

We can divide these research instruments into two groups: for the diagnosis of PTSD and for the evaluation of the history of traumatic experiences (e.g., frequency, intensity, a period of life in which it occurred). **Table 1** shows the types of trauma according to research tools commonly used in Brazil.

Table 1 - Types of trauma according to research tools commonly used in Brazil

Tools	Types of trauma
K-SADS, SCID, MINI, CTQ, CTI, DAWBA, MACE, CIDI, CECA, ETI	Physical abuse (e.g., physical violence, being physically assaulted or seriously injured (e.g., by family, robbers)) Sexual abuse (e.g. rape, sexual violence)
MINI, SCID, DAWBA, K-SADS, CIDI, ETI	Serious accident (e.g., being run over, car crash) Fire
CTQ, CTI, MACE, CECA, PBI	Emotional Neglect
MINI, DAWBA, K-SADS, CIDI, ETI	Natural calamity (e.g., flood, hurricane, or earthquake)
DAWBA, MACE, K-SADS, ETI, CTI	Experienced serious domestic violence (e.g. witnessed mother or a sibling being physically assaulted at home by family members)
MINI, DAWBA, K-SADS, CIDI	Kidnap Sudden death in one's environment
SCID, DAWBA, K-SADS, CIDI	Serious disaster (e.g. house collapse, bomb explosion)
DAWBA, K-SADS, SCID, CIDI	Serious threat (e.g. physical or sexual) Witnessed a family member or friend being seriously assaulted or threatened (e.g. physically or sexually)
CTQ, CTI, MACE, CECA	Physical neglect
MINI, SCID, CIDI	War, combat experiences (e.g. military or civilian)
DAWBA, K-SADS, CIDI	Mugging
SCID, K-SADS, CIDI	Learning about something terrible (e. g. sudden disease, death or rape) of somebody close to you
SCID, CIDI, ETI	Witnessing a person being killed or dying, or seriously injured

Table 1 - Types of trauma according to research tools commonly used in Brazil

Tools	Types of trauma
CTQ, CTI, ETI	Emotional abuse (general)
SCID, CIDI	Work accident
MINI, CIDI	Attack
	Discovery of a dead body
CIDI, ETI	Having a life-threatening illness or serious personal injury (e.g. personal or familiar)
CECA, PBI	Parental control and antipathy from parents
	Discord in the family
CIDI	Being refugee
ETI	Serious injury/illness of parent or friend
	Separation of parents
	Family mental illness
	Alcoholic parents
CIDI	Stalking
	Ever did something that accidentally led to the serious injury or death of another person
	Ever did on purpose either seriously injure, torture, or kill another person
	Ever see atrocities or carnage such as mutilated bodies or mass killings
MACE	Non-verbal emotional abuse
	Parental verbal abuse
	Emotional abuse by peers
	Physical bullying by peers
CTI	Separation from or death of caregivers
	Time spent living with other relatives or strangers
	Placement in institutions or foster care

Acronyms: K-SADS (1995) - Kiddie Schedule for Affective Disorders and Schizophrenia, SCID (2017) - Structured Clinical Interview for DSM-5, MINI (1998) - Mini International Neuropsychiatric Interview, CTQ (1998) - Childhood Trauma Questionnaire, DAWBA (2000) - Development and Well-Being Assessment, MACE (2015) - Maltreatment and Abuse Chronology of Exposure, CIDI - WHO-Composite International Diagnostic Interview (2004), CECA (1994) - Childhood Experience of Care and Abuse, ETI-SR (2000) - Early Trauma Inventory Self-Report, CTI (2005) - Childhood Trauma Interview, PBI (1979) - Parental Bonding Instrument.

Source: The author (2017).

For the diagnosis of PTSD, the instruments most used in research in Brazil are the same as those used for the diagnosis of most psychiatric disorders. For the adult population, there are the MINI (Mini International Neuropsychiatric Interview)(AMORIM, 2000), the SCID (Structured Clinical Interview for DSM)(FIRST, 2017) and the WHO-Composite International Diagnostic Interview (CIDI) (KESSLER; ÜSTÜN, 2004). And for the children and youth population, there are The Development and Well-Being Assessment (DAWBA)(GOODMAN et al., 2000) and the Kiddie-Sads (K-SADS-PL) (BORDIN; BRASIL, 1996). All these instruments have versions translated and validated into Brazilian Portuguese. However, until now, only SCID has an updated version of the latest version of DSM-5 that has already been translated and validated into Brazilian Portuguese.

For the evaluation of the history of traumatic experiences, there are several instruments, and the most used is the Childhood Trauma Questionnaire (CTQ)(GRASSI-OLIVEIRA; STEIN; PEZZI, 2006a). More recently, the MACE (Maltreatment and Abuse Chronology of Exposure) has been gaining prominence (KLUWE-SCHIAVON; WENDT; GRASSI-OLIVEIRA, 2016). Both instruments have versions translated, adapted and validated for Brazilian Portuguese. Other instruments exist but do not have a translation, adaptation, and validation for Brazilian Portuguese, making it difficult to use them in Brazil. Examples of these instruments are CTS (Conflict Tactics Scale), PTSDS (Posttraumatic Stress Diagnostic Scale), LEC (Life Events Checklist). A study carried out with members of the International Society for Traumatic Stress Studies pointed out that the instruments most used in research to assess the history of exposure to trauma in adults were the PDS (11% of participants), CTS (7% of participants) e a LEC (7% of participants)(ELHAI et al., 2005).

I will briefly describe each of these instruments used to evaluate the history of traumatic experiences.

According to CTQ instrument, intrafamilial childhood trauma experiences can be divided into five types: physical abuse (PA), emotional abuse (EA), sexual abuse (SA), emotional neglect (EN), and physical neglect (PN). Emotional abuse refers to verbal assaults on a child's sense of worth or well-being or any humiliating, demeaning, or threatening behavior directed toward a child by an older person (e.g., *People in my family called me things like "stupid," "lazy," or "ugly"*). Physical abuse refers to bodily assaults on a child by an older person that pose a risk of, or result in, injury (e.g., *I got hit so hard by someone in my family that I had to see a doctor or go to the hospital*).

Sexual abuse refers to sexual contact or conduct between a child and an older person, including explicit coercion (e.g., *Someone tried to touch me in a sexual way, or tried to make me touch them*). Emotional neglect refers to the failure of caretakers to provide basic psychological and emotional needs, such as love, encouragement, belonging and support (e.g., *There was someone in my family who helped me feel that I was important or special*). Physical neglect refers to the failure to provide basic physical needs including food, shelter, and safety (e.g., *I didn't have enough to eat*) (BERNSTEIN et al., 1994). One year after the publication of the CTQ, Fink, Bernstein, and collaborators developed The Childhood Trauma Interview (CTI), a brief semi-structured interview focused on six areas of childhood interpersonal trauma: separation and losses, physical neglect, emotional abuse or assault, physical abuse or assault, witnessing violence, and sexual abuse or assault. All perpetrators are inquired about. Severity and frequency of the traumatic experiences are scored from 0 to 6. Duration is calculated in years from age at onset to cessation for each type of trauma. Scores for the relationship of perpetrator to victim and the number of perpetrators are also given (FINK et al., 1995).

The MACE scale measure the severity of exposure to ten types of maltreatment (emotional neglect, non-verbal emotional abuse, parental physical maltreatment, parental verbal abuse, peer emotional abuse, peer physical bullying, physical neglect, sexual abuse, witnessing interparental violence and witnessing violence to siblings) during each year of childhood. The MACE provides an overall severity score and multiplicity score (number of types of maltreatment experienced) with excellent test-retest reliability (TEICHER; PARIGGER, 2015). The resulting questionnaire comprises 52 questions, and for each item, there are check boxes for indicating at what age exposure occurred (1–18 years) (KLUWE-SCHIAVON; WENDT; GRASSI-OLIVEIRA, 2016).

The Early Trauma Inventory – Self-Report (ETI-SR) is a 62-item questionnaire developed as a self-report version of the clinician-administered ETI. The ETI-SR follows the Early Trauma Inventory (ETI) (BREMNER; VERMETTEN; MAZURE, 2000) format of four domains of childhood traumatic events: general trauma, physical, emotional, and sexual abuse. General traumatic events comprise a range of stressful and traumatic events that can be mostly secondary to chance events. Items for which a positive response is obtained are followed up with questions regarding frequency, perpetrator, and age of onset. At the end of each domain, there are questions about

the current effect on the individual in areas of social, work, and emotion for the items in that domain (BREMNER; BOLUS; MAYER, 2007).

The Conflict Tactics Scale (CTS) was originally created by Straus in 1979 (MUÑOZ-RIVAS et al., 2007), is a practical method of ascertaining the presence and degree of maltreatment. Reasoning, psychological aggression, physical assault, severe assault (physical maltreatment) can be evaluated with this instrument (STRAUS et al., 1998). The Posttraumatic Stress Diagnostic Scale (PTSD)(FOA et al., 1997) is a good self-report measure for PTSD, and should allow a diagnosis of PTSD as well as an estimation of PTSD severity and should conform to the DSM-IV criteria for PTSD (POWELL; ROSNER, 2005). The Life Events Checklist (LEC), developed by the National Centre for PTSD, is a self-report measure enquiring about the exposure to traumatic events across the lifespan. The measure differentiates between different types of exposure including experiencing, witnessing or learning about traumatic events and allows for the inclusion of a traumatic event not listed or captured by the measure (Gray, Litz, Hsu & Lombardo, 2004). It does not evaluate emotional traumas. The CECA instrument was developed to explore the consequences of loss of a parent using two quality of care measures (parental indifference and parental control), and quality of relationship measure (antipathy). Measures of physical and sexual abuse are also included (BIFULCO; BROWN; HARRIS, 1994). Lastly, the Parental Bonding Instrument (PBI) is a retrospective scale to assess parental (mother and father separated) behaviors and attitudes towards the subject in childhood. Care and overprotection were evaluated (PARKER; TUPLING; BROWN, 1979). High care and low overprotection are considered optimal, whereas low care and high overprotection are considered least optimal (RAVITZ et al., 2010).

Child maltreatment and outcomes throughout one's life

Child maltreatment is a global public health problem, with serious consequences to the mental health of those who suffer it (GREEN et al., 2010). **Table 2** shows the effect sizes (COHEN, 1988) of the associations between each type of childhood trauma and several mental health outcomes. Sexual abuse during childhood has long been demonstrated devastating and found associated with, among others serious life-long consequences, anxiety disorders or depression (LI; ARCY; MENG, 2016), suicide attempts (DEVRIES et al., 2014), alcohol and illicit drug dependence (FERGUSON; MCLEOD; HORWOOD, 2013), posttraumatic stress disorder (PTSD)

and eating disorders (CHEN et al., 2010). Previous studies have shown that physical abuse, in children, is also detrimental and associated with mental disorders and suicide attempts (CARR et al., 2013; DUBE et al., 2001; FRY; MCCOY; SWALES, 2012; IP et al., 2016; LINDERT et al., 2014; NORMAN et al., 2012; SPRINGER et al., 2007). These findings have led many countries to legally ban any type of physical punishment on children (DAY; PETERSON; MCCRACKEN, 1998; THEUNISSEN; VOGELS; REIJNEVELD, 2015; VITTRUP; HOLDEN; BUCK, 2006). More recently, emotional abuse has been consistently associated with mental health symptoms (dissociation, limbic irritability, anger-hostility), drug use, and self-injurious behaviour (FRY; MCCOY; SWALES, 2012; NORMAN et al., 2012; TEICHER et al., 2006; TEICHER; PARIGGER, 2015); it has even been found more associated to depressive disorders, and suicidal behaviour than other types of abuse (DE ARAÚJO; LARA, 2016; INFURNA et al., 2016; MANDELLI; PETRELLI; SERRETTI, 2015). However, as shown in **Table 2**, only sexual abuse and neglect present at least small associations with mental health problems (e.g. depression and anxiety) when the study design used was longitudinal and adjusted for trauma co-occurrence.

Child maltreatment is complex and difficult to study. Most studies on physical abuse have not accounted for the different types of physical aggression (v.g. with objects, or spanking). Moreover, the interaction between different types of abuse (physical and/or emotional and/or sexual) (DEBOWSKA et al., 2017), awareness of the children on the motivation for being punished (v.g. conditional spanking), or their long-term subjective impact in the life of those abused were not well explored in previous studies. In addition to the situation experienced by itself (objective element), its subjective interpretation must be taken into account (RASMUSSEN et al., 2007), since the intense emotional reaction at the moment of the traumatic experience is associated with development of psychopathologies, even in individuals who did not present PTSD (CREAMER; MCFARLANE; BURGESS, 2005).

The mismatch model introduced some insights into how stress can lead to psychopathology. According to this theory, stress itself cannot generate disease; however, the mismatch between early and later environments can do it (NEDERHOF; SCHMIDT, 2012). For example, a child born in a violent environment may become adapted to live in a war period, like the Spartans; on the other hand, this same child may not become adapted to attend an elementary school in a high-income area. Another example is a child born in an overprotective family, something common

nowadays, who developed depression in his/her first vital crisis during adolescence or adult life. Thus, mild early-life adversity prepares one for future adversities and promotes resilience (DASKALAKIS et al., 2013). Resilience is the term used to describe the ability to overcome and recover from adverse situations (ANAUT, 2005). A resilient individual easily adapts to changes in life, even negative ones; therefore, it is a protective factor for mental disorders. Therefore, it is important to provide the child with a supportive environment for the development of resilience.

Table 2 - Type of childhood trauma and its consequences (based on effect size)

	Sexual abuse	Physical abuse	Emotional abuse	Neglect
Depression	Small*	Trivial to small	Small	Small*
Anxiety disorder	Small*	Small	Small	Small*
PTSD	Small	Small		
Eating disorders	Small	Small	Small	Small
Problem drinking	Small*	Trivial	Trivial	
Substance abuse	Small*	Small		
Suicidal behavior	Small* to moderate	Small	Small to large	Small
Conduct disorder		Small		Small
Antisocial PD		Small		
Borderline PD		Small		
Sleep disorders	Large			

* Findings from prospective studies that adjusted to co-occurrence (FERGUSON; MCLEOD; HORWOOD, 2013; HOVENS et al., 2015).

Acronym: PD - Personality Disorder

Source: The author (2017).

OBJECTIVE

General Objective

To analyze the association between maltreatment in childhood and adolescence with mental health.

Specific Objectives

To describe the subjective impact of abuse occurred in childhood and adolescence in adulthood.

To analyze the association between maltreatment experiences and corporal punishment in childhood and adolescence with the use of psychoactive medication in adulthood.

JUSTIFICATION

It is a difficult task to study the consequences of maltreatment in childhood and adolescence due to the multiple factors involved and their complex interactions. Most studies analyzing abuse have not considered the different means of aggression (e.g. with objects, spanking). Moreover the interaction among the various kinds of abuse (physical and/or emotional and/or sexual), or whether individuals were aware of the reasons for being punished (e.g. conditional spanking), or the subjective impact on the adult life of the individual who had such experienced were not well explored in previous studies. It is necessary to include the interactions of all these factors to have a better insight into the real impact of child abuse later in life.

HYPOTHESIS

We hypothesize that, when considering the different forms of abuse and related factors (demographic data, co-occurrence, subjective impact, knowing the reasons for being punished), physical punishment had a different impact on the use of psychotropic medication throughout one's adult life.

METHODS

We used the data collected from the umbrella project BRAINSTEP (*Brazilian Internet Study on Temperament and Psychopathology*) to investigate this association (LARA et al., 2012).

Setting

The Brazilian Internet Study on Temperament and Psychopathology (BRAINSTEP) is one of the largest web-surveys aimed to study the association between several psychological, behavioral and psychopathological profiles/traits. The complete methodology has been previously described (LARA et al., 2012). For this study, volunteers filled out the online survey anonymously (<http://www.temperamento.com.br>). This website is non-commercial and advertisement-free and was promoted on national TV (e.g., Rede Globo) and written news media through Brazil (São Paulo, Belo Horizonte, Porto Alegre, Santos). The data for this study were collected from self-selected (a type of convenience sample) volunteers. Computer survey technology was chosen because this approach appears to facilitate the reporting of behaviors that are particularly sensitive and stigmatized issues, as several risk behaviors (TURNER et al., 1998), which is the case for childhood trauma (particularly for sexual). Furthermore, some self-administrated web-based surveys have previously been used and considered feasible and an appropriate mode of interview (RANKIN et al., 2008). We have previously used this method in other published studies that assessed childhood trauma (DE ARAÚJO; LARA, 2016; SUDBRACK et al., 2015). The BRAINSTEP system provides anonymous psychological (phase 1) and psychiatric (phase 2) evaluation and includes questions to assess the validity of the answers. Each phase has around 450 questions. We use data from the first phase, which includes approaching the history of traumatic adversity throughout life.

Participants

All participants with ≥ 18 and < 60 years of age that responded to the online survey from March 1, 2011, to July 31, 2014, were included. Exclusion criteria were participants who did not have data considered to be not valid. Data was considered

valid if questions were answered following the instructions related to items “attention” and “honesty” (MAZAR; ARIELY, 2006) (validity checks) (**Figure 4**).

Figure 4 - Validity checks

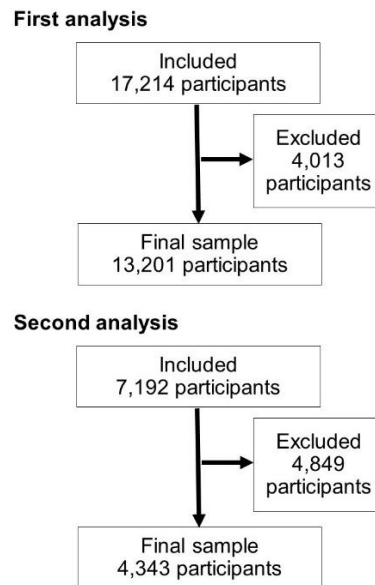
Validity checks

Please check the alternative sometimes in this question.
Do you commit to answering the questions honestly and truthfully?

Source: The author (2018).

Volunteers answered the instruments anonymously on the Internet from August 1, 2013 to July 31, 2016 (first analysis), and from August 1, 2016 to August 31, 2017 (second analysis). The excluded group were younger (27.95 (SD=9.50) vs. 30.31 (SD=9.50), $P<.001$, independent t-test) had more males (33.4% vs. 27.9%, $P<.001$, $df=1$, Chi-square test), more unemployed (7.4% vs. 7.7%, $P<.001$, $df=7$, Chi-square test), and less often university education (30.8% vs. 42.1%, $P<.001$, $df=2$, Chi-square test). The group from the first analysis were older (28.17 (SD=10.73) vs. 26.30 (SD=10.65), $P<.001$, independent t-test) had less males (28.8% vs. 31.3%, $P<.001$, $df=1$, Chi-square test), less unemployed (6.3% vs. 6.9%, $P<.001$, $df=7$, Chi-square test), and more often university education (34.7% vs. 31.6.1%, $P<.001$, $df=2$, Chi-square test). The sample size calculation shown that the required sample was 158 participants (79 in each group), to detect an odds ratio equal to two (exposed/no-exposed) considering a multiple correlation coefficient of 0.2 between all variables included in the model. **Figure 5** illustrates the flowchart of inclusion and exclusion.

Figure 5 – Flowchart of inclusion and exclusion



Source: The author (2018).

Measurements

Demographic data

Age, sex, race, education level and occupation were assessed.

Childhood maltreatment

Sexual, emotional and physical abuse were assessed with the Portuguese version of the Childhood Trauma Questionnaire (CTQ) (GRASSI-OLIVEIRA; STEIN; PEZZI, 2006a). The CTQ assesses the following domains: emotional abuse (EA), physical abuse (PA), sexual abuse (SA), emotional neglect (EN), and physical neglect (PN). Each trauma domain was evaluated with five questions, using a 5-point Likert-type scale, resulting in scores ranging from 5 to 25. The sum of scores is the total trauma score. We selected the most reliable questions for SA (item 24), EA (item 25), and PA (item 12) to evaluate the level of each abuse domain (GRASSI-OLIVEIRA; STEIN; PEZZI, 2006a). Thus, we used the following questions: “Someone molested me”, “I believe that I was emotionally abused”, and “I was punished with a belt, a board, a cord, or some other hard object”, respectively (BERNSTEIN; FINK, 1998; GRASSI-OLIVEIRA; STEIN; PEZZI, 2006b).

Subjective impact of each childhood trauma subtype

If the participant responded that he/she was abused (sexual, emotional, and/or physical) at least rarely, one question to assess the subjective impact was presented after the respective CTQ specific subtype of trauma item. For the subjective impact of each subtype of abuse (sexual, emotional, and physical) we used the question: “You mentioned having suffered (sexual/emotional/physical) abuse in childhood and/or adolescence. How do you feel about it these days?” Using a 5-point Likert-type scale, the possible answers were: a) I have many very negative consequences in me currently; b) I have some negative consequences in me currently; c) I do not feel negative or positive consequences in me currently; d) I have some positive consequences for me currently; e) I feel many positive consequences for me currently (Figure 6).

Figure 6 - Subjective impact evaluation

Subjective impact

- If the participant responded that he/she was abused (sexually, emotionally, and/or physically) at least rarely.
- One question to assess the subjective impact was presented after the respective CTQ specific subtype of trauma item.

“You mentioned having suffered (sexual/emotional/physical) abuse in childhood and/or adolescence. How do you feel about it these days?”

- a) This has **very negative** consequences in me currently;
- b) This has **some negative** consequences in me currently;
- c) This does not have **negative or positive** consequences in me currently;
- d) This has **some positive** consequences in me currently;
- e) This has **many positive** consequences in me currently.

Source: The author (2018).

Spanking

In order to perform the second analysis, for those who had never been physically abused, we asked about the frequency of slaps from their parents during childhood/adolescence. Participants were required to rate the frequency of spanking in a 5-point Likert-type scale (“never true, rarely true, sometimes true, often true, and very often true”), based on CTQ’s responses (**Figure 7**). Also, to analyze the subjective impact of being spanked, we utilized the same evaluation for the subtypes of abuse.

Figure 7 - Spanking frequency evaluation

Spanking

For those who had never been physically abused.

Frequency of slaps from their parents during childhood/adolescence.

- a) Never;
- b) Rarely;
- c) Sometimes;
- d) Often;
- e) Very often.

Source: The author (2018).

Reason for being punished

suffered any physical punishment (physical abuse with objects, or spanking), at least rarely, we included a question: “You mentioned that you were physically punished in your childhood and/or adolescence. Did you know the reason for being punished?”. Using a 5-point Likert-type scale, the possible answers were: a) never; b)

least of times; c) sometimes yes, sometimes no; d) most of the times; e) always” (Figure 8).

Figure 8 - Evaluation of reason for being physically punished

Reasoning

For those who responded that they suffered some kind of physical punishment (physical abuse with objects, or spanking), at least rarely..

“You mentioned that you were physically punished in your childhood and/or adolescence. Did you know the reason for being punished?”

- a) Never;
- b) Few times;
- c) Sometimes yes, sometimes no;
- d) Most of the times;
- e) Always.

Source: The author (2018).

Objective impact: psychiatric medication use

In order to perform the second analysis, besides evaluating the subjective impact, we selected the psychiatric medication use, to analyze the objective impact. The use of lifetime psychiatric medication was assessed with the question: “Have you ever taken psychotropic or controlled-prescription medications such as antidepressants, anxiolytics, antipsychotics, stimulants, or mood stabilizers for at least a week?” (Figure 9).

Figure 9 - Lifetime psychiatric medication use evaluation

Lifetime use of psychiatric medication

- Objective parameter of mental health
- Outcome

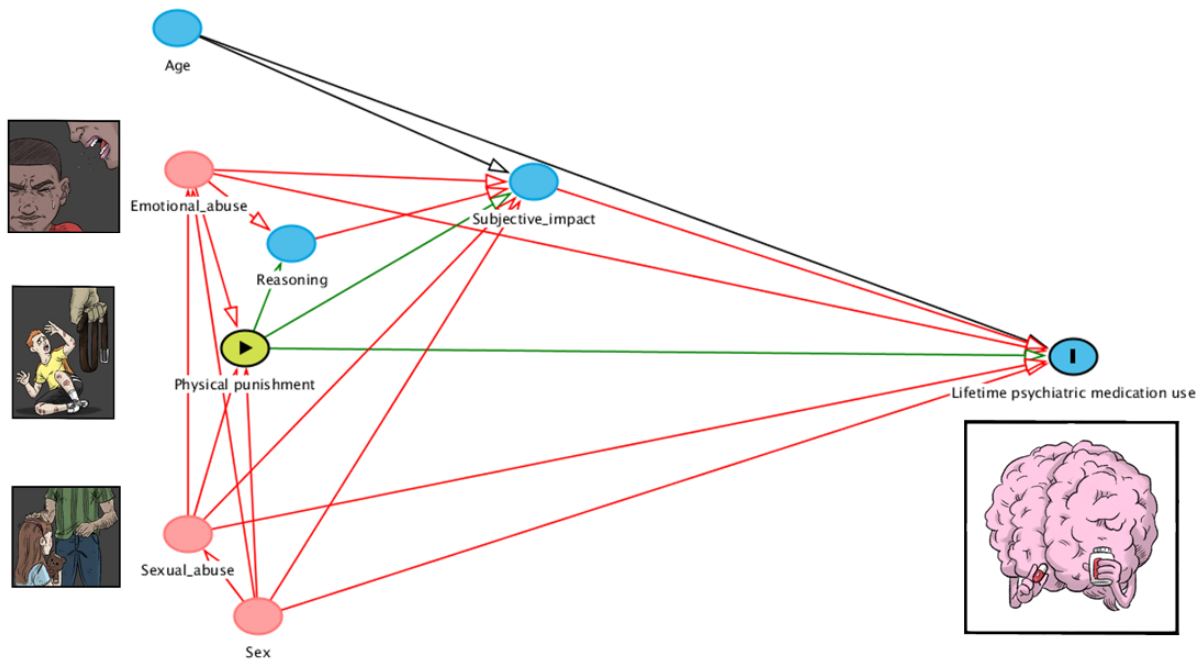
“Have you ever taken psychotropic or controlled-prescription medications such as antidepressants, anxiolytics, antipsychotics, stimulants, or mood stabilizers for at least a week?”



Source: The author (2018).

Figure 10 illustrates our theoretical causal diagram.

Figure 10 - Proposed causal diagram to analyze the link between childhood/adolescence maltreatment and lifetime psychiatric medication use



Source: The author (2017).

Statistical analysis

First analysis

Prevalence of abuse experiences in childhood and their respective subjective impact

These frequencies were described according to the type, frequency, and reason for being punished.

Identifying variables

The variables included subjective impact of physical punishment (categories “a” and “b” as negative, category “c” as neutral, and “d” and “e” as positive), sexual abuse (“never true, rarely true, sometimes true, often true, and very often true”), emotional abuse (“never true, rarely true, sometimes true, often true, and very often true”), and

physical abuse (“never true, rarely true, sometimes true, often true, and very often true”).

Second analysis

Subjective impact of physical punishment according to physical punishment characteristics

These frequencies were described according to the intensity, frequency, and awareness of the reasons for physical punishment.

Identifying variables

The variables included subjective impact of physical punishment (categories “a” and “b” as negative, category “c” as neutral, and “d” and “e” as positive), intensity of physical punishment (“Only slaps” as Spanking (sometimes true to very often true) plus PA never true, “Sometimes with objects” as PA (rarely to sometimes true), and “Frequently with objects” as PA (often to very often true)), and reason for being punished (categories “a”, “b” as rarely, “c” and “d” as sometimes knew the reason, category “e” as always knew the reason).

Association between childhood abuse and physical punishment and lifetime psychiatric medication use

The associations between childhood abuse and physical punishment, the subjective impact of physical punishment, the reason for being punished and lifetime psychiatric medication use were tested for statistical significance by fitting a generalized linear regression model (Poisson). The odds ratios (ORs) and 95% confidence intervals (95% CIs) were obtained from this model.

Identifying covariates

To identify potential covariates, each association between types of childhood abuse and physical punishment, socio-demographic (age and sex), the subjective impact of physical punishment, the reason for being punished and lifetime psychiatric medication use were examined.

Covariate adjustment

To adjust the associations between childhood abuse and physical punishment, socio-demographic (age and sex), the subjective impact of physical punishment, the reason for being punished and lifetime psychiatric medication use, the regression model extended to include the confounding factors.

The findings of this analysis are summarized in: (a) the unadjusted model OR (95%CI) for the effect of each predictable factor on the outcome; (b) the covariate-adjusted OR (95%CI) for the effect of each predictable factor on the outcome.

Identifying variables

Baseline covariates included sex, age (born since 90s decade and not, age cut-off ≥ 33 years), emotional abuse (“No” as never true, “Yes” as at least rarely), sexual abuse (“No” as never true, “Yes” as at least rarely), intensity of physical punishment (“No slaps” as Spanking (never true to rarely true) plus PA never true, “Only slap” as Spanking (sometimes true to very often true) plus PA never true, “Physical abuse” as PA (at least rarely true)), subjective impact of physical punishment (categories “a” and “b” as negative, category “c” as neutral, and “d” and “e” as positive), reason for being punished (categories “a”, “b”, “c” and “d” as “rarely/sometimes knew the reason”, category “e” as “always knew the reason”).

Age was grouped as described to analyze the impact of social and cultural changes across the decades and to analyze the impact of the publication of the Brazilian Child and Adolescent Statute, in 1990, which rules the law protection to this population.

The outcome variable, lifetime psychiatric medication use, was considered a dichotomous measure (yes or no).

These analyses were conducted with the IBM SPSS statistical package (version 20; SPSS Inc). P values <0.05 were considered statistically significant for the unadjusted model, and P values <0.001 were considered statistically significant for the covariate-adjusted model.

Ethics

All participants gave their electronic informed consent before completing the questionnaires. The Institutional Review Board of Pontifícia Universidade Católica do Rio Grande do Sul approved the study (09/04796).

Financial support

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RESULTS

For the first analysis (abuse frequencies and respective subjective impacts), after validity checks (exclusion of 9.5% of the initial sample), the final sample consisted of 13,201 volunteers, 3,686 men (27.9%). **Table 3** shows the demographic data and childhood abuse of the final sample. The mean age (\pm SD) was 30.3 \pm 9.5 years.

Table 3 - Demographic data, childhood abuse and physical punishment of the final sample

Variable	First analysis	Second analysis
Total sample	13,201 (100.0%)	4,343 (100.0%)
Age (years)	30.3 \pm 9.5	28.3 \pm 9.1
Male	3,686 (27.9%)	1,381 (31.8%)
Nonwhite	3,759 (28.4%)	1,468 (33.8%)
Unemployment	1,014 (7.7%)	372 (8.6%)
Higher education	5,562 (42.1%)	1,752 (40.3%)
Sexual abuse*	2,355 (17.8%)	789 (18.2%)
Emotional abuse*	8,547 (64.7%)	2,814 (64.8%)
Physical punishment		
Physical abuse*	9,306 (70.5%)	2,980 (68.6%)
Only slaps	NR	1,049 (24.2%)
No**	NR	314 (7.2%)

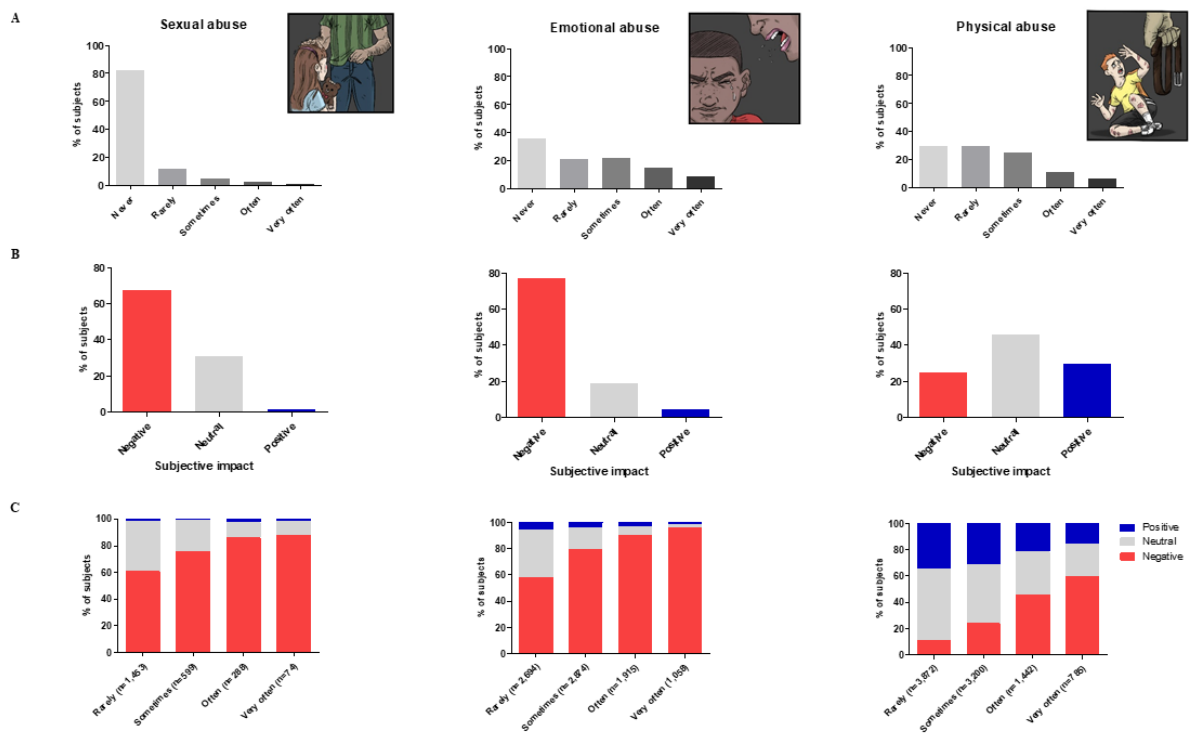
*At least rarely
 **Never and rarely for slaps frequency
 NR: not rated

Source: The author (2018).

In the first study, physical abuse was the most frequent type of abuse (70.5%) followed by emotional (64.7%) and sexual abuse (17.9%) (**Figure 11A**). For those who responded at least “rarely true” to these questions, we asked about their subjective impact (negative, neutral, positive). The emotional and sexual abuses were associated with a very high frequency of negative subjective impact (76.9% and 67.7%, respectively) and a very low frequency (4.2% and 1.6%) of positive impact (**Figure 11B**). In contrast, only 24.9% subjects reported a negative and 29.6% a positive impact for physical abuse. A subanalysis showed that an increasing frequency was associated with a more negative impact for all types of abuse (**Figure 11C**). Even when said to

occur rarely, ~60% of subjects considered sexual and emotional abuse negative, whereas for physical abuse, the frequency of negative impact only surpassed positive impact with objects when reported to occur often or very often.

Figure 11 - Prevalence and subjective impact of sexual, emotional and physical abuse: (A) Prevalence of abuse experiences in childhood (N =13,201), (B) Subjective impact of being abused during childhood/adolescence according to type of abuse, (C) Subjective impact according to the type and frequency of abuse



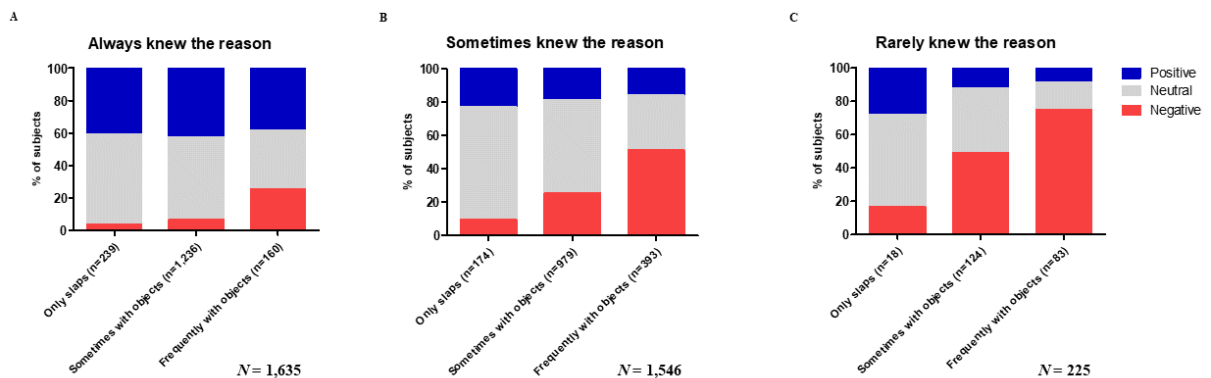
Source: The author (2018).

For the second analysis (to evaluate the association between predictable factors and psychiatric medication use), after validity checks (exclusion of 10.7% of the initial sample), the final sample included 4,343 volunteers (men n = 1,381 or 31.8% and women n = 2,962 or 68.2%). The mean age (\pm SD) was 28.3 \pm 9.1 years (**Table 3**).

Thus, in order to explore further these surprising results on corporal punishment, a second study was conducted. In this one, we also asked about spanking frequency and its subjective impact on those who reported never experiencing physical abuse with objects. Similar results on the prevalence of abuse were also confirmed in the

second sample (**Table 3**) with the inclusion of spanking. In this sample, a history of any physical punishment was present in most subjects (92.6%). In addition, for all subjects with any history of corporal punishment (with objects or just spanking), we assessed how often they knew the reason for being punished. As shown in **Figure 12**, among those who were only slapped and were always aware of the reason for their punishment, only 3.8% considered it to have a negative subjective impact, whereas 40.6% reported a positive impact and 55.6% neither positive nor negative impact. Interestingly, those who always knew the reason for being physically beaten with objects reported more frequently a positive than a negative impact even when said to occur often and very often. However, the negative impact of physical punishment increased substantially when the subjects were beaten more often with objects without knowing the reason.

Figure 12 - Subjective impact of physical punishment according to the intensity, frequency and awareness of the reasons of physical punishment



Source: The author (2018).

As an objective parameter of mental health, we also assessed lifetime use of psychiatric medication. Emotional and sexual abuse were associated to a higher chance of lifetime use of psychiatric medications (OR=1.26, 95%CI 1.15–1.32; OR=1.13, 95%CI 1.04–1.22, respectively, **Table 4**). After adjusting for all variables including emotional and sexual abuse, a positive subjective impact of being physically punished was associated to a lower chance of lifetime use of psychiatric medication (OR=0.76, 95%CI=0.69–0–0.83), whereas the negative subjective impact, the intensity of corporal punishment (with or without objects), and knowing the reason for being punished did not show significant associations.

Table 4 - Risk factor for lifetime psychiatric medication use

Variable	N (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age			
Born decade 80s	2,014 (50.3)	1	1
Born decade 90s	1,987 (49.7)	0.57 (0.53-0.61)**	0.58 (0.53-0.62)**
Sex			
Male	1,286 (32.1)	0.81 (0.75-0.88)**	0.86 (0.80-0.93)**
Female	2,715 (67.9)	1	1
Intensity of physical punishment			
No	595 (14.9)	1	1
Only spanking	431 (10.8)	1.07 (0.94-1.22)	1.05 (0.91-1.20)
Physical abuse	2,975 (74.4)	1.04 (0.95-1.14)	0.95 (0.86-1.05)
Reason for being punished			
Always knew	2,057 (51.4)	1	1
Sometimes / rarely knew	1,944 (48.6)	1.16 (1.08-1.24)**	1.02 (0.95-1.10)
Subjective impact of physical punishment			
Negative	747 (18.7)	1.07 (0.98-1.16)	1.00 (0.92-1.10)
Neutral	2,084 (52.1)	1	1
Positive	1,170 (29.2)	0.79 (0.64-0.77)**	0.76 (0.69-0.83)**
Emotional abuse			
No	1,347 (33.7)	1	1
Yes	2,654 (66.3)	1.39 (1.28-1.51)**	1.26 (1.15-1.37)**
Sexual abuse			
No	3,259 (81.5)	1	1
Yes	742 (18.5)	1.26 (1.17-1.36)**	1.13 (1.04-1.22)*

* $p < .05$; ** $p < .001$

Missing data: Emotional abuse (n=281), Reason for being punished (n=295)

Generalized linear model, Poisson.

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ATTACHMENTS/SUPPLEMENTS
ATTACHMENT 1 – ETHICS COMMITTEE APPROVAL



Pontifícia Universidade Católica do Rio Grande do Sul
 PRÓ-REITORIA DE PESQUISA E PÓS-GRADUAÇÃO
 COMITÊ DE ÉTICA EM PESQUISA

OF.CEP-1505/09

Porto Alegre, 06 de novembro de 2009.

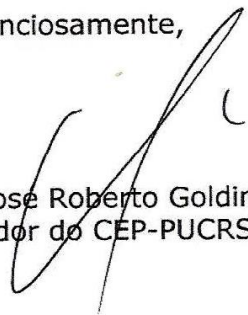
Senhor Pesquisador,

O Comitê de Ética em Pesquisa da PUCRS apreciou e aprovou seu protocolo de pesquisa registro CEP 09/04796 intitulado **“Caracterização comportamental, psicológica e psiquiátrica baseada no temperamento emocional e afetivo”**.

Salientamos que seu estudo pode ser iniciado a partir desta data.

Os relatórios parciais e final deverão ser encaminhados a este CEP.

Atenciosamente,



Prof. Dr. Jose Roberto Goldim
 Coordenador do CEP-PUCRS

Ilmo. Sr.
 Dr. Diogo Rizzato Lara
 Nesta Universidade

PUCRS

Campus Central

Av. Ipiranga, 6690 – 3º andar – CEP: 90610-000

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Pontifícia Universidade Católica do Rio Grande do Sul
Comitê de Ética em Pesquisa

PARECER

Cadastro do Projeto CEP/PUCRS
09/04796

Título:
Caracterização comportamental, psicológica e psiquiátrica baseada no temperamento emocional e afetivo.

Pesquisador Responsável:
Prof. Dr. Diogo R. Lara

Aspectos Científicos e Metodológicos
O presente projeto de pesquisa visa avaliar por meio de questionários parâmetros indicativos para caracterização comportamental, psicológica e psiquiátrica de indivíduos. A versão corrigida do projeto não apresenta problemas.

Aspectos Éticos
Os aspectos éticos foram respondidos de forma satisfatória.

Recomendação
Aprovar

Considerações Gerais
O projeto corrigido está adequado.

Data do Parecer 06/11/2009



ATTACHMENT 2 – INFORMED CONSENT

Termo de Consentimento Livre e Esclarecido

I. **A Justificativa da Pesquisa:** caracterizar o temperamento humano e suas relações com o comportamento e transtornos psiquiátricos para fins científicos (artigos científicos e produtos voltados para o comportamento).

II. **Os procedimentos a serem utilizados:** respostas de questionários e escalas de auto-avaliação padronizados para serem preenchidos via internet. Você pode levar até 2 horas ao todo para completar as duas fases do sistema, com atenção no prazo de uma semana a contar da data em que começar. Você pode interromper e reiniciar o preenchimento de onde parou entrando com seu email e sua senha.

III. **Riscos esperados:** não há riscos se for preenchido de modo privativo.

IV. **Os benefícios que se pode obter:** no fim de cada uma das duas fases do sistema será fornecido um relatório de suas características de temperamento e possíveis transtornos psiquiátricos, que podem ser úteis como auto-conhecimento ou clinicamente.

V. **Liberdade de abandonar a pesquisa sem prejuízo para si:** a qualquer momento, sem qualquer prejuízo ou necessidade de explicação.

VI. **Garantia de privacidade:** a pesquisa é anônima, mas você precisará fornecer um email que será usado somente para o envio da senha de acesso. Portanto, sua privacidade será mantida em todas as fases da pesquisa e todos os dados coletados serão mantidos sem a identificação do email fornecido.

Aceito

ATTACHMENT 3 – PROOF OF SUBMISSIONS TO JOURNALS

Science
JOURNALS | AAAS

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Welcome to Science's Submission and Information Portal. Here you can submit a new or solicited manuscript, continue working on a submission, track a submitted manuscript, or access manuscripts assigned to you as a reviewer or advisor. You can begin a new submission by clicking on the NEW SUBMISSION button in the navigation bar above. To work on an un-submitted manuscript, click on the manuscript number. If you are a reviewer or advisor, click on the manuscript number as well.

Total Number of Manuscripts: 1

Manuscript Number	Role	Journal	Article Type	Title	First Author Name	Status	Last Activity Date	Assigned To
aat7941	Author	Science	Research Article	What makes physical punishment beneficial or harmful?	DE ARAUJO, RAFAEL MORENO FERRO	Rejected	09-Apr-2018	Sugden Andrew

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Submissions with an Editorial Office Decision for Author Rafael Moreno Ferro de Araújo, M.S.

Page: 1 of 1 (1 total completed submissions)

Display 10 results per page.

Action	Manuscript Number	Title	Initial Date Submitted	Status Date	Current Status	Date Final Disposition Set	Final Disposition
View Submission View Decision Letter Send E-mail	LANGH-D-18-00738	What makes physical punishment beneficial or harmful?	06/04/2018	06/14/2018	Completed	06/14/2018	Reject

Page: 1 of 1 (1 total completed submissions)

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Psychological Medicine

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MAIN MENU • CONTACT US • SUBMIT A MANUSCRIPT • INSTRUCTIONS FOR AUTHORS

Role: Author Username: diara

Submissions with an Editorial Office Decision for Author diogo lara

Page: 1 of 1 (2 total completed submissions)

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Action	Manuscript Number	Title	Initial Date Submitted	Status Date	Current Status	Date Final Disposition Set	Final Disposition
Action Links	PSM-D-11-00979	CHILDHOOD TRAUMA IS ASSOCIATED WITH MALADAPTIVE PERSONALITY TRAITS	Dec 18 2011 4:24:35:417PM	Dec 28 2011 2:13:45:523PM	Completed Reject	Dec 28 2011 2:13:45:403PM	Reject
Action Links	PSM-D-18-00866	What makes physical punishment beneficial or harmful?	Jul 23 2018 11:18:18:603AM	Jul 24 2018 11:13:39:817AM	Completed Reject	Jul 24 2018 11:13:39:780AM	Reject

Page: 1 of 1 (2 total completed submissions)

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<< Author Main Menu

ATTACHMENT 4 – SUBMITTED MANUSCRIPT (Psychological Medicine)

Porto Alegre, July 18th, 2018

Dear Editor,

I wish to submit a new manuscript entitled “**What makes physical punishment beneficial or harmful?**” for your consideration to be published in the journal "Psychological Medicine".

I confirm that this work is original and has not been published nor currently under consideration for publication elsewhere. Further, we did not have any pre-submission discussions with editors.

At present, very limited information is available on the isolated effects of each type of childhood abuse (sexual, physical, and emotional abuse) on mental health, especially their subjective impact during adulthood. We analyzed a large data set of adults collected anonymously on the Internet to improve the reliability of answers on these sensitive issues (as shown by Turner et al., Science, 1998; 280:867–73).

We found that emotional and sexual abuse levels during childhood and adolescence were mostly associated with a very negative subjective impact, while contrary to what most of us would expect, physical abuse with objects was often associated with a *positive* subjective impact. In a follow-up data collection, we included questions on spanking and the awareness of the reason for physical punishment. The results were much appealing:

- spanking was rarely associated with negative subject impact and very often with positive impact;
- being beaten even with objects (belt, sandals, etc.) was also rarely associated with negative impact and resulted in often positive impact when subjects were aware of the reason for the punishment;
- physical abuse had a negative effect only when they occurred frequently and with little awareness of the reason for being beaten.

Thus, occasional and conditional physical punishment by spanking is clearly different from frequent unconditional physical abuse with objects or leading to lesions.

With a public ban of even well-meaning mild spanking, parents may become helpless to limit the misbehavior of children, which may, in turn, increase verbal/emotional abuse and lead to highly detrimental and long-lasting consequences, according to several studies.

We understand that this is a sensitive topic. We realized that physical punishment is not as harmful as suggested in the media and the law based on our two previous studies on personality traits and suicidal behavior. These findings, at the time, were contrary to our original hypothesis but that is the beauty of science, isn't it?

We are submitting this paper to this prestigious journal to increase public awareness on what may and may not be harmful to children.

All authors approved the submitted version. Besides the authors, the following researchers have reviewed the paper: Rita Mattiello, Linda Booij, André Palmimi, and César Brito.

Informed consent was obtained from all participants after the nature and possible consequences of this study were explained.

All data underlying the study are available under the solicitation.

Please address all correspondence concerning this manuscript to me at diogorlara@gmail.com

Thank you for your consideration regarding this manuscript and we look forward to hear from you soon.

Sincerely,

Diogo R. Lara, MD, PhD

Title page**Full Title: What makes physical punishment beneficial or harmful?****Word count:** 3,270**Authors names:**Rafael M. de Araujo MD¹, Diogo R. Lara PhD^{1*}.**Affiliations:**

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Abstract

Background Physical punishment in children and adolescents is banned in many countries, but the evidence to support it comes from studies which failed to control for the co-occurrence with emotional abuse and to consider if there were reasons for being punished.

Methods We analyzed the data from a large and anonymous online survey conducted in Brazil on the history of childhood sexual, physical (with objects or slaps), and emotional abuse and its subjective impact (positive, neutral or negative). We also asked about the awareness of the reasons for being punished physically and the lifetime use of psychiatric medication. We used a multivariate model to analyze the association of early maltreatment with the use of psychoactive medication during adulthood.

Results Emotional and sexual abuse were strongly associated with negative subjective impact. In contrast, physical punishment with objects or slaps was often associated with positive subjective impact, especially if the individuals always knew the reason for being punished. Physical abuse was harmful if frequent, with objects and for no clear reason. Those with a positive subjective impact of physical punishment were less likely to have used psychiatric medication.

Conclusions These findings suggest occasional and conditional (i.e. with a clear reason) corporal punishment, especially slapping, is associated with positive subjective impact and lower likelihood of undergoing psychiatric treatment. These findings have implications for public policies on the physical punishment ban.

Main text

Introduction

Child maltreatment is a global public health concern with serious consequences to mental health (Green *et al.* 2010; Fulu *et al.* 2017). Sexual abuse during childhood has long been associated with anxiety disorders or depression (Li *et al.* 2016), suicide attempts (Devries *et al.* 2014), alcohol and illicit drug dependence (Fergusson *et al.* 2013), posttraumatic stress disorder (PTSD) (Chen *et al.* 2010), eating disorders (Molendijk *et al.* 2017) and dissociation (Vonderlin *et al.* 2018). Physical abuse in children has also been associated with mental disorders and suicide attempts (Dube *et al.* 2001; Fry *et al.* 2012; Norman *et al.* 2012; Carr *et al.* 2013; Lindert *et al.* 2014; Ip *et al.* 2016) and many countries have legally banned any type of physical (or corporal) punishment to children, including even the mildest one (Durrant & Ensom 2012). More recently, emotional abuse, characterized as verbal attacks (offense, blame, and criticism), has also been found to be consistently associated with mental health symptoms, drug use, and self-injurious behavior (Teicher *et al.* 2006; Fry *et al.* 2012; Norman *et al.* 2012). Further, the association of emotional abuse to depressive disorders and suicidal behavior has a higher magnitude than the other types of abuse (Mandelli *et al.* 2015; de Araújo & Lara 2016; Infurna *et al.* 2016).

Child maltreatment is complex and difficult to study. The boundaries between nonabusive and customary punishment and extreme violence are unclear in most of the investigations (Larzelere & Kuhn 2005). In addition, most studies do not account for the different types of physical aggression (e.g., with objects or spanking), the interaction between different types of abuse (physical and/or emotional and/or sexual) (Debowska *et al.* 2017), the awareness of the children about the reasons for being punished (e.g., conditional spanking), or their long-term subjective impact. In addition to the objective events of abuse, subjective interpretation must be taken into account (Rasmussen *et al.* 2007), since the emotional reaction to the events is what may lead to the development of psychopathologies (Creamer *et al.* 2005). In order to address some of these shortcomings, we performed two studies analyzing the data from a large and anonymous online survey conducted in Brazil on several psychological constructs (Lara *et al.* 2012).

Methods

We performed two cross-sectional studies analyzing the data from a large and anonymous online survey conducted in Brazil on several psychological constructs (Lara *et al.* 2012). The aim of these studies (one and two) was to evaluate the subjective impact of abuse and analyze the association of maltreatment experience and physical punishment in childhood and adolescence with the use of psychoactive medication during adulthood by using a multivariate model. This model included different means of physical punishment, the interaction among the various kinds of abuse (emotional, sexual), whether individuals were aware of the reasons for being punished, and their subjective impact.

To this end, we used data from the Brazilian Internet Study on Temperament and Psychopathology (BRAINSTEP). This is a large web-survey aimed to study the association between several psychological, behavioral, and psychopathological profiles/traits. The complete methodology has been previously described. For the current studies, volunteers filled out an online survey anonymously (<http://www.temperamento.com.br>). The website is non-commercial and advertisement-free and has been promoted on national TV and written news media in Brazil.

Some self-administrated web-based surveys have previously been used and considered feasible and an appropriate mode of interview (Rankin *et al.* 2008) with the increased reporting for several risk behaviors (Turner *et al.* 1998). We have previously used this method in other published studies that assessed childhood trauma (Sudbrack *et al.* 2015; de Araújo & Lara 2016).

All participants with ≥ 18 and < 60 years of age that responded the online survey from March 1, 2011 to July 31, 2016 were included in the first study and from August 1, 2016 to August 25, 2017 in the second study. The exclusion criterion was based on the validity of the provided data. Data were considered valid if validity-check questions were answered correctly following the instructions (e.g., Please mark the alternative sometimes in this question) and “honesty” (see the studies by Mazar and colleagues (Mazar & Ariely 2006)).

The excluded group were younger (27.95 (SD=9.50) vs. 30.31 (SD=9.50), $P<.001$, independent t-test) had more males (33.4% vs. 27.9%, $P<.001$, $df=1$, Chi-square test), more unemployed (7.4% vs. 7.7%, $P<.001$, $df=7$, Chi-square test), and less often university education (30.8% vs. 42.1%, $P<.001$, $df=2$, Chi-square test).

Demographic data, lifetime psychiatric medication, use and the assessment of childhood trauma (Childhood Trauma Questionnaire; CTQ, Portuguese version) were assessed.

Childhood maltreatment

Sexual, emotional, and physical abuse were assessed with the Portuguese version of the Childhood Trauma Questionnaire (CTQ) (Grassi-Oliveira *et al.* 2006). The CTQ assesses the following domains: emotional abuse (EA), physical abuse (PA), sexual abuse (SA), emotional neglect (EN), and physical neglect (PN). We selected the most reliable and sensitive questions for SA (item 24, “Someone molested me”), EA (item 25, “I believe that I was emotionally abused”), and PA (item 12, “I was punished with a belt, a board, a cord, or some other hard object”) to evaluate the level of each abuse domain (5-point Likert-type scale).

Study 1. Subjective impact of each childhood trauma subtype

If the participant responded that he/she was sexually, emotionally, and/or physically abused at least rarely, another question to assess the subjective impact was presented after the respective item. For the subjective impact of abuse, we used the question: “You mentioned having suffered (sexual/emotional/physical) abuse in childhood and/or adolescence. How do you feel about it these days?” The possible answers were: a) I have negative consequences currently; b) I do not feel negative or positive consequences currently; c) I have positive consequences currently.

Study 2. Spanking– the reason for being punished and psychiatric medication use

In the second study, for those who had never been physically abused, we asked about the frequency of slaps from their parents during childhood/adolescence. Participants were required to rate the frequency of spanking on a five-point Likert-type scale (“never true, rarely true, sometimes true, often true, and very often true”), based on CTQ’s responses. Further, to analyze the subjective impact of being spanked, we utilized the same evaluation for the subtypes of abuse; and, for those who responded that they suffered any kind of physical punishment (physical abuse with objects or spanking), at least rarely, we included a question: “You mentioned that you were physically punished in your childhood and/or adolescence. How often did you know the reason for being punished?” In this case, on a five-point Likert-type scale, the possible answers were a) never; b) rarely; c) sometimes; d) most times; e) always”.

Besides evaluating the subjective impact, we also considered the psychiatric medication use to analyze the objective impact. The use of lifetime psychiatric medication was assessed with the question:

“Have you ever taken psychotropic or controlled-prescription medications such as antidepressants, anxiolytics, antipsychotics, stimulants, or mood stabilizers for at least a week?”

Statistical analysis

First study

The prevalence of abuse experiences in childhood and their respective subjective impact were described according to the type, frequency, and reason for being punished. The variables included subjective impact of physical punishment (negative, neutral, and positive), sexual abuse (“never true, rarely true, sometimes true, often true, and very often true”), emotional abuse (“never true, rarely true, sometimes true, often true, and very often true”), and physical abuse (“never true, rarely true, sometimes true, often true, and very often true”).

Second study

The subjective impacts of physical punishment according to physical punishment characteristics were described according to the intensity, frequency, and awareness of the reasons for physical punishment. The associations between childhood abuse and physical punishment, the subjective impact of physical punishment, reason for being punished, socio-demographic (age and sex), and lifetime psychiatric medication (outcome) use were tested for statistical significance by fitting the data to a generalized linear regression model (Poisson). This analysis is summarized as (a) the unadjusted model OR (95%CI) for the effect of each predictable factor on an outcome; (b) the covariate-adjusted OR (95%CI) for the effect of each predictable factor on an outcome.

The variables included subjective impact of physical punishment (negative, neutral, and positive), intensity of physical punishment (“Only slaps” as Spanking (sometimes true to very often true) plus PA never true, “Sometimes with objects” as PA (rarely to sometimes true), and “Frequently with objects” as PA (often to very often true)), and reason for being punished (three categories: never-rarely, sometimes-most times, and always knew the reason).

Baseline covariates included sex, age (born after the 1990s and not, age cut-off ≥ 33 years), emotional abuse (“No” as never true, “Yes” as at least rarely), and sexual abuse (“No” as never true, “Yes” as at least rarely), and subjective impact of physical punishment (negative, neutral, and positive).

Age was grouped to analyze the impact of social and cultural changes across the decades, and to analyze the impact of the publication of the Brazilian Child and Adolescent Statute, in 1990, the law for the protection to this population. The outcome variable, lifetime psychiatric medication use, was considered a dichotomous measure (yes or no). For the regression model, the intensity of physical punishment was reclassified (“No slaps” as Spanking (never true to rarely true) plus PA never true, “Only slap” as Spanking (sometimes true to very often true) plus PA never true, “Physical abuse” as PA (at least rarely true)), as well as reason for being punished (“rarely/sometimes knew the reason” and “always knew the reason”).

These analyses were conducted with the IBM SPSS statistical package (version 20; SPSS Inc). *P* values $< .05$ were considered statistically significant for the unadjusted model, and *p* values $< .001$ were considered statistically significant for the covariate-adjusted model.

All participants gave their electronic informed consent before completing the questionnaires. The Institutional Review Board of Pontifícia Universidade Católica do Rio Grande do Sul approved the study (09/04796).

Results

For the first analysis (abuse frequencies and respective subjective impacts), after validity checks (exclusion of 9.5% of the initial sample), the final sample consisted of 13,201 volunteers, 3,686 men (27.9%). Table 1 shows the demographic data and childhood abuse of the final sample. The mean age (\pm SD) was 30.3 \pm 9.5 years.

In the first study, physical abuse was the most frequent type of abuse (70.5%) followed by emotional (64.7%) and sexual abuse (17.9%) (Fig. 1A). For those who responded at least “rarely true” to these questions, we asked about their subjective impact (negative, neutral, positive). The emotional and sexual abuses were associated with a very high frequency of negative subjective impact (76.9% and 67.7%, respectively) and a very low frequency (4.2% and 1.6%) of positive impact (Fig. 1B). In contrast, only 24.9% subjects reported a negative and 29.6% a positive impact for physical abuse. A subanalysis showed that an increasing frequency was associated with a more negative impact for all

types of abuse (Fig. 1C). Even when said to occur rarely, ~60% of subjects considered sexual and emotional abuse negative, whereas for physical abuse, the frequency of negative impact only surpassed positive impact with objects when reported to occur often or very often.

For the second analysis (to evaluate the association between predictable factors and psychiatric medication use), after validity checks (exclusion of 10.7% of the initial sample), the final sample included 4,343 volunteers (men $n = 1,381$ or 31.8% and women $n = 2,962$ or 68.2%). The mean age (\pm SD) was 28.3 ± 9.1 years (Table 1).

Thus, in order to explore further these surprising results on corporal punishment, a second study was conducted. In this one, we also asked about spanking frequency and its subjective impact on those who reported never experiencing physical abuse with objects. Similar results on the prevalence of abuse were also confirmed in the second sample (Table 1) with the inclusion of spanking. In this sample, a history of any physical punishment was present in most subjects (92.6%). In addition, for all subjects with any history of corporal punishment (with objects or just spanking), we assessed how often they knew the reason for being punished. As shown in Fig. 2, among those who were only slapped and were always aware of the reason for their punishment, only 3.8% considered it to have a negative subjective impact, whereas 40.6% reported a positive impact and 55.6% neither positive nor negative impact. Interestingly, those who always knew the reason for being physically beaten with objects reported more frequently a positive than a negative impact even when said to occur often and very often. However, the negative impact of physical punishment increased substantially when the subjects were beaten more often with objects without knowing the reason.

As an objective parameter of mental health, we also assessed lifetime use of psychiatric medication. Emotional and sexual abuse were associated to a higher chance of lifetime use of psychiatric medications (OR=1.26, 95%CI 1.15–1.32; OR=1.13, 95%CI 1.04–1.22, respectively, Table 2). After adjusting for all variables including emotional and sexual abuse, a positive subjective impact of being physically punished was associated to a lower chance of lifetime use of psychiatric medication (OR=0.76, 95%CI=0.69–0–0.83), whereas the negative subjective impact, the intensity of corporal punishment (with or without objects), and knowing the reason for being punished did not show significant associations.

Discussion

Taken together, these results showed a negative subjective and objective impact of emotional and sexual abuse, even when occurring rarely, in agreement with several studies (Teicher *et al.* 2010; Fry *et al.* 2012; Norman *et al.* 2012; Mandelli *et al.* 2015; de Araújo & Lara 2016; Infurna *et al.* 2016). In sharp contrast, the outcomes of corporal punishment were often positive, and a clear negative subjective impact was observed mostly in those frequently beaten with objects, particularly in the minority who rarely knew the reason for being punished. Thus, unlike emotional and sexual abuse, the negative consequences of corporal punishment for mental health are far less common than usually regarded and positive long-term outcomes seem to be the rule particularly when the reason for being punished is always clear.

Since the second half of the twentieth century, the social sciences have been concerned with the influence of parental practices, mainly the use of physical punishment, on the future behavior of their children, particularly on aggressiveness (Bandura 1986; M. A. Straus 2001; Durrant & Ensom 2012). This led many countries to sanction anti-spanking laws, being Sweden the first in 1979 (Fuller 2009). However, a recent meta-analytic review of longitudinal studies (Ferguson 2013) reported that spanking was not associated with negative long-term outcomes. Even regarding more severe forms of physical punishment, when adjusted for the co-occurrence of other forms of childhood maltreatment, such as emotional abuse or negligence, physical abuse has no or even a mildly positive impact on psychological outcomes, such as personality traits (McLoyd & Smith 2002; Li *et al.* 2014; Sudbrack *et al.* 2015).

This body of data indicates the possibility that, with the noble intention to preclude serious physical injuries to children, banning all types of corporal punishment, including conditional spanking, may have unwanted consequences. In a need to restrain their children, the parents, banned from spanking, may then shift from corporal punishment to verbal attacks, with the erroneous belief that these are less detrimental and to avoid legal problems. Thus, children may be more exposed to the harmful effects of emotional abuse and deprived of the putative benefits of contextualized and proportional corporal punishment. Further, under this kind of legislation, parents who occasionally end up spanking their children may feel guilty and try to compensate for their action, which can be confusing for the children. These hypotheses are worth exploring in new studies as most past studies have not addressed such issues (Chamberland *et al.* 2011).

The mild forms of physical punishment with a clear reason (e.g., conditional spanking) are sharply different from unconditional, frequent and violent forms of physical abuse. We suggest the term physical abuse be used strictly when it produces significant physical injuries, while the term physical (or corporal) punishment would require the presence of a clear reason for being beaten and the absence of lesions. Perhaps the most striking result of our study is that even corporal punishment (i.e., with a reason) with objects was regarded as positive by about 40% of subjects and negative by only a minority of subjects (~7% when sometimes, ~26% when often). One hypothesis is that children perceive punishment as a form of care with parents going through the discomfort of beating to regulate their inadequate behavior (i.e., an effortful investment for their good) and not as a sadistic manifestation of aggression. Interestingly, physical punishment is always triggered by a specific behavior and does not lead to a “cycle of violence” (Widom *et al.* 2015). In comparison, the more often emotional abuse occurs, the higher the association with personality traits such as emotional sensitivity, anxiety, anger, low positive affect and low self-esteem (Sudbrack *et al.* 2015).

However, despite appealing outcomes, our study has certain limitations. First, the cross-sectional design is not appropriate to address causality, which applies to emotional and sexual abuse. The association of conditional corporal punishment was not in the direction of harm, either for subjective impact or the use of psychiatric medication. Furthermore, the question on the subjective impact of parents’ behavior is by itself an inference of causality from an individual point of view. In the scope of mental health, subjective perception is a key element, but we still cannot ascertain that conditional corporal punishment causes a benefit per se. Second, the retrospective assessment of abuse can be biased since a person who suffers from a mental disorder could recall bad memories more easily. If this would have been the case, it would be difficult to imagine how this type of bias can selectively apply to memories of emotional and sexual abuse and spare those of corporal punishment. Third, we did not include direct interviews and biological markers and relied exclusively on voluntary and computerized anonymous participation. The advantage of this methodological approach is to be more suitable for reliable data collection on such sensitive issues than face-to-face interviews and pen-and-paper questionnaires (Turner *et al.* 1998).

The ideological and moral aspects regarding corporal punishment seem to have grounded the formulation of the public policies, rather than “evidence-based policy-making” (Paul 2016). Most campaigns aimed to protect children and adolescents are focused on physical punishments and sexual

abuse, whereas emotional abuse receives less attention from the public, the media and policymakers. This study is in line with several others suggesting the long-lasting and devastating consequences of emotional abuse, including suicidal behavior (de Araújo & Lara 2016). Since emotional forms of abuse are silent, harmful, and frequent, effective strategies for their prevention, detection and early intervention are more likely to lead to a lower burden of mental disorders than focusing only on corporal punishment. Finally, although images of children being spanked can be shocking, especially if taken out of context, banning the conditional corporal punishment by parents, especially spanking, seems unfounded according to the current scientific evidence and is probably naïve given its widespread frequency. Based on the Swedish spanking ban experience, mild corporal punishment during childhood may even prevent physical violence later on (Fuller 2009). As a hypothesis, corporal punishment may be considered a hormetic stimulus (a process whereby a low dose of a physical agent/stressor that is detrimental at higher doses induces a beneficial effect), which may lead to resilience or damage according to its intensity, frequency, period of life, and context (Calabrese 2008). Based on the current evidence and our data, a review of social policies on childhood maltreatment would be recommended to reverse the ban on conditional spanking and to alert parents on the negative impact of emotional abuse.

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Table 1. Demographic data, childhood abuse and physical punishment of the final sample

*At least rarely

Variable	First analysis	Second analysis
Total sample	13,201 (100.0%)	4,343 (100.0%)
Age (years)	30.3 ± 9.5	28.3 ± 9.1
Male	3,686 (27.9%)	1,381 (31.8%)
Nonwhite	3,759 (28.4%)	1,468 (33.8%)
Unemployment	1,014 (7.7%)	372 (8.6%)
Higher education	5,562 (42.1%)	1,752 (40.3%)
Sexual abuse*	2,355 (17.8%)	789 (18.2%)
Emotional abuse*	8,547 (64.7%)	2,814 (64.8%)
Physical punishment		
Physical abuse*	9,306 (70.5%)	2,980 (68.6%)
Only slaps	NR	1,049 (24.2%)
No**	NR	314 (7.2%)

**Never and rarely for slaps frequency

NR: not rated

Table 2. Risk factor for lifetime psychiatric medication use

Variable	N (%)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age			
Born decade 80s	2,014 (50.3)	1	1
Born decade 90s	1,987 (49.7)	0.57 (0.53-0.61)**	0.58 (0.53-0.62)**
Sex			
Male	1,286 (32.1)	0.81 (0.75-0.88)**	0.86 (0.80-0.93)**
Female	2,715 (67.9)	1	1
Intensity of physical punishment			
No	595 (14.9)	1	1
Only spanking	431 (10.8)	1.07 (0.94-1.22)	1.05 (0.91-1.20)
Physical abuse	2,975 (74.4)	1.04 (0.95-1.14)	0.95 (0.86-1.05)
Reason for being punished			
Always knew	2,057 (51.4)	1	1
Sometimes / rarely knew	1,944 (48.6)	1.16 (1.08-1.24)**	1.02 (0.95-1.10)
Subjective impact of physical punishment			
Negative	747 (18.7)	1.07 (0.98-1.16)	1.00 (0.92-1.10)
Neutral	2,084 (52.1)	1	1
Positive	1,170 (29.2)	0.79 (0.64-0.77)**	0.76 (0.69-0.83)**
Emotional abuse			
No	1,347 (33.7)	1	1
Yes	2,654 (66.3)	1.39 (1.28-1.51)**	1.26 (1.15-1.37)**
Sexual abuse			
No	3,259 (81.5)	1	1
Yes	742 (18.5)	1.26 (1.17-1.36)**	1.13 (1.04-1.22)*

* $p < .05$; ** $p < .001$

Missing data: Emotional abuse (n=281), Reason for being punished (n=295)

Generalized linear model, Poisson.

Captions for figures

Fig. 1. Prevalence and subjective impact of sexual, emotional and physical abuse.

(A) Prevalence of abuse experiences in childhood ($N = 13,201$).

(B) Subjective impact of being abused during childhood/adolescence according to type of abuse.

(C) Subjective impact according to the type and frequency of abuse.

Fig. 2. Subjective impact of physical punishment according to the intensity, frequency and awareness of the reasons of physical punishment

Figure 1

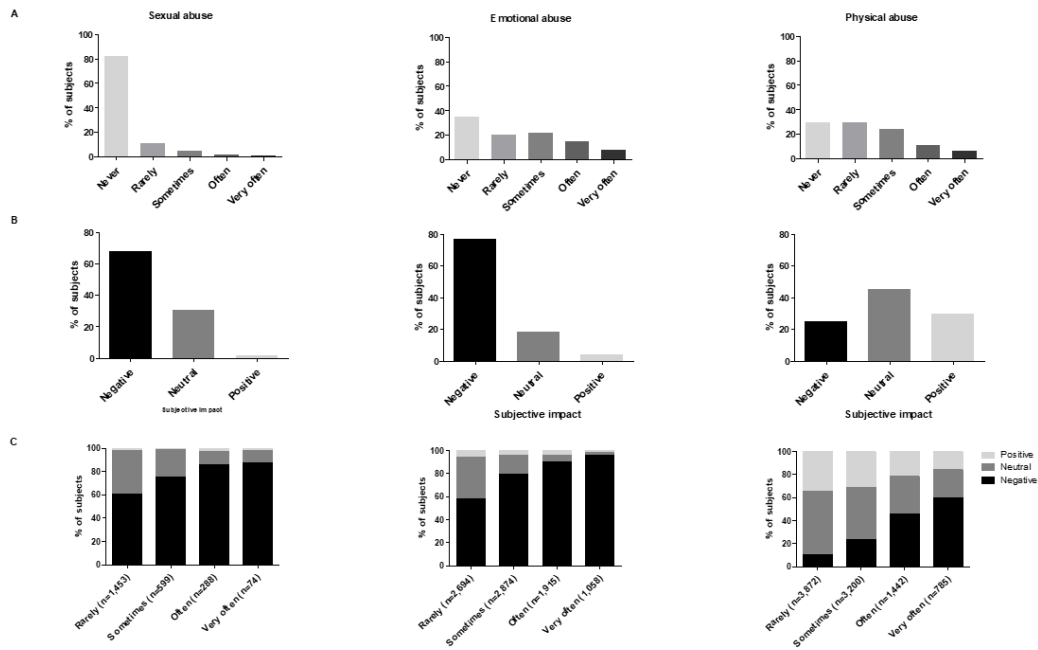
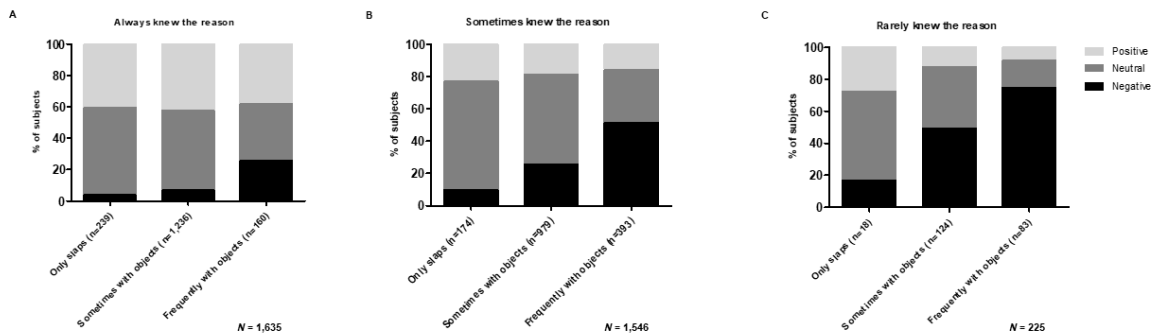


Figure 2



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Contributors

DRL is the research coordinator of the study. DRL and RMA contributed equally on literature search, figures, tables, study design, data collection, data analysis, data interpretation, and writing the paper.