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The Trauma of Adoption: ADHD and Chinese Orphans

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THE GOAL of this paper is to address the issues of neglect and abuse towards Chinese girls as a result of China's one child policy, traditional practices and orphanages; specifically, the impact of such in relation to ADHD. Hence, this paper strives to address the impact and trauma associated with international adoption, primarily the movement of orphans from China to North America.

A culture with gender-specific bias and the effect of living without a stable familial structure can have a lasting influence on the mental health of orphans (Dubbowitz, Papas, Black, & Starr, 2002). The impact of abandonment and/or neglect by one’s biological parents, living in an orphanage lacking a nurturing environment, and moving between different cultures could lead to higher levels of trauma; also, it can exacerbate symptoms of pre-existing mental health conditions. (Mogavero, Jager, & Glennon, 2016). The condition that is the focus of this paper is attention deficit hyperactivity disorder (ADHD).

ATTENTION DEFICIT/HYPERACTIVITY DISORDER
ADHD is characterized by varied levels of impulsiveness, restlessness, the tendency to intrude/interrupt conversations, forgetfulness, logorrhea, and distractibility (Barkley, pg. 27). ADHD is a neuropsychiatric disorder that affects nearly 7%-12% of children, adolescents and adults worldwide (Jordon & Anderson, 2016). In contrast, ADD, which stands for Attention Deficit Disorder, lacks the hyperactive characteristic that an ADHD individual displays (Salman, Idrees, Anees & Idrees 2016). According to Ashford (2014), ADHD is often mistaken for ADD, which is similar but still differs from ADHD.

Individuals with ADD lack hyperactive and restless behavior, which often go undiagnosed. Symptoms of ADHD have also been mistaken for mood disorders, such as Mania and Cyclothymic Disorder. In some cases, ADHD can seem similar to Borderline Personality Disorder (Wender, Wolf and Wassertein, 2001). Despite these differences, there is no clear consensus; for example, some believe that ADD and ADHD are the same condition (Low, 2017).

In 2005, about 6.4 million children, ages 4-17 years, were diagnosed with ADHD in the United States (H & R, 2014). It is a condition largely passed down by the father; one out of three fathers diagnosed with ADHD will produce offspring with ADHD (H & R, 2014). The expression of ADHD is thought to be regulated by two genes: DRD4 and DAT1 (Durston, 2010). DRD4 (dopamine D4 receptor) partially determines personality traits such as cogitation, memory, learning ability, and motor control. A dopamine dysfunction causes lower levels of cognition, memory, learning abilities, and motor
control. These all go hand-in-hand with symptoms of ADHD (Ptáček, Kuželová, & Stefano, 2011). The second gene involved in the expression of ADHD is DAT1. DAT1 is a dopamine transporter gene that regulates dopamine circulation through the dopaminergic circuits (Shumay, Fowler, & Volkow, 2010). Based on the series of studies in Mouse Models of Attention-Deficit/Hyperactivity Disorder, the lack of the DAT1 gene among test mice resulted in impulsive behavior. This resulted in their inability to stay on a small elevated platform (Itohara, Kobayashi and Nakashiba, 2015). Simply, the lack of DAT1 functionality leads to hindered behavioral control.

Not only does ADHD affect the neurological characteristics of the brain, it also causes physical defects of the brain. Normal brain development is achieved around age five and during early adolescence the brain reaches its maximum volume (Krain & Castellanos, 2006). However, most Chinese orphans are malnourished and deprived of proper early childhood care which becomes a contributing factor to deficient brain development. According to the article Structural Brain Imaging of ADHD-Deficit/Hyperactivity Disorder, individuals that have been diagnosed with ADHD have a significantly smaller dorsolateral prefrontal cortex, cerebral cortex, corpus callosum, and cerebellum than that of non-ADHD individuals (Seidman, Valera, and Makris, 2005).

To clarify, the dorsolateral prefrontal cortex is responsible for attention and the ability to control behavior. Also cited in the article are studies that reveal adults with ADHD to have significantly smaller prefrontal cortices, giving rise to difficulty in attention and behavioral control (Seidman et al., 2005). The corpus callosum is a mass of nerve tissue that facilitates information transfer between the two hemispheres of the brain. Studies have suggested that individuals with ADHD have a smaller corpus callosum than non-ADHD individuals (Hynd, Semrud-Clikeman, Lorys, Elopulos, & Lytyinen, 1991).

In addition to a smaller prefrontal cortex and corpus callosum, evidence supports that ADHD individuals have smaller cerebral cortices (Cubillo, Halari, Smith, Taylor, & Rubia, 2012). Having a smaller cerebral cortex results in reduced perception, memory, motor function, social abilities, language, and problem solving (MedicineNet, 2016). Studies suggest that children diagnosed with ADHD have significantly reduced cerebellums (Stoodley 2014). The region of the brain that is most impacted by ADHD is the frontal lobe. According to a study conducted by S.H. Mostofsky (and associates), individuals with ADHD were found to have smaller frontal tissue volume than non-ADHD individuals (Mostofsky, S., Cooper, K., Kates, W., Denchla, M., & Kaufmann, W. 2002). The frontal lobe is the portion of the brain that is responsible for executive functions such as cognitive skills, memory, language, and judgement (Healthline 2015). A trio of scientists conducted brain scans of 89 male (mean age 10.5 years; range 5.1-18.4) and 63 female (mean age 9.4; range 5.3-16.0) children who were diagnosed with ADHD (Castellanos, Lee and Sharp 2002). The results indicated a -3.2% decrease in overall brain volume. The same researchers conducted the study again four years later, but with larger samples. The results were consistent with their initial results in 2002 (Krain 2006).
As mentioned earlier, ADHD is strongly linked to genetics. However, heritability is not the only factor that affects the function of individuals with ADHD (Adesman 2017). While genetics determine the presence of ADHD, external factors such as traumatic events in an individual’s life account for intensified symptoms of ADHD, according to the National Child Traumatic Stress Network (NCTSN, 2016). One group of individuals that are particularly susceptible to exacerbated symptoms of ADHD are orphans. This could be due to the sequential experience of three major (and traumatic) events: first, neglect/abuse; secondly, lack of a familial environment, and lastly the trauma of international adoption (based on age of the adoptee and the additive factor of culture shock).

ONE CHILD POLICY

According to the World Bank Group, in 1960 China’s population was at 667 million. In 1979, China’s population jumped to 969 million (WBG, 2016). By 1982, China had reached over 1 billion. Within the current population, there are a total of 56 ethnic groups (Lilly 2009); the 10 biggest ethnic groups (respectively) are the Han, Zhuang, Hui, Man, Uyghur, Miao, Yi, Tujia, Tibetan and Mongol (Sawe, 2017). Hans makes up for 91.15% of China's population, the remaining 55 ethnic groups are in the eighth percentile (Linzhu, 2015). In 2010, Tibet had 6.2 million people, 20 years earlier the population was 4.6 million, a 34.8% increase (Hao, 2000 & Tibet Data, 2015). As of 2016 the age structure of China is as follows: 17.10% are 0-14 years, 13.27% are 15-24, 48.42% are 25-55; 55+ make up 21.22% of the population (Index Mundi, 2016). The evidence shows that the elder generation outnumbers those within the 0-14 age group (Index Mundi, 2016); that is a 21.50% difference. To put this into perspective, it was reported that in 1975 (four years prior to the one child policy) individuals of 0-14 years made up 40.1% of the population; ages 15+ were the remaining 59.9% (Clarke 2015). That is nearly a 57.4% drop in the youth population.

The one child policy was established in 1979 under the command of Deng Xiaoping. The policy was mainly targeted at the Han group because they made up the majority of China’s population (Berenson, 2015). Deng’s goal was to reduce the birth rate – consequently, he enforced the one child policy by rewarding those who obeyed his law with financial support and employment (Connett, 2015). While this new law did cause a significant decrease in birth rates, it remained greatly controversial, argued by some as violating “human rights and reproductive freedoms” (BBC, 2015).
NEGLIGENCE/ABUSE

In China, the mortality rate for females from the ages one to five is 40% higher than males. According to the 2012 documentary *It's a Girl* (IG), there is a near even global ratio of boys to girls. However, in China and India the gender ratios are skewed: about 140 boys for every 100 girls (IG). In 2008 the sex ratio was 1.22 million men for every 1 million women (Powell 2015). It is suggested that the sex ratio has shifted as a result of a more relaxed “one-child policy” (to be discussed). In 2015, the ratio was 1.16 million men to 1 million women. In the eyes of Indian society and traditions, having a girl was a “drain on family resources” (Powell, 117) whereas having a son was “perceived as an opportunity for upward mobility” (Patel, 149, 2007). During a community meeting of women in Haryana, India, they came to the conclusion that the leading cause for female infanticide which they conclude is due to tradition (Patel). Traditionally, when a girl grows up and marries, it is her family’s responsibility to pay a large dowry to the future groom’s family. Although the dowry system was outlawed in 1961, it is still practiced to this day (Ramakrishnan, 2013). The dowry includes various gifts such as property, livestock, jewelry, and money. In many cases, it is too much for poorer residents to pay, thus leading to the social pressure to have a boy and neglect girls (Mitra, 2014). Similarly, the one child policy law combined with Chinese tradition has made girls susceptible to neglect, abuse, and infanticide. Methods of infanticide include suffocating daughters with a cloth, throwing acid on them, poisoning them, strangling them as soon as they are born, and drowning the child in a bucket of water (IG). In a two minute CNN video clip, Chinese officials are seen pulling an abandoned infant out of a squat toilet. Reportedly, the crying newborn baby girl was wedged face down in the toilet pipe (Ripley 2015).

Gender screening during early stages of pregnancy can end in a forced abortion – if the child is a girl, that is. The enforcers are a group called the Family Planning Police (FPP) (BBC News & IG). Parents who do not wish to abort are forced into constant hiding; the FPP financially rewards those who report people who have violated the one child policy. In economically poor regions of China this type of enforcement has created a culture where the acquisition of money is held more important than a child’s life. However, the parents of female children have to beware of more than the FPP and reward-seekers; as the skewed sex ratio leaves few wives to be found, it is not uncommon for parents of a male to kidnap girls in order to ensure their son will have a wife. In some cases, the girl’s family will sell their daughter(s) to a family that has a son and collect the money (IG). Approximately 200 million girls are missing from the world due to this rampant genocide, now commonly called ‘gendercide’ (Hatten, 2012). Fox News reported in 2007 that infanticide was more common in the poorer areas of China; after the establishment of the one child policy, infanticide rates rose in wealthier parts of China. The one child pol-

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PHYSICAL ABUSE
Difficulty trusting others
Low self-esteem
Anxiety and fears
Physical problems
Internalization of aggression
Depression
Difficulty with touching
Inability to play
Difficulty with relationships
Abuse of alcohol and drugs
Perception of powerlessness

NEGLECT
Difficulty trusting others
Low self-esteem
Anger
Impaired object relations
Lowered intelligence
Impaired development
Verbal inaccessibility
Inability to play
Difficulty with relationships
Abuse of alcohol and drugs
Perception of powerlessness

SEXUAL ABUSE
Difficulty trusting others
Low self-esteem
Anxiety and fears
Shame and guilt
Anger
Self-abusive tendencies
Depression
Inability to play
Difficulty with relationships
Abuse of alcohol and drugs
Perception of powerlessness
Distorted view of body
Sexual problems

...icy is an underlying cause for neglect of Chinese girls. In relation, the effects of neglect in young children result in reduced brain volume, which exacerbates symptoms of ADHD even more so than those of ADHD individuals who have not been neglected (Glaser, 4.17, 2007). According to a 2008 study consisting of a small sample group of ADHD individuals (ages 8-11 years), researchers found that participants with a history of neglect and abuse "displayed more impulsivity and inattention than non-abused children with ADHD" (Peterson, Joseph & Feit, pg. 4.17) (Becker-Blease and Freyd, 2008).

Even if a Chinese girl is not killed at infancy, she still faces a multitude of dangers, including human trafficking and sex slavery. Since the initiation of the one-child policy, sex trafficking has increased (IG, Fetterly, and Littlejohn 2014, 2015); indeed, "sex trafficking has been exacerbated even further by the one child policy" (Fetterly 2014). The one child policy contributes to the lucrative business of human trafficking, results of a faulty legal system, poverty, unemployment, poor access to education, and gender inequality. It is also a product of a long standing cultural tradition that devalues women, a clear violation of human rights (Tiefenbrun & Edwards, 2009, Littlejohn, 2015). In some of the poorer locations of China, parents sell their daughters to sex traffickers. It has been estimated that nearly 30,000 to 60,000 kidnappings occur per year; however, that number is disputed; some claim that numbers are as high as 200,000 per year (Hays, 2015). The work Understanding Child Abuse and Neglect provides a table (see above) that lists the effects of such trauma (Crosson-Tower’s, 375, 2010).

According to a study of 30 ADHD students (10 girls and 20 boys), it was discovered that 60% of the children had experienced neglect and that 35% had experienced psychological abuse. In conclusion, it was suggested that "society and families should be trained to better know how to deal with ADHD children" (Hadianfard, 2014). Many of the children with ADHD in China do not have a supportive family or stable social structure. According to another study, 228 girls between the ages of six and 12 (140 with ADHD and 88 without ADHD) participated in a study of the effects of abuse and neglect on individuals with ADHD (Brinsco-Smith and Hinshaw 2006). The study showed that the "ADHD sample [group] had numerically higher rates of all types of abuse, most notably neglect and sexual abuse"; the profound effects of neglect and abuse are described by parents, teachers and peers of those with ADHD as a tendency towards aggression and the experience of social rejection (Brinsco-Smith & Hinshaw, 2006).
To test the effects of neglect and its relation to symptoms of ADHD, a team of researchers conducted a study on rats to test their response to maternal separation (Womersley, Hsieh, Kelway, Gerhardt and Russell 2011). Their hypothesis was that separation from the mother for three hours per day (from postnatal to 14 days) would induce anxiety-like behaviors, altering DAT1. They were able to conclude that maternal separation did cause (1) decreased surface expression of DAT1 and (2) decreased DAT affinity. Both cause increased time needed to clear dopamine from the extracellular fluid. This discovery reinforces the argument that neglect plays a part in exacerbating symptoms of ADHD. ADHD is a leading mental disorder consistent among neglected and abused individuals (Hunter 2014).

ORPHANAGE LIFE

In addition to neglect and abuse, life at an orphanage can have a profound effect on young Chinese girls. In recent years, due to the more relaxed one child policy law, orphanages in China have seen a decrease in orphans. However, there has been a clear shift from abandonment of children due to gender bias to those with a mental/physical disability (Ripley, 2015).

One definition of an orphan is a child who has lost both parents, as opposed to a “single orphan” that has only lost one parent (Bunkers, Cox, Gesiriech and Olson’s 2014). The group of orphans emphasized in this paper are those who have lost both parents. As of 2014, it has been estimated that 158 million children have lost either a father or mother and about 17.8 million have lost both (due to death or abandonment).

Globally, reasons for abandonment vary. Europe saw a 90% increase in abandoned children due to poverty and homelessness. According to the United Nations Children’s Fund (UNICEF, 2003), an estimated 11 million African children are orphaned after testing positive with HIV/AIDS. In Russia the cause for orphaned children is a combination of (1) high rates of alcoholism, (2) lack of proper juvenile law system to protect and provide protection from abuse and (3) inadequate orphanage systems (Gatti 2014). In 2012, Russia banned the US from adopting children from Russia. Approximately 40% of the orphans in Russia who outgrow the orphanage system struggle with substance abuse while 10% committed suicide (Gatti, 2014).

In recent years, an additional 500 orphans have been added to the already staggering 576,000 orphanages in China. The quality of these orphanages vary greatly due to the amount of staff available per number of orphans (Vanderklippe 2014); fortunately, the level of care provided by these orphanages has been improving: orphanages have seen a decline in abandoned children since 2005; despite this, it is estimated that 10,000 abandoned children are received each year (Hui and Blanchard 2014).

Although orphanages are generally considered to meet a child’s basic needs, orphanages are often considered inadequate for any developing youth (Thurston). On average, for every 48 children there are 3-4 staff members (Thurston). Consequently, the amount of attention given to each child is inconsistent: out of these children, several will feel lonely, reinforcing feelings of neglect; children in orphanages are less likely to receive the attention and love they need to be able to establish proper relationships with others.). The unbalanced ratio of orphans to caretakers hampers critical nurturing and establishment of a familial environment (Neimetz, 586, 2010).
Proper care and nurture in the early stages of childhood are key factors in the development of a child’s brain (O’Connor and Joffe, 2013). In addition, “childhood maltreatment is a key risk factor for poor mental and physical health” (Cecil et al., 2016). According to the Raising Children Network (RCN, 2013), the first five years of a child’s life is when their brain develops most quickly. It is during this time that the foundations for learning, health and behavior are established. In a recent study that compared foster to orphaned children, it was found that children placed in foster care not only possessed a normal skull size, but had a relatively higher attention span and IQ (Szalavitz, 2012). According to studies done in a Romanian orphanage, it was concluded that “institutional rearing was associated with substantial psychiatric morbidity...[and] that placing [children] in families significantly reduced internalizing disorders” (Zeanah et al., 2009).

One condition that directly hinders normal brain growth is Malnutrition. It results in reduced sensory perception, memory and executive control (Schoenmaker et al., 2014). One study compared the learning abilities of malnourished Korean orphans compared to a healthy group. The result was consistent with the initial claim: that malnourished children would have significantly lower IQ scores than that of well-nourished children (Winick, Meyer and Harris 81, 1975).

ADOPTION

The term adoption has a tendency to breed misconceptions. Adoption is a historically successful social solution for children who have one or two unavailable parents; of course, it is preferred that a child receive critical parental care and consequent nurture (Brodzinky, 153, 1993).

“[International adoptees] grapple with who they are, how they are same and different from others, and what the future holds for them” (Mohanty and Newhill 2011). In relation, the term marginality means to “have a sense of isolation and of not quite belonging”, which is often a result of international adoption (Mohanty and Newhill). There are two main factors of post-adoption that contribute to exacerbated symptoms of ADHD: age and culture shock.

META-ANALYSIS:
the statistical procedure for combining data from multiple studies

BINOMIAL-LOGIT REGRESSION:
a statistical technique used to predict the relationship between predictors (independent variables) and a predicted variable (dependent variable) where the dependent variable is binary

AGE

Age at adoption is suggested to play a major role in heightened symptoms of ADHD in an individual. China’s orphan population is estimated at over 1 million children of 0-17 years (Neimetz, 858). If adopted at a young age (mean age of around 13.6 months), children are often able to form new attachments with adoptive mothers/fathers. This process takes about two years. Not only do studies see an increase in secure behavior in reaction to familial stability but also a decrease in inhibited behaviors (Cohen & Farnia, 2011).

One intriguing study analyzed how adopted Norwegian adolescents (ranging from age 11-19 years) showed greater levels of mental health disorders than non-adopted Norwegians (Askeland et al., 2015). It has also been noted that “international adoptees have been found to have a 3-4-fold increased risk of both suicide attempts and death, as well as being admitted to a psychiatric hospitals compared to the general population” (Askeland et al.,...
China represents the largest group of internationally adopted children. In relation, “the older the child is at adoption, as correlated with the length of time spent in an institution [orphanage], the greater the [developmental] delay[s]” (Krakow and et. al., 2005).

An experiment tested 2,148 international adoptees (ranging from 10-15 years) compared to 933 non-adopted individuals (12-15 years) (Verhulst, Althaus and Bieman, 1990). The parents of all the subjects (both adoptees and non-adoptees) where asked to fill out the Achenbach Child Behavior Checklist. The results were consistent with those of international adoptees. They displayed significant behavioral hindrances compared to non-adopted children. Another study used a meta-analysis binomial-logit regression mode; the findings suggested that persistence of ADHD decreased with age (Verhulst, Althaus and Bieman, 159).

**CULTURE SHOCK**

Culture shock is defined as:

“...a sense of loss and disorientation that occurs when our deeper values are challenged by a new culture...This conflict in values frequently generates feelings of tension and anxiety due to the loss of familiar cultural cues, and a sense of inefficacy when we cannot succeed at tasks we once mastered. Symptoms of culture shock may be both physical and psychological, resembling typical stress responses we may have had before, in our own culture” (Bennett, 2, 2013).

Similarly, Joanne Ostrow describes the struggles and discoveries of four internationally adopted Chinese girls in 2012 (ages ranging from 13-15 years). She observed the way cross-cultural adoption has affected them as all four were raised in different parts of the United States (Ostrow, 2012).

There is a lot of emotion and stress that occurs for both the adoptee and the adopters: “...physical [and]/or emotional trauma and neglect and relationship difficulties... tend to be exacerbated in times of rapid cultural change” (Raphael-Leff, 2003).

The stress caused by culture shock also causes lasting anxiety. According to NCTSN, stress induced events such as being immersed in a completely different culture overlaps with ADHD, causing more intensified symptoms (NCTSN).

**POSTADOPTION**

Approximately 40,000 orphans are adopted internationally. In 2005, it was estimated that 23,000 international adoptees were adopted into the United States. As one may imagine, adoption has tremendous potential for nursing an abused, abandoned and mentally damaged child. Many adopted children fall under ‘Attachment Theory,’ which suggests that infants are biologically predisposed to form
relationships and that very early years of childhood are crucial for developing social cognitive skills (Golding, 24, 2007). Data collected over a span of three decades indicates that adoption has had a positive impact on emotional and physical recovery (Johnson, 2002). Children who have been adopted tend to show positive development such as physical growth, sense of security, cognitive development and reduced behavioral problems (Askeland et al., 48). This is characterized as resilience.

Resilience is defined as the process in which a person achieves positive outcomes despite negative experiences. They cope successfully and avoid and/or overcome the extreme negative effects that often follow traumatic experiences (Askeland et al., 49).

DISCUSSION

Resilience among abused and neglected children varies depending on factors such as relationships and social support. Professionals and future guardians/parents should gain knowledge about how and why abused and neglected children have developmental issues (Crosson-Tower, 63).

The positive outcomes of adoption is grossly understudied (Miller, 2533, 2005). It could be worth looking into the neurological development of a positive environment on the brain of an individual with ADHD.

An understanding of the effect of aging on ADHD symptoms would add positively to this discussion. Understanding the role of aging on the symptoms could provide guardians and medical providers a better understanding of ADHD.

CONCLUSION

Physical and psychological trauma, pre-adoption, and the effects of adoption result in exacerbated symptoms of ADHD in Chinese orphans. The one child policy and Chinese tradition has created social pressure to have a son. Consequently, this results in thousands of girls being killed and neglected. A lucky few find their way to an orphanage. However, because of the high volume of abandoned children, orphanages are unable to provide adequate nutrition, care, and early childhood developmental support (often causing reduced cognition). Lastly, the process and act of adoption and being immersed into a new culture is an additive stressor that heightens symptoms of ADHD. However, the environment that is provided by an adoptive family often helps in the healing process of an adoptee(s).

ADHD is strongly linked to genetic inheritance; however, traumatic events such as mental/physical/sexual abuse, abandonment, culture shock and neglect can intensify the symptoms. Proper care and patience in adoptive families provides a stable and loving household and reduces the symptoms of ADHD.


Ashford, K. *What's the Difference Between ADD and ADHD?.* Doctors are no longer using the term ADD to describe a lack of focus and problems with organization. We explain why. Retrieved from http://www.parents.com/health/add-adhd/difference-between-add-and-adhd/.


