

Chronic Stress:  
How the Boys and Girls Club of America Can “Be Great” in the Promotion of Mental Health

Meredith Hardy  
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Washington and Lee University

## Introduction

Everyone feels a little stress from time to time. “The physical pressure, pull, or other force exerted on one thing by another” or, more simply, “strain” is a hallmark of living in today’s world—something always has to be done (Dictionary.com). Bills have to be paid, kids must be picked up from soccer, and papers (like this one) have to be written by midnight. I am certainly not one to be stress-free, but I am here to tell you about a group of people who experiences levels of stress that not only surpass these day-to-day stressors, but their stress is sustained for significantly longer as well. Thus, this stress holds more weight for their future than is to be expected. The group? The economically disadvantaged children of the United States.

In what follows, I present two imaginary children, representatives drawn from the all-too-real situation of a childhood spent in poverty. ‘Jacob,’ a seven-year-old second grader, and ‘Danielle,’ a thirteen-year-old seventh grader, are growing up in unstable homes and their family income is below the federal poverty line. Both have their gifts, but both are fighting a serious battle. They are the models through whom I will convey the molecular and macro level roles of stress in a low-socioeconomic status child. They provide a carrier for the information I wish to impart, so remember their plights as you consider the risks they are enduring.

Another crucial aspect to remember throughout this paper is the definition of stress—an entirely accurate one is difficult to come by. Easily reportable are the feelings of agitation and pressure that stem from a stressful situation; that the tasks at hand are bearing uncomfortable weight due to size or imminent deadline. These are the sensations of stress that any college student, professional, parent, or service industry worker might experience. The biological stress this paper is interested in is much more difficult to quantify—it is molecular in nature and holds much bigger future consequence than does discomfort over a large project. This stress develops

over time and breaks the neuroendocrine feedback loop that is designed to use stress productively. The body instead turns on itself and stress becomes dangerous.

There must be something that we can do to help these kids fight this battle and keep the body from losing the advantage of a healthy stress response. I spent the summer working in a Boys and Girls Club that is particularly robust within its host community, Phillips County, Arkansas. It was my first interaction with the Club and it demonstrated to me the positive role that it plays in the lives of the children that it serves. I heard from multiple older members of the community who wished that they had the resources the club provides available to them as they were growing up. I began to contemplate the potential role that Boys and Girls Clubs could play in the mental health of the children they serve. It is the linking of the two that gave me the idea to investigate these further within this paper.

Therefore, I shall elaborate on the main parts of my discussion. I will introduce you to the Boys and Girls Club of America (BGCA), explaining why it is a particularly robust venue for improving the lives of its beneficiaries. I will detail for you precisely what is happening to the brains of disadvantaged children as they continue to live their lives and what methods developed by the medical field are potentially viable methods for winning this mental battle. I will attempt to incorporate these methodologies with what is in existence at Boys and Girls Clubs and posit new programs that could continue to serve the mental health of these children. Finally, I will tell you why this is necessary. Throughout this discussion, I emphasize the role that this intervention can play in real children's lives. Not only does it promote healthier living, but it may eventually save lives by preventing permanent mental disorder and facilitates the opportunity to escape poverty.

**Jacob**

Jacob is the quintessential second grader: active, full of questions, and easily distractible. He lives with his grandparents, as his mother is in jail and his father moved away from his town years before. They reside in a downtrodden neighborhood, sandwiched between a vacant lot and an abandoned house. Jacob's home is very small and since it has not been well maintained, mold has developed in the walls and air vents. His grandmother suspects that this is where he has picked up asthma because his breathing problems extend beyond the typical exercise-induced variety found in his suburban counterparts. He occasionally has to miss school and go to the emergency room because he becomes stricken with bouts of severe coughing and wheezing. This would not typically be of much issue, but Jacob's attention has been drifting more and more when it comes to his schoolwork and often fails to complete his makeup work. His grandparents emphasize good performance in school, as Jacob's older brother Zachary has dropped out of the eleventh grade. They spend much of their time worrying about Zachary because he has been associated with a gang and was recently caught on the street with a gun. His upcoming court date seems to have dominated home discussion lately, whether or not Jacob is around.

**Danielle**

Danielle has stepped into the role of second mother for her four younger brothers and sisters, though she is just in the seventh grade. Her roles at home include watching the children while her mother goes to her night shift job, getting them off to school, and doing chores around the house. Her father is in and out of the house, bringing with him alcohol and questionable friends. These friends have been hanging around more and more often as Danielle has matured. They make her uncomfortable and have begun to abuse her. Her mother has been twice evicted

from her home in the past five years because she struggles to find housing that she can pay for, as her income excludes her from qualification for voucher assistance. At school, Danielle has been getting into trouble with her teachers for not completing her work and for getting involved in fights with other girls. She complains that the work is boring, difficult, and too time-consuming with all of her other responsibilities at home.

These are the characters in my story. Both are members of their local Boys and Girls Club, where they have formed quality relationships with the workers and children there. I will now delve further into their lives that are filled with poverty-related stress (PRS) and I will argue that this is the primary cause for concern in such afflicted children. Without a sturdy neural base, these children are limited in how far they can go in life or even just the relative comfort with which they maneuver through the day. I will argue that this blight of PRS must be fought. It must be taken seriously and it must incite disapproval and the will to fight from those concerned with poverty everywhere. The role that BGCA can play in this battle holds a lot of potential for action.

### **I. The Boys and Girls Club of America**

The first “Boys Club” was established in 1860 by three women, who thought that boys on the streets could be doing so much more (bgca.org). Henceforth, the organization has focused on the role of character in the development of youth in America. The emphasis on character to promote the success of its members is maintained in order to support its explicit mission, which is “to enable all young people, *especially those who need us most*, to reach their full potential as productive, caring, responsible citizens” (bgca.org, emphasis added). The organization holds approximately 3,985 charters nationwide, making it one of the most prominent youth outreach

programs accessible, including 1,314 in schools, 360 in public housing, and 199 on Native American reservations (bgca.org). These chapters are concentrated in high-poverty areas. In total, the national organization serves around 4.1 million youth under 18 (Alter, 2011). Indeed, it was named the number one national youth organization by The Chronicle of Philanthropy for the 19<sup>th</sup> consecutive year (bgca.org). Because of the club's interest in the future development of its members, it serves as a viable platform for well-being.

The club's operating costs and salaries for workers are covered in several ways. The Justice Department issues an annual grant to the organization (Perry, 2010) and local clubs receive money from state governments as well (bgca.org). The club maintains a large list of corporate sponsors that often support ventures or programs of choice to which they will contribute funds. Finally, the clubs raise funds from individuals, especially notable alumni (bgca.org). Their efforts raise the national image of the club and its movement. Though four U.S. Senators raised a complaint with concern that much of the federal funding that was issued to the organization was used to heavily compensate executives, the club presented evidence that they complied with all governmental requirements associated with receiving such grants (Perry, 2010). Since then, there have been no prominent comments on how the organization spends its money, which further ratifies that it is a trustworthy resource for supporting youth development and mental health. Because BGCA receives extensive public and private funding, each club's membership fee remains exceptionally feasible (ex. BGC-Phillips County: \$5-10/year), so that all youth have an opportunity to join, regardless of financial status.

Local clubs provide basic services to their members that are of particular importance in disadvantaged areas. The clubs are intended to be safe places for children to go after school and during the summers. Employees serve as safe resources for members. This is vitally important to

children living in dangerous areas, because going home every day after school increases the risk of being affected by this violence. Whether this means physical harm due to stray gunfire, or the mental effects sustained as a result of mere exposure, these children develop a burden. BGCA can alleviate some of this by removing kids from this environment, at least some of the time. The clubs also provide lunches and/or snacks to children every day. When I was in Helena, children during the summer received a lunch that included fruit or vegetables and milk. Kids coming in after the school day at KIPP were provided with varying snacks. The option of purchasing snacks was also available. For children whose families struggle to put enough food on the table day-to-day, this is a very beneficial service that the clubs provide.

Beyond safety and nourishment, the national programs that BGCA supports and implements in its member clubs are designed to encourage participants to build character and quality functioning. Programs focus on leadership, educational attainment, the arts, recreation, and importantly, wellness. Within this category, participants cultivate self-esteem, good decision-making, responsibility, and self-sufficiency (bgca.org). These expanded services do much to foster future opportunities for participants by cultivating soft and hard skills. These initiatives are vital to facilitating the ability of clubs stay true to the organization's mission of creating character in the members served.

Many of these services are important to the promotion of mental health, which can be delineated from mental disorder because its importance to individual flourishing. It has been proposed that by encouraging flourishing, mental illness can be avoided because the mind and self are more capable of maintaining good health (Kabat-Zinn, 2011). If this idea can be conceptualized further into even more concentrated programs on flourishing, perhaps even more disorders can be headed off. Additionally, it would make sense that if this platform is already in

existence in its current state, it could be galvanized by programs geared at combating the precursors to mental illness and illness itself. Disadvantaged children that BGCA are a particularly crucial collection of members for whom such programs would really make a difference.

## **II. Poverty-related stressors and the toll they take**

Disadvantaged communities are more likely to experience traumatic events – events, more often than not, attributable to poverty and disorder. These events play regular roles in the lives of children at BGCA. We return now to Danielle and Jacob, who are no exception. Both are experiencing challenging life events that add to the baseline levels of stress that they are already enduring. This already elevated level of everyday stress comes from seven and thirteen years of stress Jacob and Danielle respectively have already experienced. Researchers have identified crucial events that can be classified as Adverse Childhood Experiences (ACEs) (Miller, Chen, & Parker, 2011). These include things like household dysfunction, abuse of any sort, and exit or social-separation events, which has been called the most severe of stressors one that can experience (Blakey, 1994). We have seen already that both children in question have dealt with a significant separation event in their lives. Jacob's parents are no longer around and Danielle's father has stopped existing as a true father figure. Danielle and Jacob join our story with a set of ACEs in their past already. They are more vulnerable to coming stressors as they grow up.

Low-income neighborhoods tend to suffer higher levels of violence than more affluent areas (Krivo & Peterson, 1999). In Jacob's neighborhood, there is a turf war between rival gangs that is fracturing the area. Residents understand the boundaries that exist between the gangs, but everyday life requires crossing these lines and thus putting lives at risk. Over the past year,



several neighbors of Jacob's were shot and a child a year or two older than him died after being caught in the crossfire. While he spends his afternoons at the Club, his grandmother knows that he is safe and she trusts leaving him there. However, when he is at home during the evenings and weekends, he is in danger.

The stress endured comes from the simple exposure to violence that Jacob experiences on a daily basis. Jacob was visibly affected by the death of his neighbor, as he refused to go outside after dark and insisted on sleeping with the light on. The sociologist Patrick Sharkey noted that local homicide plays a role in childhood shifts of attention and impulse control (2012). Homicide exposure also negatively affects performance on cognitive performance (Sharkey, 2010), which could play a role in Jacob's slipping grades. His teacher noticed his straying attention and poor test scores in the immediate aftermath of the shooting, neither of which have returned to optimal levels.

What slides past the acknowledgement of the general public and Jacob's family is mere contact with mentions and visions of violence, such as his grandparents' discussion of Zachary's court date and the bullet casings that lay in the gutter of his street. Homicide takes a toll on adults as well, as their mental condition is affected (Sharkey, 2012). Therefore, his family not only experiences regularly heightened stress responses due to the very danger that is present in their neighborhood, but the occasional traumatic event such as the injury or death of a nearby individual adds sudden shock to an already weakened system. Thus, stable mental health states are lacking in Jacob's home and are continuing to affect his development.

Danielle endures a different stressor. Because her duties at home are constantly shifting and the people in her home are always changing, she must counter the challenges associated with an unstable home life. The recent evictions of her family have kept her from really establishing a

place that she can call home and where she is comfortable. Despite her mother's efforts to keep a roof over their heads, the demographic of being a woman by itself puts her at risk of eviction yet again (Desmond, 2012). Because of this, her mother is always trying to find ways to earn more money by accepting more shifts at work. Danielle then gains more responsibilities at home caring for the younger children. She can no longer spend the long afternoons at the Club that she used to. Danielle counts down the time until the youngest one is old enough to gain membership so that she can return to her friends and activities there and escape the new danger that she is dealing with at home.

The strange men that her father brings home on occasion have started abuse her when no adults are around, often when she is home in the afternoons taking care of the younger children. Abuse during the childhood years is one of the specific ACE events researchers look for and has been attributed to later onset of mental health disorders such as depression and posttraumatic stress disorder (Miller et al., 2011; McEwen and Gianaros, 2010; Wadsworth, 2011; Nikulina, Widom, and Czaja, 2010; Gracia & Herrera, 2006). Danielle bears this burden on top of all the other responsibilities she has, and it has a similar effect as violence does on Jacob. Sudden onset stressors pile on top of chronic stress and exacerbate its effects.

A final poverty-related stressor of note affects both Jacob and Danielle, as well as their entire families. As both are living below the poverty line, financial duress creates considerable weight to bear for their families. Of primary concern is taking care of the rent, the bills, and putting food on the table. Though they are able to obtain some government assistance in the form of SNAP, both families have other financial burdens to bear. Occasionally, a bill cannot be taken care of, or in Danielle's mother's case, the rent check is not paid. The resulting consequences of utility shutoff or eviction create their own stress on top of the money worry that got them there in

the first place (Goodman, Pugach, Skolnik, and Smith, 2013). Fortunately, both families are able to pay the annual membership fee for their children to belong to the Club.

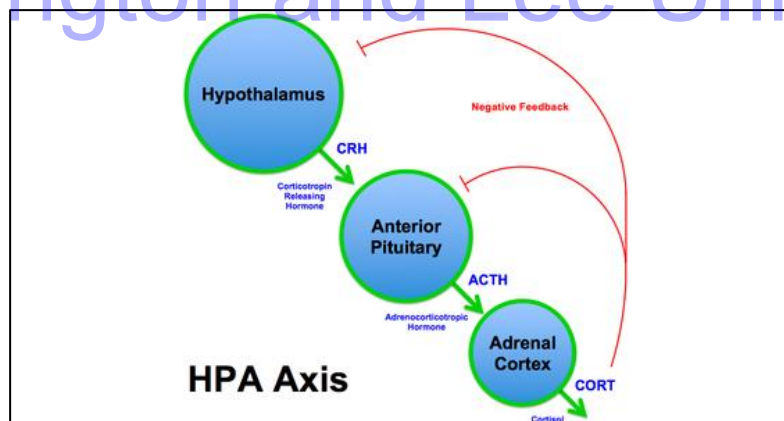
There are other stressors that contribute to PRS like neighborhood disorder, discrimination, and plain old bad luck, but these stressors I've just described bear the most weight on Jacob and Danielle and their families. This balance between recurring and isolated incidents significantly affects their functioning on the macro level, but the reasons behind those grand symptoms are explained by microscopic changes to the brain. These create the cascade of effects that lead to altered behavior and potential future mental disorder.

### **III. An introduction to allostatic load and the birth of potential mental disorders**

Biology textbooks define stress as *any* change to homeostasis, whether positive or negative. This means that major life changes such as divorce and marriage receive equal bearing when considering the stress that they generate. However, one can usually find a greater presence of negative stressors in communities of disadvantage in addition to generally positive stressors. The molecular consequences of chronic stress appear to be more worrisome than we perceive on the macro level. The body is designed to withstand and overcome the occasional threat to our personal well-being. If you register a threatening individual nearby, your body's physiological responses, including increases in heart and respiratory rate, blood pressure, and stress hormones, will engage. Acute stressors such as the dark shadow in an alley stimulate a healthy "fight-or-flight" response via the activation of the hypothalamic-pituitary-adrenal (HPA) axis (Squire, Berg, Bloom, du Lac, Ghosh, and Spitzer, 2013).

The HPA axis (Figure 1) represents a cascade of events stemming from the perception of a stressor in the environment. The brain responds by secreting cortisol-releasing hormone (CRH)

and arginine vasopressin (AVP) from the paraventricular nucleus (PVN). The presence of these hormones in the brain causes the anterior pituitary gland, which is the chief secretory gland of the endocrine system, to release adrenocorticotropin hormone (ACTH). ACTH then reaches circulation throughout the body and acts on the adrenal glands to release cortisol, the stress-related glucocorticoid in humans that triggers the stress response in the brain (Squire et al., 2008). The adrenal glands sit on top of the kidneys, so they are able to distribute cortisol with ease. The hippocampus, which is thought of as the seat of learning and memory, acts as a check on this system by shutting down the HPA axis when its activity becomes too great (Romeo et al., 2006). The HPA axis is an example of a negative feedback system. This set-up is a hallmark of biological function wherein a system is capable of stopping its action by secreting a hormone—“feeding back”—onto itself, which triggers a stop signal. This prevents the system from getting out of hand and running away from its intended function.

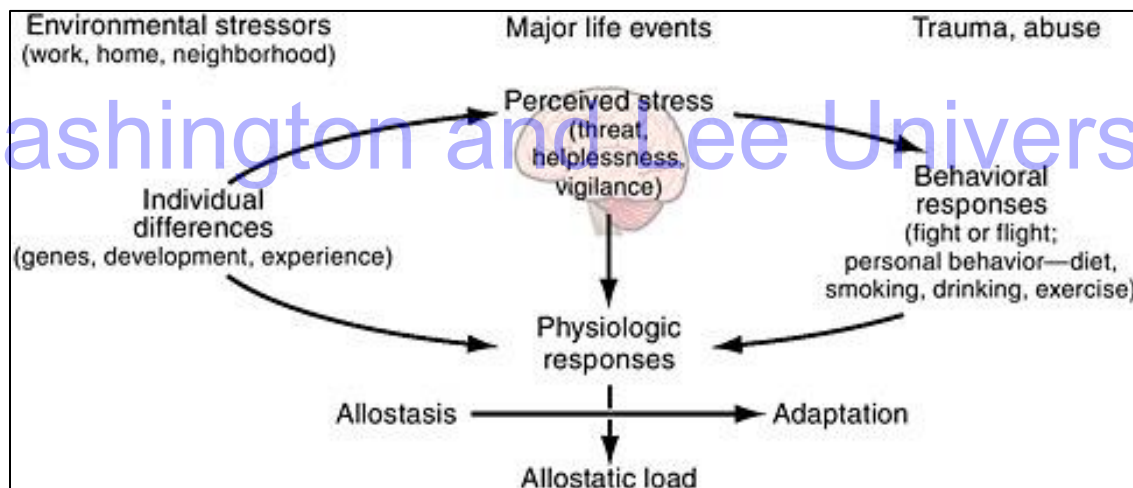


**Figure 1. Graphical representation of the HPA axis, the negative feedback loop charged with controlling the body’s stress response.**

Retrieved from: [http://en.wikipedia.org/wiki/Hypothalamic-pituitary-adrenal\\_axis](http://en.wikipedia.org/wiki/Hypothalamic-pituitary-adrenal_axis)

The constant presence of stressful stimuli, on the other hand, results in the continual activation of this system. Chronic stress is marked by the persistent action of the HPA axis and, thus, a constant presence of cortisol in the brain due to the overwhelming production of the adrenal glands. This is where the advantages of “fight-or-flight” turn detrimental. This generates

what Bruce McEwen termed *allostatic load* (2001). *Allostasis* is the state of bearing constant stress and attempting to manage it and allostatic load is the term that describes all of the stressors that come to bear on an individual (Figure 2). Robert Sapolsky's Glucocorticoid Cascade Hypothesis postulates that the downregulation of corticosteroid receptors in the hippocampus dampens the inhibition of HPA axis activity, which facilitates the continued hypersecretion of cortisol (1986). Essentially, this increasing weight, or load, of stress bears down on the brain and body systems. The brain becomes so overwhelmed with cortisol that it cannot shut down the HPA cascade because it physically does not have the capability to manage the overwhelming presence of glucocorticoids (Squire et al., 2008). The receptors used to remove cortisol from the brain are no longer of use. The HPA axis is now broken.



**Figure 2. The combination of stressors from the environment and major life events contribute to heightened levels of chronic stress. This causes the stacking effect of events on top of one another, which leads to the breakdown of the HPA axis.**

Retrieved from: [http://nap.edu/openbook.php?record\\_id=1266&page=90](http://nap.edu/openbook.php?record_id=1266&page=90)

It seems unfathomable that a young child like Jacob can bear such a break in a crucial system, but the weight that he shoulders due to his asthma and dysfunctional home is considerable. What is important to remember about this phenomenon of the broken feedback loop is that children who are growing up in poverty start the accumulation of allostatic load early

on in life. As they grow older and stress does not lessen, the breakdown of brain and body systems becomes more and more pervasive. Because of this, I think that children present the most important target age group for action and the effects of cortisol in the brain itself reinforce my thinking.

The hippocampus is perhaps one of the most prominent loci of damage caused by stress in the brain. Hippocampal functions include cognitive function and memory, so its neurological importance is relevant when considering its effects on affected individuals. The blunting of Danielle's cognitive function may inhibit her performance on an aptitude test that determines her promotion to the eighth grade—that is the real life consequence of hippocampal damage.

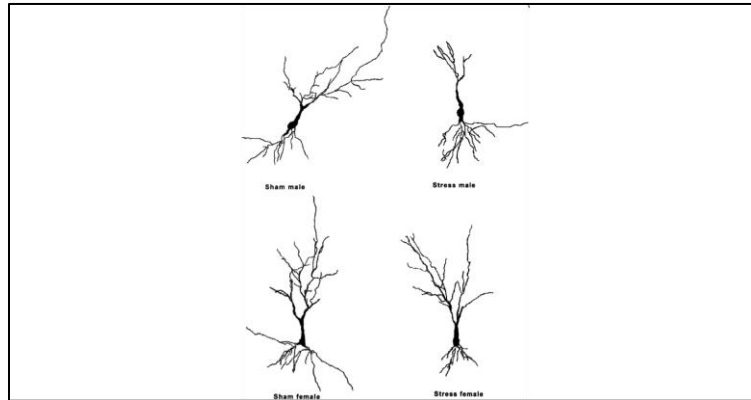
Specifically, there is a group of pyramidal neurons in the CA3 region of the hippocampus that provide integral support to the learning and memory system (Squire et al., 2008; Conrad, 2006).

CA3 pyramidal neurons do this by creating a network of synaptic connections—that is, bridges between each neuron that provides a speedy way for information to move throughout the brain.

An action potential that electrochemically represents a piece of information or instruction for the next direction to take is passed from neuron to neuron. Literally, it is an impulse that moves from reception in a neuron's dendrites through its cell body and out through its axon, which conducts the impulse to the next cell. That entire action takes a fraction of a second. The CA3 neurons serve as major purveyors of information within the hippocampus, especially when working cognitively.

These neurons possess a protective mechanism that causes the retraction of their dendrites—the receivers of action potentials—in order to avoid lethal overexposure to the neurotransmitter glutamate. Glutamate is released due to the presence of glucocorticoids such as cortisol (Conrad, 2008). We saw that cortisol is an integral part of the HPA axis and the stress

response. This is of concern to those of us considering chronic stress, because the constant presence of cortisol as a result of such stressful states may lead to the dendrites becoming unable to reassume their original position. The CA3 dendrites (Figure 3) forgo their synaptic connections in order to avoid a glutamate overdose and instead become permanently retracted. Their potential to ferry information across the brain is nearly eliminated.

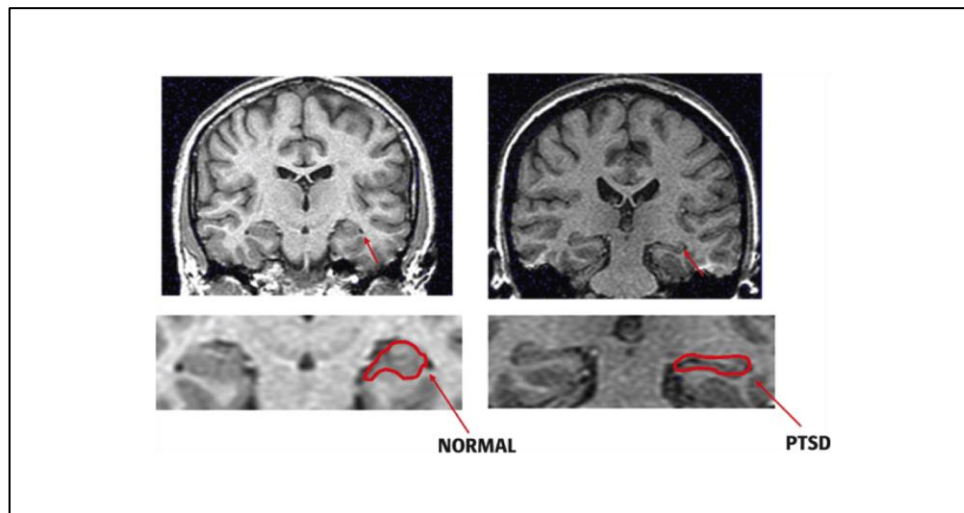


**Figure 3: Golgi-stained neurons retrieved from sham (control) and stressed rats demonstrate the effects of chronic stressing on dendritic length and branching.**

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Any number of chronically stressful situations could contribute to such a phenomenon and dull the function of the hippocampus, at least temporarily. A worrying implication of smaller hippocampal volume is the increased susceptibility to Post Traumatic Stress Disorder. People with smaller hippocampi run the risk of being more sensitive to traumatic life events, and from there, PTSD. In a study of Vietnam War veterans and their monozygotic—that is, identical—twins, it was found that those combat-exposed brothers with relatively smaller hippocampi suffered “severe, more unremitting PTSD” than those with hippocampi of regular size (Gilbertson et al., 2002). Let’s consider this in terms of those living in chronic poverty. The chronic stressors that contribute to heightened HPA axis activity may indeed lead to a reduction of hippocampal volume that is significant (Figure 4). This change in brain size leads the sufferer

to be more likely to develop PTSD. Additionally, they are also likely to suffer worse symptoms from that disorder.

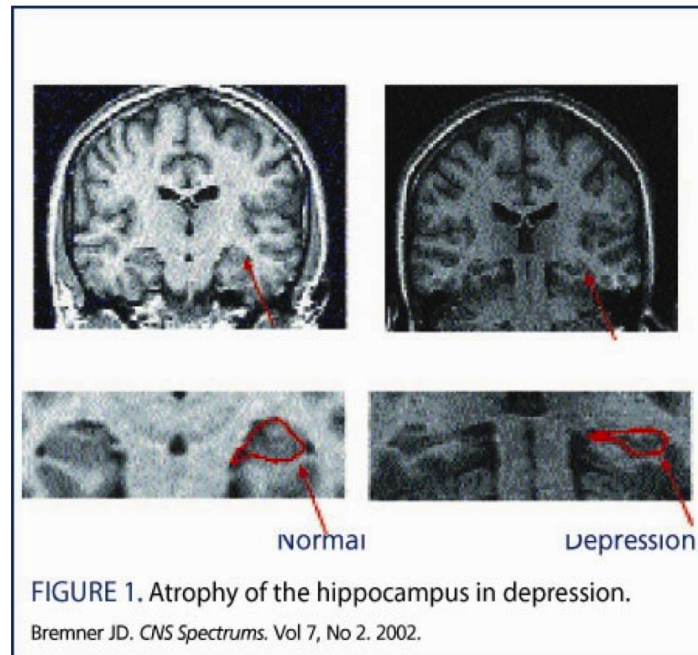


**Figure 4: Magnetic resonance imaging (MRI) scan of a healthy subject and of one with PTSD. Note the difference in hippocampal size between the two.**

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Of additional note, major depression is likely to develop following chronic stress and exposure to traumatic life events (McKernan, Dinan, and Cryan, 2009). Sufferers of major depression also exhibit hippocampal atrophy (Figure 5). In particular, the pattern of hippocampal dysfunction is sharp at the onset of a depressive state, but peters out over time. Sufferers of depression therefore exhibit a potential critical zone wherein the pattern of retraction and atrophy can be reversed. First-time sufferers of depression demonstrate such dysfunction, but those who suffer recurring episodes show actual reduction of hippocampal volume (MacQueen et al., 2003). Perhaps by combating depression early on, retraction can be turned back before severe neurological damages ensue—hence the importance of understanding the role of chronic stress in kids.

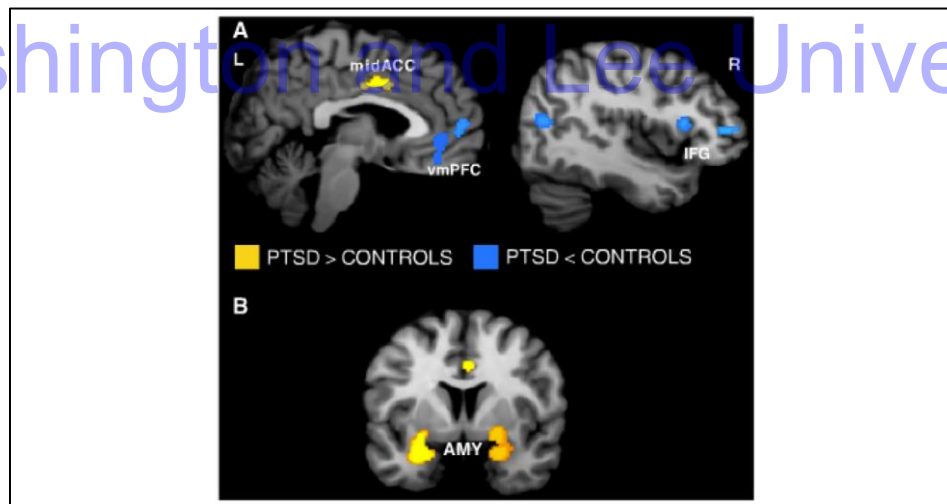




**Figure 5: MRI scan of healthy participant and one with major depression. Note the difference in hippocampal volume between the two, which is similar to the difference between healthy and PTSD.**  
Retrieved from: <http://www.primarypsychiatry.com/aspx/articledetail.aspx?articleid=2212>

Other brain structures of note to this conversation on chronic stress are the prefrontal cortex (PFC) and the amygdala. The PFC is part of the neocortex, or the “new” part of the brain that has developed as characteristically “human” (Squire et al., 2013). It is here that external information and internal knowledge are integrated to generate behavior. Damage to this cortex is considered to be a major contributor to the loss of executive decision-making. Children of disadvantage have demonstrated lower levels of executive control, which is often measured using the Stroop test—naming the color of the letters rather than the color that the letters spell out (Tough, 2012). PFC damage can be measured neurologically by loss of cortical gray matter and dendritic shortening (Drevets et al., 2010; McEwen et al., 2012). This damage is apparent in behavior as executive decision-making weakens and as short term (working) memory worsens (Squire et al., 2013; Figure 6). In terms of damage to conscious function, chronic stress does the most work on this brain area and thus bears a prominent place in our conversation.

The amygdala associates emotions with stimuli, as well as facilitating the consolidation of memories following emotional life events (Squire et al., 2013). During simulated stressful events in the lab, rats exhibit increased fear conditioning and aggressive behavior in marked activation of the amygdala (McEwen, Eiland, Hunter, and Miller, 2012). This is thought to contribute to the brain's relative susceptibility to emotionally significant events during periods of chronic stress (Conrad, 2006). Contrary to the previous two brain areas I have discussed, the amygdala undergoes hypertrophy, which causes growth in volume (McKernan et al., 2009; Figure 6). Perhaps this is why emotions become exaggerated under conditions of chronic stress. The brain area that is responsible for emotional impression is now swollen and fear and aggression are now amplified. This could be the reason why Danielle lashes out at the classmates and teachers that she perceives as a threat to her.



**Figure 6: Functional MRI scan of PTSD patient. Note the decreased PFC and increased amygdala activity in the patient.**

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So far, we have established that chronic stress contributes to changes in brain structure. The distinct changes in cortical volume and synaptic connections are linked to mental disorders. Impoverished communities display markedly higher levels of mental disorders like depression (Silver, Mulvey, and Swanson, 2002) and impoverished children tend to report higher rates of

ACEs than their more affluent peers (Miller et al., 2011). Such mental affliction negatively impacts brain function by blunting cognitive sharpness and memory. By tying together all of these factors, it becomes apparent that Jacob and Danielle are on a bad neural path. They are constantly stressed due to the conditions in which they are living and are already demonstrating problems in school involving attention and self-control. Because adolescent brains tend to be more plastic than adults, they are at greater risk to develop abnormally when exposed to chronic stress (Selemon, 2013). However, this pattern of dysfunction may potentially be reversed. We will now consider what therapies and treatments have been developed that are encouraging means of preventing or reversing the cognitive struggle that disadvantaged individuals suffer.

#### **IV. What can be done?**

The neural changes and psychological disorders that result from chronic stress are a weighty burden to bear. Fortunately, research has highlighted a few threads of treatment that have demonstrated relative success in beating back neurological changes due to the toxic threat of chronic stress. In terms of defeating depression and anxiety, pharmacology is one of the most talked about modes of action. McKernan and colleagues (2009) found that antidepressants are capable of preventing cell death and stimulating neurogenesis through a variety of mechanisms including serotonin reuptake (SSRIs). Additionally, benzodiazepines have been pinpointed as a potential class of drugs that can reduce dendritic atrophy via interactions with GABA receptors within the hippocampus, specifically those associated with the CA3 region (McEwen et al., 2000; Conrad, 2006). Not only are these neurological effects prominent, but they promote an overall greater feeling of well-being, which can alleviate the feeling of hopelessness that comes from the mental disorders the drugs are intended to treat (McKernan et al., 2009). These drug

classes are valuable routes to consider, but note that antidepressants often come with a warning label directed at young sufferers of mood disorders encouraging them to avoid or take caution using such drugs (Consumer Reports, 2011). Though pharmacological means are a viable way to address chronic mental disorder and stress, issues with accessing these drugs via authentic prescription, their associated costs, and the known risks attached to their use in adolescents excludes them from our consideration here.

Thus, we will now consider ways of defending adolescent mental health that have markedly fewer side effects and are more practical for implementation in Boys and Girls Clubs. Talk therapies, stereotyped by the image of the patient on the couch talking to the doctor, are typically associated with working through life's problems. In certain applications, this technique is effective. Traditional therapies that incorporate support and encouragement demonstrate improved self-concept over time. Cognitive behavioral therapies involve a professional teaching the patient how to defeat mental challenges through focused cognition. It has been used to assist in combating chronic fatigue, a condition that has similarities with allostatic load (de Lange et al., 2008). However, the challenge with administering these in low-income communities comes from access and affordability issues. Consistent meetings with doctors can be expensive and setting aside the time to make an office visit can be difficult, if not impossible, considering the relatively inflexible work schedules associated with low-wage jobs. Stigmas against mental health care also exist in low-income communities, as people who should seek it are frequently concerned with appearing weak (Alicea, Pardo, Conover, Gopalan, and McKay, 2012)

Mental health care such as this in low-income communities is underutilized and, when it is, frequently becomes fragmented due to interruptions in treatment on the side of the patient. Different methodologies have been employed which are intended to defeat this issue. One such

idea, the Step-Up program, involved the near constant interaction between patient and professional via text message, phone calls, or face-to-face contact (Alicea et al., 2012). This program was implemented in inner-city high schools in East Harlem and the South Bronx. It incorporates mental health care professionals and schoolteachers, who work together to identify at-risk students and to implement the treatment program, as well as develop patient accountability (Alicea et al., 2012). This develops a relationship between the two that encourages constant development and trust. Patients are more likely to succeed in the face of such treatment and doctors were able to consistently track progress and make concurrent changes to treatment as necessary (Alicea et al., 2012).

If this methodology were to be implemented in Clubs, it would have to be changed to become less expensive and more accessible. Talk therapy sessions can be upwards of \$100 and local mental health professionals can be hard to come by. However, the same ideals of encouragement, beneficial cognitive challenge, and constant access that come from examples like Step-Up should still be modeled. However, in order to reduce costs associated with hired clinical psychologists, a modified training regimen could be created to teach Club employees the knowledge and skills that allow them to serve as the mental health resource in this case. They already have established relationships with the kids that they work with. If they are presented with club members who display symptoms of mental disorder, they could be able to act as promoters of mental health that reverse the disordered path and instead forge the way to mental health.

It is valuable to consider other venues for the treatment and prevention of neural dysfunction and atrophy due to chronic stress that could be potentially implemented in Boys and Girls Clubs. A technique called neurofeedback has been developed as an active means of

reworking neural patterns. Its experimental use has resulted in school children regaining attention and drug addicts overcoming their habits (Cochran 2007, 2011; Burkett, Cubbin, Egerter, Williams, and Pamuk, 2005). What this method does is use the observation of electroencephalographic (EEG) recordings to reinforce healthy and inhibit unhealthy brain activity (Hammond, 2011). EEG records display the visual transcript of neural impulse amplitude and frequency. Similar to the seismographs used for earthquake detection and measurement, there are different ranges of EEG frequencies associated with specific states of cognition and activity.

The actual administration of this treatment involves using the brain to control a video game and then examining the actual neural impulses via EEG feedback that result from motivating the brain to think in such a way (Hammond, 2011). The idea here is that the brain can be trained to recognize exactly which thought processes contribute to productive action by associating those trains of thought with specific EEG readings. In other words, patients are able to watch their own brain waves during periods of stimulation and are encouraged to manipulate how they engage in certain activities to replicate favorable patterns.

Its real life application includes a subject pool that demonstrates somewhat remarkable results. Crack cocaine addicts who paired neurofeedback with a recovery program were more likely to remain clean over a 12-month follow-up period than those who did not, and were less likely to substitute alcohol or marijuana once off of crack (Burkett et al., 2005). Businessmen who participated in neurofeedback indicated that they felt more productive and less stressed at work (swthf.org). When neurofeedback was implemented in elementary schools, children improved in attentiveness and test scores, and showed reduction of ADHD symptoms (Cochran,

2007, 2011). This demonstrates the scope and range of individuals who can benefit from this technique.

Part of the appeal of neurofeedback comes from the sheer *coolness* or novelty of it. It is particularly appealing to children because they essentially get to play a video game; however, instead of relying on motor skill to work a controller, they can use their minds to manipulate the game. Of the therapies I have listed here, this is the one that could be the most exciting to participants if inserted, exactly as administered in a clinical setting, into clubs nationwide. This is a direct neural intervention that gets to the biological roots of the problem without negative side effects. It can be expensive, with treatments costing at least \$125/session (nchouston.org). However, in areas with multiple Boys and Girls Clubs, the cost could be reduced by purchasing a set of equipment that is accessed by many more participants than just those at a single club.

Notably, the benefits of improved participant mental capability would significantly outweigh the costs of equipment and operation when future outcomes are taken into consideration.

Finally, in addition to the new ideas I have recommended, existing programs that have been established by the national organization can be promoters of good mental health. In particular, the Triple Play program is intended to serve the mind, body, and soul of members by teaching good life habits such as proper nutrition, fitness, and behavior (bgca.org). Lacking in this program is the promotion of good mental health. Program goals promoting the ideals associated with flourishing could be incorporated with the existing programming so that all involved club members build up their mental health in such a way to combat chronic stress.

This may be the easiest method to introduce to the club, as the platform for its implementation is already in place. The specific vehicle I propose to use for mental health promotion is mindfulness. This is the core of Buddhist meditation, which Western medicine has

worked to convert it for use in a clinical setting (Kabat-Zinn, 2011). Mindfulness-based stress reduction (MBSR) is used to still the body and focus attention on the present as opposed to worrying about the past or future. The specific implementation of this practice comes from using audio recordings once a week to teach participants how to meditate, and the initial object of focus is on something small and more skillful, such as eating (Kabat-Zinn, 2011). Focus is then moved to larger aspects and eventually surrounds all thought and emotion—Jon Kabat-Zinn says that it is the awareness of everyday life that marks true meditation.

Though it is often difficult to get kids to focus on one thing at a time, it can be accomplished. This summer in Phillips County, the Club began to offer yoga in the afternoons to interested children. While some kids were easily distracted, others took that time to be quiet and focus on learning a new skill. If MBSR is carefully integrated into Triple Play as another core aspect of that program, children can acquire the skill of mindfulness to take forward as they grow. Though the children may not recognize it, MBSR is actually taking their minds off of the stressful things they experience at home and preventing them from dwelling on difficult experiences. This lowers their levels of chronic stress and may indeed reverse the patterns of neural damage that can result from such stress.

Thus, we see that a multitude of ways exists to prevent disadvantaged children from suffering the detrimental future effects of chronic stress. Though we can effectively eliminate pharmacology from potential roles that BGCA can play, other methods arise. Talk therapy, neurofeedback, and meditation all lack negative side effects and feature elements of their methodology that can be selected for use by Club leaders. I think that the affirmed positives of accountability and constant presence given by adults in Clubs and derived from methods of talk therapy like Step-Up is something that is innate to the organization and can be used to encourage



mental health. Specific programs that use neurofeedback and meditation can be introduced with the direct intent of reversing patterns of neurodegeneration and mental illness that result from chronic stress.

## **V. Why should action be taken?**

Many who would read this paper are sure to doubt – or, at least, question – the necessity of enacting mental health programs for youth; furthermore, they certainly may wonder why BGCA is the ideal vehicle of choice for this action. The first reason to foster mental health in children is because it promotes positive outcomes in the future. Quality mental function is essential to striving towards the attainment of dreams and goals such as higher education and quality employment. If we ascribe to the theories of philosopher John Rawls, then we should agree with his thinking that just courses of action encourage the pursuit of fair equality of opportunity (Daniels). By this, I mean that the proper outcome of decisions made propagates opportunity. To apply this argument, the just provision of mental health practices to Jacob and Danielle will facilitate their pursuit of opportunities in life that are available to them. They will not be downtrodden by poor mental function; rather, they will exhibit strength in their cognitive abilities. Therefore, they have the ability to pursue good grades or functional networks that push them further toward success.

As I have explained, poor cognitive ability that results from chronic stress negatively affects educational outcomes due to impacted learning and memory centers in the brain. Additionally, chronic stress affects the brain center of executive control. Damage here results in questionable decision-making and behavior, and can play a negative role in relationship maintenance with friends, family, and acquaintances. Here is my second reason for why

maintaining mental function in youth is important: without it, educational and social prospects may dim and eventually extinguish, if the problem runs rampant enough. Why should we allow this to happen if the originating issue is beyond the control of the individual? Again, if we believe in justice, we should be vitally concerned with the ability of these persons to maintain such prospects so that they may pursue the opportunities made available to them.

Amartya Sen writes about capability as it involves advantage. Sen is concerned, in particular, with the ability of a particular person to achieve certain functionings in their life that will allow them to enjoy social and individual advantage (Sen, 1993). A point of interest is that the freedom of well-being that comes from the ability to choose one's potential well-being within his own capability set—essentially, an individual can use the abilities that are available to him to choose the path of his well-being (Sen, 1993). In application, when Jacob is provided with a set of capabilities through Club programming to increase his happiness and decrease his stress, he is likely to pursue a greater sense of well-being. This wellness will continue to serve him in the future due to his strengthened mental state and sense of self.

Finally, the facilitation of good mental health in today's youth is setting the precedent for generations to come. If we bolster the attainment of health now, not only will the population be healthier as a whole, but good health and health maintenance will also be passed down to their children. Do we not desire a healthy, well-functioning, and productive society as a whole? If positive ends are desired, they should be pursued. There is no interference of poor mental health to keep individuals from attaining their best. The argument can be moved onto issues of motivation and the like, but at least the neural playing field has been leveled. Every child can pursue their dreams, if they so choose.

## Conclusion

Boys and Girls Clubs encourage their members to “Be Great.” Without good mental health, this is a goal that is difficult to maintain. The elements of a childhood spent in poverty join together to be a drain on the brain that impacts the future prospects of the child in question. Physically, brains that are broken down take up less space and function with less efficiency than healthy ones. Mentally, affected individuals change who they are because they suffer mood disorders and it changes who they are. This is why it is crucial to intercede in populations that are at the most risk, such as the membership of BGAC.

I propose that BGCA adopt a method for targeting participants who are particularly at risk of suffering from chronic stress that is created by child psychologists who are familiar with the telltale signs of such stress. In addition, club professionals would undergo training to teach them how to identify children undergoing stress by using the guidelines established by the national organization. They will serve as sources of encouragement and positive accountability that ensure that children continue to develop positively as they undergo mental health intervention.

By my estimation, this intervention should come in the form of meditation or neurofeedback, though implementing both would only serve to reinforce the child’s opportunity to defeat neurodegeneration and poor mental function. For both, I suggest that pilot programs be used to test their viability in clubs within a variety of environments and to identify any weaknesses that could be strengthened in widespread usage. If these programs reinforce their effectiveness, campaigns to fund nationwide implementation may begin and from there, the Club can serve as a mental health service to vulnerable children who can benefit drastically from their presence.

Through programs already in existence and also through programs that could be implemented in the future, change can be enacted on behalf of these children. Jacob and Danielle may still have to endure the stressors that come paired with an adolescence spent in poverty. However, with the help of programs that are in existence to combat neurodegeneration, chronic stress, and mental disorder, they might reverse the poor neural path they are following and instead develop strong neural bases that can withstand the extreme pressures of stress. They might then develop into adults in pursuit of opportunities presented to them and, beyond that, a life that can potentially overcome disadvantage and inequality in the future.

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