

Maladaptive Stress Response and Intergenerational Trauma



BIG SONIA

SURVIVOR. GRANDMA. DIVA.



INFLATABLE FILM & ARGOT PICTURES PRESENTS A FILM BY LEAH WARSHAWSKI & TODD SOLIDAY

IN ASSOCIATION WITH SIFF / TRUE PRODUCTIONS & WOMEN YOU SHOULD FUND & BYEN | DIRECTED BY LEAH WARSHAWSKI & TODD SOLIDAY | PRODUCED BY LEAH WARSHAWSKI | ORIGINAL SCORE BY BRAD ANTHONY LAINA | EXECUTIVE PRODUCER TOM WRIGHT
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JOURNEYS IN FILM
educating for global understanding



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About *Journeys in Film*

Teaching Core Curriculum with Film

Founded in 2003, Journeys in Film operates on the belief that teaching with film has the power to help our next generation gain a richer understanding of the diverse and complex world in which we live. Our goal is to help students recognize cultural biases and racism (including their own), cultivate human empathy and compassion, develop a deeper knowledge of universal issues and current challenges, and encourage civic engagement as competent world citizens.

Award-winning feature films and documentaries act as springboards for lesson plans in subjects ranging from math, science, language arts, and social studies to other topics that have become critical for students to learn about: human rights, environmental sustainability, poverty, hunger, global health, diversity, gender, and immigration. Prominent educators on our team consult with filmmakers and cultural specialists in the development of curriculum guides, each one dedicated to an in-depth exploration of the culture and issues depicted in a specific film. The guides complement teachers' existing lesson plans and meet mandated curricular requirements, providing teachers with an innovative way to fulfill their school districts' standards-based goals.

We prepare teachers to use film effectively in the classroom through customized professional development workshops and online webinars.

Journeys in Film is an organization with proven results. Individual teachers worldwide and entire school districts in the U.S. have employed our interdisciplinary film-based curricula.

- Millions of students have learned about our multicultural world through Journeys in Film's middle school series, based on films from Iran, South Africa, South Korea, the Maori of New Zealand, Tibet, India, China and Saudi Arabia.
- Students are becoming inspired by the courageous contemporary and historical figures portrayed in films such as *Hidden Figures*, *The Post*, and *He Named Me Malala*.
- Films like *Schindler's List*, *Defiant Requiem*, and *Big Sonia* not only teach about the Holocaust, but also demonstrate how one person can make a difference in the lives of others.
- Teachers are using our outstanding documentary series to teach about historical events, American prison systems, the critical role of photojournalists, and positive psychology.

Journeys in Film guides help teachers integrate these films into their classrooms, examining complex issues, encouraging students to be active rather than passive viewers, and maximizing the power of film to enhance critical thinking skills and to meet the Common Core Standards.

Why teach with film?

Today's students are the most visually literate generation in history. According to the Social Science Research Network, 65% of people are primarily visual learners. Today's students are more affected by media than ever before. They seldom need to be coaxed into watching films; after all, everyone loves a good movie. Through their own desire to be entertained, students become captivated learners.

Films have long been overlooked as an educational tool. We teach our students literature that originates from many places around the world, but we tend to forget that what often spurs the imagination is both visual and auditory. Film, which in minutes can be screened and beamed to every country in the world, is this extraordinary educational tool that goes right into the heart of different cultures. One of its strengths lies in its ability to present information rapidly and convey atmosphere, making that world come to life. It allows viewers to "feel" and thereby develop empathy skills, thus potentially increasing the likelihood of students connecting personally to the content, which in turn helps with understanding and analyzing concepts.

In teaching with films, we encourage our students to be critical consumers of what they see and teach them to consider the perspective of the filmmaker and challenge generalizations. Analyzing film and media is an empowering skill and one that is increasingly important for young people. To this end, it is imperative to integrate the film into a larger lesson, using it as a launching pad for historical and cultural exploration, as well as an examination of narrative perspective, character development, and media literacy.

In one 7th grade student's words, "I like Journeys in Film because it just doesn't teach you like a book. It's better when you can actually see it happening. Films give a first-hand view of places and stories."

Journeys in Film is a 501(c)(3) nonprofit organization.

Directors' Statement



Sometimes the really big stories come from the smallest places. As filmmakers, we travel all over the world chasing stories about people making an impact. In making *Big Sonia*, we realized some of those stories are right in our own backyards and that you don't have to go far to come home.



When we began filming in 2011, Leah's grandmother Sonia Warshawski was 85 years old, and we had just started dating. On the heels of our last feature documentary, *Finding Hillywood*, our intention was to make

a short film about Sonia's small tailoring shop, John's Tailoring, and the steady stream of loyal customers that came in for the conversation as much as for tailoring. Sonia's extended family had joked for years about using the shop as the subject of a reality show. We'd all long witnessed Sonia holding court from her counter-top podium, doling out marriage advice, recommending books about WWII to teenagers, and doing interviews for local news stations. We knew Sonia had a gift for making anyone in her shop feel like the most important person in the world. And we knew the shop was her own refuge from the horrors of her past as a teenage Holocaust survivor.

However, once we started filming for our short, our anticipated *weeks* of production turned into *months*. It soon became apparent to us that customers were drawn to John's Tailoring not just for gossip and a bit of human connection, but for their

own redemption. They came in because Sonia sets a glowing example of how an ordinary person can move past deep personal and historical trauma to find peace and heal others.

Still, our time with Sonia revealed her complex side. Her interactions with customers — many of whom she sees as her best friends — are very different from her relationships with her own family, which have often been tense and tender, overshadowed by decades of survivor's guilt and post-traumatic stress. During the course of production, we began to perceive the trauma suffered not just by Sonia, but by my aunts and father, who had survived their own brand of trauma in a household gripped by grief and loss. We also began to see the ways in which Sonia's pain had branded Leah, as a third-generation survivor, the grandchild of refugees, and the child of a parent who'd long grappled with his own mother's distance and pain.

Then, suddenly, the plot turned. Sonia got an eviction notice for John's Tailoring, her home-away-from-home for 35 years. Her panic was palpable. And while we knew Sonia would survive the physical loss of her shop, we were also compelled by her store's powerfully symbolic role as a forum for human connection--a stronghold and a place of safety for Sonia and so many others. We continued to fundraise and film, and our "short" turned into a feature. Oh, and somehow in the middle of it all, we got married. The store was now woven into the fabric of our lives, too.

Despite featuring a Holocaust survivor, *Big Sonia* is not a "Jewish movie." And it's not a "Holocaust movie." More than anything, *Big Sonia* is a story about humanity: our human potential to overcome even the worst of the world's sins and atrocities with love, compassion and understanding. It's a tale about survival, yes, but not only the heroic kind—the kind

that was forced upon Sonia and is forced upon other victims of genocide and hatred. It's also about the everyday acts of survival we must all undertake just to be human: to overlook slights and disappointments, to rise above bigotry and ignorance and self-doubt, to push for peace and forgiveness even when our instincts urge retribution or bitterness.

We premiered *Big Sonia* at bi-coastal film festivals the day after the 2016 presidential election. At the time, we had no way of knowing that the themes of our film would find new relevance in our current political moment. Sonia's life story has been called an antidote to the hate and fear we see around us, and we hope that is true. But the real lesson of *Big Sonia* is that we've *all* got the capacity to combat the worst humanity has to offer. Like Sonia, we all have the opportunity to create for others the places of comfort and connection where survival takes root.

With love and gratitude,

Leah Warshawski & Todd Soliday

Co-Directors

Big Sonia

Introducing *Big Sonia*

Teaching about the Holocaust is essential, and yet recent statistics show that many Americans simply do not know about it.¹ Sometimes the overwhelming numbers that died as a result of Hitler's rise to power is hard for the human mind to comprehend. In this film, however, the viewer learns about the Holocaust through the eyes of one person who lived through it and her family, who were forever shaped by the events of the 1940s.

Teenage Sonia Warshawski was living with her mother, father, sister, and brother in Międzyrzec, Poland, when the German army invaded. Her father and brother were shot, her sister disappeared and her survival was uncertain, and Sonia and her mother were forced to work as slave laborers until the day they were deported to the Majdanek death camp. After her mother died in the gas chamber, Sonia was sent first to Auschwitz-Birkenau and then to Bergen-Belsen, where she was finally liberated as the war drew to a close.

This film by her granddaughter gives students insight into both the horrors of the Holocaust as a whole and the profound effect that it had on one individual and succeeding generations. Now in her nineties, Sonia is a vibrant, busy woman who loves interacting with family and with the customers who come to her tailor shop. She speaks to school groups, prison inmates, and others about her experiences. Her story is one of unimaginable suffering, but also of hope, of resilience, and of a refusal to let herself hate. Classes viewing this film will have a memorable experience, a blend of factual knowledge of history and the personal story of a remarkable woman.

Film credits:

DIRECTORS: Leah Warshawski & Todd Soliday

WRITTEN BY: Eric Frith

PRODUCER: Leah Warshawski

EXECUTIVE PRODUCERS: Dwayne J. Clark, Thomas Lee Wright

CO-EXECUTIVE PRODUCERS: Claude and Bertina Thau,
Ni'Coel Stark

MUSIC: Brad Anthony Laina

CINEMATOGRAPHY: Todd Soliday

¹ <https://www.nbcnews.com/news/us-news/study-shows-americans-are-forgetting-about-holocaust-n865396>

Maladaptive Stress Response and Intergenerational Trauma

Enduring Understandings

- The stress response is an adaptive reaction that evolved to facilitate the continuation of the species.
- A maladaptive stress response can impact the physical and psychological health of trauma survivors as well as the offspring of trauma survivors.
- Intergenerational trauma occurs when the effects of trauma are not resolved in one generation and are passed onto the next.

Essential Questions

- What is the stress response and how does it ensure the survival of a species?
- What is trauma and how is it related to a maladaptive stress response or post-traumatic stress disorder (PTSD)?
- Can the effects of trauma be passed on from one generation to the next?

Notes to the Teacher

In her Ted-X video “How Do You Cope with the Trauma You Didn’t Experience?” at <https://www.youtube.com/watch?v=OkAMHQhabkU>, director Leah Warshawski considers how the traumatic events that shaped her grandmother’s early life have left their mark, not only on Sonia Warshawski, but on her two daughters Regina and Debbie, her son Morrie, and her grandchildren. Such intergenerational trauma is a major theme of the film *Big Sonia*. This lesson explores how trauma and the stress it produces can affect us all.

The lesson should be begun before showing the film *Big Sonia*. Parts 1 and 2 give students the opportunity to see several videos and read an online article to understand the relevant concepts of stress response, adverse childhood experiences, and intergenerational trauma. In Part 3, students apply what they have learned to an analysis of intergenerational trauma in personalities that appear in the film *Big Sonia*, which offers insights into Holocaust survivor Sonia Warshawski and her relationships with her children and grandchildren.

A note of warning: Before you begin, prepare for the possibility that a discussion on trauma may activate strong emotions for some of your students. If there is a possibility of toxic stress or trauma in the background of any of your students, you should warn them that this lesson may be difficult and have options for students to work on an alternative assignment outside of the classroom or give them permission to leave if the material proves distressing. It is also important that you have a counselor and resources available in the event that they are needed.

What is the stress response and how does it ensure the survival of a species?

In creating *Big Sonia*, Leah Warshawski, the filmmaker and granddaughter of a Holocaust survivor, came to realize that she mirrors the post-traumatic characteristics of her grandmother Sonia. As the director delved deeper into the life and experiences of her grandmother, intense conversations with family members revealed the effects of toxic stress and emotional pain carried forward with each generation. Within this journey, she discovered the reality of intergenerational trauma and the fact that even though one may not physically experience trauma, maladaptive stress responses of the past very much affect the future.

When human beings have all of the resources needed to maintain bodily systems, they are in a state called *homeostasis*. Homeostasis is often referred to as balance or equilibrium. During homeostasis, various chemicals including epinephrine, norepinephrine and cortisol are available at low levels throughout the brain and body. Levels of these chemicals increase when there is a real or perceived threat to homeostasis, known to most people as stress. The detection and elimination or mitigation of threats are essential for human survival and the continued propagation of the species. (Consider what happens if human beings are unresponsive when they see large animals or city buses moving rapidly toward them.) For this reason, human beings evolved with a stress response, that is, a physiological, behavioral and cognitive mechanism to reestablish homeostasis.

The perception and intensity of threat or the interpretation that something is indeed a stress is entirely subjective and based upon previous experiences, coping mechanisms, and social support available to the individual. The perception of

a threat occurs in an area of the brain called the *amygdala*. Immediately, the amygdala sends a signal to another part of the brain called the *hypothalamus* and the stress response is activated. The hypothalamus partners with the *pituitary gland* and the *adrenal gland* to facilitate and monitor the body's response to stress. Together these areas are referred to as the hypothalamic-pituitary-adrenal axis (HPA axis).

The stress response occurs in two stages: the first, “fight or flight,” is a fast response and the second, the “general adaptation syndrome,” is slow. The “fight or flight” response is the result of communication between the hypothalamus, the anterior pituitary gland and adrenal medulla where norepinephrine and epinephrine are released. Norepinephrine and epinephrine help with the initial reaction to a stressor by providing energy and increasing attention. The “general adaptation syndrome” consists of communication between the hypothalamus, anterior pituitary gland and adrenal cortex resulting in the release of cortisol or stress hormone. Cortisol functions to reduce inflammation, provide energy and shut down the stress response once the threat has diminished.

Not all environmental changes are interpreted as threatening. However, any environmental change that is interpreted as threatening will result in the activation of the stress response. Additionally, because our brain's perception seems to be reality, simply the thought of the threatening event is enough to activate the stress response, even while a person is physically safe. To that end, a maladaptive stress response occurs when the stress response is triggered too often or is the result of trauma.

What is trauma and how is it related to a maladaptive stress response or post-traumatic stress disorder (PTSD)?

Trauma is a deeply distressing or disturbing experience. Trauma may lead to extreme stress in which one lacks the ability to cope and to process the emotional toll of the experience. Examples of experiences that may result in trauma include real or perceived life-threatening event, sexual assault, and the accidental or violent loss of a child, family member or friend. Although it is normal to experience certain temporary after-effects of stress such as fatigue, insomnia, headaches, muscle tension, digestive upset, moodiness, and mild anxiety, trauma leaves long-term, even life-long physical and emotional consequences and often results in a diagnosis of Post-Traumatic Stress Disorder (PTSD). Individuals with PTSD experience psychological and physical symptoms such as hypervigilance, extreme or exaggerated responses to minor stimuli, flashbacks or nightmares of the traumatic event, extreme emotion when being reminded of the trauma, or cardiovascular disease, gastrointestinal problems, and other inflammatory disorders.

Can the effects of trauma be passed on from one generation to the next?

These maladaptive responses to stress and trauma do not stop with the individual who experiences the stress or trauma. There is research that suggests that the psychological impact of trauma, specifically the development of PTSD in a trauma survivor, has the capacity to impact the expression of genes in offspring. To understand this further, it is important to understand something about genes. Genes hold information that, when activated, determines individual characteristics.

Some characteristics are the result of a single gene, for example, the ability to roll one's tongue. Other characteristics such as height and eye color are polygenic, that is, they are the result of multiple genes working together. Genes are not the sole determiners of who we become and how we develop. There are chemical compounds located above the gene called the epigenome and when the epigenome interacts with the environment, genes can be activated or silenced. Think of the keys on a piano as genes and the hands that play the keys as the epigenome. One study of Holocaust survivors with PTSD illustrates potential epigenetic effects. Specifically, the gene that helps to regulate cortisol in offspring has epigenetic markers such that there are higher levels of circulating cortisol compared to the offspring of parents who were not subjected to the Holocaust or have PTSD.¹

In comparison to the limited human research on the relationship between trauma and gene expression is the research on Adverse Childhood Experiences or ACEs. ACEs are traumatic experiences in a person's life that occur before the age of 18 and that the person remembers as an adult. In 1998, a scientist at the Centers for Disease Control and Prevention (CDC) and a physician who worked for Kaiser Permanente investigated the relationship between ACEs and negative outcomes on social relationships as well as psychological and physiological health in adulthood. Not only did the researchers confirm a relationship between ACEs and negative outcomes on social relationships as well as psychological and physiological health in adulthood, but they found that, as the number of ACEs experienced increased,

¹ Yehuda, R., Daskalakis, N. P., Lehrner, A., Desarnaud, F., Bader, H. N., et al. (2014). Influences of maternal and paternal PTSD on epigenetic regulation of the glucocorticoid receptor gene in Holocaust survivor offspring. *American Journal of Psychiatry*, 171(8), 872-880.

so did the negative outcomes on social relationships and psychological and physiological health in adulthood.²

In conclusion, it appears as though there are multiple mechanisms of action in which trauma can be carried on through generations whether through epigenetic markers for depression and anxiety in offspring or the perpetuation of toxic stress and trauma experienced by the children of trauma survivors.

For more information, see <https://www.cdc.gov/vitalsigns/aces/>.

COMMON CORE STANDARDS ADDRESSED BY THIS LESSON

CCSS.ELA-LITERACY.CCRA.R.1

Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCSS.ELA-LITERACY.CCRA.R.3

Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

CCSS.ELA-LITERACY.CCRA.R.7

Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

CCSS.ELA-LITERACY.RST.11-12.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

² Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*, 14(4), 245-258.

Duration of Lesson

4 or 5 class periods

Assessments

Whole-class discussion

Group discussion

Completion of **HANDOUT 1: THE STRESS RESPONSE**
and **HANDOUT 3: INTERGENERATIONAL TRAUMA**

Materials

Internet access for watching the following videos:

- “How Stress Affects Your Body,”
<https://www.youtube.com/watch?v=v-t1Z5-oPtU>
- “ACEs Primer” <https://www.youtube.com/watch?v=ccKFkcfXx-c&t=2s>
- “Study finds trauma effects may linger in body chemistry of next generation” <https://www.pbs.org/newshour/show/study-finds-ptsd-effects-may-linger-body-chemistry-next-generation>

Photocopies of **HANDOUT 1: THE STRESS RESPONSE**

Internet access for students to read “An Unhealthy Dose of Stress” at <https://swmnelca.org/wp-content/uploads/2018/08/Unhealthy-Dose-of-Stress.pdf>.

Photocopies of **HANDOUT 2: GLOSSARY**

Photocopies of **HANDOUT 3: INTERGENERATIONAL TRAUMA**

Procedure

Part One: Preparation

1. On the board write, “Imagine that you have to give a speech to the entire student body and this really stresses you out. Describe in detail the physical reactions and feelings this experience would evoke.” Give students time to reflect in writing.
2. Ask students to volunteer to describe what they have written. List descriptions like “cheeks feel hot” and “racing pulse” on the board.
3. Next, share the Ted Ed video “How Stress Affects Your Body” about the physiological process that occurs during stress and how it impacts health at <https://www.youtube.com/watch?v=v-t1Z5-oPtU>. Ask students to match up the descriptions on the board to the steps in the stress response.
4. Following this video, lead a discussion about the purpose of the stress response. Emphasize specifically that the stress response exists to notify us when there is a change in our environment that is threatening and to get us to safety. Make it clear that without the stress response the human species would not survive.
5. Conclude the discussion by making a connection between the survival of the species and physiological processes and their relationship to the stress examples provided at the beginning of the lesson.
6. Explain to students that they are going to study the effect of childhood trauma on stress and adult life. Invite students to tell you if at any time they feel this is too difficult and explain that you will give an alternate assignment.

Part Two: Adverse Childhood Experiences

1. Introduce the concept of Adverse Childhood Experiences with the YouTube video “ACEs Primer” at <https://www.youtube.com/watch?v=ccKFkcfXx-c&t=2s> and explain that the class will now dive deeper into what happens developmentally when a child experiences trauma or toxic stress. Discuss insights and surprises from the video.
2. Next, have students access, read, and take notes on the article “An Unhealthy Dose of Stress” from the Center for Youth Wellness at <https://swmnelca.org/wp-content/uploads/2018/08/Unhealthy-Dose-of-Stress.pdf>. Also pass out **HANDOUT 1: THE STRESS RESPONSE** and give students a few minutes to work individually or with a partner to order the events in the correct sequence after they have read the article.
3. Once work has been completed, review the correct answers for the handout. (The correct order should be 4-6-2-1-5-7-3.) Take the opportunity to review terminology. See **HANDOUT 2**, and, if you wish, distribute it to the class.
4. Conclude this section by asking students to discuss “Sasha” from the Center for Youth Wellness article in small groups. What does Sasha’s future look like and what do students believe may happen if/when she has her own children? What types of ACEs might her children experience if she doesn’t resolve her own traumatic experiences? Have students share their hypotheses as an introduction to the concept of Intergenerational Trauma.

Part Three: Intergenerational Trauma

1. Introduce the secondary mechanism for Intergenerational Trauma by playing the PBS Newshour clip “Study finds trauma effects may linger in body chemistry of next generation” at <https://www.pbs.org/newshour/show/study-finds-ptsd-effects-may-linger-body-chemistry-next-generation>.
2. Discuss the clip, making sure students understand that in addition to the toxic stress experienced by being a child of a trauma survivor, offspring may also “receive” changes to certain genes, increasing the odds of having anxiety and depression.
3. Pass out **HANDOUT 3: INTERGENERATIONAL TRAUMA** and state that the class is going to apply all that they’ve learned about the stress response, ACEs, and Intergenerational Trauma to the film *Big Sonia*. Explain the directions and ask students to complete the worksheet as they watch the film but save the questions for homework.
4. Show the film, pausing a few minutes before the end of the class period for students to complete their notes.
5. Once they have finished the film, have them complete **HANDOUT 3: INTERGENERATIONAL TRAUMA** (in class or for homework).
6. Collect their work and discuss their answers, using the suggested answers on **TEACHER RESOURCE 1** as a guide. Remember that answers may vary. Be sure to focus on the questions at the end pertaining to cultural groups and communities that share a history of oppression, victimization, or massive group trauma exposure. Some examples are:

Lesson

(PSYCHOLOGY, HUMAN DEVELOPMENT)



- A.** African Americans (slavery and subsequent institutional racism)
- B.** American and Canadian First Nations indigenous peoples (genocide, forced boarding school attendance and removal from family and community)
- C.** Armenians (genocide)
- D.** Black South Africans (apartheid)
- E.** Japanese Americans (survivors of internment camps)
- F.** More recent examples such as Syrian and South and Central American refugees.

Ask students what we can learn from survivors. How can we break the cycle of Intergenerational Trauma?

- 7.** End the lesson on a positive note touching on the subject of resilience. Have students brainstorm and list resilience-building resources and interventions. (You may wish to have a guidance counselor team with you for this discussion; at the least, have school and local resource information available.)
- 8.** In closing, ask students if Sonia from the film or Sasha from the reading had been given such resources, do they think the effects of their trauma would have been passed on to the next generation?

**Handout 1**

Steps in the Stress Response

Directions:

What is the order in which events occur when someone is stressed? Read all the elements in the list below. Then place the correct number beside each step in the stress response.

- _____ 1. The pituitary gland sends a message to the adrenal cortex and cortisol is released.
- _____ 2. The hypothalamus releases hormones to trigger the pituitary gland.
- _____ 3. The dog's owner appears, yells its name, and you realize the threat is over. Cortisol now turns off the stress response, helping your body calm down.
- _____ 4. You're walking home from school when a large and unrestrained dog races toward you.
- _____ 5. The pituitary gland sends a message to the adrenal medulla and epinephrine/adrenaline and norepinephrine/noradrenaline are released.
- _____ 6. Your amygdala reacts to the threat by sending a message to the hypothalamus.
- _____ 7. You react to the threat by an increase in heart rate and your pupils dilating.



Handout 2 ► P. 1

Glossary

adrenal cortex	Located along the outside of the adrenal gland and mediates the stress response by producing cortisol or stress hormone.
adrenal glands	Small glands located on the top of each kidney that help the body respond to stress by producing cortisol, norepinephrine (noradrenaline) and epinephrine (adrenaline)
adrenal medulla	Located in the inner part of the adrenal gland and mediates the fast stress response (fight or flight) by producing norepinephrine (noradrenaline) and epinephrine (adrenaline).
adverse childhood experiences (ACEs)	Traumatic experiences that can have a profound effect on a child's developing brain and body with lasting impacts on a person's health throughout a lifespan. There are ten recognized ACEs, which fall into three types—abuse, neglect, and household dysfunction. ¹
amygdala	Two structures located close to the hippocampus in the frontal portion of each temporal lobe sound the alarm to the hypothalamus when a stressor is detected.
cellular plasticity	The ability of cells to change their structure or function.
cortisol	A hormone often referred to as stress hormone whose effects include increased blood pressure and blood sugar and regulation of the body's metabolism and immune response.
epigenome	A second set of instructions interacting with DNA that activate or suppress the expression of particular genes.
epinephrine/adrenaline	A hormone produced by the adrenal medulla to mediate the fast portion of the stress response or fight or flight.
fight or flight	The initial and fast reaction to a stressor wherein the adrenal medulla releases norepinephrine (noradrenaline) and epinephrine (adrenaline) to increase energy and attention during the initial processing of stress. Analogous to the alarm stage of the general adaptation syndrome.
general adaptation syndrome	The slower response to stress occurring in three stages wherein cortisol or stress hormone is produced from the adrenal cortex to provide energy and reduce inflammation. The first stage or alarm stage is analogous to the fight or flight response. The second stage is resistance and the third is exhaustion.

¹ Centers for Disease Control and Prevention, Adverse Childhood Experiences, (Apr. 1, 2016), available at <https://www.cdc.gov/violenceprevention/acestudy/index.html>

Handout 2 ► P. 2

Glossary

genes/genome	Contains the unique list of genetic instructions stored in the sequence of base pairs of DNA.
hippocampus	An area of the brain responsible for memory processing, learning and aspects of regulating the stress response.
homeostasis	When a living organism has all resources necessary to maintain bodily systems, often referred to as balance or equilibrium.
hypothalamic-pituitary-adrenal axis	The central stress response system connecting the brain with the entire body via hormones released into the blood.
hypothalamus	An area of the brain with many functions one of which is to control and mediate the stress response by connecting the nervous system to the endocrine system via the pituitary gland. This connection to the endocrine system allows for a total body response to stress.
intergenerational trauma	Also referred to as transgenerational or historical trauma is the theory that trauma when experienced by one generation is transferred to future generations through behavior via the effects of post-traumatic stress disorder or complex post-traumatic stress disorder and/or genetics via epigenetic mechanisms.
intervention	Action taken by caregiver, teacher or community to stop or reduce the effects of adverse experiences and increase resilience.
maladaptive or toxic stress:	Extreme, frequent or extended activation of the body's stress response without the buffering presence of support. ²
neuroplasticity	The process by which our brains are shaped by our experiences.
norepinephrine/noradrenaline	A hormone produced by the adrenal medulla to mediate the fast portion of the stress response or fight or flight.
pituitary gland	An area of the brain with many functions, one of which is to connect the nervous system (hypothalamus) with the endocrine system (adrenal glands) during the stress response.
polygenic	Traits or characteristics controlled by two or more genes.
post-traumatic stress disorder (PTSD)	A combination of maladaptive physiological psychological, and behavioral characteristics experienced by individuals exposed to trauma.

² Sara B. Johnson, et al., The science of early life toxic stress for pediatric practice and advocacy, 131 PEDIATRICS 319 (2013), available at <http://pediatrics.aappublications.org/content/131/2/319.full>.

Handout 2 ► P. 3

Glossary

prefrontal cortex	An area of the brain responsible for decision-making, judgement, impulse control and attention.
resilience	The ability to learn from, cope and process the emotional toll of a crisis or traumatic experience and return to physical homeostasis and psychologically healthy state.
stress	A real or perceived threat to homeostasis.
stress response	The physiological, behavioral and cognitive mechanism to reestablish homeostasis.
synaptic plasticity	The strength of the connections between braincells.
transgenerational epigenetic inheritance	Inheritance of epigenetic markers across generations that affect gene expression and trait(s) of offspring. Traits studied in epigenetics often refer to the way people behave or their vulnerability to disease. Normally markers are wiped clean at conception (when egg and sperm meet), but research is beginning to establish that some markers are not erased.
trauma	A deeply distressing or disturbing experience such as a threat to one's life, sexual assault, or the violent or accidental loss of a family member or friend.

Handout 3 ► P. 1

Intergenerational Trauma

Directions: While watching the film *Big Sonia*, use the “Adverse Childhood Experience Chart” below to identify and fill in the corresponding information for each generation represented in the film. If there is no information, just leave the section blank.

<div>Sonia</div> <div>↓</div>	Adverse Childhood Experience(s) encountered.	Description of resulting social, emotional, and/or cognitive impairment.	Description of the health-risk behaviors subsequently adopted.	Description of resulting disease, disability, and/or social problems seen in adulthood.
<div>Morrie</div> <div>↓</div>	Adverse Childhood Experience(s) encountered.	Description of resulting social, emotional, and/or cognitive impairment.	Description of the health-risk behaviors subsequently adopted.	Description of resulting disease, disability, and/or social problems seen in adulthood.
<div>Leah</div>	Adverse Childhood Experience(s) encountered.	Description of resulting social, emotional, and/or cognitive impairment.	Description of the health-risk behaviors subsequently adopted.	Description of resulting disease, disability, and/or social problems seen in adulthood.



Handout 3 ► P. 2

Intergenerational Trauma

Reflection Questions:

1. Select either Morrie or Leah. Describe the behaviors they may have witnessed or experienced as a child due to the trauma or toxic stress experienced by their parent or grandparent. How many known ACEs did they experience and how might this possibly affect their health in adulthood? (A list of ACEs appears on the next page; you may observe other responses to ACEs not listed.)

2. What is resilience? Pick one of the three survivors and describe two resilience-building interventions which may have disrupted the cycle of Intergenerational Trauma.

3. In addition to the Holocaust, name three examples of historical traumas. Pick one and describe the known or potential impact on subsequent generations.

Handout 3 ► P. 3

Intergenerational Trauma

Adverse Childhood Experiences (ACEs)		
The following are stressful or traumatic events which can be experienced directly or witnessed.		
Abuse	Neglect	Household Dysfunction
Physical abuse	Physical neglect	Mother treated violently
Sexual abuse	Emotional neglect	Incarcerated household member
Emotional abuse		Household mental illness
		Substance misuse within household
		Parental separation or divorce
Risk Factors Related to ACEs		
Substance Abuse	Behavioral Problems	Physical Health Problems
Early alcohol use	Suicide attempts	Diabetes
Substance abuse (illicit or prescription) and addiction	Lifetime depressive episodes	Heart disease
Tobacco use	Sleep disturbance	Chronic obstructive pulmonary disease
	High-risk sexual behaviors	Liver disease
	Adolescent pregnancy and unintended pregnancy	Cancer
	Poor work performance	Stroke
	Financial stress	Sexually transmitted diseases
	Risk for intimate partner abuse	Fetal death
	Poor academic achievement	
	Early initiation of sexual activity	

[Source: <https://www.cdc.gov/violenceprevention/acestudy/about.html> and <https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences>]

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