

# BOOK: KEY POINTS

## THE ORCHID AND THE DANDELION: WHY SOME CHILDREN STRUGGLE AND HOW ALL CAN THRIVE W. THOMAS BOYCE, MD

The Orchid  
and the  
Dandelion

Why Some Children  
Struggle and How  
All Can Thrive

W. Thomas Boyce, M.D.

### PREMISE OF THE BOOK:



**Most children are dandelions** – hardy, resilient and are able to prosper and thrive in most environments.



Conversely, about **15 to 20 percent of children are orchids**; they are highly sensitive and more reactive and susceptible to their surroundings.

Boyce's findings are impactful, helping parents and educators understand that some children tend to be more vulnerable and reactive to their surroundings than others. With this knowledge, they can tailor their parenting styles and, for teachers, their approach to classroom communication, thus creating the right environment to help children thrive.

Parents and teachers should recognize an orchid child's unique talents (they tend to be creative and imaginative) and nurture them, instead of having expectations at odds with their child's gifts;

### MY REVIEW OF THE BOOK for whatever it is worth

This book has some fascinating points. It is a slow read with much repetition as he builds his point. The scientific concepts are explained well enough for a novice.

Throughout the book, he presents several stories of the interplay of stress and physical ailments.

*In these pages, I present mostly select excerpts from the book that are straight to the point. I skip his studies, stories and anecdotes.*

Different  
individuals need  
different  
frameworks to  
help them  
prosper in life.

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## Chapter 1: A TALE OF TWO CHILDREN

*From the field of epidemiology (the study of disease and health within human populations):* Fifteen to 20 percent of children – about one in five – experience the majority of all the physical and psychological illnesses found within a population of children over time. The same disproportion is found in adult populations. The same children who had the illnesses in childhood become adults who disproportionately suffer the illnesses.

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This is not based exclusively on nature or nurture. Rather it is an ongoing and systemic interplay between nature and nurture – **gene-environment interactions**.

**No two children are alike.** Children have very different patterns of internal, biological responses to their environments. These are grouped as dandelions and orchids.

- **Dandelions** are resilient and can flourish in almost any environmental circumstances.
- **Orchids** are sensitive to their environments, making them especially vulnerable under conditions of adversity. They will be unusually vital, creative and successful within supportive, nurturing environments.

**Orchids are not broken dandelions;** they are a different, more subtle kind of flower. Within the struggles and frailties of orchids lies an unimagined strength and redemptive beauty.

## Chapter 2: THE NOISE AND THE MUSIC

*This chapter describes many studies they tried as they discovered that different children react differently to stress.*

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**Gene–environment interactions** are situations in which environmental factors affect different individuals differently.

**Gene expression:** the process by which the instructions in our DNA are converted into a functional product, such as a protein.

**Epigenetics:** the science of how environmental exposures can modify gene expression, without altering DNA sequence of the gene itself.

**Epigenome:** is the collection of all of the epigenetic marks on the DNA in a single cell. The epigenomic marks differ between different cell types. So, a blood cell will have different marks or modifications than a liver cell.

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## Chapter 3: LEMON JUICE, FIRE ALARMS AND UNANTICIPATED DISCOVERY

They conducted several studies in preschools. They looked at correlation between typical childhood illnesses and stressors. A surprising find from their studies was that:

**The highly stress-reactive kids (read: orchids) were either the sickest – or the healthiest – contingent upon the socioemotional tenor of their families.**

These children flourished in bad environments and thrived in good environments for the same remarkable reason: **they were more open, more permeable, more tender to the powerful influences, both good and bad, of the contexts in which they were living and growing.**

How might this all happen? **Conditional adaptation.** The ability of a developing fetus or infant to sense and anticipate the potential harmfulness or protectiveness of the conditions into which it is born implies a capacity for adjusting or calibrating stress response to match the early environment. Infants with temperamental negative emotionality (negative reactions to stress) showed differential susceptibility to rearing influence. In other words, the way they are raised impacts the adults they become.

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**Phenotype** refers to the set of observable, visible characteristics that describe an individual person (eye color, height, personality, behaviors, etc.)

**Founder** is to sink like a stone and fail.

**Emotionality** is the observable behavioral and physiological component of emotion. It is a measure of a person's emotional reactivity to a stimulus. Most of these responses can be observed by other people, while some emotional responses can only be observed by the person experiencing them.

**Differential susceptibility** is a special, relatively intense sensitivity to the nature and character of the experienced social world; most importantly, a sensitivity to both the toxic and supportive of the social environmental conditions.

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## Chapter 4: AN ORCHESTRATION OF ORCHIDS AND DANDELIONS

*This chapter describes more studies they conducted with similar results – orchids were highly sensitive and showed either the highest or lowest levels depending on environmental conditions.*

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### A FINDING

Orchids and dandelions can have very different experiences/interpretations/memories of the same experiences.

In an experiment, they had children have the same experience [after a series of questions and interactions, the adult offered to make hot chocolate and then ‘the fire alarm went on’]. Later they were questioned about the whole experience (the questions and the hot chocolate). Some were questioned by friendly interviewers, others by grim-faced.

- Dandelions had average memories in both conditions.
- Orchids who were asked by friendly interviewer had exquisitely accurate, encyclopedic memories. The ones asked by rude, grim-faced couldn’t seem to remember a thing.

Astonishingly, when questioned by both types of interviewers

- Dandelions had about the same memory performance
- Orchids’ memories varied according to the interviewer.

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### A FINDING

In a section in this chapter about the onset of puberty, they found that orchids in difficult environments had earlier onset. Orchids in stable, healthy environments had a delayed onset (which is considered favorable). The dandelions didn’t seem to be affected.

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## Chapter 5: WHERE DO ORCHIDS (AND DANDELIONS) COME FROM?

Is it all genetic, or is there something that happens early in life?

Birth is actually quite a traumatic experience for the newborn. It has all the elements of a major stressor – unanticipated, unfamiliar and uncomfortable. The child's very first stress reactivity trial.

Each element of the APGAR test done on newborns is to one degree or another an indication of the body's adaptation to the stressors of being born.

High correlations between APGAR scores and stress reactivity have been found. Higher APGAR scores reported with less developmental vulnerabilities. (It was their kindergarten teachers who reported on their behaviors, such as following rules, sitting still, focus, etc.; they did not know of their APGAR scores.

### **EITHER/OR or BOTH/AND: Genetic determinism vs environmental determinism (nature vs nurture)**

It's like asking: Which contributes more to the area of a rectangle – the length or width?

It's not a matter of either/or, but rather both/and. Genes and environment interact. Internal and external.

Orchids may be born with genetically driven predispositions toward differential susceptibility. But there are probably early environmental forces that also shape the child.

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**Stress reactivity** refers to the capacity or tendency to respond to a stressor. It is a disposition that underlies individual differences in responses to stressors and is assumed to be a vulnerability factor for the development of diseases.

**The APGAR score** is a method to quickly summarize the health of newborn children against infant mortality. Apgar stands for "Appearance, Pulse, Grimace, Activity, and Respiration." In the test, five things are used to check a baby's health. Each is scored on a scale of 0 to 2, with 2 being the best score.

**Genetic predisposition** is an increased likelihood of developing a particular condition or disease based on a person's genetic makeup. This can be influenced by environmental conditions.

A genetic predisposition results from specific genetic variations that are often inherited from a parent

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## Chapter 6: NO TWO CHILDREN ARE RAISED IN THE SAME FAMILY

**Even in the same family, there are differences in treatment, biology and circumstance – in very different realities.** Thus, different epigenetic ‘switches’ are flipped on and off. These differences shape them epigenetically into the people they will be as adults.

- There are differences in our genes. And in how our families imagined, saw, helped, and treated us– and how we encode and hold on to those experiences in our epigenomes.
- And then of course there are also the ‘external’ and incidental facts of life that are beyond the choice or decisions yet affect us internally (family tragedy, neighborhood violence, economic hardship)
- There are differences – gender, birth order, behavior, adaptive, fit.
- Each child can experience and internalize the family environment differently.

**Family affects each child differently.**

### Epigenetic process:

**For every child, the object is to do as well as they can within the setting that they have been given – and the epigenome is the means to that end.**

Environmental events and the conditions in early life release coordinated epigenetic events, turning genes on and off and ensuring a child’s evolved, unconscious adaption to the world into which they have been born.

**Caveat:** Innate differences in the children – like the natural intensity and pitch of their crying – can influence the level of care their receive from their parents.

**Just because a child has an inauspicious beginning does not foreclose on the future they have yet to experience.**

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### epigenetics:

Epigenetics is the study of biological mechanisms that will turn genes on and off.

The different combinations of genes that are turned on or off is what makes each one of us unique.

**Epigenetics Controls Genes.** This is achieved through (a) nature: epigenetics is what determines a cell’s specialization (e.g., skin cell, blood cell, hair cell, liver cells, etc.) as a fetus develops into a baby through gene expression (active) or silencing (dormant); and (b) nurture: environmental stimuli can also cause genes to be turned off or turned on.

**Epigenetics Is Everywhere.** What you eat, where you live, who you interact with, when you sleep, how you exercise, even aging – all of these can eventually cause chemical modifications around the genes that will turn those genes on or off over time. Additionally, in certain diseases such as cancer or Alzheimer’s, various genes will be switched into the opposite state, away from the normal/healthy state.

**Epigenetic changes can even be inherited.**

[www.whatisepigenetics.com](http://www.whatisepigenetics.com)

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## Chapter 7: THE KINDNESS AND CRUELTY OF CHILDREN

**School bullying can be somatically experienced as chronic abdominal pain.** Neuroscientists have shown how the pain of social exclusion can activate the same brain regions as those affected by acute and chronic pain.

Studies have shown that children – even very young children – divide people into **dominance/subordination** order. Preschool teachers have reported that within 2-3 weeks of the new school year, children intuitively establish dominance and subordination relationships. Read: bullying.

### Lower status, Bigger problems

- Where you fall socially and economically affects how healthy you are, and when and how you will die.
- Children at every level of social economic status (SES) have higher rates of chronic morbidities than those just above them in family wealth and education, and lower rates than those just below them. It is not simply poverty that drives health inequalities; it's the entire spectrum of societal inequality.
- Researchers trace the health consequences of such inequality to the erosion of trust, the breakdown of social connections, the increase in social anxiety and the marginalization of disempowered outsiders. It is not only the dearth of what money can buy (better housing, healthcare, more nutritious food, etc.), it is also the socioemotional assaults of witnessing family and neighborhood violence, poor parenting, less effective schools. And the person's subjective intuition about where they stand on the SES scale in comparison to others.

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**A child's health is not only influenced by SES, it is also the 'micro-societies' in their own social settings. (read: **peer relationships**)** These are not correlated with gender or parents' SES.

In studies, those children on the lower end had higher stress (measured by cortisol levels) than those in more dominant positions. The same children also showed significantly more teacher-reported symptoms of depression and inattention, poorer peer relationships, and less positive academic competence.

Dandelions are less impacted by SES. Rich kids can get sick and poor kids may not. – constitutional indifference to the SES. Orchids' outcomes are largely dependent of their environment, and thus their SES and status in their peer groups matters.

**Orchids are generally found at the lowest or highest levels in their peer groups.**

- lowest: because of their inhibited, less assertive behavioral styles
- Highest: because of their careful attentiveness to social dynamics and to the possibilities for leadership that such attentiveness conveys.

**Teachers can make a huge difference in the lives of the children.** Some teachers might use the children's social hierarchy as a means of controlling child and group behavior (for example, taking the side of the more dominant child, or might try to avoid a conflict by allowing kids to marginalize others)  
Others explicitly attempt to minimize the visibility and potency of the ranking by employing more child-centered, egalitarian teaching approaches. (for example, highlighting a subordinate child's special artistic or intellectual or athletic gift, or ban exclusionary behavior like "you can't say you can't play")

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In the first impressionable years, teacher's styles and methods are crucially instrumental in shaping a child's early development, mental health, and academic success.

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## Chapter 8: SOWING AND TILLING THE GARDENS OF CHILDHOOD

*What follows is a collection of parental and teaching approaches to try with orchids. Note: parenting and teaching inherently is trial, error, reflection and adaptation to each individual child in each circumstance.*

### 1. The Menace of Novelty and Comfort of the Ordinary

**Neophobia:** a deep seated dread of the unanticipated or previously unencountered.

- Stems not from a lack of courage, rather it is a lack of basic, trusting comfort with previously unfronted social settings and experiences.
- To address this: **provide lots of sameness and routine.** These provide a child with a sense of control and a backdrop of certainty.

### 2. The Love of a Child

- **Offer reassurance and support with attentiveness and love. Steadfast love.**
- Even a single supportive adult can have a transformative influence in the life of a child.
- Quality time is a cultural myth. The reality is that the very best of moments come at unplanned and unexpected times. These moments surface out of the normal, monotonous flow of daily life, when sufficient ordinary time has passed between parents and child
- The presence of the father has measurable benefits for the child (dual parenting)

### 3. A Responsiveness to Differences

- **Recognize and honor the goodness of human differences.** No two children are alike. Celebrate each child individually. Recognize, acknowledge and praise the special skills and strengths of each child. Especially the orchids who may be overshadowed by other children.
- Sensitivity to sensitivities. Adults must notice and answer the broad differences in needs of all children.

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Some approaches to try  
with orchids.

1. The Menace of Novelty and Comfort of the Ordinary
2. The Love of a Child
3. A Responsiveness to Differences
4. A Grounding in Forbearance and Freedom
5. The Finely Drawn Line Between Protecting and Provoking
6. The Potency of Play

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## 4. A Grounding in Forbearance and Freedom

- **Adults must offer acceptance and affirmation of the child's true, tenderhearted and creative self.**
- Orchid children are sharply discerning of adults' judgments and opinions and respond to these in ways that are both receptive and vivid.
- Orchid children are gifted in attunement to others – and can become entrapped in others' expectations of them and they lose themselves.
- Allow each child to express themselves in the way that works best for them.

## 5. The Finely Drawn Line Between Protecting and Provoking

- **We must seek and achieve a well-tempered balance between measured protection and emboldened exposure** (nudge, encourage their venturing into the unknown and uncomfortable).
- Too much sheltering can become coddling, but excessive pressure toward exposure can overwhelm. All children need to know that they can bear risk and face the unknown and overcome.

## 6. The Potency of Play

- **All children are fed and nurtured by imaginative play.** Play, like dreaming, is a way of bringing the realities of life down to size.
- Children use invention and pretense as a means of accommodating the very real difficulties and vivid emotions of life

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“...the world does indeed break everyone – even our children – and that one of our responsibilities as physicians, as teachers, as administrators, as social workers, is to help children become strong in broken places.”

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## Chapter 9: THE ARC LIFE FOR ORCHIDS AND DANDELIONS

Trajectories of the entire life course are set largely in the child's earliest years. What happens in childhood never, ever stays simply in childhood – it can reappear as disorders and afflictions, including neurobiological. This all impacts health, accomplishment and well-being over the entire life span. The adults in the young child's life can play critical formative roles in the kinds of adults they will be.

After interviewing the original subjects of the study some 30 years later, they observed that the:

- Dandelions reported life experiences reflecting some aspect of steady, resilient reactions in face of real adversity.
- The orchids had heightened sensibilities.
- While all subjects sorted visibly and recognizable, even 30 years later, into the categories that the lab had placed them, no one was a pure unadulterated specimen of either flower; each was located on the spectrum of orchid to dandelion sensibility.

**Dandelions Growing in Meadows:** *Dandelion children growing up in sheltered, stable childhoods.*

Grew up secure and self-reliant, able to address the challenges and difficulties that life inevitably brings. They are adaptable and lead satisfying and meaningful adult lives.

**Dandelions Planted on Freeways:** *Dandelion children exposed to stressors.*

They are resilient and productive adults. They used their stressful lives as life lessons that deepened their identities.

**Orchids Growing in Tropical Rain Forests:** *Orchid children growing up in virtually adversity-free life.*

They have a strong sense of their uniqueness and personal destiny, and a impressive commitment and capacity toward enacting and making these special visions for their lives.

**Orchids Growing in Frigid Alaskan Office Buildings:** *Orchid children exposed to stressors.*

Can be productive adults, but live with less passion and joy than other adults.

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### FINDINGS

1. Orchid and dandelion are a continuum rather than an exact 'bucket'.
2. Lives will change perceptively over time. Some were like they were in the childhood study, others displayed striking differences in temperament and behavior. We are each always becoming – forever changed from the person we were, but not yet transformed into the individual we are still to be.
3. Lives are intrinsically unpredictable. While many people follow predictable paths, But superimposed on this predictable developmental regularities is unpredictability.

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## Chapter 10: THE SINS OF THE FATHERS, THE MEANS OF GRACE

Our human capacities for parenting, teaching or healing are powerfully dependent upon and affected by our psychological and socioemotional strengths and failings – which are rooted in the dim, distant realities of our own beginnings.

**Intergenerational inheritance. Epigenetics.** Still an emerging field. Epigenetic changes brought on by a parent's lifetime exposures might actually be a pathway of intergenerational inheritance.

### HOW DOES THIS WORK?

- **Indirect.** The parenting behaviors and experiences of mothers and fathers can themselves produce neurobiological changes that shape and guide the behavior and biology of their young. Indirect.
- **Direct. Germline.** The transfer of the parents' epigenetic record of experiences into the germline (ie: the sperm and/or the egg).

### What does this all mean?

- Harmful and protective experiences and grandparents can be transferred in some manner to their offspring.
- Dandelions and orchids temperaments may partly be because of epigenetics.

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Children and  
grandchildren of  
the holocaust  
are impacted by the  
holocaust survivor's  
traumatic experiences.

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## Conclusion: HELPING ALL CHILDREN THRIVE

Each human life of inestimable value. At our core, every one of us born into this bright, troubled world is a being of radiant complexity and unspeakable worth. Yet, there are lives that possess within them such enormous, silent possibility for both misery and joy, foundering and flourishing that there falls perhaps upon all of us a shared obligation to intervene, a collective responsibility to assure protection and safety in the lives of the vulnerable. There is so much at stake in the life of an orchid child ... **it becomes incumbent to maximize and unmask the great potential that each child possesses.**

...  
**Children's immune systems are reactive to stressful events** and the reactivity has observable consequences for infectious illnesses like runny nose, pneumonia and ear infections.

...  
Although the expression of emotion (fear and pain), in writing, language or music is likely therapeutic to us all, **small orchids especially can find consolation and healing in the simple expression of difficult or painful feelings to another human being.** Telling, in this case, is protecting. Our orchid children, with their extravagant capacities for emotional receptivity empathy, are those perhaps most likely to garner that protection just by saying or showing "what happened".

### Final thoughts

A fundamental error in understanding why different children thrive or founder is in the assumption that most children are vulnerable and those who are resilient are missing some elements of vulnerability. **Faulty inferences come from this assumption.**

- Some children are not so resilient; they are not breakable. The truth is that given horrific circumstances, any child can be broken.
- We just have to teach children the skills of resiliency. It is more complex than that.
- Vulnerable children are susceptible only to negative circumstance. Actually, they can flourish in positive and caring environments, and become exceptional.
- Resilience is a rarity. The truth is most children are resilient.

YET, in North America, too many children are exposed to adversities that lie well beyond the normative stressors.

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**The good news is...** vulnerability is really sensitivity which carries with it a capacity for remarkable reversal of fortune within positive, support environments.

**The bad news is ...** orchid children can be undone by their exposures to atypical, non-normative adversity and that such adversity is far too endemic in the world.