Studies in DeafBlindness for the Advanced Practioner

The biology of connection: How relationship-led teaching changes brains, bodies & behavior

December 8, 2017

Texas School for the Blind & Visually Impaired Conference Center

Presented by
Dr. Suzanne Zeedyk
connected baby & University of Dundee

Developed for
Texas School for the Blind & Visually Impaired Outreach Programs
Texas DeafBlind Outreach Project
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-8:45 AM</td>
<td>Sign-in and Coffee</td>
<td>Conference Center Foyer</td>
</tr>
<tr>
<td>8:45-9:00 AM</td>
<td>Housekeeping and Welcome</td>
<td>Auditorium</td>
</tr>
<tr>
<td>9:00-10:15 AM</td>
<td>Presentation</td>
<td></td>
</tr>
<tr>
<td>10:15-10:30 AM</td>
<td>Break</td>
<td>Outside Courtyard</td>
</tr>
<tr>
<td>10:30-12:00 PM</td>
<td>Presentation</td>
<td>Auditorium</td>
</tr>
<tr>
<td>12:00-1:15 PM</td>
<td>Lunch</td>
<td>Lunch will be on your own</td>
</tr>
<tr>
<td>1:15-2:30 PM</td>
<td>Presentation</td>
<td>Auditorium</td>
</tr>
<tr>
<td>2:30-2:45 PM</td>
<td>Break</td>
<td>Outside Courtyard</td>
</tr>
<tr>
<td>2:45-4:00 PM</td>
<td>Presentation</td>
<td>Auditorium</td>
</tr>
</tbody>
</table>
The biology of connection: How relationships change brains, bodies & behavior

Dr. Suzanne Zeedyk
connected baby & University of Dundee

Slides 1: The biology of connection: How relationship-led teaching changes brains, bodies & behaviour

Slide 2: The biology of connection: How relationships change brains, bodies & behaviour

Slide 3: How a sense of safety changes brains, bodies & behavior

Slide 4: How a sense of safety changes brains, bodies & behavior

Slide 5: How a sense of emotional safety changes brains, bodies & behavior

Slide 6: How a sense of anxiety changes brains, bodies & behavior

Slide 7: Why responsiveness matters so much

Slide 8: Why curiosity matters most of all

Slide 9

Health Book Gifting
Baby Theatre Childminders
Mental Health Police
Retailers Education
Musicians Nurseries
Family Support Social Services
Voluntary Sector Politicians
Slide 10

In this slide the content from the previous slide appears with the above logo included.

Slide 11: My message

1. Babies arrive already connected.
2. Connection shapes brain development.
3. Society suffers when babies (and adults) don’t feel connected.

Slide 12: Today

1. Connection
2. Stress
3. Attachment
4. Implications for DB field

Slide 13: Why did you come today? What hopes did you bring?

Slide 14:

Figure 4 A mom lies on the floor and holds her infant on her stomach; they gaze at each other.

Slide 15:

Figure 5 Newborn infant in grandmother’s arms. Baby is looking up at grandmother’s face, fingers in her mouth.
Slide 16:

Figure 6 Adult holds infant before a camera with picture in picture view.

Slide 17:

Figure 7 A mom and 3 month old child grin at each other; each has a “heart” shape superimposed over their hearts.


Slide 18: Being picked up

Figure 8 A 2 month old lifts his arms in response to the mother extending her arms as she prepares to pick him up from the floor.

Vaus Reddy et al, *Plos One, 2013*
Slide 19: Facial Expressions

Figure 9 Images from Meltzoff & Moore research showing 3 images of a dad making faces on the top row and 3 images of a newborn imitating these expressions on the bottom row.


Slide 20: Hand gestures

Figure 10 First in a series of 3 slides showing hand gestures in newborns as part of Emese Nagy et al research from *Developmental Science*, 2014.

Slide 21: Hand gestures

Figure 11 Second in a series of 3 slides showing hand gestures in newborns as part of Emese Nagy et al research from *Developmental Science*, 2014.

Slide 22: Hand gestures

Figure 12 Third in a series of 3 slides showing hand gestures in newborns as part of Emese Nagy et al research from *Developmental Science*, 2014.
Slide 23

Figure 13 View of a village near the water with a long bridge going across.

Slide 24: Today

1. Connection
2. **Stress**
3. Attachment
4. Implications for DB field

Slide 25: Today

5. Connection
6. **Adverse Childhood Experiences**
7. Attachment
8. Implications for DB field

Slide 26:

Figure 14 The image of the documentary film Resilience
Slide 27: Adverse Childhood Experiences Study, 1998

Figure 15 This is the developmental model used by the Adverse Childhood Experiences research team to explain their findings. It contains a pyramid with 6 sections from bottom to top they read: 1) Adverse Childhood Experiences, 2) Disrupted Neurodevelopment, 3) Social, Emotional, and Cognitive Impairment, 4) Adoption of Health-risk Behaviors, 5) Disease Disability, and Social Problems, and 6) Early Death. An arrow is along the left side of the pyramid and indicates from movement bottom toward the top, Conception to Death.

Slide 27:

Figure 16 This is the poster used in the national Resilience Tour in Scotland, Summer 2017.

Slide 28: Adverse Childhood Experiences Study, 1998

Figure 17 Graphic of ACES study appears again.
Slide 29: Adverse Childhood Experiences Study, 1998

• 1995-1997
• 17,000 patients undergoing standard physical health examinations in USA
• Published as: ‘The relationship of adult health status to childhood abuse and household dysfunction’ (American Journal of Preventative Medicine, 1998)

Slide 30: Adverse Childhood Experiences Study (ACE Study)

• 1995-1997
• 17,000 patients undergoing standard physical health examinations in USA
• Published as: ‘The relationship of adult health status to childhood abuse and household dysfunction’ (American Journal of Preventative Medicine, 1998)
• Childhood Experiences

Slide 31: Childhood Experiences

Abuse:
• Physical abuse
• Emotional abuse
• Sexual abuse

Neglect:
• Emotional neglect
• Physical neglect

Household Dysfunction:
• Mother treated violently
• Substance misuse
• Parent mental illness
• Parent in prison
• Parental divorce
Slide 32: Consequences for health

- Liver disease
- Heart disease
- Depression
- Fetal death
- Illicit drug use
- Alcoholism
- Health-related quality of life
- Early sexual activity
- Adolescent pregnancy
- Partner violence
- Smoking
- Suicide attempts
- Sexually transmitted disease

Slide 33: Number of Adverse Childhood Experiences (ACE Score)

<table>
<thead>
<tr>
<th>No. Experiences</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>36%</td>
</tr>
<tr>
<td>1</td>
<td>26%</td>
</tr>
<tr>
<td>2</td>
<td>16%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>4 or more</td>
<td>16%</td>
</tr>
</tbody>
</table>

Slide 34: Adverse Childhood Experiences Study 1998

![Figure 18 Repeat of ACE Study Graphic](image-url)
Slide 35: Dr. Nadine Burke Harris

Figure 19 This is a screen shot of the TED Talk by Dr. Nadine Burke Harris.

Slides 36 and 37

Figure 20 This is a screen shot of a BBC Radio programme on ACES from February 2016.

After the BBC Radio screen shot appears the following text appears: “IT WAS BRILLIANT, ABSOLUTELY BRILLIANT!! THE MOST IMPORTANT PROGRAMME ON CHILDHOOD ADVERSITY EVER BROADCAST!!”

Slide 38

Figure 21 Logo for the film, Resilience.

Slide 39

Figure 22 Poster of film screening schedule shown earlier in the powerpoint.
Figure 23 This is the beginning image of the trailer for the documentary film Resilience. I may play the trailer during my presentation.

Figure 24 A screenshot of NHS website.

Figure 25 Screenshot of Burnside Pharmacy School blog posting, ACES and what next.....

Slide 41

Slide 42

“As a young, naïve paediatrician I saw kids with ADHD and other conduct disorders, many of whom had a dysfunctional home environment. Some were adopted, but we were strangely uncurious about what had happened to them before they were adopted. I met countless parents who were overwhelmingly anxious, who bought their children to hospital week in, week out. Some seemed to spend every Friday night in A&E. I focused on the children and it hardly ever crossed my mind to think about what had happened in their own lives, or might still be happening, that rendered them so fearful.

Slide 43

What is extraordinary, and to be frank, a betrayal of patients and clinicians on the part of those responsible for medical education is that we never talked about, much less seriously taught about the lasting effects of trauma. We were taught that diseases were due to the interaction of human biology and the environment, but human experiences were barely part of the picture.

Slide 44
Slide 45

Figure 26 Screen shot from the Baltimore Sun website with headline that reads: "Initiative underway to educate communities on impact of adverse childhood experiences on developing brains".

Slide 46

Figure 27 Screenshot of WQAD website with headline: "Childhood trauma can cause developmental delays in adulthood, study says".

Slide 47

Figure 28 Screenshot from the Gainesville Sun website shows the Florida College of Medicine's Mobile Outreach Clinic bus and staff treating homeless individuals and has the headline: "Consider trauma in providing services".
Slide 48: ACESTooHigh.com

![ACESTooHigh.com website banner](image)

Figure 29 Screenshot of the ACESTooHigh.com website banner.

Slide 49

![Graphic drawing of the brain showing the Frontal Lobe, Parietal Lobe, Occipital Lobe, and Temporal Lobe.](image)

Figure 30 Graphic drawing of the brain showing the Frontal Lobe, Parietal Lobe, Occipital Lobe, and Temporal Lobe.

Slide 50

![Image of the wider nervous system, both parasympathetic and sympathetic nervous system.](image)

Figure 31 Image of the wider nervous system, both parasympathetic and sympathetic nervous system. Function of this slide is simply to make the point that a child’s sense of connection shapes the development of the whole nervous system. A banner appears over that reads, “Self-regulatory system”.

Advanced Practitioner in DeafBlindness, 2017 - The Biology of Connection – Zeedyk, S.
Slide 51

Figure 32 An infant in a hospital setting wearing a respirator and various tubes and wires are attached to him.

How many sensory-impaired children begin life in stress & trauma?

Slide 52:

Figure 33 This is the image from one of the clips of the documentary film Resilience. It shows a cartoon illustration of a young child in a classroom setting. The illustration depicted in colors to imply stress and unsafety.

Slide 53:

Do you think awareness of early trauma is sufficiently embedded within the field of Deafblindness?

Is ‘trauma’ the right terminology?

Slide 54:

Implication

Many of the struggles & ‘behaviours’ of children who are deafblind may not be due to their ‘condition’, but to early experiences of pain, fear, anxiety & stress.

*It takes courage to think about this.*
Slide 55

Figure 34 Newborn infant in grandmother’s arms. Baby is looking up at grandmother’s face, fingers in her mouth.

Slide 56: Voices in the womb

Figure 35 The cover of the children’s book Cat In The Hat, by Dr. Seuss.

DeCasper & Spence, Infant Behavior and Development, 1986

Slide 57: Music in the womb

Figure 36 Image of the introductory scene to the popular British soap opera ‘Coronation Street’. It shows a image of houses and cars, along a street. The street depicted is ‘Coronation Street’.

Peter Hepper, Lancet, 1988: ‘Fetal Soap Addiction’
Slide 58: All fetal experience

Figure 37 Image of the cover of the book Origins, by Annie Murphy Paul, published 2010 and a picture of the author.

Slide 59:

Figure 38 A repeat of the Slide 10, showing a mother and 3-month-old baby engaged in face-to-face gaze. The banner across the photo reads: ‘Human beings are already connected.’

Slide 60:

Figure 39 Cover of the book, In the Realm of Hungry Ghosts, by Gabor Mate, MD

“The three environmental conditions absolutely essential to optimal human brain development are: nutrition, physical security, and consistent emotional nurturing. …

The third one – emotional nurturance – is the one most likely to be disrupted in Western society.”
Christakis argues that most of today’s youngest children are spending their critical early-learning years in environments that ignore or misunderstand their needs. The kind of respectful observation that children need -- of what they can (and can’t) do -- is rare in early childhood settings.

Boys are more vulnerable to neuropsychiatric disorders that appear in the early years of life. (Girls are more vulnerable to disorders that appear later.) Early disorders have been increasing in recent years. Notably, more babies have also been put into daycare settings in recent years, nearly all of which provide inadequate care for babies.
Researchers studied kindergarteners' behavior and followed up 19 years later. Here are the findings.

*Turns out, sharing really is caring.*

Figure 43: From August 12, 2015 – “Researchers studied kindergarteners' behavior and followed up 19 years later. Here are the findings. Turns out, sharing really is caring.”

Figure 44 A group of young children seated on the floor in a school room. They are smiling and laughing.

Upworthy.com (August 2015)

Slide 65

Social skills of 800 kindergarteners were measured.

At age 25:

- For every one-point increase in a child's score:
  - 54% more likely to finish secondary school,
  - twice as likely to graduate from university,
  - 46% more likely to have a stable, full-time job at age 25.

- For every one-point decrease in scores:
  - 67% higher chance of having been arrested in early adulthood,
  - a 52% higher rate of binge drinking
  - 82% higher chance of being in public housing.
Slide 66
Conclusion:

“The bottom line? We need to do more than just teach kids information. We need to invest in teaching them how to relate to others and how to handle the things they’re feeling inside. Ignoring social skills in our curricula could have huge ramifications for our kids down the road.”

Slide 67

Figure 45 Image of the brain. Function of this slide is simply to make the point that a child’s sense of connection shapes their neural pathways. That is, connection has a biological impact.

Slide 68

Figure 46 Image of the wider nervous system, both parasympathetic and sympathetic nervous system. Function of this slide is simply to make the point that a child’s sense of connection shapes the development of the whole nervous system.
Slide 69

Figure 47 The same image as above of the wider nervous system with a sign over the image that reads self-regulatory system.

Slide 70

Human brains are built for connection

Figure 48 This is an image of Clarissa Volmar and her father. Clarissa was born deaf-blind. Her image here reminds us that ‘even’ deafblind babies are born connected, because they have a human brain. Their biology will be being shaped by experiences of connect

Slide 72

Figure 49 connected baby presents Stories of Connection, an exhibit capturing moments of connection.
Figure 50 People at an exhibit examining a wall of photographs.

Figure 51 Another view of people at the exhibit looking at photographs on a wall.

Figure 52 Another view of the exhibit visitors looking at the photos on the wall.

Figure 53 A young boy with CHARGE touches a baby's face and holds a baby bottle in the baby's mouth.
Slide 77
This caption appear on top of the image shown in Slide 76: “This photo shows our 4 year old son trying to comfort his baby brother. Despite severe hearing and visual problems, he was somehow able to work out something was wrong with the baby and felt the urge to help. A magical moment. All barriers were overcome through the simple need to care.”

Slide 78
Do you think this knowledge of innate connection is sufficiently embedded within the field of Deafblindness?

Slide 79
Implication
Many of the struggles & 'behaviours' of children who are deafblind may not be due to their 'condition', but to their early experiences in relationships.
**Slide 80:**

1. Connection
2. Stress
3. **Attachment**
4. Implications for DB field

**Slide 81: Attachment Theory**

![Attachment Theory Diagram]

Figure 54 This is a standard image used in explaining Attachment Theory. Four squares are arranged as follows from upper left, Secure, upper right, Resistant, lower left, Avoidant, and lower right, Disorganized. These squares exist along x and y axis. The horizontal axis from left to right shows low anxiety to high anxiety and the vertical axis shows from top to bottom “low avoidance” to “high avoidance”.

**Slide 82: Children’s hospitals in 1950s**

![Children's Hospitals Image]

Figure 55 This is an image of 2-year-old Laura, who is at the heart of a documentary film made in 1952.

Robertson: A 2 Year Old Goes to Hospital (1952)

**Slide 83: www.robertsonfilms.info**

“This film classic, made in 1952, drew attention to the plight of young patients at a time when visiting by parents was severely restricted.”

“A study of the typical emotional deterioration in an unaccompanied young patient, and of the subtle ways in which she shows or conceals deep feelings of distress.”
Slide 84

“Now, when I try to remember and reimagine that stay in hospital (as a 4-year-old), I can clearly see my sister through the glass window, with us only able to ‘touch hands’, and I can still feel my distress at waking to find her gone. That’s more than 60 years ago and it still hurts me. It is really powerful, what happens for children.”

From a 65-year-old man

Slide 85

Over the content from the previous slide quote this broken heart image appears:

❤️

Slide 86 *The Language of the Hands* by Barbara Miles

Figure 56 This is the image from the cover of Barbara Miles’ well known book on deafblindness: Language of the Hands.

Slide 87: Children’s hospitals in 1950s

Figure 57 This is an image of 2-year-old Laura, who is at the heart of a documentary film made in 1952.

Robertson: A 2 Year Old Goes to Hospital (1952)

Slide 88: Definitions of Attachment?

Figure 58 An emoji showing puzzled face.
Slide 89: John Bowlby

“Proximity-seeking to the attachment figure in the face of threat, due to the capacity to sense conditions that could be dangerous: being alone, unfamiliarity, rapid approach.”

Wikipedia

Slide 90: Pat Crittenden

“The organization of mental and behavioral strategies for protection of the self and progeny. It extends from infancy to adulthood.”

Wikipedia

Slide 91: Dan Siegel

“The need for a close relationship between parent and offspring to connect and protect, to soothe and attune.”

Relationship Science

Dec 2013
Slide 92: Sir Harry Burns

“Individuals feeling in control of their lives... Young people who don’t experience consistent parenting are less able to manage themselves in stressful situations.”  

*The Times Newspaper*  
12 January 2013

Slide 93: Suzanne Zeedyk

“Having an *internal teddy bear* – on whom you can call when you need comfort, no matter what your age.”

Slide 94:

Figure 64 Drawing of Sabretooth Tiger
Slide 95: A teddy bear


Sharing Communicative Landscapes with Congenitally Deafblind People: It’s a Walk in the Park – Paul Hart

Slide 98: Films

Image of a mom sticking out her tongue and her infant looks back at her and sticks out her tongue. Poster for “the connected baby” a film by Dr. Suzanne Zeedyk and Jonathan Robertson.
Slide 99: E-courses

Figure 69 Image showing part of the E-Course in the connected baby series

Slide 100: Presentation Videos

Figure 70 Image from Suzanne Zeedyk video, The Biology of Attainment, April 2017

Slide 101: Blog

Figure 71 Photograph of a baby winking with the caption: When corporations encourage giggling at children's distress

Slide 102: Facebook & Twitter

Figure 72 Photo of a young child holding a stuffed animal
Slide 103:

Figure 73 Image of the brain shown in previous slides.

Slide 104:

Figure 74 Image of the nervous system shown in previous slides.

Slide 105:

Figure 75 The nervous system slide with the banner, "Self-regulatory system" superimposed over it and images of a teddy bear (on the left) and a sabre tooth tiger (on the right).

Slide 106: Orion Withrow

Figure 76 Orion Withrow stands holding on to the balcony rail in his home with a young boy behind him, arms out and ready to grab Orion if need be.

Attachment = trust
**Slide 107: Attachment Styles**

![Attachment Styles Diagram](attachment:attachment_styles.png)

Figure 77 This is a standard image used in explaining Attachment Theory, a banner is superimposed over it that reads, "Not today"

**Slide 108: Rupture & Repair Cycle**

![Rupture & Repair Cycle](rupture_repair_cycle.png)

Figure 78 This is the image of the Rupture and Repair Cycle: A circle divided into thirds with each third having a label. These labels read from top left going clockwise, repair, relate, rupture and are connected by arrows.

**Slide 109:**

![Frozen Movie](frozen_movie.png)

Figure 79 Image from the movie Frozen with the words, Let It Go.
In healthy relationships, roughly 1/3 of our time is spent in each stage.
Making up is more important than messing up.

Do you think there is sufficient awareness of the attachment system within the field of Deafblindness?

Many of the struggles & achievements of children who are deafblind may not be due to their ‘condition’, but to attachment experiences.
‘Behaviours’ may be reflective of attachment styles.

Many of the struggles of children who are deafblind may not be due to their ‘condition’, but to difficulty by others in creating repair after rupture.
Slide 120:
Today
1. Connection
2. Stress
3. Attachment
4. Implications for DB Field

Slide 121:
Figure 82 Image from the movie Frozen showing each of the main characters.

Slide 122-126
Secure & Insecure Attachment
In the illustration below a scale shows three points from left to right: Ambivalent, Secure, and Avoidant. Below the scale at each end are images of sabre tooth tiger images.

GOOD vs POOR? No! They all helped the child to survive.
Slide 127: Attachment Styles

![Attachment Styles Diagram](image)

Figure 83 Graphic of Attachment Styles shown in the powerpoint.

Slide 128:

![Child Cuddled](image)

Figure 84 This is an image of a child being cuddled – which provides reassurance, which central to repair for young children.

Slide 129:

![Rupture & Repair Cycle](image)

Figure 85 Graphic showing the Rupture & Repair Cycle
Slide 130: Human brains are built for connection

Figure 86 This is an image of Clarissa Volmar and her father. Clarissa was born deaf-blind. Her image here reminds us that ‘even’ deafblind babies are born connected, because they have a human brain. Their biology will be being shaped by experiences of connect

Slide 131: 2. All communication draws on emotional connection

Figure 87 A student at Perkins School for the Blind, DeafBlind Department is cooking under the supervision of his teacher.

Functional Communication?

Slide 132: 3. People bring their developmental experiences to any interaction

Figure 88 Photograph of Clarissa Volmar
Slide 133: 3. People bring their developmental experiences to any interaction

Figure 89 Photo of a family of a DeafBlind individual with the caption Cogswell-Macy Act support material

Slide 134: 3. People bring their developmental experiences to any interaction

Figure 90 Repeat of the Orion Withrow photo at the balcony rail

Slide 135: 3. People bring their developmental experiences to any interaction

Figure 91 Repeat of slide of the infant in the hospital from the Premie Project

Slide 136: 4. Good communication requires trust

Figure 92 A DeafBlind man and another signer in a conversation
Slide 137-139: 5. Trust takes time to build

Slide 140: In Summary

Slide 141: The biology of connection: How *relationships* change brains, bodies & behavior

Slide 142: How a sense of *emotional* safety changes brains, bodies & behavior

Slide 143: Why curiosity matters most of all

Slide 144: Thank you

Slide 145:

www.suzannezeedyk.com
www.connectedbaby.net
@suzannezeedyk
@connectedbaby
Texas School for the Blind & Visually Impaired

Outreach Programs

Figure 94 TSBVI logo

Figure 95 IDEAs that Work logo and Department of Education OSEP disclaimer.

“This project is supported by the U.S. Department of Education, Special Education Programs (OSEP). Opinions expressed here the authors and do not necessarily represent the position of the Department of Education.”