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Study guide:

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Jesus on the brain

Church experiences can influence children

By Robert C. Blezard

When Jesus said, “Let the little children come to me, and do not stop them” (Luke 18:16), he obviously wanted to teach us that an encounter with him would do them good. Medical science now backs him up on this. When our children are in church and receive positive exposure to the sounds, sights, smells, touch and movements of faith, the sensory data can make a lasting imprint in the brain. In other words, it can hard-wire them to the faith.

Exercise 1: Faith formation

We used to have just Sunday school, but now many congregations are adopting a wide-ranging approach to educate, inspire and train people in the faith across age groups. Discuss:

- What strategies does your congregation have in place to form the faith with children? What materials are used?
- In light of the exciting research done on brain development in children, what changes might be appropriate for your congregation to make to better form their faith? List your suggestions and give them to your Christian education committee.

Exercise 2: Feelings

Take a poll of your study group:

- How many people have positive feelings when they go to church?
- Describe those feelings. Why do you have them?
- Are the feelings enhanced by some particular aspect of church life, such as hymns, music, prayers, Scripture, liturgy, communion, the smell or appearance of church, the candles, etc.?
- What thoughts accompany your feelings?
- How long have you had those feelings? What is the earliest age you can remember?
- Among those who have those feelings, how many were brought into church as an infant or toddler?



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Study guide: **Jesus on the brain**

continued

- Is it possible that your positive feelings are the result of sensations you experienced as a young child that were deeply established in your brain?

Exercise 3: Memories

Some of the most faithful churchgoers are “lifers”—folks who have always been part of congregational life. As a study group, share:

- When were you baptized? Do you remember it? Do you have your baptismal certificate? Are there photos of your baptism?
- What’s your earliest memory of church?
- Before there are concrete memories, are there shadows of memories, glimpses, scenes, smells you associate with church?
- What photos are there of you in the church as a child?
- Does your congregation assist families and children in developing and preserving memories of their early church life? What more could be done?

Exercise 4: Children in worship

- What’s your congregation’s policy on infants and very young children in church? Is it written down? Is it spoken or unspoken?
- Do parents tend to keep their little ones with them or are children segregated by themselves during worship?
- Given that the sensory experience of worship may actually help shape and develop a child’s brain in positive ways, why should parents be encouraged to bring infants and very young children into worship with them?
- How can the worship experience be more hospitable for families with babies or young children?

Exercise 5: Sensory cultivation

Worship services aren’t typically designed with the brain-development needs of young children in mind. However, given what we know about the positive effect that sensory data has on them, how might worship be changed to make it as enriching for young brains as possible? What could be done with sounds, music and hymns? With lights, colors and visuals? With ritualized body movements (such as crossing oneself, kneeling or pressing hands together in prayer)? With prayers and spoken liturgy?

For action, make a list of suggestions for your pastor, congregation council or worship committee. How might these changes also make church interesting for grown-ups?



Jesus on the brain

By Dawn Rundman

Every time I feel the spirit moving in my heart, I will pray.

Song lyrics like this use language describing God's presence inside our bodies, and as faithful Christians, we are commanded to love the Lord with all our hearts and souls and minds. But as we live this out, have you ever wondered about the ways our faith practices might actually cause physical changes in us, down to our very cells? Could singing hymns, saying prayers or making the sign of the cross actually lead to changes in how our brains are wired?

Imagine an infant whose family says a dinnertime prayer each evening. One night she surprises them all when her chubby hands clasp into a prayer posture. Now picture an 81-year-old man in a memory care unit who can no longer speak because of the way Alzheimer's has ravaged his brain. Yet he sings along to "Jesus Loves Me" during the weekly chapel service.

One example comes from the beginning of human life and the other from near the end, but both are evidence of the ways faith practices make their mark on the human brain.

Findings from the field of developmental neuroscience suggest that multisensory formation experiences, especially those during the first three years of life, may shape pathways in the brain in deep and lasting ways. This phenomenon is called neuroplasticity and points to the young brain's ability to form and strengthen neural pathways.

So what is it about a church setting that could actually shape neural connections in young children? What experiences make such lasting impressions on the human brain that they remain encoded for years or even a lifetime? While neuroscience research hasn't focused

The impacts of early exposure to music, positive social interactions and multisensory experiences suggest that what we do in our churches makes a difference.

on church settings as contexts for neural change, enough studies have shown the impacts of early exposure to music, positive social interactions and multi-sensory experiences to suggest that what we do in our churches makes a difference.

Next time your congregation welcomes an infant through baptism, consider all the ways this little one’s brain can be changed by his experiences at your church.

Instrumental music

Perhaps your church musician plays organ and piano. Maybe you have a praise band that rocks the sanctuary. Whatever the music style, the acoustic environment of worship is a unique one for an infant. Where else can a little one be surrounded by the sounds, vibrations and sights of a variety of instruments and choral singing?

Exposure to music early and often ensures that songs of faith are encoded deeply in the brain, able to be recalled later in life.

Prayers

When prayers are offered, a child witnesses how language and body movements are used for communication and connection with God. Whether it takes the form of table grace, the Lord’s Prayer or sung petitions, a child begins to learn and remember these words.

Once expressive language begins, the child can begin offering her own prayers by heart long before she can read them from a page.

The body of Christ, the blood of Christ

An infant or toddler who is present around the table at communion takes in the smells of the elements and the warm touch of a caregiver holding him. As young children receive the elements, these familiar tastes of bread and drink are associated with an array of faces gathered together. Memories of smell and taste have strong connections with emotions.

When young children associate this sacrament with feelings of security, belonging and community, imagine the pathways that have formed.

Smiling faces everywhere

Congregational life offers a rich social environment to young children, with smiling faces, encouraging words and gentle touches during the passing of the peace. The child begins to associate these social interactions with feeling secure, welcome and comfortable.

Neuroscience 101:

A crash course

Within the human brain, we have billions of cells called neurons that make up the brain’s gray matter. Neurons have several structures called dendrites that resemble the multitude of bare tree branches during winter. Dendrites receive messages from surrounding cells and carry those nerve impulses along the length of the cell to a structure on the other end called an axon.

If the nerve impulse is potent enough, the axon releases neurotransmitters into the space between it and the dendrites of neighboring cells. This space is called a synapse. The release of neurotransmitters into synapses leads to other dendrites being activated.

When dendrites are activated repeatedly, they branch out more extensively, strengthening their connections to surrounding cells. Given the treelike appearance of dendrites, this process is called dendritic arborization.

Alternately, when connections between cells aren’t stimulated they are weakened by a process known as synaptic pruning. The phrase “use ’em or lose ’em” is used to describe this phenomenon, emphasizing that neural pathways are formed and strengthened by experiences.

These cellular processes—receiving inputs through dendrites and sending outputs through axons, arborization and pruning—occur throughout our lifespan. We are born with all the brain cells we’ll ever have—about 100 billion. So instead of babies growing new cells, cellular loss actually begins. Some connections between neurons are pruned away while others are reinforced to form more extensive, or arborized, pathways. The growing infant doesn’t need more brain cells—she needs the cells she has to begin working more efficiently.

CHRIS DICKEN





CHRIS OCKEN

Young children rely on us to be storytellers about who Jesus is.

him. These are deep and abstract concepts, but they have their beginnings in the first years of life as children hear stories and see images of Jesus in worship space artwork.

Let's marvel at the ways young children in our midst are neurologically marked by the routines and rituals of worship, prayer, music and other faith practices. These neural pathways that initially form widen into highways. Every congregation can offer

As an infant grows, she may begin to remember familiar faces from previous times in worship. Isn't it amazing to think a baby is forming some neural pathways to remember *your* face?

Stories and imagery about Jesus

Worship may be the first place where a young child may "hear the story of Jesus and his love." Young children rely on us to be storytellers about who Jesus is, what he did and how our life is rooted in our relationship with

rich and varied ways for little ones to learn sounds, smells, sights, tastes and touches that create deep neural pathways that may last a lifetime. □



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