The Science of Young Adult Brains:
It's Never Too Late to Become an Effective Communicator

Maurice Belote, San Francisco State University
mbelote@sfsu.edu • 415-405-7558

SLIDE:
Your body is younger than you think...

Cells	Frequency of Tissue Renewal
Epithelial cells:	every 5 days
Skin:	every 2 weeks
Red blood cells:	every 120 days
Liver:	every 300-500 days
Bones:	every 10 years
Stomach:	every 15 years

(Spalding et al., 2005)

SLIDE:
When two opposite points of view are expressed with equal intensity, the truth does not necessarily lie exactly halfway between them. It is possible for one side to be simply wrong.
–Richard Dawkins, D.Phil.

SLIDE:
Communication Matrix

Four major reasons to communicate: to REFUSE things that we don't want; to OBTAIN things that we do want; to engage in SOCIAL interaction; and to provide or seek INFORMATION.

Level I. Pre-Intentional Behavior
Level II. Intentional Behavior

Intentional Communication
Level III. Unconventional Communication (pre-symbolic) Level IV. Conventional Communication (pre-symbolic)

Symbolic Communication
Level V. Concrete Symbols
Level VI. Abstract Symbols
Level VII. Language
(Rowland, 2004)

SLIDE:
The critical period hypothesis (CPH) as proposed by Lenneberg (1967) holds that primary language acquisition must occur during a critical period which ends at about the age of puberty with the establishment of cerebral lateralization of function. (Snow & Hoefnagel-Höhle, 1978)

SLIDE:
Who's the idiot who decided that youngsters should learn foreign languages in high school?
–Harry Chugani M.D., Wayne State University

SLIDE:
There are 100 billion neurons in the human brain and you could place about 30,000 of them on the head of a pin, but placed end to end the neurons in just one person's cortex would stretch for 100,000 miles—enough to circle the globe four times. (Jensen & Nutt, 2015)

SLIDE:
This process of maturation, once thought to be largely finished by elementary school, continues throughout adolescence. Imaging work done since the 1990s shows that these physical changes move in a slow wave from the brain's rear to its front, from areas close to the brain stem that look after older and more behaviorally basic functions, such as vision, movement, and fundamental processing, to the evolutionarily newer and more complicated thinking areas up front. (Dobbs, 2011)

SLIDE:
Plasticity is an intrinsic property of the human brain and represents evolution's invention to enable the nervous system to escape the restrictions of its own genome and thus adapt to environmental pressures, physiologic changes, and experiences.
(Pascual-Leone, Amedi, Fregni, & Merabet, 2005)

SLIDE:
The good news about brain plasticity is that it may peak in childhood and adolescence but it never entirely stops—at least not until we do. The more you learn, the easier it is to learn the next thing. (Jensen & Nutt, 2015)

SLIDE:
Researchers at UCLA found that myelin continues to be produced well past adolescence and even into a person's thirties, making the communication between brain areas ever more efficient.
(Jensen & Nutt, 2015)

SLIDE:
Gray matter density gain continued up to age 30…Visual, auditory and limbic cortices, which are known to myelinate early, showed a more linear pattern of aging than the frontal and parietal neocortices, which continue myelination into adulthood…Findings

also indicate that the posterior temporal cortices, primarily in the left hemisphere, which typically support language functions, have a more protracted course of maturation than any other cortical region.
(Sowell et al., 2003)

SLIDE:
Much of what we learn happens throughout our lives. What we missed at one stage, given different circumstances, can be made up later on. The work of neuroscientists and of educators points to the resilience of the brain, to a lifelong ability to learn new things. (Frontline, 2003)

SLIDE:
Cognitive Referencing:
The practice of comparing IQ scores and language scores as a factor for determining eligibility for speech-language intervention. Cognitive referencing is based on the assumption that language functioning cannot surpass cognitive levels. However, according to research, some language abilities may in fact surpass cognitive levels. Therefore, ASHA does not support the use of cognitive referencing. (ASHA, Cognitive Referencing)

SLIDE:
National Joint Committee for the Communication Needs of Persons with Severe Disabilities (NJC)

- American Association on Intellectual and Developmental Disabilities
- American Occupational Therapy Association
- American Physical Therapy Association
- American Speech-Language-Hearing Association
- Association of Assistive Technology Act Programs
- Council for Exceptional Children Division for Communicative Disabilities and Deafness
- TASH
- United States Society for Augmentative and Alternative Communication

SLIDE:
Position Statement: National Joint Committee for the Communication Needs of Persons with Severe Disabilities (2003)

Eligibility determinations based on a priori criteria violate recommended practice principles by precluding consideration of individual needs. These include, but are not limited to:

(a) discrepancies between cognitive and communication functioning
(b) chronological age
(c) diagnosis
(d) absence of cognitive or other skills purported to be prerequisites

(e) failure to benefit from previous communication services and supports; (f) restrictive interpretations of educational, vocational, and/or medical necessity
(g) lack of appropriately trained personnel
(h) lack of adequate funds or other resources.

SLIDE:
American Speech-Language-Hearing Association, National Joint Committee, 2011: Transitions to new work and living environments in adulthood are likely to create a need for communication services to support development of communication forms and functions appropriate to new settings as well as to educate new communication partners about the individual's communication forms and support needs. Even if records indicate an adult "did not benefit" from services in earlier years, he/she may be able to benefit from services in adulthood; research has documented the continued development of communication/language skills through young adult years, and new approaches to intervention and advances in AAC technology offer greater chance of success.

SLIDE:
American Speech-Language-Hearing Association, National Joint Committee, 2011: Research has shown that many individuals with severe disabilities continue to develop communication and language skills in their adult years. Some individuals may experience particularly positive communication outcomes in adulthood due to factors such as improved assessment and intervention options, new communication technologies, or improved health and stamina.

SLIDE:
American Speech-Language-Hearing Association, National Joint Committee, 2011: Research studies have shown that adolescents and adults with a variety of severe disabilities made measurable gains when provided with appropriate communication services. Communication intervention may address a variety of self-determination components, including choice making and problem solving.

SLIDE:
American Speech-Language-Hearing Association, National Joint Committee, 2011: Communication services are likely to be particularly important for adults as they leave home and school and move into new living or working environments. Adults with severe disabilities often need communication services to adapt their communication systems to the demands of new settings. Thus, communication intervention remains a need in adulthood, and we should expect that, with appropriate programming, gains in communication are likely.

Bottom Line: Communication is a lifelong activity of value to people of all ages; intervention to facilitate effective communication is warranted for all ages.

SLIDE:
Decision Making in Termination of Services:
Each program should have established policies and procedures for following the individual after discharge. Follow-up is necessary because an individual's circumstances may change, new treatments may become available, or the individual may respond differently due to maturational changes or new life transitions. (ASHA, 2004)

SLIDE:
Decision Making in Termination of Services:
An apparent "lack of progress" is based on the assumption that the prescribed treatment goals, methods, data collection, and use are all appropriate for the individual with disabilities and his/her family. However, it is possible that the perceived lack of progress is actually an indication that the procedures being implemented are not well-suited to the individual with disabilities. (ASHA, 2004)

SLIDE:
Decision Making in Termination of Services:
If the discharge is motivated by a lack of progress, questions such as the following should be carefully considered before a final decision is made:

- How appropriate have the intervention goals been?
- Has treatment occurred with appropriate intensity and over a sufficient amount of time?
- Have appropriate methods been implemented?
- Has intervention been guided by careful data collection and analysis?
- Have sufficient supports been provided to optimize opportunities for successful outcomes? (ASHA, 2004)

SLIDE:
The greatest gift we can give a person is a functional, effective communication system.

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