Communicative competence for individuals who require AAC: Revisiting the definition and strategies

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aac.psu.edu

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- The silence of speechlessness is never golden. We all need to communicate and connect with each other – not just in one way, but in as many ways as possible. It is a basic human need, a basic human right. And much more than this, it is a basic human power. (Williams, 2000)

Goal of AAC intervention

- Allow individuals with CCN to participate fully in all aspects of life
  - Express needs and wants
  - Exchange information
  - Build social closeness
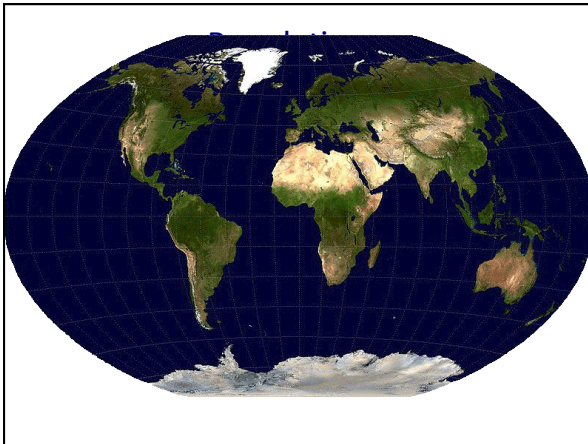 - Participate in social etiquette routines

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Communicative Competence

- Communicative competence is defined as
  - "the state of being functionally adequate in daily communication and of having sufficient knowledge, judgment, and skills to communicate effectively in daily life" (Light, 1989)
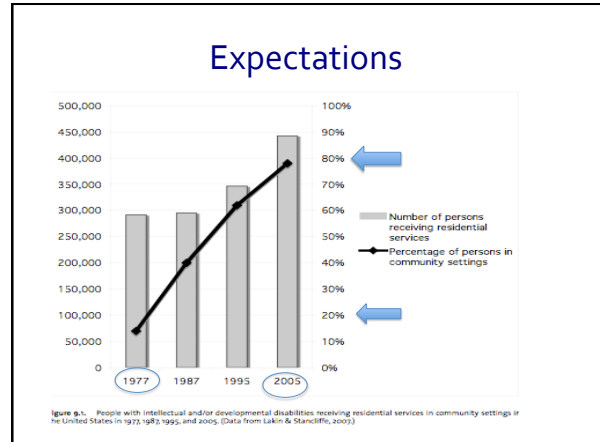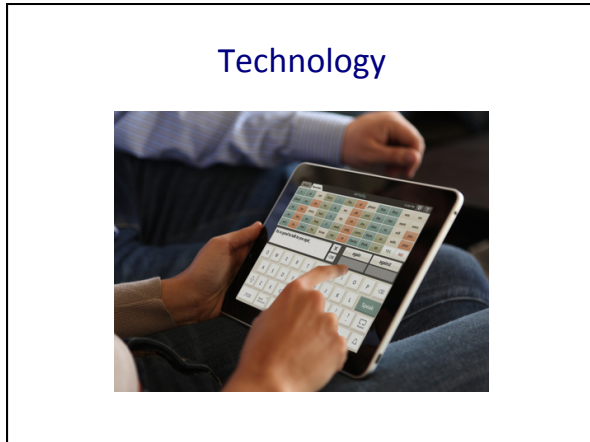
Communicative competence (1989)

- Functionality
- Adequacy
- Sufficiency of knowledge, judgment, skill
  - Linguistic
  - Operational
  - Social
  - Strategic

Populations

Populations

Scope of needs

Technology

Expectations

Figure 9.1.   People with intellectual and/or developmental disabilities receiving residential services in community settings in the United States in 1977, 1987, 1995, and 2005. (Data from Lakin & Stancliffe, 2007.)

Goals of this session

- Consider how changes in the field of AAC have impacted our understanding of communicative competence
- Discuss the skills that are required of individuals with complex communication needs to develop communicative competence;
- Summarize current research results on interventions to build these skills with individuals with complex communication needs (CCN).

Communicative competence depends on

- Knowledge, judgment, and skills in four interrelated domains
  - Linguistic
  - Operational
  - Social
  - Strategic

Linguistic domain

- Language skills are the foundation of communicative competence
  - Skills in the language(s) spoken by the family and community
    - Receptive
    - Expressive
  - Skills in the "language" code of the AAC system(s)
    - Content, form, use

Linguistic Competence

- But
  - Many AAC systems are not true language systems
  - Disconnect between input and output
  - Limited models

Interventions to build linguistic competence

- Provide **early** intervention
  - Too often "early" intervention is not early
  - 80% of children are > 2 years old when they receive AAC services (Hustad, et al., 2005)
  - No means of communication during critical stages of development

Development of language and literacy skills

Average Spoken Vocabulary for Children
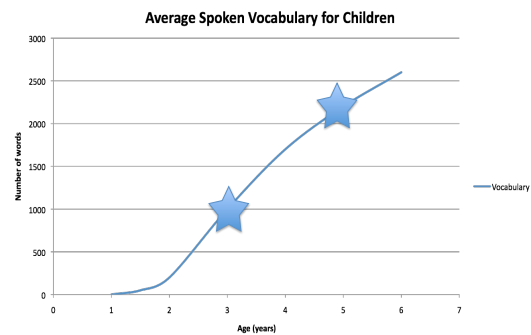
Intervention to build linguistic competence

- Provide access to a rich language environment
  - Introduce wide range of concepts
    - Not just object labels, but also questions, social expressions, relational terms

  - Provide access to concepts via AAC
    - Do not require children to prove knowledge first
    - Support children in learning language via AAC

  - Add vocabulary on a daily basis

Intervention to build linguistic competence

- Focus on motivating and meaningful contexts within the natural environment
  - Numerous opportunities for communication
    - Not just expression of needs and wants
    - But rather opportunities for sustained social interaction
  - Involve parents and families as well as daycare/ school teams

### Frequency of turns in 20 min expressed by GR: Baseline to Intervention (8-36 months)
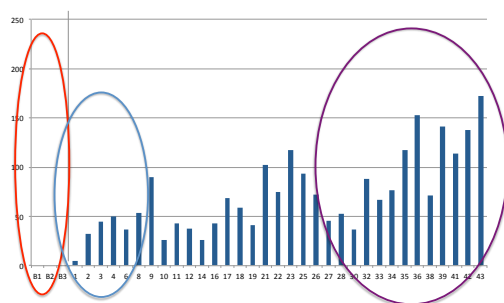
Intervention to build linguistic competence

- Provide opportunities for communication
  - Pause and wait

- Model AAC & speech
  - Speech & sign
  - Speech & aided AAC

- Respond to child's communicative intent
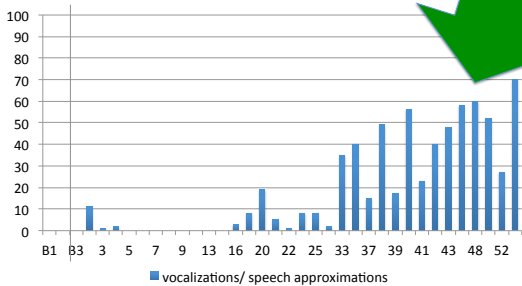 - Expand & model more complex language

Intervention to build linguistic competence

- Introduce literacy skills early
  - Use literacy to teach language concepts, syntax & morphology

- Intervention to teach literacy skills
  - Direct instruction in basic skills
    - Phonological awareness, letter sound correspondences, single word decoding, sight word recognition
  - Numerous opportunities to apply skills in meaningful & motivating reading activities

% of turns expressed via different modes by JL at baseline & during intervention (15-37 months)

■ vocalizations/ speech approximations   ■ gestures/signs   ■ Aided AAC
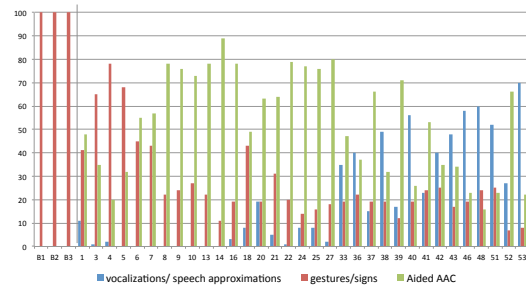
% of turns communicated via speech by Jackson

■ vocalizations/ speech approximations

Summary of intervention to build language skills

- Start early
- Focus on meaningful & motivating activities in the natural environment
- Provide access to a rich language environment /effective means to communicate
  - Introduce literacy skills early
- Provide opportunities for communication
  - Pause and wait
- Model AAC & speech
- Respond to child's communicative intent

Results of intervention to build language/literacy skills

- With early AAC intervention, children
  - Demonstrate significant increases in their rates of turn taking

  - Learn to use multiple modes to communicate
    - Aided & unaided AAC provide a means to communicate & learn language before speech develops
    - Use of AAC does NOT inhibit speech development

  - Demonstrate significant growth in their expression of concepts
    - AAC provides a powerful visual support to facilitate language learning

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Early intervention for young children with autism, cerebral palsy, Down syndrome & other disabilities
Website at http://aackids.psu.edu

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For further information on literacy intervention, visit http://aacliteracy.psu.edu

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The development of communicative competence

- Rests on knowledge, judgment, and skills in four interrelated domains:
  - Linguistic
  - **Operational**
  - Social
  - Strategic

Operational domain

- Skills in the technical production, operation & use of AAC systems
  - Skills to produce hand (or body) shapes, positions, orientations, & movements required for unaided systems
  - Skills to technically operate & use aided AAC systems
    - Low tech & high tech systems
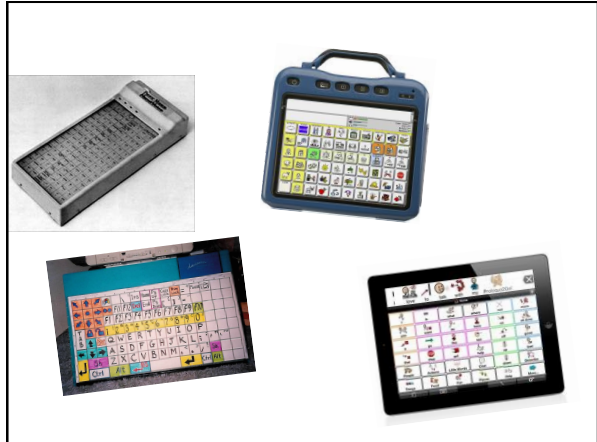
Building operational competence

- People without disabilities receive 12 years of writing and language teaching during school. I had next to none. Usually the consumer is given 2 to 6 hours of teaching how to use the device. Extensive, intensive teaching during implementation is the key to success.
 Randy Horton

Increase practice

Rackensperger et al (2005)

I had my mom take a couple of sections at a time out of the thick Unity binder and put them into a thinner binder so it wasn't too mind boggling for me. Then I would study the sequences and description . . . I did most of my practicing (or) memorizing sitting on the family room floor with my Liberator perched on a chair in front of me along with a few sections of the Unity program (manual) in front of me. I did pretty good with motivating myself to keep on studying on a regular basis three or four times a week for two hours at a time ... It took about two years to learn the entire vocabulary really well.

("Julie", age 28)

Reduce complexity

Increase practice
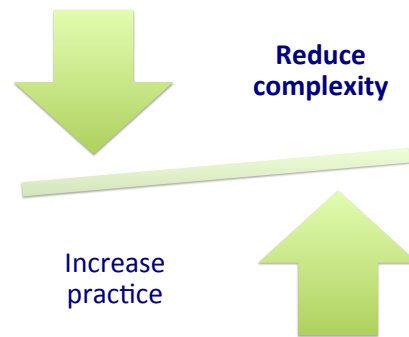
Intervention to maximize operational competence

- In order to maximize operational competence,
  - Work to minimize demands of AAC systems

- Current AAC technologies reflect the conceptual models of nondisabled adults
  - As a result, many AAC systems are not developmentally appropriate for children

- Need to re-think the design of AAC systems
  - Reduce the learning demands for children

Reducing the learning demands

Reducing the learning demands

Re-thinking AAC symbols

PCS for "who"

- 0% correct
  – Others thought it was "a back of a head", "a boy eating spaghetti", "a hair cut", "a 7 with ears", etc

Child's representation of "who"
"Girl says, 'Mom, who is that?'
'This is your new daddy.'"

Traditional AAC displays

Traditional grid layout

- Each language concept is represented by separate AAC symbols in "boxes" organized in rows & columns

- Language is taken out of context

- Understanding symbols relies on semantic memory

- Each representation must be processed separately, understood, & then integrated

GRID FOR "PLAYING TELEPHONE"

Mom	talk	telephone
Dad	hi	who?
boy	goodbye	

Alternative approach to AAC displays
Visual scene displays

Visual scene display (VSD)

- Vocabulary embedded under "hot spots" in integrated visual scene
- Language is presented in meaningful context
- Scene is processed as an integrated unit
- Meaning is derived from the entire scene

VSD FOR "PLAYING TELEPHONE"

Research on the effect of type of display

- Infant study (Wilkinson & Light, in progress)
  - 4 different contexts familiar to infants
    - Feeding, bathing, playing ball, etc
  - Infants viewed pairs of displays for each context
    - E.g., PCS grid vs. photo VSD
    - Position & order counterbalanced
  - Eye tracking technology
    - Measure visual attention / interest

Type of display affects visual attention of infants

- Infants looked first & longest at photo VSD compared to PCS grid
- Infants at "first words" stage demonstrated strong preference for photo VSDs

Mean length of viewing, VSD vs grid

Type of display affects performance

- Toddlers were more accurate locating vocabulary using VSDs than grid displays (Drager, Light, et al., 2003)

- It was not until 4 & 5 years of age that children performed with similar accuracy using VSDs or grid displays (Light, et al., 2004)

2000 words

Type of display affects performance

- 4 & 5 year olds still performed much more accurately with VSDs or grids than with iconic encoding (Light, et al., 2004)

- With appropriate intervention, preschoolers with CCN can acquire basic literacy skills
  - Require access to traditional orthography (Light & McNaughton, 2009)


Implications for designing AAC displays for young children

- Results suggest that VSDs may be better suited than grid displays for
  - Infants, toddlers, younger preschoolers
  - Other beginning communicators (under age 4 - 5 developmentally)

- Compared to traditional grid displays, VSDs
  - Attract more visual attention
  - Result in more accurate performance locating vocabulary
  - Seem to support more rapid lexical development / language learning

Potential advantages of VSDs

- represent familiar events and activities
  - replicate the contexts in which children learn language

- present language in context
  - provide support for understanding & learning
  - support access to language via episodic memory

- preserve conceptual & visual relationships between people & objects that occur in life
  - preserve the location, function, proportionality of concepts

- provide motivating & interesting contexts
  - stimulate interaction

- seem to offer visual processing advantages
  - rapidly process scenes (<200 milliseconds)

Reduce complexity

Increase practice **by making it fun!**
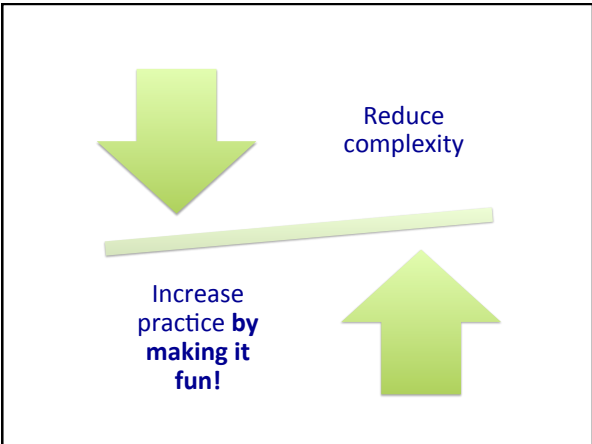
Implications for practice

Minimize operational costs and maximize power of communication by designing developmentally appropriate AAC systems

– early stages of language development
 – VSDs that include photos /familiar images of people engaged in meaningful & motivating events

– later stages of development
 – Provide access to traditional orthography
  • Support more advanced language & literacy development

Additional resources

• For more information on designing AAC systems for young children with complex communication needs, see the webinar at
 – http://www.atia.org/i4a/pages/index.cfm?pageid=3989
• Or visit our AAC at Penn State website for further information
 – http://aac.psu.edu

Communicative competence depends on

• Knowledge, judgment, and skills in four interrelated domains:
 – Linguistic
 – Operational
 – **Social**
 – Strategic

Social domain

• Sociolinguistic skills
 – Discourse skills
  • E.g., turn taking, initiation/ responses
 – Communicative functions

• Sociorelational skills
 – knowledge, judgment, and skills in the *interpersonal* aspects of communication

What makes someone a "good" communicator?
(Light, Arnold, & Clark, 2003)

- Participating actively in interactions
- Being responsive to partners
- Demonstrating interest in partners
- Putting partners at ease
- Projecting a positive self-image
- Engaging partners in interaction
- Maintaining a positive rapport

Chris Klein

they have a difficult time getting into a conversation with anyone.

Challenges in the Development of Sociorelational Skills

- Individuals with CCN may lack
  - the means to demonstrate sociorelational skills
  - the social experiences required to develop these skills
  - appropriate intervention to teach these skills

Intervention to build sociorelational skills

- Partner-focused questions are a powerful means to build social competence
- PFQs focus on the partner's interests, activities, feelings, etc.
  - Serve to put the partner at ease
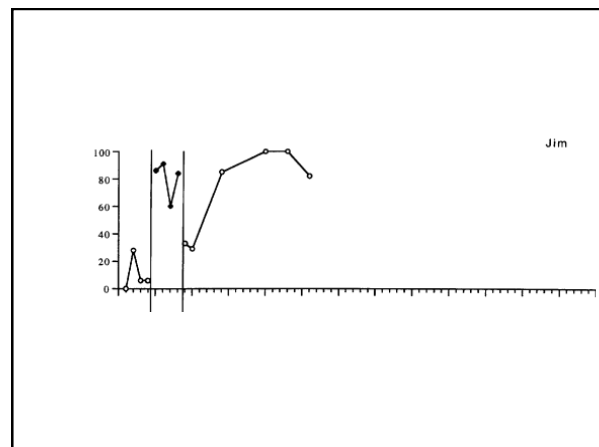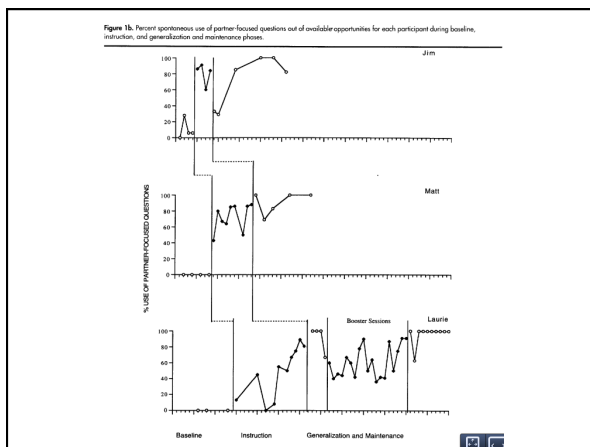 - Demonstrate interest in partner/ other orientation
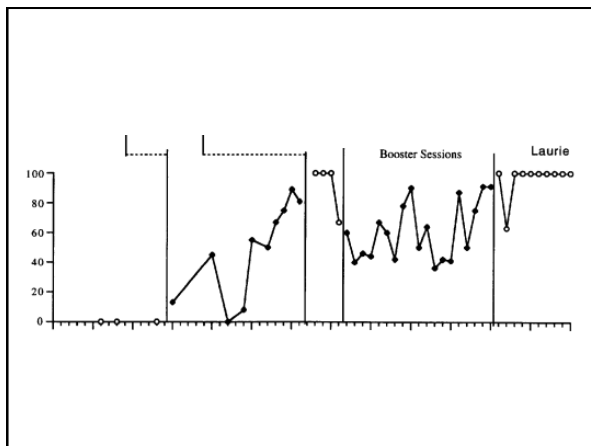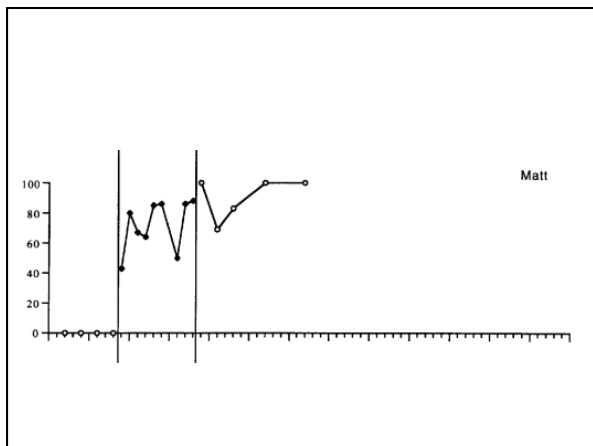
Intervention procedures
(Light & Binger, 1998; Light, Binger, Agate, & Ramsay, 1999)

- Identify appropriate interaction contexts
- Provide appropriate vocabulary to ask PFQs
- Provide guided practice in PFQs using least to most prompting hierarchy
  - Natural cue
  - Expectant delay
  - Point
  - Model
- Provide opportunities for practice in varied contexts in natural environment to build generalization & maintenance

Effects of intervention to build sociorelational skills

- After intervention, participants
  - Demonstrated acquisition of the target skill
    - Asking partner-focused questions
  - Participated in longer & more frequent interactions
  - Were perceived to be more competent communicators
    - By themselves
    - By familiar partners
    - By observers naïve to AAC

Figure 1b. Percent spontaneous use of partner-focused questions out of available opportunities for each participant during baseline, instruction, and generalization and maintenance phases.

Matt

Booster Sessions   Laurie

Communicative competence depends on

- Knowledge, judgment, and skills in four interrelated domains:
  - Linguistic
  - Operational
  - Social
  - **Strategic**

Strategic domain

- Individuals who require AAC will encounter limitations in their development of linguistic, operational, and social skills
- They will require strategies to allow them to bypass these constraints and make the best of what they do know and can do
  - Temporary strategies
  - Long term strategies

Examples of strategies
(Mirenda & Bopp, 2003)

- Difficulty understanding the partner
  - Ask partner to slow down or augment input
- Word or phrase not available
  - Ask partner to "guess"; use another mode; paraphrase
- Rate of communication too slow
  - Ask partners to predict; use telegraphic messages
- Partner is uncomfortable
  - Use an introductory message; use humor

Chris Klein in bank

BANKER: so you can use this to show

The AAC Mentor Project
(Light, McNaughton, Krezman, Williams, et al., 2002)

- Leadership Training (online) for adults who used AAC
  - To develop skills as effective mentors
  - To build leadership capacity

- Mentor Program (via E-mail)
  - To support adolescents and young adults who use AAC in solving problems and meeting personal goals

AAC Mentor Project:
Leadership Training

- 31 adults with CP participated
  - 20-48 years old (mean = 32 years old)
  - All had functional literacy skills

- Self-paced online intervention designed
  - To develop positive and effective interpersonal communication skills
  - To develop collaborative problem solving skills
  - To teach strategies to facilitate access to disability-related information and resources

AAC Mentor Program

- Adolescents & young adults who used AAC choose mentors who used AAC to provide
  - Access to role models
  - Encouragement & social support
  - Collaborative problem solving and goal setting
    - Friendship
    - Personal care assistants
    - Transition planning
  - Access to relevant resources

AAC mentor program results

- Proteges set a total of 80 goals with their mentors
  - Attained 32%
  - Made progress toward 51%
  - Did not make progress toward 16%

AAC Mentor Program
Satisfaction / Social validation

- 96% of protégés were very satisfied; they liked
  - Talking to someone who understood
  - Sharing experiences
  - Getting new ideas for doing things
  - Being "a part of something"

- 97% of mentors were very satisfied; they liked
  - Helping someone else
  - Sharing similar experiences
  - Meeting someone new

http://mcn.ed.psu.edu/~mentor/
(Light, McNaughton, Krezman, Williams, et al., 2002)

Chris Klein' Mentor program

BeCOME:AAC

Building Connections With Others Through Mentoring & Education About AAC

BecomeAAC.com

Light (2003)

Psychosocial Factors

Environmental Supports & Barriers

Communicative Competence
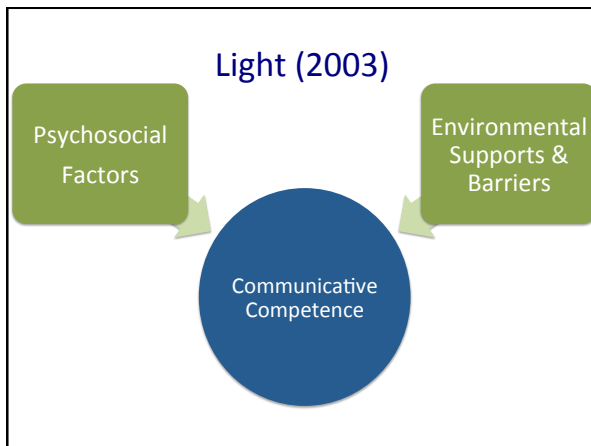
Psychosocial Factors

- Motivation
  - Worth doing + can be done
- Attitude
  - Positive outcome is achievable
- Confidence
  - Effort will produce a positive outcome
- Resilience
  - Continued effort in face of adversity

Environmental Supports and Barriers

Attitudes

Policy & practice

Knowledge & skills

John Draper
(Carter & Draper, 2010)

- …One example was how the lockers of students who had a disability were grouped in a separate location rather than integrated into the alphabetical order of the rest of the student population. Another example was the practice of having students who had a disability work with paraprofessionals in a segregated resource room rather than allowing us to interact with our peers in the school library. These practices limited my chances of connecting with peers….I have often wondered how much more rewarding my high school experiences would have been had more of the teachers and paraprofessionals in my life understood the critical connections between fostering relationships and achieving educational success

Environmental Supports and Barriers

Trottier, Kamp & Mirenda (2011)
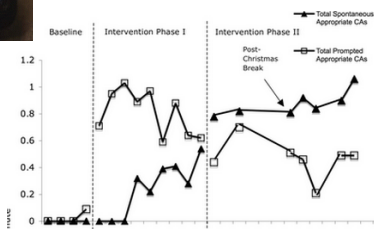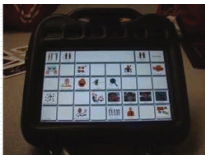
Environmental Supports and Barriers
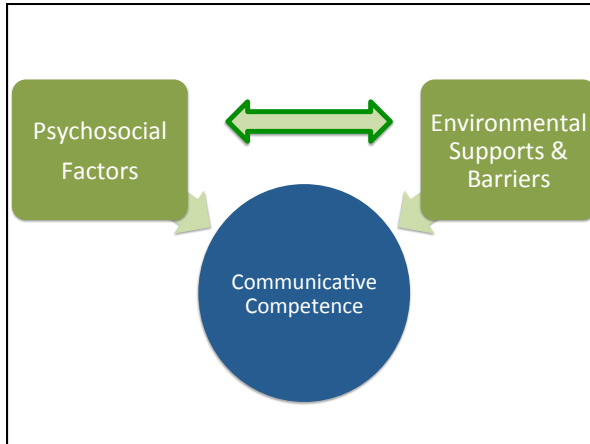
Communicative Competence

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  - "the state of being functionally adequate in daily communication and of having sufficient knowledge, judgment, and skills to communicate effectively in daily life" (Light, 1989)

Joy of aides (Eva Sweeney)

Changes in…

- Populations
- Communication needs
- AAC systems
- Expectations for participation

Integration of skills across domains

- Communicative competence depends on the integration of knowledge, judgment and skills across linguistic, operational, social and strategic domains
  - Linguistic and operational skills provide the **tools** for communication
  - Social and strategic skills focus on **effective use** of these tools in interactions

- Attainment of communicative competence is a complex process that requires concerted intervention

The art and the science of building communicative competence

– The science
  - Research that advances understanding and practice

– The art
  - The belief and the commitment to the right of all individuals to express themselves fully and seek their full potential

For handouts, visit http://aac.psu.edu

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Augmentative and Alternative Communication at the Pennsylvania State University

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UPCOMING
AAC-RELATED EVENTS

Events on January 10, 2012

Designing Effective AAC Technologies for Beginning Communicators - ATIA Webinar by Janice Light
Starts: 12:00 pm
Ends: January 10, 2012 - 1:30 pm
Location: Online Webinar
Description: This session will include discussion of a wide range of research studies that address the subject of the design of AAC technologies for beginning communicators. Each study will be presented briefly with a

Home

Welcome to AAC at Penn State!

The Penn State AAC community of faculty, graduate students and undergraduate students are dedicated to enhancing communication and improving the overall quality of life for individuals who have complex communication needs and their families. We are seeking to improve outcomes for

SEARCH

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- Masters Students Prepare for Externship Experiences (12/9/11)
- Congratulations to Penn State Masters Students! (12/9/11)
- AAC for School-age Children with Intellectual Disabilities: Strategies for Long-Term Intervention — Webinar (12/7/11)
- AAC for School-age Children with Intellectual Disabilities: Basic Strategies for

Acknowledgements