

Project ASPIRE: Addressing Language Disparities for Children with Hearing Loss

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Outline

- Impact of poverty on child development and educational attainment
- 30 million word gap: foundational impact on early language development
- Closing the gap: the Thirty Million Words Project
- SES disparities in children with hearing loss
- Project ASPIRE: addressing the disparity
- AG Bell/LSLS: a continued evolution

Children born into poverty

- Income inequality has never been greater in this country
- Children are profoundly impacted: **16.1 million** children live in poverty
- An additional **16.3 million** children are living just above the federal poverty line

Children born into poverty: The Stats

- Racial and ethnic minorities are disproportionately affected
- Children under 18 living in low-income families in the United States in 2011:
 - 11 million (65%) of Latino children
 - 6.5 million (65%) of African-American children
 - .4 million (63%) of American Indian children
 - 12.1 million (31%) of white children
 - 1 million (32%) Asian children

A life of poverty often means:

- Limited access to
 - health care
 - quality education
 - healthy food
 - safe play and exercise
- Living in more violent and economically depressed neighborhoods
- Precarious or unstable housing

Toxic Stress

- Extreme or prolonged stress can become 'toxic' for children and derail healthy development
- 'Toxic stress' can negatively impact neural connections in the learning and reasoning parts of the brain
- When experienced in early life, this has long-term consequences on a child's learning, behavior, and physical and mental health

Impact On health

- Impoverished children at greater risk for:
 - Poor physical health
 - Chronic health conditions
 - Behavioral and emotional problems

Educational attainment

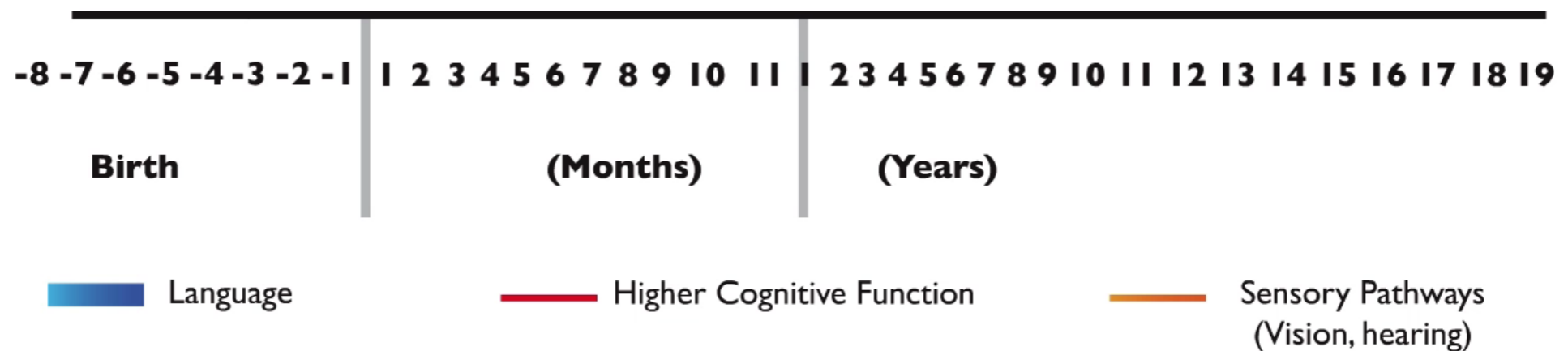
- Only 48% of low-SES children are school-ready by age five
- 80% or more of African-American and Latino public school students can't read or do math at grade level in 4th, 8th, and 12th grades

Educational attainment

- Dropout rate of low-SES children was 5 times greater than higher-SES children in 2009
- Even the highest-scoring low-SES children are much less likely to finish college than their higher-SES counterparts

Human Brain Development

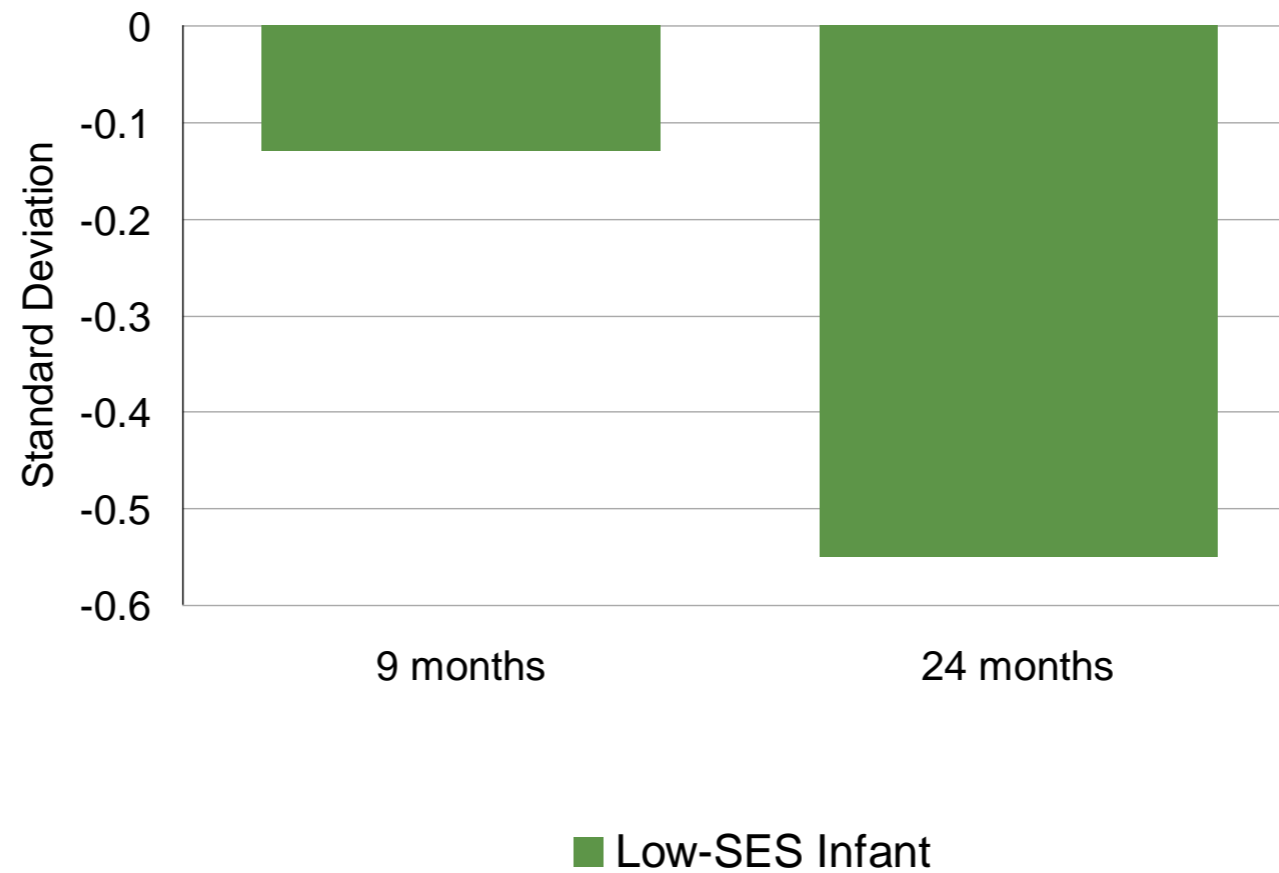
Synapse Formation Dependent on Early Experiences (700 per second in the early years)



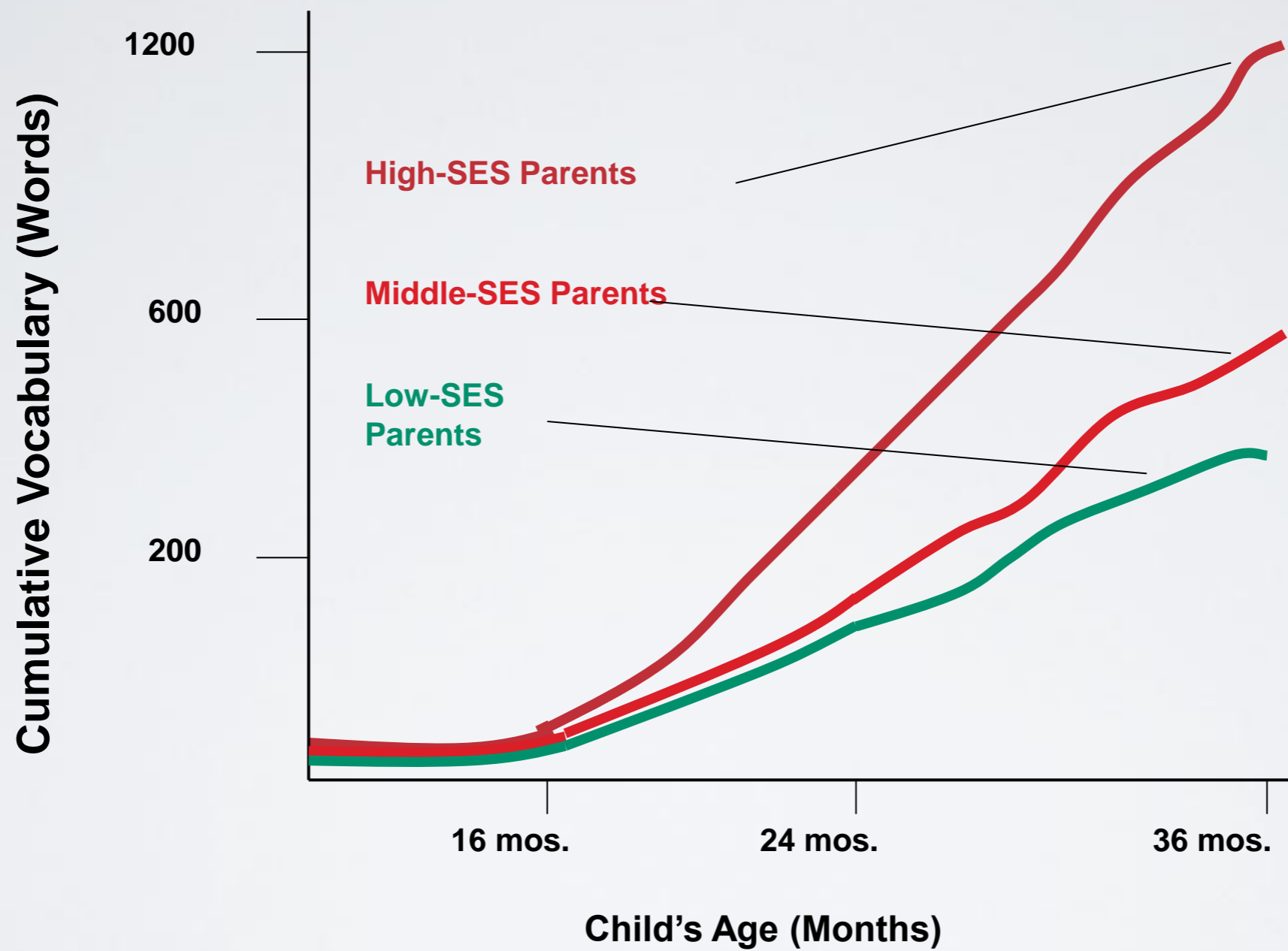
(National Scientific Council on the Developing Child, 2007)

Disparities in cognitive development assessment between higher- and lower-SES infants

Mean score for infants above 200% Federal Poverty Line →



Child vocabulary development



Early language disparities

- Early language disparities play a critical role in the academic achievement gap found in low-SES children
- Language skills are foundational for:
 - Cognitive ability
 - Literacy
 - School readiness

Thirty million word gap

- Hart + Risley:
 - High-SES children: 45 million words by age 3
 - Low-SES children: 13 million words by age 3
- This 30 million word gap profoundly impacts children's vocabularies, test scores, and IQs

Disparities in early language environments

- Both quantitative and qualitative
- Inequities in parents' language input include:
 - significantly less talk and gesture
 - shorter and less complex phrases
 - less use of open-ended questions
 - greater use of directives

Disparities in early language environments

- Decreased parental language input leads to significant disparities in children's development of:
 - vocabulary
 - grammar
 - narrative skills
 - Early literacy skills
- Disparities in language skills are seen from infancy through high school, and the gap widens with age

The thirty million words project

- 12-week parent-directed behavioral intervention to equip parents with skills to enrich their children's language environments



- The disparities noted among typically developing children are compounded in children with hearing loss
- Early language environments have a profound impact on the outcomes of children with hearing loss, regardless of their communication option

Disparities in pediatric hearing loss

- A critical factor in these disparate outcomes is a lack of parental knowledge and skills to support child listening and spoken language development

Targeting the disparity: Project ASPIRE



- Parent-directed program designed to enrich the early language environments of children ages 0-3 with hearing loss
- Listening and spoken language curriculum
- Provided through Early Intervention
- Now funded: Dept. Education IES

Guiding philosophy

- Parents are children's first and most important teachers
- Enriching a child's early language environment occurs through promoting parent-child interactions that have been linked to positive child outcomes
- This does NOT require changing cultural practices and values or idiomatic speech

Goals

- Equip parents with knowledge of their child's brain and language development
- Increase parents' belief that their words have the power to “build their child's brain” and positively impact their educational outcome
- Increase parents' language input to enrich their child's early language environment

Curriculum

- Multidisciplinary approach, combining research from:
 - Early childhood development
 - Listening and spoken language development
 - Behavioral intervention
 - Health promotion
 - Sociology
 - Health disparities
 - Social marketing

Curriculum

- Extensive formative development and testing with parents, community stakeholders, and interdisciplinary experts
- Culturally-sensitive curriculum focused on increasing parent language input and parent-child interaction
- Presents evidence-based information in an approachable, easy-to-understand manner that is accessible to most literacy levels

Curriculum: more than just “talk”

- Rich early language environment includes:
 - child-directed speech
 - turn taking and wait time
 - description and expansion
 - scaffolding
 - joint attention
 - routines
 - open-ended questions
 - labeling
 - praise and encouragements
 - prompting over commands and prohibitions
 - dialogic book reading
 - decreasing TV and technology time

Intervention elements

- Coaching method
 - One-on-one Home Visiting model
- Educational modules
- Behavioral strategies
 - Video modeling
 - Quantitative Linguistic Feedback
 - Goal setting

Coaching method

- ASPIRE-trained Early Interventionists
- Parents are partners
- Discussion-based, motivational, non-judgmental approach
- Fosters parents' sense of autonomy and competency



Educational modules

- 10 weekly computer-based modules
- Integrate practical strategies for increasing parent talk and turn taking into routines and everyday activities
- Multimedia platform
- Emphasis on cognitive fluency by teaching through concrete analogies

Educational modules: video

- Video of parent-child interaction illustrates real-life applications of educational content

Educational modules: animation

- Animation conveys scientific concepts that can't be captured in video in tangible, understandable ways

Behavior strategies: video modeling



- Interventionist and parent practice new skills on video
- Review and discuss using coaching method
- Gives parents immediate concrete feedback on implementing strategies

Behavior strategies: quantitative linguistic feedback

- LENA's automated technology grants an unprecedented window into a child's natural language environment
- Records 10-16 hours
- Measures
 - adult words
 - conversational turns
 - child vocalizations
 - TV time

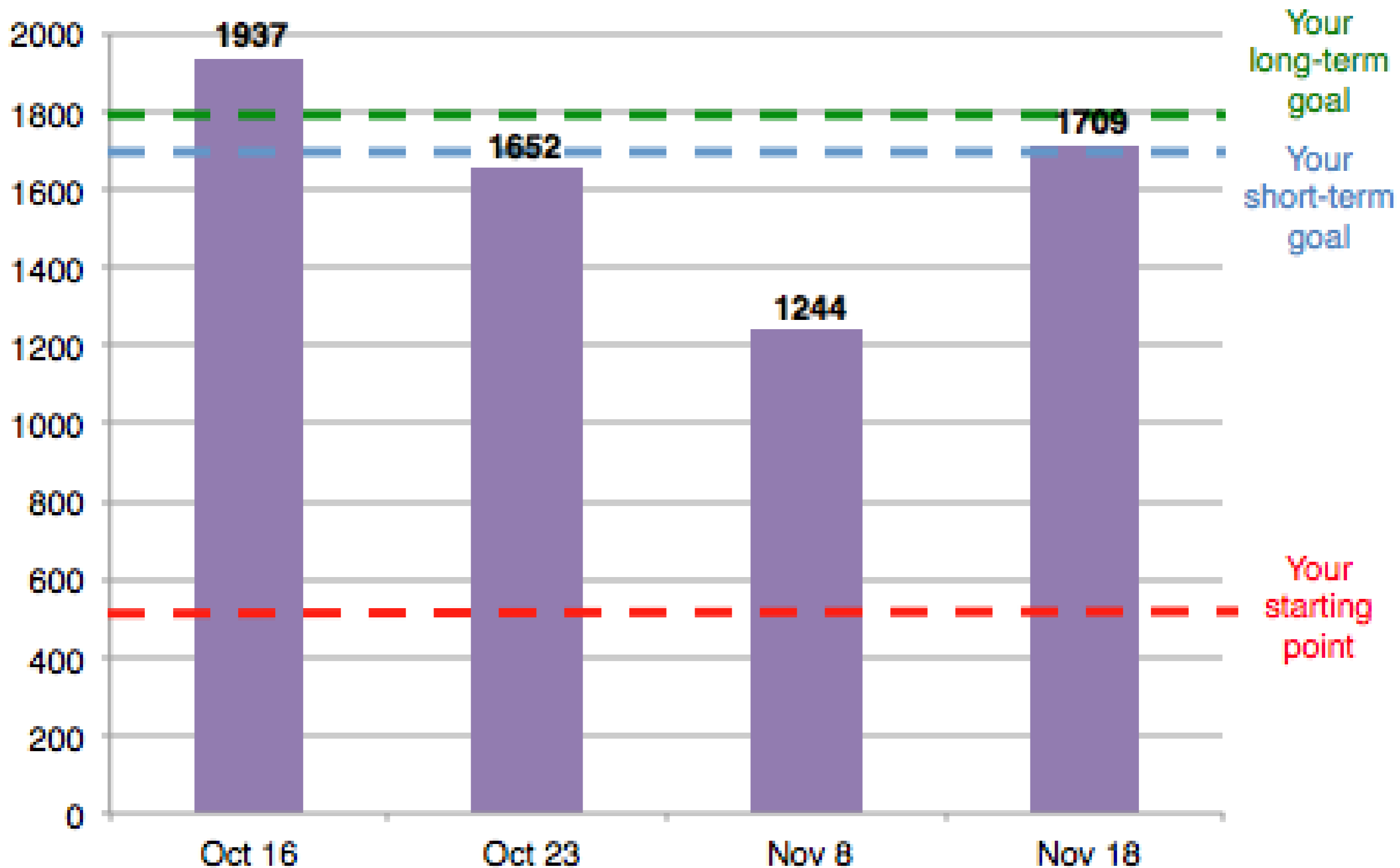


Behavior strategies: quantitative linguistic feedback

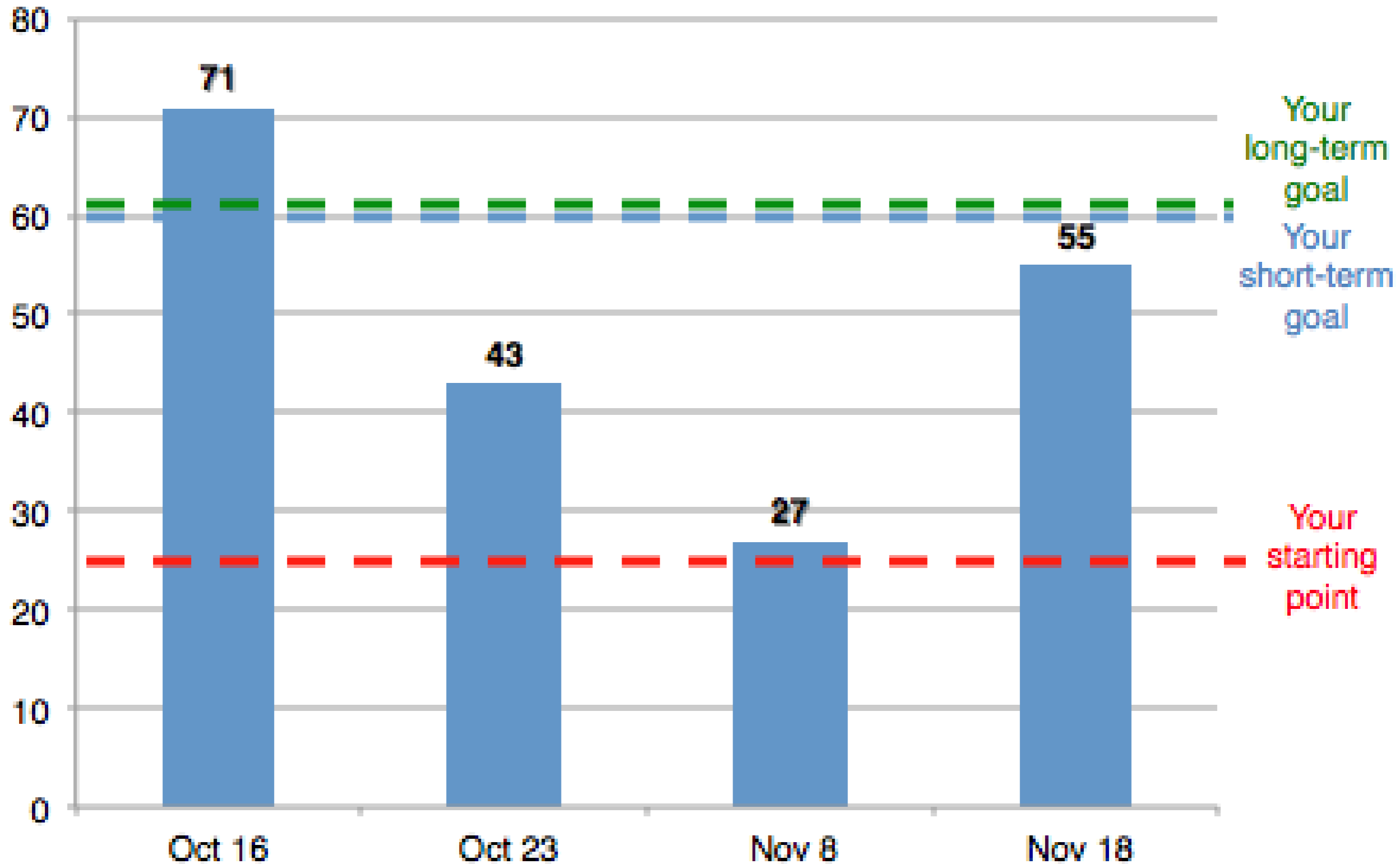
- Tool for:
 - awareness of language input
 - feedback
 - motivation
 - goal setting



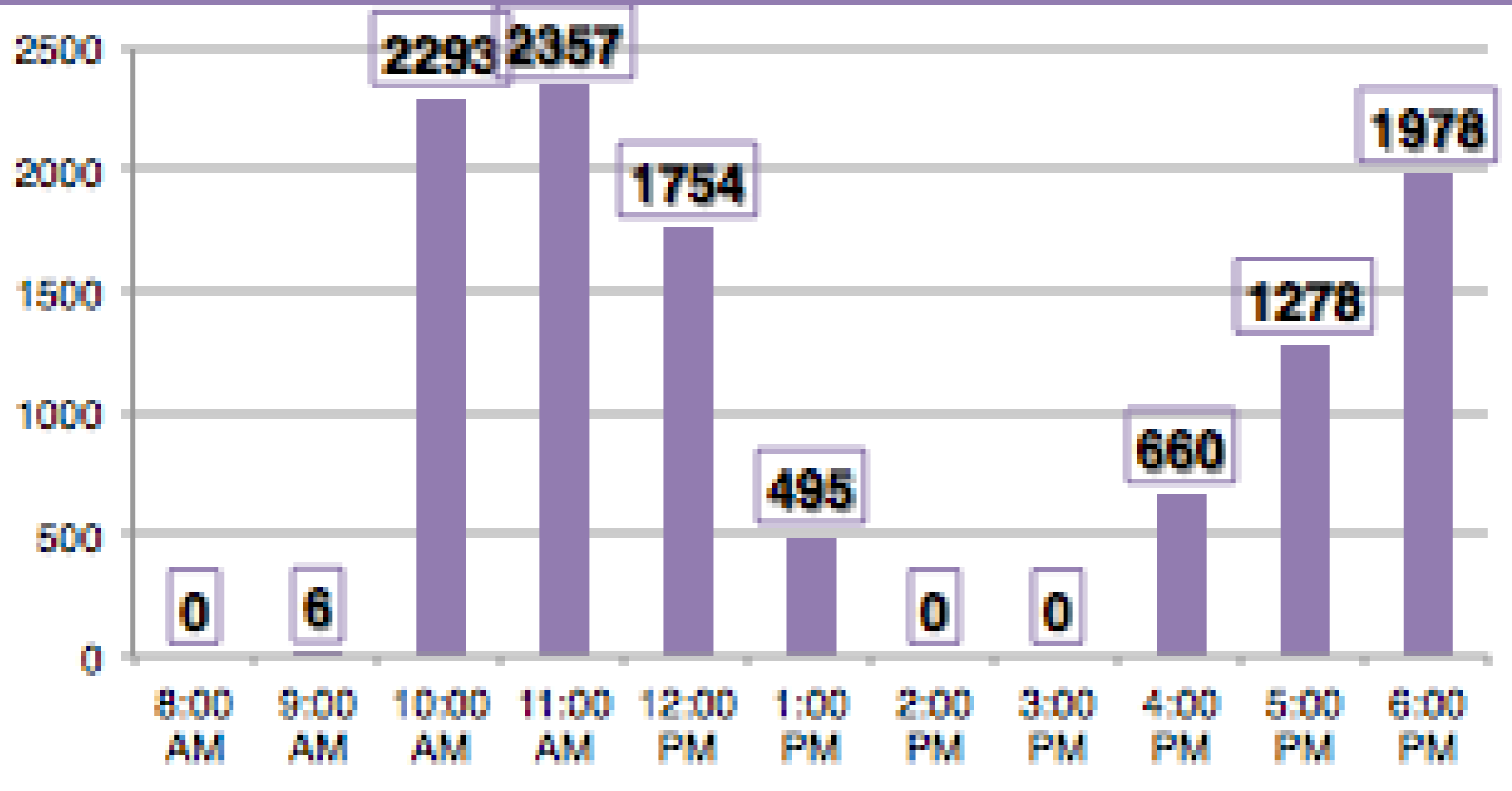
Average words per hour



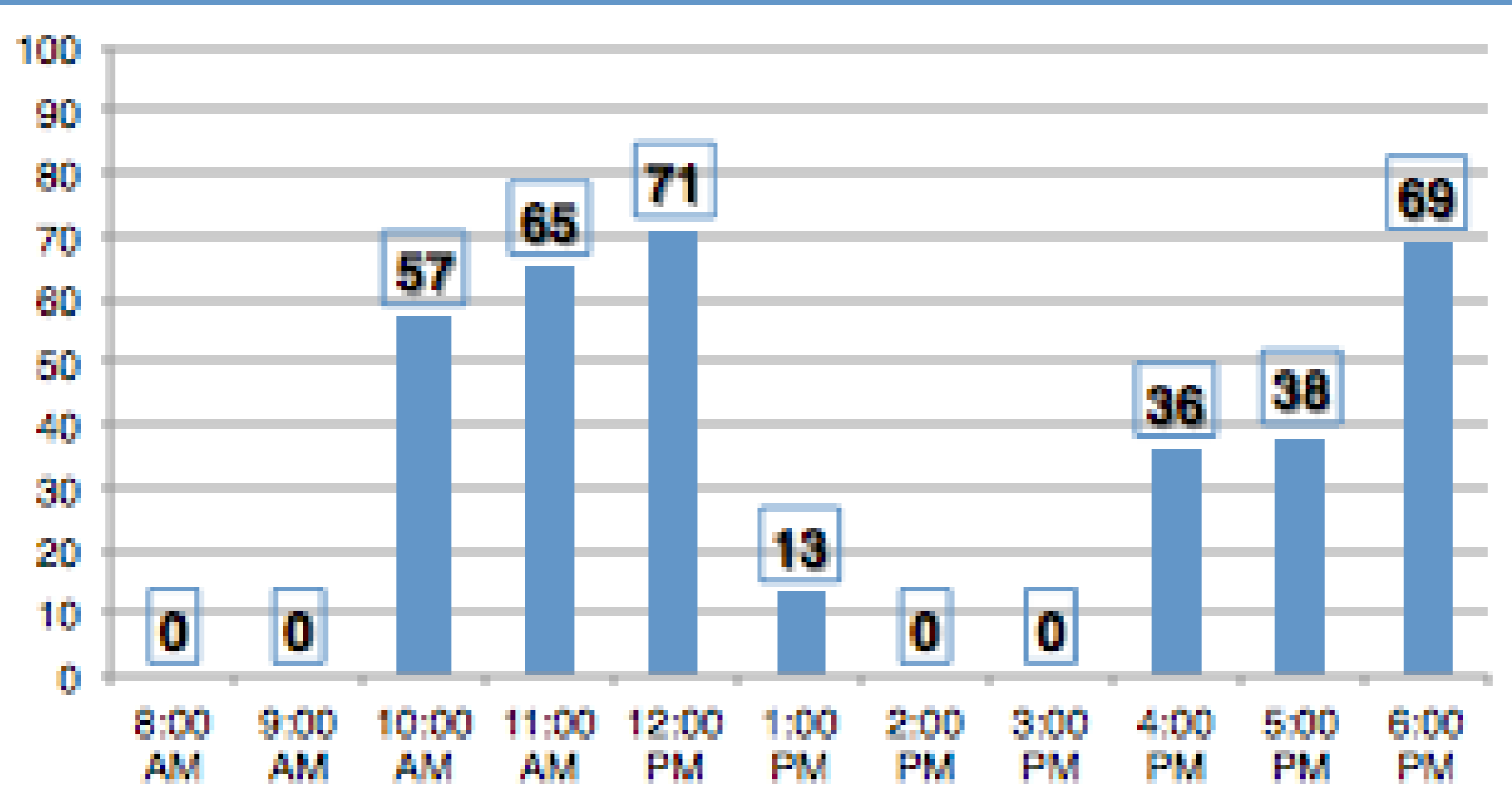
Average turns per hour



Your words
hour by hour
Nov 18

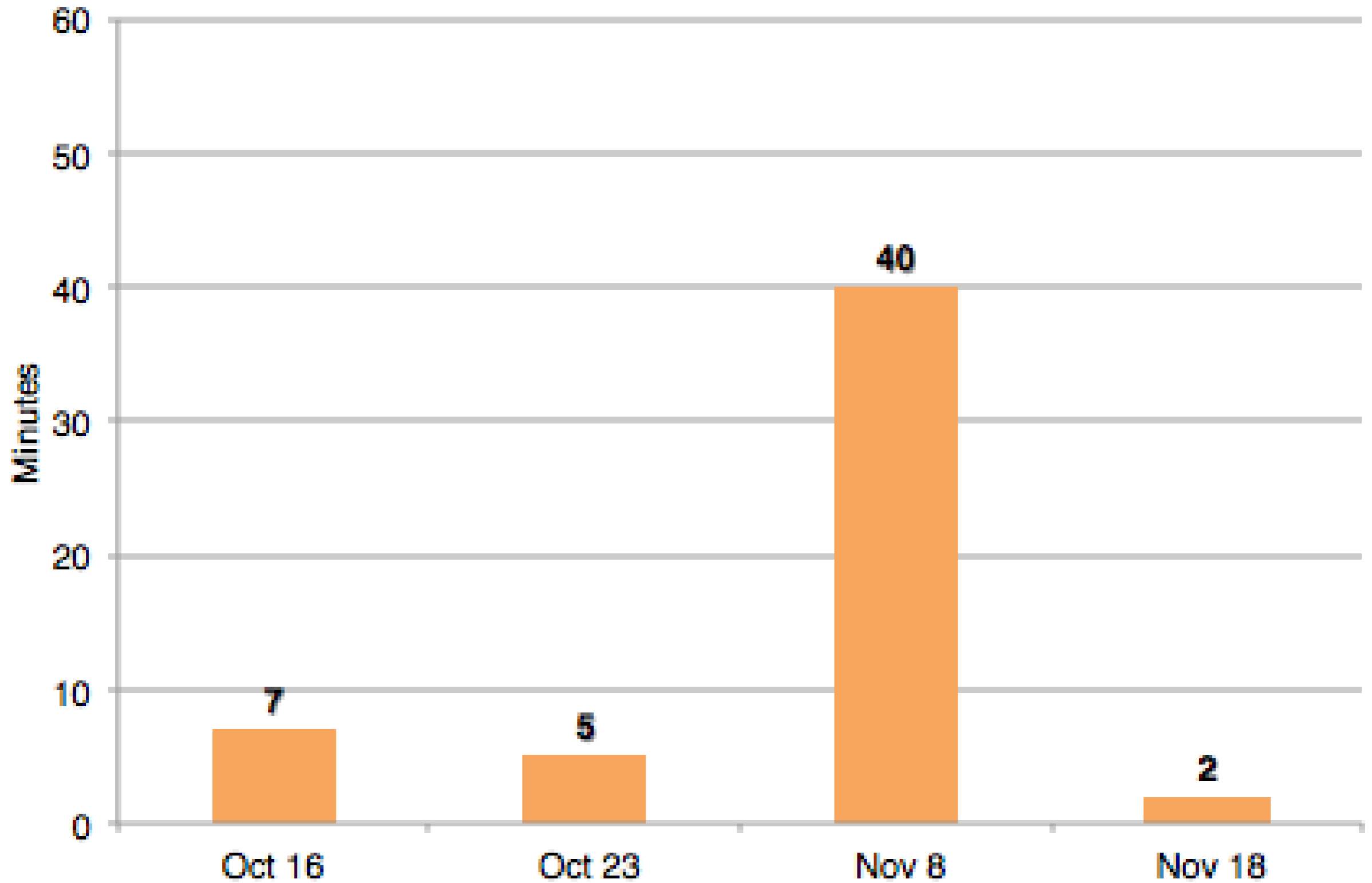


Turns
hour by hour
Nov 18





Total TV and Media



Pilot study

- Currently ongoing
- 32 families in Chicagoland area
- Quasi-experimental study
- 3-months post-intervention follow up

Project ASPIRE: Next steps

- Longitudinal, multi-institutional study
- Identify potential partners to make curriculum accessible nationwide
- Translate & video into Spanish
- Adapt for Telemedicine
- Comprehensive professional development
- Web-based Community of Practice for ASPIRE Interventionists

Listening and Spoken Language: a continued evolution

- We have come so far
- We must focus our efforts on those children being left behind
- We must disentangle disadvantage from diagnosis

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