

individual differences in school

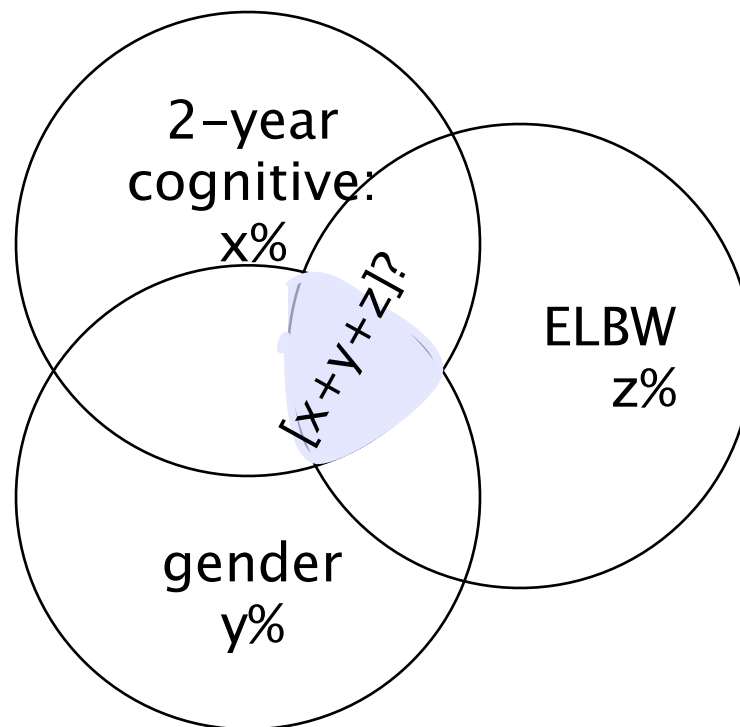
- **individual vs. group differences in psych**
 - ◆ why care about individual differences?
 - explaining current performance
 - predicting outcomes in individual students
 - special populations (disabilities)
 - figuring out “what goes with what”
 - designing interventions for specific subgroup

difficulty of explaining IDs

- ◆ **stability of traits limited by:**
 - situation
 - person x situation
 - measurement error
 - random error
- ◆ **example: ELBW children (<1 kg) (Sajamieni et al 2001)**
 - cognitive/language dev from 2 to 4 years
 - $r = .73$ (50% shared variance)

kinds of individual differences₂

- **predictive sub-groups:**



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- ◆ **example: ELBW children (<1 kg) (Sajamieni et al 2001)**
 - cognitive/language dev from 2 to 4 years
 - $r = .73$ (50% shared variance)
 - more complication:
 - scores at 2 predict IQ at 4 for GIRLS ONLY
 - in boys, IQ at 4 predicted by 2-yr temperament (orientation–engagement)

kinds of individual differences

- **in preschool development**
 - ◆ cognitive/language skills (predictive? causal?)
 - ◆ social skills (what kinds for school?)
- **in prior achievement**
 - ◆ aptitude: hard to separate from achievement
 - ◆ knowledge begets knowledge: “Matthew effect”
- **in behavioral patterns**
 - ◆ ex: homework habits
- **in attitudes, goals, values, and affect**

one aspect: learning disabilities

- math disabilities
[other kinds?]
- reading disabilities
 - ◆ high rate in children with SLI* (Tallal: “LLI”)
 - cause of dyslexia controversial; possible basis in phonological processing problem? (Tallal)
 - what is the point?
 - putative cause of LLI?
 - remediation/therapy: does the neuroscience pan out?
 - not advocating FastForWord

Physiological mapping studies have shown that the detailed organization of the auditory cortex is driven by environmental input during critical periods of development⁴³. Exposure to altered acoustic input during critical periods of early development, such as continuous or pulsed noise, significantly disrupts the development of tonotopic representation in the primary auditory cortex, and these developmental changes persist into adulthood⁴⁴⁻⁴⁵. Beyond the critical period, these sensory/neural maps can only be driven to change by intensive neuroplasticity-based training⁴⁶.

during critical periods of development Hebbian learning⁴⁷ drives the auditory cortex to ‘represent’ each phoneme of the native language as a distinct neural firing pattern (‘cell