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| **Brain Maturation**  **Symposium and Discussion Notes**  ***Terry Jernigan***  *An integrative Science of the Developing Human Mind and Brain*  *Behavioral phenotypes are forms of individuality*    *Risk phenotypes  -*  *Affective disorders*  *Psychosis*  *Substance use*  *Academic failure*  *Why do behavioral phenotypes diverge during development?*  *-Genetic*  *Model for emerging behavioral phenotypes in developing child*  *-Hypothetical domain relevant neural genotype*  *-Environmental effects of neural apparatus relevant to skill or domain*  *How do we test and improve such a model?*  *PING Project*  *Creating a Pediatric Imaging Genomics Data Resource*  *Cortical surface area Expansion/Contraction  Annualized*  *Multimodal imaging of self regulating developing brain*  *(PNAS, 2012)*  *Conceptual Model for Translating results to Interventions*  *Variations in early genetic patterning in brain  may introduce very subtle biases in infant’s sensorimotor processing*  *Observing Developing Mind*  *-New relationships with families*  *From fragmentation to integration in developmental science.*  *-how to contextualize ?*  ***Erik Newman***  ***Datasets***  ***Aims****- Identify contextual and individual differences*  ***Data harmonization***  *- find subset of measure when possible*  *-allows for direct comparison across studies or sub studies*  ***Biological factors***  *Genetic Ancestry*  *-mediates association between ancestry and cortical surface area*  ***Child Mental Health***  **L***earning Disabilities*  *ADHD*  *Anxiety Disorders*  *Depression*  [*www.dsm5.org*](http://www.dsm5.org)  *cross-cutting symptoms:*   * *Temperament/Personality* * *Engagement and Motivation*   *ALEKS –*  *Thresholding –averse/sympathetic preferences*  *Use data in choice tasks to determine preference based on level*  *Martial arts (Lakes & Hoyt, 2004)*  ***Big Data Challenges***  *Finding measures that span your age of interest (longitudinal study)*  *Finding developmentally appropriate measures*  *How to collect data that is both useful and brief*  *Contextual factors*    ***Richard Tibbles***  *Data and the web*  *Scaling data collections*  *Scaling time and participants*  *·      Resource intensive*  *·      Limits number of participants*  *·      Limits number of time points*  *Scaling over time and participants*  *Gathering behavioral data online*  *Online surveys*  *·      straight forward*  *·      easy*  *·      stroop effect*  *·      flanker task*  *·      posner task*  *Psycho coffee*  *·      robust preload*  *·      experimental measures*  *·      platform for online behavioral tasks*  *Educational Technology*  *·      data collection*  *o   fine grained time course (master over time)*  *·      iterative design*  *o   participatory design with teachers*  *o   move into classroom when ready*  *o   leverage individual differences evident in highly dimensional data*  *o   create iterative designs for personalized learning*  *Highly multidimensional data on learners*  ***Session Questions and Discusions:***  ***Use of EEG and Neural data in schools?***  ***Educational variables- how do we change the culture?***  ***What can be done to implement educational research in school systems?***  ***What changes will be necessary for educators and scientists?***  *Problem is with expectation for quick results…. Need support in staffing*  ***What change in avenues to education are needed to integrate relevant big data into pedagogical practice?***  *- research that is relevant , use models, focus on learning in the university*    *- start younger with children and “nest” them for MBE principles*  ***What kind of assessments will provide evidence of success***  *-What is critical?...metrics?....difficult to specify….*  *-Having educational background before “in-service” begins.  The knowledge will help drive   practices that yield evidence.*  *-Perception assessments upon educators.* |