

Abstracts of Plenary Sessions and Posters Accepted for Presentation at the 2017 Annual Meeting of the Society for Developmental and Behavioral Pediatrics

Platform Session Abstracts Presentations

Abstract 1

Which child functional characteristics are most predictive of perceived family impact of child neurodisability?

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Purpose: Family impact of childhood neurodisability is usually studied condition-by-condition. This study aims to identify the specific child functional characteristics that are most predictive of families' perceptions of the impact of childhood disability, across conditions. **Methods:** Caregivers of 216 children with neurodevelopmental disabilities ($M = 8.17$ years) completed measures of children's practical, conceptual and social skills (i.e., adaptive functioning), behavior problems, and perceived negative family impact. The frequencies of caregiver-reported primary diagnoses were: 35% cerebral palsy, 27% autism spectrum disorder (ASD), 20% global developmental delay, 10% epilepsy, and 8% had multiple listed conditions. **Results:** In order to predict perceived negative family impact, a hierarchical multiple regression was conducted with child age and gender entered in Step 1, and problem behavior and adaptive functioning subdomains in Step 2. The second model was statistically significant ($F(9, 206)=9.66, p<.001$), and accounted for an additional 29.5% of the variance in negative family impact above and beyond model 1 ($F(7, 206)=12.33, p<.001$). Children's practical and social skills, as well as emotional symptoms emerged as significant predictors of perceived negative family impact, with emotional symptoms accounting for greatest variance. We also examined whether the same domains would emerge as significant after controlling for the influence of ASD, a condition which may exert particular strain on the family system. A second regression was conducted with presence of ASD (yes/no) included in Step 2, and problem behavior and adaptive functioning subdomains entered in Step 3. Including ASD did not explain additional variance, and the same functional characteristics (practical and social skills, emotional symptoms) emerged as significant. **Conclusion:** The study findings highlight the importance of devoting consideration to the ways in which the functional limitations experienced by children with chronic developmental health conditions similarly impact family well-being, regardless of disorder designation.

Abstract 2

High-Resolution CMA Genetic Testing of Children with Speech & Language Delay: Pathogenic Findings & Clinical Relevance

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Purpose: Early diagnosis of neurodevelopmental disorders such as autism is critical. Speech & language (S&L) delay may be an early sign for children at risk. Chromosomal microarray

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analysis (CMA) is a high resolution genetic test in medical guidelines as first-tier testing for the clinical evaluation of children w autism and other neurodevelopmental challenges. Our objective was to determine the prevalence of genetic causes in children who have S&L delay as a clinical concern and to compare these pathogenic findings w children referred for testing w/o S&L delay. **Methods:**We studied the findings of 15,175 children < 19 yo for whom CMA was part of the clinical work-up. We used T-test & chi-square analyses to determine the differences in a) diagnostic yield between children w vs. w/o S&L delay as part of their neurodevelopmental challenges, b) the age at which children w S&L delay get tested and c) any gender difference in genetic diagnostic yield in children w S&L delay. We also compared the most common genetic findings between children w vs. w/o S&L delay. **Results:**Children w S&L delay are referred for genetic testing at an earlier age (~ 1.3 years younger) than children w/o S&L delay who have other testing indications. In addition, children w S&L delay have the same prevalence of pathogenic findings vs. children w other indications not listing S&L delay. Girls w S&L delay have a higher prevalence of pathogenic findings (11.7%) than boys w S&L delay (8.2%). Genetic diagnoses differ based on whether S&L delay is included or not as a testing indication. e.g., 47,XXY aneuploidy is much more common in children w S&L delay vs. children w/o S&L delay. Details about how specific pathogenic findings impact clinical management will be presented. DB peds refer children w S&L delay for testing earlier than pediatricians. **Conclusion:** Children w S&L delay often have an identifiable genetic cause for their clinical challenges. Their pathogenic results also reveal that S&L delay may be an early marker for children at risk for autism. Our findings underscore the importance of early referral to and CMA testing by DB peds.

Abstract 3

Association Between Facial Processing Abilities and Social Competence in Pediatric Brain Tumor Survivors

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Purpose:Pediatric brain tumor survivors (PBTS) often experience significant deficits in social functioning. This cross-sectional study evaluated associations between facial processing abilities and social competence in school-aged PBTS. **Methods:**PBTS (n=30; 63.3% male; mean age = 13.9; mean age at diagnosis = 6.0) were at least 5 years from tumor diagnosis and 2 years from end of tumor-directed therapy and did not have a multi-system genetic disorder or severe developmental delay before tumor diagnosis. Participants completed measures of IQ (Differential Ability Scales, 2nd Edition), facial processing (Victoria/Yale Face Processing Battery; FPB), and social functioning [Children's Communication Checklist-2 (CCC-2); Vineland Adaptive Behavior Scales, Second Edition (Vineland-2); Social Responsiveness Scale, Second Edition (SRS-2)]. Pearson correlations and linear regressions evaluated associations between facial processing abilities and social functioning measures. **Results:**The most common diagnosis was glioma (46.7%). PBTS IQ was in the average range (m=102.73; SD =16.48).

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Correlations revealed significant associations between worse facial identity and affect recognition abilities and more social impairments (SRS-2), worse social relationships (CCC-2), and worse socialization (Vineland-2; r s range .37-.58). Tumor location and age at diagnosis were not related to facial processing abilities or social competence. In regressions controlling for non-verbal IQ, worse affect recognition was associated with more social impairments and worse socialization. **Conclusion:** Findings suggest that facial processing abilities are associated with parent-rated PBTs social functioning, beyond that of cognitive abilities. Screening facial processing abilities may identify those at risk for social functioning difficulties.

Abstract 4

Association between Breastfeeding in Infancy and Cognitive Function of Adolescents in Santiago, Chile

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Purpose: To study the association between duration of breastmilk as the sole source of milk in infancy and cognitive function in adolescence. **Methods:** Data are from 891 adolescents who completed an infancy iron deficiency anemia preventive trial in Santiago, Chile. Date of the first bottle of formula was collected in infancy, and used to calculate the duration of breastmilk as the sole source of milk. Breastfeeding duration was categorized into 0-3m, 3.1-6m and >6m. Cognitive function was assessed in adolescence using the Wechsler Intelligence Scale for Children-IV: Matrix Reasoning (WISC-MR) and Verbal Similarities (WISC-VS). Generalized linear modeling was used to assess the differences in cognitive functioning scores by breastfeeding groups. Models were adjusted for participants' sex, birth weight, SES, maternal IQ, HOME score, maternal stress, age of WISC evaluation, preventive trial randomization, and infancy iron-deficiency anemia. **Results:** The sample was 50.2% female, 16.2 +/- 0.2 years of age at follow-up, and low-middle income. The average date of first bottle was 3.6 months (SD= 3.1), and 51.6% of participants were breastfed for at least 3 months. The average score for WISC-MR was 7.5 (SD= 2.4), and WISC-VS was 8.4 (SD= 2.1). Longer duration of breastmilk as the sole source of milk was significantly associated with higher scores in WISC-MR after adjusting for covariates ($F= 4.06$, $p= .018$). Those who breastfed for 0-3m scored significantly lower on the WISC-MR at 16y ($M= 7.31$, $SE= 0.12$) compared to those who breastfed for 3.1-6m ($M= 7.83$, $SE= 0.15$, $p= 0.004$) and >6m ($M= 7.72$, $SE= 0.19$, $p= 0.044$). There was no difference in scores between the 3.1-6m and >6m groups. There were no significant associations between breastfeeding duration and WISC-VS scores. **Conclusion:** In a sample of healthy infants, at least 3 months of breastfeeding significantly improved matrix reasoning in adolescence. Findings add to the existing literature that breastmilk is a superior form of nutrition for infants, and its benefits extend to adolescence. Public policy advocacy campaigns to promote breastfeeding may benefit from this finding.

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Abstract 5

Sex differences in toddlers at high risk for Autism Spectrum Disorder

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Purpose: Boys are four times more likely than girls to be diagnosed with autism. Accumulating evidence suggests that girls may be "protected" against symptoms of ASD, but also that girls with ASD are different than boys in their spectrum of symptoms and their brain development. Neuroimaging-based longitudinal studies of infants at increased familial risk for autism provide a unique opportunity to identify early sex differences impacting the development of ASD symptoms. The goal of this study is to characterize sex differences in toddlers at risk for ASD in spontaneous EEG measurements and their correlation with cognitive and language measures. **Methods:** EEG data and language measures were collected as part of the longitudinal Infant Sibling Project, comparing infants at high risk of developing ASD with low risk controls. Infants with a sibling with ASD were designated high risk (HR), while infants with least one typically developing sibling and no known first degree relatives with ASD were designated low risk (LR). Each infant was evaluated at multiple intervals using the Mullen Scales of Early Learning (MSEL) and evaluated for ASD at 24 and 36 months. Spontaneous frontal gamma power was measured and correlated with language outcomes at 24 months. **Results:** Participants included 95 HR siblings, and 71 LR controls. Within the HR group 19 of 49 boys (38.7%) and 9 of 46 girls (19.6%) were diagnosed with ASD. Spontaneous frontal gamma power was not significantly different at 24 months between sexes within the HR group. However, correlation of spontaneous gamma power and expressive language skills at 24 months was directionally opposite and significantly different between sexes in the HR group without ASD (Fisher z-transform; 2.61, $p < 0.01$). In HR-noASD girls, frontal gamma power was negatively correlated with language skills (Pearson $r = -0.677$, $p = 0.001$), but not correlated in HR-noASD boys (Pearson $r = 0.21$, $p > 0.4$). Opposing correlations in gamma power were also measured between LR and HR girls (Fisher z-transform: 3.47, $p = 0.0005$), with LR girls having a positive but not significant correlation between frontal gamma and language skills (Pearson $r = 0.35$, $p > 0.05$). **Conclusion:** This study demonstrates sex differences in early brain activity of children with familial risk of ASD.

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Poster Symposium Abstracts

Poster Symposium I: Education – Abstracts 6-9

Abstract 6

Online Training in Shared Decision-Making: A DBPNet Medical Education RCT

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Purpose: Shared decision-making (SDM) is a recommended practice in cases of medical uncertainty. Autism Spectrum Disorder (ASD) is a complex condition with many treatment options, offering opportunities for SDM use. An RCT investigated the differential impact of 2 online interactive case-based learning experiences on SDM. We hypothesized that, in DBP fellows, Intervention case would increase SDM more than Comparison case. **Methods:** 97 DBP fellows were enrolled and 95 completed training. Participants were randomly assigned to Intervention or Comparison groups. Pre- and post-Intervention data were gathered electronically. Clinical cases were presented online, using Design-A-Case (DAC) software. The Intervention Case addressed enhancement of SDM when caring for children with ASD, with direct teaching about SDM. The Comparison Case described evidence-based practice (EBP) using risperidone in children with ASD. The DAC virtual clinical encounter employed problem-based learning, with asynchronous faculty responses, clinical pearls, and resource links. **Variables** *Participant characteristics.* Sociodemographics; fellow level, past SDM training; ASD experience; EBP attitude. *Primary outcome.* SDM level collected pre- and post-intervention, using SDM Questionnaire Physician, SDM-Q-Doc. *Secondary outcome.* Collaborative health communication attitude, collected pre- and post-intervention, using Leeds Attitude to Concordance, LATCon II. **Results:** Pre-intervention participant characteristics were similar across groups (Table 1). 21 participants reported no past SDM training. Table 2 shows pre- and post-intervention data and repeated measures ANCOVA results. At 4 weeks post-educational intervention, both groups showed significantly increased SDM. Neither group changed related to collaborative health communication attitude. The model was unchanged after inclusion of fellow level, SDM training, ASD experience, and EBP attitude. **Conclusion:** SDM can be enhanced by an online case-based training, either focused on evidence-based practice or focused on SDM principles. Consistent and measurable SDM education can be provided to all trainees, irrespective of training site location.

Abstract 7

Early Identification of Anxiety Disorders in Primary Care: Results from a Training Program for Pediatric Residents

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Purpose: Pediatric anxiety disorders are highly prevalent, but tend to go undetected as pediatricians often lack adequate training in evaluation of emotional disorders. We developed a brief (50-minute), evidence-based training program with online modules aimed at improving evaluation of child anxiety disorders. **Methods:** The program emphasized how to evaluate the degree of interference, distress, duration, and frequency associated with anxiety-related symptoms, and how to deliver appropriate recommendations. The training could be completed in a live, group-based format or via an online, asynchronous training program. Pediatric residents from two residency programs (n = 63) participated and completed pre- and post-training surveys on attitudes about their previous training, knowledge of pediatric anxiety, and perceived evaluation skills. They also answered questions (pre and post) about video vignettes, which depicted an interaction between a pediatrician and a parent of an anxious child. **Results:** 81% of residents reported they did not receive enough prior training in evaluation of emotional problems. Paired samples t-tests indicated that the training program increased residents' knowledge of pediatric anxiety (t = 4.90; p < .001) and perceived evaluation skills (t = 10.05; p < .001). On the vignette-based assessment, residents demonstrated increased sensitivity in relation to the degree of interference in the child's life (t = 4.07; p < .001), qualification for an anxiety diagnosis (t = 2.43; p < .05), and how urgently they would refer the family for treatment (t = 4.82; p < .001). The majority (93%) reported that they would recommend this program to a colleague; 86% endorsed that they will be more likely to ask families about emotional difficulties, and 95% endorsed that they will be more likely to make a referral when one is warranted. **Conclusion:** Results provide preliminary evidence that brief training programs could be an effective way to improve early identification of anxiety disorders in primary care. Lessons learned about integrating such training programs into resident education will be discussed.

Abstract 8

Efficacy of a Pilot Curriculum on Adverse Childhood Experiences

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Purpose: Adverse childhood experiences (ACEs) have been identified as a significant unaddressed public health threat; however, the impact of ACEs and approaches to screening and intervention are not universally taught during pediatric residency. The study objective was to examine the efficacy of a pilot curriculum on ACEs in addressing this educational gap in pediatric residency. **Methods:** A two-part curriculum, which included an online module to be completed prior to an in-person workshop, was piloted with pediatric residents during their developmental and behavioral pediatrics rotation. The multimodal workshop included a video vignette, didactic information, interactive games and facilitated discussions. Residents completed pre- and post-curriculum measures, including a five question knowledge assessment and 5-point Likert scale evaluating residents' ratings of their knowledge and comfort level with screening and interventions. **Results:** The initial pilot included 18 second and third year pediatric residents. Residents showed

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improvement in their knowledge as reflected in an increase in the number of correct responses (mean score increase 0.95 (1.18), $p=0.005$). Residents also rated improvement in their understanding of the impact of toxic stress on neurodevelopment (mean increase 1.32 (0.82), $p<0.0001$); understanding of the long-term effects of complex trauma (mean increase 1.47 (0.84), $p<0.0001$); comfort with screening patients for ACEs (mean increase 1.21 (0.85), $p<0.0001$) and knowledge about approaches to prevent, mitigate and treat toxic stress (mean increase 1.68 (0.75), $p<0.0001$). **Conclusion:** Residents showed improvement in objective measures of knowledge and self-rating of knowledge as well as comfort with screening and intervention approaches. This pilot curriculum appears to be effective in promoting education on ACEs for pediatric residents. Further investigation is needed to assess practice changes that occur as a result.

Abstract 9

A One Week Medical Student Rotation in Developmental and Behavioral Pediatrics: Is it Effective?

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Purpose: The purpose of this study was to determine whether a one week rotation in developmental and behavioral pediatrics (DBP) was effective in teaching medical students about several core DBP topics. **Methods:** Third year medical students rotated in DBP for one week. Targeted topics for learning included developmental milestones, early intervention, ADHD, autism spectrum disorder, people first language and transition medicine. Medical students participated in a variety of experiences, including clinic observations, online modules, case discussions and patient clinical encounters. Pre- and post- measures were completed assessing knowledge (10 multiple choice questions) and medical students' ratings of comfort with history and examination and knowledge surrounding targeted topics via a 5-point Likert scale. **Results:** 30 third year medical students completed the rotation. Medical students showed an improvement in their knowledge as reflected by an increase in the number of correct responses (mean score increase 2.1 (1.6), $p<0.0001$). Improvements were also noted in medical students' ratings of ability to identify red flags in development (mean increase 0.75 (0.8), $p=0.004$); working knowledge of ADHD (mean increase 0.44 (0.6), $p=0.03$); basic understanding of autism spectrum disorder and its diagnosis (mean increase 1.25 (0.9), $p=0.001$); basic understanding of important issues in transition medicine (mean increase 1.38 (0.8), $p=0.0002$); and comfort with examining a child (mean increase 0.56 (0.6), $p=0.008$), obtaining a developmental history (mean increase 1.06 (0.8), $p=0.001$) and making a referral for early intervention services (mean increase 1.19 (0.7), $p=0.0001$). **Conclusion:** The one week rotation in DBP appears to be effective in improving medical student objective and self-assessment measures of knowledge of targeted core DBP topics as well as self-ratings of comfort examining a child and

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obtaining a developmental history.

Poster Symposium Abstracts

Poster Symposium II: Transitions – Abstracts 11-13

Abstract 11

Comfort of Adult Primary Care and Specialty Physicians in Treating Teens with ADHD who are Transitioning from Pediatric Care

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Purpose:As adolescents with ADHD transition to adulthood, they often continue to require maintenance and/or management of ADHD medication(s). The transition process for these teens and young adults is often challenging in terms of finding a physician willing to manage their ADHD medication(s). The purpose of this study is to explore comfort levels of adult clinical providers (ACP) in managing medications for young adult patients with ADHD. **Methods:**An anonymous questionnaire was distributed via email to ACPs in Internal Medicine (IM), Family Medicine (FM), Neurology (NE), and Psychiatry (PS) in the US. The survey included questions about demographics and comfort levels (CL) in managing stimulant (S) and non-stimulant (NS) ADHD medications for patients with uncomplicated ADHD when presented with various clinical scenarios (Table 1). CL was assessed using a visual analog scale (from 1-100, with 1 being least comfortable and 100 most comfortable). Mean CL scores for each specialty were calculated for managing S and NS medications in each clinical scenario. 2-sample t-tests were used to compare the CL of FM vs. IM physicians in each clinical scenario and also to compare physicians CL regarding combined therapy vs. monotherapy in each specialty. All statistical analyses were performed in R. **Results:**Of 359 survey responders, 82 were in IM, 158 in FM, 95 in PS, and 24 in NE. Reported CL regarding use of ADHD medications varied greatly across specialties for use of S and NS medications in treating uncomplicated ADHD (Table 1). Mean CL for subspecialists (PS and NE combined) ranged from 58.3 to 81.4. Of note, FM doctors were significantly more comfortable ($p<0.001$) than IM doctors in managing ADHD medications across scenarios. IM doctors were on average less than half as comfortable when compared with FM doctors for both S and NS medications in all areas except for refilling medications on a stable dose. Also, comfort level scores for both FM and IM doctors with combined therapy (adding a second stimulant or adding a non stimulant to stimulant therapy) were significantly lower ($p<0.001$) when compared with managing only one medication. **Conclusion:** Adult primary care physicians, especially those practicing IM, report low CL for treating patients with uncomplicated ADHD. This is especially apparent when considering patients who require more than one medication. Although subspecialists (PS and NE) reported their CL as being higher overall, these numbers are lower than would be expected given their clinical training. The low CL of many adult care providers may contribute to the large number of teenage and young adult patients with ADHD who do not continue needed medical treatment for ADHD after transitioning from their pediatrician to an ACP.

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Abstract 12

Understanding self-management in college students with Attention-Deficit/Hyperactivity Disorder through their parents' eyes

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Purpose: This qualitative study seeks to examine parent perspectives of the experiences and challenges surrounding their child's self-management of ADHD in college. **Methods:** Thirteen parents of college students with ADHD completed semi-structured interviews focused on ADHD self-management behaviors. Interviews concluded upon data saturation. Data were then analyzed via directed content analysis using the Health Belief Model. **Results:** Six themes emerged: 1) Parents were heavily involved in their children's self-management (e.g., taking medication, checking grades) prior to college; however, these responsibilities abruptly shifted when the student began college, 2) Parents' worries about their child's ADHD self-management (e.g., missing medication, sharing medication, failing classes) were exacerbated by the lack of communication from the student and college, 3) Volitional non-adherence was high due to social events, career goals, side-effects, and medication beliefs, 4) Social factors and stigma negatively impacted students' self-management behaviors, 5) Obtaining academic accommodations was a difficult and confusing process, and 6) Parents identified several keys to success (e.g., gradual transitioning of responsibilities, implementing structure/organization, avoiding helicopter parenting) as well as created a wish-list for needed resources at college. **Conclusion:** Parents abruptly shift responsibilities to students upon entering college. Because of this immediate decline in parental involvement in addition to social factors and stigma, parents became increasingly concerned about their child's ability to self-manage his or her ADHD. Parents were also frustrated with the college due to lack of communication and the difficult nature of the academic accommodations' process. Based on the keys for success and future recommendations identified by our participants, intervention programs preparing both parents and students for the transition to college are greatly needed as are more supportive resources on campuses for students with ADHD.

Abstract 13

Interventions Identified by Adult Care Providers as Likely Helpful in Increasing Their Comfort Level in Treating ADHD in Teens or Young Adults who Transition into Their Clinical Practice

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Purpose: The National Resource Center on ADHD reports that 11% of children and adolescents

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(about 6.4 million) have been diagnosed with ADHD, about three quarters of whom continue to require care into adulthood. Many patients with ADHD do not continue medical treatment after leaving pediatric care. A likely contributing factor to this problem is the significant level of discomfort adult care providers (ACP) have reported in managing these patients. The purpose of this study is to explore interventions that ACP feel would be helpful in improving their comfort levels (CL) with ADHD treatment for patients who transition into their care. **Methods:** An anonymous on-line questionnaire was distributed via email to ACP -- including specialists in Internal Medicine (IM), Family Medicine (FM), Neurology (NE), and Psychiatry (PS). The survey asked about demographics and 6 possible interventions to improve CL: (1) a brief on-line course, (2) an on-line toolkit, (3) more ADHD CME opportunities, (4) more residency training in ADHD management, (5) complete medical records (MR), and (6) a phone conversation with the pediatric provider. Free text responses were also solicited and subjected to thematic content analysis. **Results:** Of 359 survey respondents, 82 were IM, 158 were FM, 95 were PS, and 24 were NE. The % of providers stating they would find each intervention helpful is reported by specialty in Table 1. (PS and NE were combined due to a low number of NE.) Agreement with suggested interventions varied across specialties. Of IM practitioners, 51% felt that more CME opportunities would help them to be more comfortable treating these patients. Of FM practitioners, 62% felt that complete MR would be helpful; however, many respondents also stated via free text that they would prefer a concise summary of the diagnosis and treatment course. 60% of FM practitioners stated that an online toolkit would improve their CL. For the subspecialists (PS and NE), preferences were fairly evenly distributed, with 55% stating that they felt better training in residency would be helpful. Lastly, several themes were noted in the free text option, the most prevalent being the desire for a neuropsychology or psychiatry evaluation, joint management with a specialist, and having more time to dedicate to these patients. **Conclusion:** Many interventions could help raise the CL of ACP in treating older teens and young adults with ADHD. As pediatricians, our focus should be on the assistance we can provide to our patients and the physicians succeeding us in their care. Both practice-level changes (like providing a summary of appropriate MR and being available for a brief phone conversation) and changes on an organizational level (such as modifying existing ADHD toolkits to support adult PCPs and providing access to more CME materials) are simple solutions that could have a large impact on the continuance of care for these patients. This study provides a first step in identifying interventions to improve CL of ACP when treating these patients, and provides a potential basis for quality improvement initiatives in the future.

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Poster Session 1 Abstracts

Abstract 14

Factors Affecting Comfort Level of Adult Primary Care Physicians when Continuing Care for Teens with ADHD

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Purpose:The AAP issues clinical care guidelines for the care of children and adolescents with ADHD, and thus the majority of youth with ADHD are able to have their primary care pediatrician manage their ADHD medications. By contrast, primary care providers for adults are often less comfortable treating ADHD, and this may pose challenges for adolescents with ADHD needing continued care as they transition from a pediatric PCP to an adult PCP. The purpose of this study is to explore factors that affect the level of comfort of adult PCPs with respect to medication management for teens and young adults with an established diagnosis of ADHD. **Methods:**An anonymous survey was distributed via email to adult PCPs practicing Internal Medicine (IM) and Family Medicine (FM). The survey included questions about amount of training in ADHD management during residency, year of residency graduation, practice setting, and whether the physician has a faculty appointment at a medical school. Also included were questions pertaining to comfort levels (CL) in managing stimulant (S) and non-stimulant (NS) ADHD medications for patients with uncomplicated ADHD. CL was assessed with a visual analog scale, with 1 being least comfortable and 100 being most comfortable. Mean comfort level scores for each specialty were calculated and compared with respect to clinical and didactic training in ADHD management during residency, year of residency graduation, practice setting, and academic appointment. **Results:**240 PCPs completed the questionnaire: 82 IM and 158 FM practitioners. See Table 1. IM physicians who completed residency prior to the year 2000 were significantly more comfortable ($p=0.003$) managing ADHD medications in patients transitioning into their practice compared to those who completed residency after 2000. IM physicians with an academic appointment were less comfortable managing ADHD medications ($p=.048$). FM physicians in an urban or suburban area were significantly more comfortable ($p=0.004$) managing ADHD medication compared to those in a rural area. **Conclusion:** For internists, earlier graduation from residency (i.e., more years in practice) was associated with higher comfort levels managing teens and young adults with ADHD. Lower comfort levels among those with an academic appointment may reflect academic focus in other clinical areas. FM practitioners in rural settings were less comfortable managing ADHD medications this may be due to the lack of subspecialists nearby with whom they can confer or refer. By identifying factors that influence physician comfort in providing care for young adults with ADHD, we can better target interventions to expand the number of PCPs to treat them.

Abstract 15

Risk Factors Associated with Idiopathic Toe-Walking

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Purpose:Idiopathic toe-walking (ITW) is a diagnosis of exclusion, meaning causation by concomitant neuromuscular disorders such as cerebral palsy or hypertonia, has been ruled out.

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Consequently, the causes of idiopathic toe-walking are, by definition, unknown. This study seeks to examine risk factors that associated with ITW. **Methods:**An anonymous, online survey was distributed to parents of children ages 15 months to 5 years via Amazon's Mechanical Turk. Participants responded to questions about their demographics and their child's motor development. Parents were queried regarding the presence of ITW, defined in the survey as walking on the toes more than 25% of the time for more than a month. Following the definition of ITW, parents indicated if their child currently toe-walks or toe-walked in the past. Parents answered questions regarding diagnosis of any neurological, neuromuscular or developmental disorders, prematurity, usage of baby-walkers, baby-bouncers and playing while standing their child before they could do so independently. Children whose parents described the presence of cerebral palsy or hypertonia were excluded from analysis. **Results:**Out of 592 responses, 562 were eligible for analysis. Respondents' children were 53.7% male, 84.27% non-Hispanic, 67.31% white, 4.77% black, 15.90% Asian, 1.94% American-Indian/Pacific-Islander, and 6.71% multiracial. 28.62% (n=159) of the sample indicated that their child currently toe-walks/had toe-walked in the past. A multivariate linear regression analysis was conducted; variables and odds ratios are shown in Table 1. Use of a baby walker, early prematurity (less than 29 weeks), developmental delays, ASD, Asian descent and multiracial descent were all positively associated with toe-walking. **Conclusion:** ITW is associated with many different risk factors. Premature children and children with ASD and DD should be monitored for the development of ITW and treatments considered. Although most are not preventable, baby walker usage is indicated as a possible preventable risk factor for ITW and parents should be warned against using them.

Abstract 17

Self-Reported Competence in Addressing Pediatric Obesity: Implications for Practice

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Purpose:Pediatric obesity is a growing health epidemic, with numerous health and economic consequences. Declared a public health priority, pediatric obesity has been at the forefront of research on the importance of integrated behavioral and health care. The purpose of the current study was to explore the perceived need for training and resources related to pediatric obesity in a sample of nursing students. **Methods:**429 nursing students (B.S. 10.5%; MSN 50.8%; DNP 38.5%) completed an online survey assessing training experiences, needs, and bias regarding pediatric obesity. Participants were predominately female (66%) and Caucasian (72.5%). **Results:**Only 33% of the sample reported having on-the-job experience working with childhood obesity, while even fewer (21%) reported having any specific coursework or training in working with children and families with obesity. The nursing students were asked to rate their perceived skill level and interest in additional training related to several treatments for pediatric obesity. Of note, nearly half of the students (43.4%) perceived themselves as having a low skill level in utilizing behavioral management strategies to treat pediatric obesity and 82.5% expressed moderate or high interest in receiving additional training in this area. Skills related to parenting and family systems were some of the lowest rated skill items, with 49% of students rating their skill level in guidance in parenting techniques as low and 42.6% of students rating their skill level in addressing family conflicts as low. Perceived barriers in the treatment of pediatric obesity were also assessed and some of the highest-rated perceived barriers were lack of support services (56%), lack of parent involvement (70%), and lack of patient motivation (51%). **Conclusion:** These results suggest that despite the evidence in support of the effectiveness of treatments for pediatric obesity, health professionals may lack the training and

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resources needed to confidently implement them. Furthermore, enhanced training would be beneficial not just to nurses, but also to other professionals working with children and adolescents with obesity.

Abstract 18

Evaluation of Consistency and Variability Between Four Developmental Milestone Systems

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Purpose: Pediatricians, caregivers, and researchers alike rely on systems of milestones as tools for tracking, comparing, and screening for problems during a child's development. There are multiple published milestone systems, and they appreciably vary in their specificity, structure, and timelines, which can cause confusion, and also makes cross-system comparisons, quality assurance, and review challenging. This project aims to systematically evaluate the consistency and variability between four milestone sources: the CDC, HealthyChildren.org, Bright Futures, and Pediatrics in Review. **Methods:** Each milestone was distilled into component "observations". For instance, a stated milestone "can hold a toy and shake it and swing at dangling toys" might be built on three observations: "holds a toy", "shakes a toy", and "swings at dangling toys". We then reviewed each milestone for their component observations and matched them with other systems' observations when relevant. Each observation and their corresponding milestones were reviewed by our team of developmental pediatricians and child psychologists for discussion and final decision. **Results:** A set of 728 observations with identifiers, was created, mapping to 1094 milestones across four systems. Only 40 observations (5.5%) were referenced by all four systems, and 424 (58.2%) were referenced by only a single system. Among those 40 observations shared by all four systems, only 22 (55%) were expected at a similar age by their associated milestones. **Conclusion:** The lack of consistency among published systems of developmental milestones creates challenges in clinical care, quality measurements, and research. A novel database of core developmental observations based on prior milestones systems could be used as a simplified "universal" set of developmental observations to be implemented at the electronic medical record (EMR) level. As such, we have developed a publically-available ontology of developmental observations: Index of Developmental Observations (IDOB). We believe implementing IDOB at the EMR level can lay the groundwork for research that will provide a more solid footing for systems such as these, and more generally for tracking child development in the future.

Abstract 19

A population based survey of young children with behavioral problems: Are parents reading with them?

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Purpose: This study examines the relationship between caregiver reading and behavioral problems in a population based sample of children 2 to 5 years old. **Methods:** The 2011/12

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National Survey of Children's Health asked the questions, "has a doctor or other health care provider ever told you that [child] had behavioral or conduct problems?" and "During the last week, how many days did you or other family members read to [child]?" Caregivers' responses were dichotomized into Daily vs. Not daily. Responses were available for 19,885 children 2-5 years old. STATA 14.2 generated chi square comparing daily reading in children with and without behavioral problems. Multiple logistic regression was used to adjust for gender, race, primary language, employment, maternal education, income level, and caregiver marital status. Survey commands were used to account for weighting and complex survey design. The data used for this study was not considered human subjects research as it uses a de-identified, publically available dataset, therefore it does not require IRB approval. **Results:** Only fifty percent of young children were read to daily. Children with behavioral problems were equally as likely to be read to daily, compared to children without behavioral problems (OR:0.96, 95% CI: 0.59-1.55; aOR:1.13, 95% CI: 0.53-2.45). Children identified as Hispanic (aOR:0.57, 95% CI: 0.45-0.73; p<0.001), black (aOR:0.64, 95% CI: 0.52-0.79; p<0.001), living in a home where English is not the primary language (aOR:0.51, 95% CI: 0.39-0.68; p<0.001), and income <200% the poverty line (aOR<0.78, 95% CI: 0.64-0.94; p<0.05) were less likely to be read to daily in the adjusted model. **Conclusion:** There was no difference in the proportion of young children, with or without a behavioral problem, read to daily. While reassuring, only half of children 2-5 enjoyed the benefits of daily reading. Children in more vulnerable minority and less financially secure families were even less likely to be read to daily. It is important for health care providers to continue to encourage daily reading at all well child visits.

Abstract 26

Comparing Neurocognitive Needs and Referrals for School-age and Young Adult Survivors of Childhood Cancer

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Purpose: As more patients survive childhood cancer, neurocognitive needs are becoming a larger focus of integrated care teams. Data are lacking regarding the most appropriate way to identify and provide age-specific neurocognitive services. This study assessed the effectiveness of an integrated survivorship clinic at a suburban, academic medical center in addressing need for neurocognitive-based services in childhood cancer survivors. **Methods:** Patients completed an intake form assessing cognitive concerns and were administered the DIVERGT cognitive screener. 10 months of data were compared and stratified by age group; charts were reviewed for further referrals. **Results:** Of 35 patients who were seen in the clinic, only 16 completed the cognitive screener [mostly blood cancer survivors (N=12); 9 males; mean age 15 (range 6-28)]. Whereas 56% of patients reported cognitive concerns during their initial intake, less than half of these (N=4) had positive screeners. Regardless of screener results, all school-aged patients were recommended to seek academic services and 2 were additionally referred for occupational therapy. Interestingly, of 5 survivors 18 and older, 60% reported concerns on intake, though none had positive screeners. Due to their age, these young adult patients were not referred for further services. T-Tests showed no significant differences between age groups on the neuropsychological screener. Of note, 75% of patients overall scored significantly below average on both fine motor movement and processing speed screening. Academic functioning was not assessed, yet patients reported difficulties, particularly in math. **Conclusion:** While a brief neurocognitive screener may be preferred during a comprehensive survivorship appointment, it does not always identify both

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specific and general cognitive needs as reported by childhood cancer survivors. Additional ways to accurately assess symptoms in a timely manner is needed, especially for patients entering transitional care. Lack of cognitive based referrals for patients age 18+ suggest a lack of access to care as these patients age. Practical clinical suggestions will also be made.

Abstract 28

Effects of a Disability Education Module During Pediatrics Clerkship: A Randomized Controlled Trial

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Purpose:All physicians work with patients with disabilities. Yet medical school disability education is sporadic and variable in content. In order to improve care and health outcomes of patients with disabilities, it is critical to teach medical students how to obtain a history, perform a physical examination, and include patient and family needs in discharge planning. **Methods:**Cluster randomized controlled trial (RCT) involving medical students in their pediatrics inpatient clerkship from May-October 2016. Students were assigned to intervention or control group based on clerkship location. Both groups received didactic presentation at clerkship start. Intervention group received bedside teaching of physical exam/interview skills and case-based discussion. We collected pre- and post-clerkship surveys of disability-related knowledge and attitudes. Two-group repeated measures ANOVA used to assess pre/post change in knowledge of disability. Conventional content analysis used to evaluate post-clerkship attitudes. **Results:**23 participants completed the study (control n=11; intervention n=12). 56% of participants had no prior experience with people with disabilities. Mean post-clerkship knowledge scores increased in both groups (6.8 to 7.3 and 7.6 to 8.2, control and intervention groups respectively); increase was not significantly higher for intervention group (p=0.8). Analysis of post-clerkship attitude items indicated that, compared to control group, intervention group gave more detailed answers. Intervention group used terms representing functional aspects of disability twice as frequently as control group. Intervention group described long-term experience of a disability within community and family; control group focused on acute medical management. **Conclusion:** Participation in a disability education program resulted in attitude change toward disability, including perspectives about functioning. Disability is a lifelong experience that is not limited to inpatient settings. It is likely that physicians who understand the functional aspects of disability across settings will deliver higher quality care.

Abstract 29

Alpha-2 Agonists are Commonly Used to Treat Preschool ADHD at 2 DBPNet Sites

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Purpose: Describe the use of stimulants and alpha-2 agonists (A2A) for treatment of preschool age children with ADHD at 2 Developmental-Behavioral Pediatrics Research Network (DBPNet) sites. **Methods:** Demographic information, diagnoses, and medications prescribed by developmental-behavioral pediatricians (DBPs) were extracted from the electronic health record for all outpatient DBP visits 1/1/2010 -12/31/2011 at 2 sites. The subset of visits for children 24-72 months of age who had a primary diagnosis of ADHD were included in this analysis. For A2A medication instructions were reviewed and coded as being for ADHD if ever prescribed > 1 time a day (no long acting A2A prescribed) or 1x/day at a time other than evening; as being for sleep if prescribed 1x/day in the evening; or as unclear (1x/day, time unspecified). **Results:** Over the 2 yrs, 993 children seen at 2,048 visits met inclusion criteria. Of the 993 children, 362 (36.5%) were prescribed a stimulant and 252 (25.4%) were prescribed an A2A prior to 72 months. Only stimulants were prescribed at 703 visits (34.3%), only A2A at 317 visits (15.4%), both medications at 177 visits (8.6%) and neither at 851 visits. A2A were prescribed for the following indications: ADHD (76.8%), sleep (16.6%), unclear (6.6%). Between sites there were differences in the frequency of visits in which these medications were prescribed with stimulants more commonly prescribed at site 1 (48.1% vs 39.8%, $p < 0.001$) and A2A more commonly prescribed at site 2 (14.8% vs 29.8%; $p < 0.001$). Among forty 2 yo with a primary diagnosis of ADHD, stimulants were less likely to be prescribed compared to A2A (2.5% vs 30%; $p < 0.001$). Among 3 yo the med classes were equally likely to be prescribed (25.5% vs 33.6%; $p = 0.13$). Among 4-5yo stimulants were more likely than A2A to be prescribed (39.4% vs 23.4%, $p < 0.005$). **Conclusion:** This study suggests that A2A are commonly used by some DBPs for preschool ADHD. Variation in frequency of use of stimulants & A2A across sites may indicate a lack of consensus on when to use these medications and suggests a need for comparative effectiveness research to better define their relative benefits & side effects in preschool ADHD.

Abstract 30

Modified Checklist for Autism in Toddlers, Revised, with Follow-Up (M-CHAT-R/F) and Language Development in Extremely Preterm Children

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Purpose: To study the association of High-Risk results on M-CHAT-R/F with language development, as assessed by Bayley Scales of Infant and Toddler Development, 3rd Edition (Bayley III). **Methods:** We reviewed medical records of children seen at a Developmental Follow-up Clinic from February 2016 to April 2017. Inclusion criteria included 1) age 16 to 30 months, with M-CHAT-R/F and Bayley III done at the same visit, 2) birth weight less than or equal 1000 g or gestational age less than 28 weeks, and 3) no prior diagnosis of autism spectrum disorder. Data collected included demographic data; M-CHAT-R/F results, including responses to each question; and Bayley III language composite score and receptive and expressive language scaled scores. Complete data were available for 40 subjects. Language composite scores were dichotomized, with scores less than 70 considered Language Delay. **Results:** Analysis using a Chi-square test and Fishers exact test showed no significant association between High-Risk results on M-CHAT-R/F and Language Delay (composite score < 70), with a p-value 0.16 for Chi-square test and 0.17 for Fishers exact test. Further analysis comparing mean scores on the Bayley III revealed significantly lower mean receptive language scaled scores (p-value 0.0022) and mean composite language scores (p-value 0.0062) in the High-Risk M-CHAT-R/F group, compared to the Low-Risk group. Item analysis showed significant differences in responses to certain M-CHAT-R/F questions, depending on M-CHAT-R/F risk group and presence of Language Delay. **Conclusion:** Based on our limited data, a High-Risk result on the M-CHAT-R/F in extremely

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preterm children may be associated with language delay. The study is ongoing, and additional data should help clarify this association.

Abstract 31

Performing Chores is Associated with Childhood Self-Competence and Sense of Agency

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Purpose:The development of confidence, responsibility, and sense of agency is important to achieving academic, social, and career success. This study is designed to examine longitudinally the relationship between performing chores in early elementary school and later child perceived self-competence in peer relationships, social behaviors, academics, and life satisfaction measures. **Methods:**We used data from 10,212 children participating in the Early Childhood Longitudinal Study-Kindergarten 2011 cohort who were entering kindergarten in the US in the 2010-2011 school year. Parents reported the degree to which a child in kindergarten and first grade performed chores. In third grade, children responded to a questionnaire regarding their perceived interest or competence in academics, peer relationships, prosocial behavior, and life satisfaction. Data was analyzed using SAS to run all linear and logistical regressions, adjusting for possible confounders. **Results:**Performing chores in both kindergarten and first grade had a statistically significant relationship with a child's perception of his or her social, academic, and life satisfaction competencies in third grade in regression models, independent of gender, family income, and parental education. For example, as the amount of chores performed in the fall of kindergarten increases from never, sometimes, often, or very often, the least square means (adjusted for gender, family income, and parental education) for the child's 3rd grade self-reported prosocial, peer relationships, life satisfaction, and academic competency scores increase (for relationship using linear regression p-values all < .0001, see figure). **Conclusion:**Performing chores in early elementary school is associated with a child's sense of self-competence in later elementary school. Pediatricians can discuss the importance of early initiation of household chores and responsibilities as this relates to children's sense of agency in their relationships with peers, social skills, academic skills, and life satisfaction measures.

Abstract 33

Sit Down and Play: A Primary Care-Based Program To Enhance Parenting Practices In Children From Low-Income Families

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Purpose:Grounded in social cognitive theory, we designed Sit Down and Play (SDP) a brief, low-cost primary care-based program to facilitate positive parenting behaviors. We conducted a prospective static group comparison study to determine the feasibility of implementation and potential impacts of SDP on positive parenting behaviors. **Methods:**An ethnically diverse group of predominantly low-income caregivers of children 2-6 months of age were enrolled, interviewed, and randomized to intervention (n=20) or control (n=20) groups. Intervention families received SDP at recruitment and the subsequent well-child visit. Control families were provided handouts regarding developmental milestones. One month after the second well-child visit, families were reinterviewed (n=34; 85% retention rate). Using open-ended questions and standardized measures, parents were asked about parenting behaviors central to children's development: 1) participation in cognitively stimulating activities, 2) provision of learning materials and 3) the quality of parent-child verbal interactions. Potential impact on perceived parenting confidence was also explored. Analyses were conducted using chi square tests and analysis of variance. **Results:**No

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significant baseline differences existed between intervention and control families in sociodemographic characteristics. There was a significant main effect of time, and as hypothesized, between time and condition that favored SDP on play behaviors ($p=0.03$). Post-intervention, SDP families had significantly higher scores in interactional activities between a parent and child that promote cognitive development ($p=0.02$), but not on parent-child verbal interactions ($p=0.058$), provision of learning materials ($p=0.06$), and parenting self-confidence ($p=0.8$). **Conclusion:** Results appear promising for an accessible, low-cost, low-intensity program delivered in the primary care setting. Further studies to determine the effectiveness of SDP on parenting behaviors and subsequent developmental outcomes are warranted.

Abstract 38

Promoting Routines of Exploration and Play during Mealtimes: Effects on Child Behavior

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Purpose: Problematic mealtime behaviors are a common cause of concern for parents of young children. This study examined the effects of the novel, Promoting Routines of Exploration and Play during Mealtimes, or Mealtime PREP, intervention on child behavior over time. **Methods:** This repeated measures study examined changes in parent-rated child behavior for children (18-36 months) with Sensory Food Aversions before and after delivery of the Mealtime PREP intervention. All intervention sessions occurred in the child's home. The Mealtime PREP uses a behavioral activation approach to train parents to gradually alter daily child meals by embedding evidence-based feeding strategies, one at a time. The Behavioral Pediatric Feeding Assessment was used to measure child behavior and track parent-identified mealtime problems at baseline, after parents were trained, and after a two-week follow-up period. Repeated measures analysis of variance was used to analyze changes in behavior and parent-identified mealtime issues over time. **Results:** Eleven young children and their parents completed the study. We observed a significant improvement in child behavior [$F(2, 20) = 7.19, p = .004, \eta^2 = .42$] over time. We also found a significant decrease in parent-identified issues [$F(2, 20) = 5.44, p = .013, \eta^2 = .35$]. Post hoc analyses, using the Bonferroni correction, revealed that significant improvement ($p = .02$) was observed in behavior between baseline ($M = 82.27, SE = 2.95$) and study end ($M = 70.73, SE = 3.43$). Lower scores on the Behavioral Pediatric Feeding Assessment indicate better, or less problematic, behavior. This pattern of improvement was similar to the decrease in number of parent-identified problems ($p = .003$). **Conclusion:** The Mealtime PREP intervention shows promise for improving child behavior and decreasing parent perception of problematic mealtime behavior. Future research is warranted to examine the generalizability and persistence of these effects.

Abstract 39

Does income level matter? The impact of breastfeeding type (i.e., exclusively breastfed, partially breastfed, or not breastfed) on developmental risk in early childhood

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Purpose: This study examined the relationship of breastfeeding (i.e., exclusively breastfed, partially breastfed, or not breastfed) on developmental risk as measured by the Parent's Evaluation of Developmental Status, across low, middle, and high income groups while accounting for child, family, and community variance. Research on the benefits of breastfeeding in middle and higher income

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groups is limited. **Methods:**Data were obtained from the 2011 National Survey of Children's Health. The data was imputed to address data missing not at random. Regression was used to calculate differences among groups after controlling for known covariates and accounting for differences at the community, family, child, and service levels. All analyses were limited to children aged 6 months through 5 years for whom breastfeeding data were available (N=23,315). **Results:**Ordinal logistic regression models were utilized to determine the odds of being either in the low or high developmental risk group by income level. Across all income groups, significant differences were found between the never breastfed group and the exclusive and partially breastfed categories, $\chi^2(1) = 5.62, p < .001$, such that an infant never having been breastfed had a 1.393, 95% CI [1.241, 1.564] greater odds of being in the high developmental risk category. In low income families, those that never breastfed had 1.307, 95% CI [1.123 - 1.522] times greater odds of being in a high-risk category as compared to those that breastfed non-exclusively, $\chi^2(1) = 3.46, p < .001$. When comparing never breastfed to exclusively breastfed within low income households the odds ratio increased to 1.413, 95% CI [1.116 - 1.788] times of being in the high-risk category, $\chi^2(1) = 2.87, p = .004$. Similar patterns of odds ratios were seen across middle and high income groups. **Conclusion:** This study found a similar pattern of benefit to breastfeeding in reducing developmental risk across all incomes groups. This suggests that the benefits of breastfeeding for reducing developmental risk are similar across income levels.

Abstract 42

An Innovative Model for Improved Oral Health in Children and Youth with Special Health Care Needs: Integrated Oral Health Exams into a Medical Home Specialty Team Clinic

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Purpose:A 2011 Institute of medicine (IOM) report concluded that oral health is an integral part of overall health, and therefore, oral health care is an essential component of comprehensive health care. (1) Poor oral health is related to frequent school absences. (2) Children and Youth with Special Health Care needs, especially those with altered communication may also suffer unknown physical and behavioral health changes when suffering dental pain. In our low SES group, dental care is often neglected while multiple medical visits are completed for each patient each year. The goal of this pilot was to meet the Triple Aim of the IOM to improve patient (caregiver) experience of care, the health of populations, and reduce costs with respect to oral health care at the same time as primary medical care visit. Children with challenging behaviors familiar to our clinical setting also allowed dental exam as an integrated part of their annual physical. **Methods:**Descriptive evaluation of a pilot of an integrated model of oral health exams by a dentist participating alongside a Pediatrician during routine multidisciplinary clinic visits for children and youth with special health care needs (CYSHCN) with cerebral palsy, spina bifida, hydrocephalus, intellectual disability and autism. Subjects were a convenience sample of all patient being seen in the MetroHealth Comprehensive Care Medical Home team clinics between 6/1/2015 and 6/1/2016. Data was extracted from both the Epic and Dentrix electronic health records. **Results:**106/170, 75% of the patients completed a dental examination 68/106, 64% needed additional dental care 38/106, 35.8% did not require additional dental visits 29/68, 42.6% scheduled a follow up dental visit 5/29, 7.4% could complete this care outside of the OR 21/29, 72.4% required sedation and or OR for full restoration 4/21, 19% have no showed for scheduled OR 13/21 were directed to the OR at the time of the first exam, avoiding in chair non-sedated dental clinic visit to proceed for OR time 51 unnecessary dental visits were avoided during this time frame No MHMC emergency room visits related to dental issues are recorded for any of the subjects during this time frame Cost analysis on a population health basis including health care cost and saving for families

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from missed work, but decreased individual revenue to institution from fewer traditional fee for service visits has been challenging. **Conclusion:** We were able integrate a dental exam with the annual physical in 75% of our population. We also were to avoid additional missed school and parental work for 51 families. Anecdotal feedback from parents and clinical staff indicates we improved caregiver experience, reducing population dental costs. A majority of our population required subsequent dental care with sedation in an OR setting. Current ongoing changes for 2016-17 includes collaboration with dentistry allowing team to now refer specific patients with challenging behaviors directly for consideration of OR dental exam under anesthesia, and collecting additional information about family and staff satisfaction. While cost analysis has been difficult, results from this pilot has informed our institution. Formally completely distinct departments are now committed to improved population health and satisfaction to complete integrated dental visits for individuals with challenging behaviors.

Abstract 43

Exploratory Study of Pediatrician Communication about Side Effects of ADHD Medication

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Purpose: This study assessed developmental-behavioral pediatricians communication about side effects of medication with parents of children diagnosed with ADHD. **Methods:** 36 pediatricians to date (study is ongoing) have completed an online study examining discussion of medication side effects with parents of children with ADHD. Responses assessed communication with a "check all that apply" method or a 5-point scale with responses ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). **Results:** Pediatricians reported initiating discussion about the following side effects: change in appetite (88.9%), sleep disturbance (86.1%), stomachaches (83.3%), headache (80.6%), change in mood or anger (75%), tics (55.6%), and change in anxiety (52.8%). One-third of the sample reported that parents bring up side effects for discussion 50-100% of the time. Pediatricians reported varied preferences for encouraging parents to read the package inserts on their child's medication (38.8% disagree, 25% neutral, 25% agree) or online material (41.7% disagree, 11.1% neutral, 36.1% agree) to learn about side effects. Most pediatricians reported that they believe parents talk to other parents about side effects and look up information online about medication, regardless of what the pediatrician tells them. When parents raise concerns, most pediatricians assess the parent's concerns before making a recommendation (58.3%) or continue to encourage medication if they believe it is the best treatment (44.4%). Only 11.1% reported recommending alternative non-pharmaceutical treatments such as therapy when parents raise concerns. **Conclusion:** Pediatricians report initiating conversation about many side effects, although, despite parent concerns about side effects, pediatricians still recommend medication for ADHD more often than non-pharmaceutical treatments. The majority of respondents believe parents will seek information about side effects regardless of their advice. Further research should examine where parents seek information and how parent information needs impact the physician-parent relationship or decision-making process.

Abstract 44

Effects of Immediate vs. Delayed Iron Therapy on Neurobehavioral Function in Ugandan

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Children with Severe Malaria

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Purpose: Iron deficiency (ID) due to malaria may act on the developing brain via pathways similar to nutritional ID. Persistent inflammation may limit iron availability following malaria infection. We compared the effects of delayed and immediate iron therapy on the neurobehavioral function of Ugandan children with ID and severe malaria. **Methods:** We conducted a randomized clinical trial comparing 4-wk delayed vs. immediate (standard of care) iron therapy on behavioral outcomes in children with severe malaria (severe malarial anemia (SMA) or cerebral malaria (CM)) and ID. We enrolled children between 18 mo and 5 yr of age with SMA (N=77) or CM (N=79), and community controls (N=83). All children with CM or SMA, and 38 controls, were iron deficient per zinc protoporphyrin concentration, and randomized to either immediate or delayed iron therapy. We assessed executive function (Behavior Rating Inventory of Executive Function, BRIEF), socioemotional function (Child Behavioral Checklist, CBCL), and observer-rated behaviors (Behavior Rating Scale, BRS) at enrollment and then 6 and 12 mo later. **Results:** At 12 months, we found no differences between the immediate and delayed arms for any of the domains assessed in children with SMA, CM, or the community controls. **Conclusion:** Delayed iron therapy does not appear to be protective against the behavioral consequences of ID in children with severe malaria, but iron status was difficult to interpret in our sample. Further investigation on which measures best reflect brain iron status may help to unravel the complex relationships between malaria infection, ID, and neurodevelopment.

(see table next page)

12-month primary behavioral outcomes (immediate vs delayed iron)

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	CerebralMalaria			SMAemia			Controls		
CBCL z-scores	Mean difference	95% CI	P	Mean diff.	95% CI	P	Mean diff.	95% CI	P
Internalizing	-0.08	-0.55, 0.38	0.73	0.13	-0.55, 0.81	0.71	-0.26	-1.1, 0.60	0.54
Externalizing	0.49	-0.08, 1.1	0.09	-0.13	-0.72, 0.47	0.67	-0.40	-1.0, 0.22	0.20
Total Problems	0.22	-0.33, 0.78	0.43	-0.05	-0.70, 0.60	0.88	-0.42	-1.2, 0.34	0.27
BRIEF z-scores	Mean diff.	95% CI	P	Mean diff.	95% CI	P	Mean diff.	95% CI	P
GlobalComposite	0.24	-0.47, 0.95	0.50	0.00	-0.59, 0.60	0.99	-0.37	-1.1, 0.38	0.32
Behavior Rating Scale	Odds ratio	95% CI	P	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Fearful/Wary Affect	2.6	0.24, 27	0.43	0.62	0.12, 3.1	0.57	0.80	0.03, 19	0.89
Negative Affect	0.58	0.17, 1.9	0.37	0.92	0.24, 3.5	0.91	9.5	0.83, 108	0.07
Positive Affect	0.94	0.28, 3.1	0.91	0.31	0.09, 1.1	0.07	0.81	0.17, 3.9	0.79
Hyperactivity/Impulsivity	2.2	0.71, 6.8	0.17	2.5	0.73, 8.4	0.15	1.9	0.37, 9.8	0.45
Adaptation/Cooperation	1.1	0.31, 3.9	0.90	0.72	0.20, 2.6	0.62	0.23	0.04, 1.3	0.10
Behavior Rating Scale	Mean diff.	95% CI	P	Mean diff.	95% CI	P	Mean diff.	95% CI	P
Toy Manipulation/Exploration	3.1	-2.9, 9.1	0.31	-0.66	-8.7, 7.3	0.87	-0.23	-8.0, 7.5	0.95
Activity Level	0.77	-2.2, 3.8	0.61	0.73	-4.3, 5.8	0.77	-1.1	-4.6, 2.5	0.53

Abstract 47

Feasibility of a Novel Online Tool to Assess Trainees' Knowledge and Observation Skills of

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Child Developmental Milestones

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Purpose: The purpose of this project is to assess the feasibility and acceptability of two different versions of a novel assessment tool used to measure both knowledge and observation skills of typical child developmental milestones of different levels of medical learners. **Methods:** Learners participating in this study were third and fourth year medical students, second and third year pediatric residents, General Pediatric (GP) Faculty, and Developmental and Behavioral Pediatric (DBP) Faculty. Learners completed a multiple choice activity that included watching a video of a typically developing child and answering either a 5 item or 10 item question set identifying milestones observed in the video. Learners reported the number times they needed to watch to video to answer the questions, how long it took to complete the activity, and how difficult they perceived the activity (1= very easy to 5 = very difficult). Comparisons were calculated across different levels of learners. **Results:** A small number of learners have completed the 5 item (4) and 10 item (3) versions of the learning activity, all medical students and DBP Faculty. For both 5 and 10 item versions of the learning activity, average percent correct scores were lower for medical students than for DBP Faculty [(66% vs. 73%) and (56% vs. 81%) respectively]. Medical students' report of perceived level of difficulty was higher than for DBP Faculty [(2.3 vs. 2) and (2.5 vs. 2) respectively]. All learners took less than 10 minutes to complete their assigned activity. **Conclusion:** Learners were able to complete both 5 and 10 item learning activities within a reasonable amount of time with DBP Faculty obtaining higher percent correct scores with lower perceived difficulty. We are continuing to enroll learners in this pilot work to include additional medical students, pediatric residents, general pediatricians, and DBP Faculty. It is likely that both 5 and 10 item learning activities could be utilized in further development of an assessment tool to measure knowledge and observation skill of child developmental milestones.

Abstract 51

Social-Emotional Difficulties in High-Risk Infants

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Purpose: Children with SE difficulties (SED) are at an increased risk for academic underachievement, delinquency, strained peer relationships, and behavioral problems. The Ages and Stages Questionnaire Social Emotional (ASQ:SE) is a level 1 screening tool that is commonly used to identify these concerns. Data examining outcomes of SED in high risk infants is limited. Our aim was to identify risk factors and outcomes for neonates seen in a NICU Graduate Clinic who score at risk for SED on ASQ-SE. **Methods:** This study was a retrospective review of 701 children meeting inclusion criteria: infants seen at our hospitals NICU Graduate Clinic from January 1, 2008 to January 1, 2015. Data were analyzed using chi-square test or Fischers exact test. A logistic regression model was used to show associations with the dependent outcome. Data were analyzed using SAS v 9.4. **Results:** 701 patients were seen between the ages of 0-5 with a total of 1780 patient encounters. 60% of children scored at risk for SED on ASQ-SE at one visit or more. The number of children scoring in the at risk category increased with age (P.0002). Children at greatest risk for SED included: grade 3 or 4 intraventricular hemorrhage (78%), high frequency oscillatory ventilation use for => 7 days (76%), small for gestational age/intrauterine growth restricted (SGA/IUGR) (57%), and patients with hypoxic ischemic encephalopathy or abnormal neurological exam at birth(74%). Patients with low birth weight, low Apgar

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scores, prolonged mechanical ventilation, cardiac patients, twin gestation/multiples, ROP stage 3 or 4, ethnicity, maternal education, and gender were not associated with scoring at risk on ASQ-SE. 72% of children at risk for SED received early intervention services. Of the 392 children scoring at risk on ASQ-SE, 9% were later diagnosed with ADHD and 2.8% were later diagnosed with an autism spectrum disorder (ASD). 100% of children with ASD and 97% of children with ADHD scored at risk on ASQ-SE at least once ($p < .001$). Children who scored at risk on ASQ-SE at two visits were 9.4 times more likely to be diagnosed with autism than children who scored at risk at one visit. Of the 392 patients that failed, 18% of children were referred for further evaluation. **Conclusion:** High-risk neonates commonly have SED, with increasing concerns for SED as children get older. 1 in 36 neonates seen in NICU graduate clinic who scored at risk for SED were diagnosed with ASD, when compared to 1 in 68, the general population rate of ASD. The knowledge gained from this study emphasizes the importance of screening high-risk infants for SED in a NICU Graduate Clinic.

Abstract 54

Are DBP new patient evaluations for ASD economically feasible? A DBPNet study

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Purpose: The wait for DBP evaluation is increasing including for ASD evaluation, while the time spent on these visits are very time consuming. Our purpose is to compare the time spent by DBPs on their first visit for an evaluation of a child with a concern for a possible ASD to the codes used to reimburse them for their work. **Methods:** 56 DBPs at 12 academic medical centers in the DBPNet research network recorded de-identified data on up to 15 consecutive new patient encounters in 2012-2013. They coded the amount of time they spent in preparation for the visit, face-to-face and following the visit including documentation and care coordination as well as the types of codes used for reimbursement. **Results:** Of 784 new DBP visits, 324 (41%) had an ASD concern. These children waited 23.3 (20.1) weeks for their visit. In 157 of these visits the DBP faculty member saw the patient as the primary clinician; in 119 the DBP supervised a resident, fellow or nurse practitioner in care of the child. When the DBP was primary clinician, 15.7 (9.5) minutes were spent in pre-visit preparation, 91 (36.5) min face to face with the family and 46.5 (29.1) min in post visit reporting and coordination totaling more than 2.5 hours. In 44% of DBP primary clinician visits consult codes (which are no longer available through CMS) were used, 43% utilized new patient codes and 3% used comprehensive visit codes not recognized by CMS. Only 7% utilized prolonged service codes. In 43% of visits, the DBP faculty performed formal developmental testing. 31% of those testing coded this as 96111, 57% coded this in 1-2 units of 96116, the remaining did not bill a testing code. **Conclusion:** New DBP evaluation visits at academic medical centers typically consume more than 2.5 hours of skilled faculty time, but this is not well reflected in the billing codes used to document this work.

Abstract 55

Sustainability of Caregiver Knowledge Following an Autism Workshop

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Purpose:Families who receive a new Autism Spectrum Disorder (ASD) diagnosis for their child are often overwhelmed. A new monthly educational workshop has been designed for families entitled "Autism 101: Putting the Pieces Together". This program is designed to improve knowledge of an ASD diagnosis, treatment options, and community resources. **Methods:**Caregivers who attended a workshop completed a pre/ post-workshop survey as well as a 30 day follow up survey assessing ASD knowledge, confidence, and ability to access resources. A control group was randomly selected from patients with a temporally matched new ASD diagnosis who did not attend a workshop. Control group caregivers were asked to complete a comparable 30 day survey. Data was analyzed via one way ANOVA. **Results:**105 caregivers attended one workshop from June 2016-Dec 2016. 20 (19%) of participants completed a 30 day follow up survey. 7 control 30 day surveys were completed. Questions were answered on a 5 point Likert scale. General knowledge about ASD increased and was sustained (means 2.47 [pre], 3.53 [post], 3.40 [30 day], $p = .000$). Caregivers ability to explain their child's diagnosis to others increased and was sustained (means 2.33 [pre], 3.42 [post], 3.25 [30 day], $p = .000$). Caregivers felt better prepared to access services (means 2.38 [pre], 3.52 [post], 3.55 [30 day], $p = .000$). Caregiver stress (10 point Likert scale) improved after the workshop but increased at 30 days (means 6.34 [pre], 5.48[post], $p = .038$, 7.20 [30 day], $p = .418$). Controls reported less stress (mean 5.29, $p = 0.106$) and felt generally more confident in their knowledge. **Conclusion:**Workshop attendance improves ASD knowledge and confidence and is sustained. However, caregiver participant stress seems to increase over time. Control caregivers report less stress and more confidence overall, which may explain lack of participation in the workshop. Study limitations include a low response rate to 30 day follow-up surveys. Ongoing research will help improve future workshops and will ultimately improve patient care.

Poster Symposium Abstracts

Poster Symposium III: Systems & Methods of Care – Abstracts 60-64

Abstract 60

Proactive Stimulant Titration in Attention Deficit/Hyperactivity Disorder: a pilot randomized control trial with implications for DBPs

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Purpose:. A pilot RCT to investigate a proactive approach to CNS stimulant titration. **Methods:**. Sample: $n = 58$, children 5-12 years/age referred to a DBP clinic. Inclusion: ADHD diagnosis confirmed, caregiver interested in stimulant treatment. Exclusion: other developmental disorder, prior meds for ADHD. Intervention: Medical staff proactively attempted weekly titration contacts by phone. Control: reactive attempts at titration; caregivers were instructed to contact staff each

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week. Titration contact structure: determine clinical changes, collect caregiver Vanderbilt (VADRS) & caregiver satisfaction. Med titration steps based on VADRS and satisfaction with med effect. VADRS, med dose, satisfaction, and other data were collected at each contact during titration & follow ups for 6 months. **Results:** Contact frequency mediated improvements in mean VADRS and satisfaction ratings using average causal mediation effect (ACME). The intervention averaged 37% more contacts (Wald $z=2.5$) and maintained an average of 1.4 more contacts at each time point from the 5th week through 6 months: a statistically significant finding. Growth models predicted a statistically significant [$t(1) = -4.0$] decline of 0.12 in mean VADRS item score per each additional contact. Accumulated contacts mediated a statistically significant indirect group effect on mean VADRS from the 5th week through 23rd week (ACME: -0.2; 95%CI spanning -.49 to -.01). Contact frequency also mediated an indirect group effect on caregiver satisfaction with med effect, but statistical significance was not reached until the 21st week [ACME: -.35; 95%CI (-.84,-.01)]. **Conclusion:** . We found evidence supporting the use of telephone contacts to lower core ADHD symptoms during stimulant titration. The control group received higher than standard of care, which may have limited the direct effect of group. A pattern of improved symptoms & satisfaction with more frequent contacts suggests that the quality of titration is associated with communication frequency in the titration period, and the proactive approach generated more frequent communications.

Abstract 61

The Effect of Integrated Behavioral Health Services on Pediatrician Efficiency

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Purpose: The purpose of the study is to examine the effect of integrated behavioral health (IBH) services on pediatrician efficiency. Prior literature has indicated that medical visits in which behavioral health concerns are discussed tend to occupy a substantial amount of a physician's time. A proposed solution for meeting the behavioral health needs of patients is the integration of psychologists into primary care. While no studies to date have investigated the effect of IBH services on pediatrician efficiency, it has been suggested that more fully integrated behavioral health services allow physicians more time to complete lucrative medical procedures. No study to date assesses whether or not such leveraging can occur within a co-located model. **Methods:** The current study utilizes direct observation and medical record review to compare pediatrician efficiency in clinics with and without IBH services. Four pediatric clinics associated with an academic medical center are included within the current study, two with co-located integrated behavioral health services and two with standard medical care (N=400). **Results:** Preliminary results suggest that approximately 16% of patients observed presented with behavioral health concerns. Within well-child exams (WCEs), pediatricians in clinics with IBH services spent approximately 27.5 minutes with patients on average, whereas clinics without IBH services spent approximately 40.6 minutes with patients. Within routine medical visits (MV), pediatricians with IBH were also more efficient (19.1 minutes vs. 22.8 minutes) than pediatricians in clinics without IBH. Upon completion of the study, descriptive and inferential statistics will be used to determine the practical and clinical significance of

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findings. **Conclusion:** Should preliminary results continue to be supported upon conclusion of the study, research findings will highlight the important finding that IBH services provides a benefit to the broader medical system and increases the efficiency of medical care.

Abstract 62

Co-Location of Developmental-Behavioral Pediatrics in Primary Care: Improving Outcomes for Providers and Families

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Purpose: Insufficient appointments exist to meet referrals for Developmental-Behavioral Pediatrics (DBP) evaluation. This project extends and improves a study of the impact of DBP co-location in Primary Care with a total of 27 months of data on wait times and referrals to a tertiary DBP program. **Methods:** From July 2013 to March 2016, a DBP MD provided Rapid Developmental Evaluation (RDE) to children referred by primary care providers (PCPs) in 4 Federally Qualified Health Center clinics. Evaluations at weekly clinics included history, physical exam and evaluation of need for services and referrals. **Results:** 166 children were evaluated. Average age 46+23 months (range 3-153). 73% male. 67% Spanish-speaking. 98% government-sponsored insurance. 2% uninsured. Reasons for referral, (multiple possible): Language Delays (47%), Behavior (27%), Concern for Autism Spectrum Disorder (ASD; 23%), Developmental Delays (19%). Time from referral to RDE 57+52 days (range 2-219). During this time, local average wait time from referral to tertiary DBP appointment was 5.1 months. Clinical referrals, guidance to parents and provider education were given. 66 children (40%) were referred for tertiary DBP evaluation. To date, 61 children have been evaluated. Diagnosis changed in 3 cases: 2 thought to have ASD diagnosed with isolated language disorder and 1 with language delay diagnosed with ASD. A survey of PCPs revealed that RDE improved communication and enabled patients to receive earlier evaluations and referrals. Challenges include language interpretation and staff support in busy primary care clinics. **Conclusion:** Co-location for DBP RDE is a feasible model of care that can result in shorter patient wait times to initial DBP visit, reduced referrals for tertiary DBP evaluation, and proactive assessment and referral to EI by primary care MDs while providing patients, families and providers with appropriate care and education. Next steps include analysis of diagnostic decisions and satisfaction among families who received the tertiary referral.

Abstract 63

Use of Applied Behavioral Analysis in Military-Connected Young Children with Autism

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Purpose:All children with Autism Spectrum Disorder (ASD) whose parents or legal guardians are current or retired active duty members of the armed services are eligible for full coverage of Applied Behavioral Analysis (ABA) services, a therapy known to improve the core symptoms of ASD. Early diagnosis and initiation of behavioral therapies are associated with improved outcomes. For military-connected children, ABA is administered under the Comprehensive Autism Care Demonstration Program (CACDP). Qualitative studies indicate that obtaining access to ABA is a difficult and lengthy process for these families. This investigation aimed to delineate access rates and the time from initial ASD diagnosis to first contact with an ABA service provider. Regional differences were explored. **Methods:**We accessed the Military Health System (MHS) Data Repository (MDR) to identify a cohort of children three years and younger with an ASD diagnosis in Fiscal Year 2015 (FY15). The date and location of the first ASD diagnosis in the chart was identified and the record was scanned for the first billing code for ABA services through Fiscal Year 2016. Regional access rates were compared. **Results:**4510 children ages three and younger were found to have a recorded diagnosis of ASD in FY15. Of those diagnosed with ASD, 57% successfully accessed ABA services within the study timeframe. However, 57% of those experienced a treatment delay of more than 180 days. Children diagnosed in the western region of the US were more likely to access ABA services as compared to the southern or eastern regions (59% vs. 54% and 53% respectively, $\chi^2= 11.4$, $p<0.01$). Those diagnosed in Europe and then transferred to the United States for services ($n=139$) were more likely to access ABA services (81%). **Conclusion:** Despite full coverage for ABA under the CACDP, many young children do not enroll in services. A majority of those that do experience significant delays. Barriers to establishing ABA are associated with location of diagnosis and need further study. The views expressed are those of the authors and do not reflect the official policy or position of the Dept. Navy, DOD, or US Government.

Abstract 64

An Online Tool for Documenting DSM-5 and DSM-PC Criteria for ADHD and Co-Morbid Conditions

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Purpose:To develop a parent completed questionnaire to help PCPs document mental health diagnoses (DSM-PC-5). Background: AAP guidelines for ADHD include documenting DSM criteria and identifying co-morbidities. The AAP also created DSM-PC (DSM for Primary Care) to document sub-disorder threshold Problem and Developmental Variation in primary care. **Methods:**An online DSM-PC-4 tool was revised using focus groups of experts and parents to document DSM-5 and DSM-PC diagnoses, and parent mental health concerns, frequencies and priorities. Children receiving care for ADHD or screened positive on the Pediatric Symptom Checklist were recruited. Test-retest (714 days) data was collected in a sample of 82 children. Parents of children aged 4-12 completed DSM-PC-5 and CBCL for their age online and then were interviewed by phone by trained psychology graduate students using the Diagnostic

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Interview for Preschool Assessment (DIPA-5) for 4-7 year olds or Minikid-5 for 8-12 covering ADHD, ODD, Mood and Anxiety. **Results:** Test-retest reliability for DSM-PC was Kappa = 0.66 for recognition of any disorder. DSM-PC-5 tended to be more sensitive but less specific than CBCL in identifying patients with any of the five disorder diagnoses. **Conclusion:** This online DSM-PC-5 tool identifies severity similarly to the dimensional CBCL with advantages of documenting DSM-5 criteria, parental concerns, frequencies and priorities. It has efficiencies of serving as a screen or triggering disorder-specific modules based on priorities. It uniquely documents DSM-PC categories.

Poster Session II Abstracts

Abstract 66

Police Officer's Understanding of Autism Spectrum Disorder

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Purpose: To assess the prior experience, knowledge and comfort of police officers concerning persons with Autism Spectrum Disorder (ASD) as these individuals are at increased risk of interacting with law enforcement both as suspects and victims. **Methods:** Participants were officers with the Cleveland Heights Police Department and Cuyahoga County officers enrolled in Crisis Intervention Training. Officers completed a survey which included questions from the literature and de-novo material to assess prior experience, knowledge, ability to identify persons with possible ASD, and comfort. Percent responses were calculated. Chi-square tests were used to determine significant group differences in categorical variables, and t-tests were used when responses were continuous. **Results:** 51 officers completed the survey. 52.9% reported previous training in ASD. 31.4% reported personal experience with ASD. 56.9% endorsed low knowledge of ASD. 39.2% did not identify a likely nonverbal teen with ASD. 80.4% did not recognize a likely high functioning teen with ASD. Mean comfort and knowledge scores were 3.24 (SD 0.86). Mean practical knowledge score was 3.74 (SD 0.52) [range of 1 (low) to 5 (high)]. Officers who identified a non-verbal teen with ASD had higher mean comfort and knowledge [3.45 (SD 0.88) v. 2.91 (SD 0.71) ($p < 0.05$)] compared to those who did not. Both officers with previous training and personal experience had higher mean comfort and knowledge [3.51 (SD 0.79) v. 2.93 (SD 0.83) ($p < 0.05$); 3.54 (SD 0.74) v. 3.00 (SD 0.88) ($p < 0.05$)]. Those with personal experience were better able to identify a non-verbal teen with ASD [89% v. 50% ($p < 0.01$)]. **Conclusion:** Officers report low knowledge, moderate comfort and did not consistently identify ASD, with specific difficulty identifying higher-functioning ASD. Those with previous training and with personal experience have a higher reported comfort and knowledge. Those with personal experience were better able to identify ASD. Further study is necessary to understand what additional training may be helpful to improve officers' knowledge and comfort in working with those with ASD.

Abstract 67

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Do Mealtime Behaviors Problems Vary by Weight Status among Children with Autism Spectrum Disorder (ASD)?

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Purpose: The study aim was to identify problematic mealtime behaviors that differentiate between children with healthy weight (HW) versus children with overweight/obesity (OW/OB). The study aim was to identify problematic mealtime behaviors that differentiate between children with healthy weight (HW) versus children with overweight/obesity (OW/OB). **Methods:** Seventy-nine children with ASD (ages 2-8 years; $M = 5.37$ $SD = 1.89$; 77% male; 66% White; 66% healthy weight) participated in this study. Mealtime behaviors were assessed by the Brief Autism Mealtime Behavior Inventory (BAMBI; Lukens & Linscheid, 2008), which provides scores for Disruptive Mealtime Behaviors, Food Refusal, Food Selectivity, and Mealtime Rigidity (Demand et al., 2015). Child height and weight were measured in triplicate, converted to BMI percentile, and used to categorize children as HW (< 85thtile) or OW/OB (> 85thtile). A discriminate analysis was conducted to predict dichotomous weight group by mealtime behaviors. **Results:** A single discriminant function was significant and predicted weight group (Omnibus Wilks' $\lambda = 0.879$, $\chi^2 = 9.833$, $p = 0.043$). The subscales Disruptive Mealtime Behaviors ($\lambda = .944$; $p < .01$) and Food Refusal ($\lambda = .907$; $p < .05$) contributed the most discernment between weight statuses with significantly higher rates of Disruptive Mealtime Behaviors and Food Refusal among HW children. **Conclusion:** Greater disruptive mealtime behaviors and food refusal classified children being in the HW versus OW/OB category. It could be posited that children who are OW/OB would demonstrate higher rates of refusal of healthy foods and tantrums for food than healthy weight children, it appears that HW children actually display greater frequency of these problems. It may be the case that greater food refusal and disruptive mealtime behaviors lead to lower calorie consumption, preventing gain of excess weight. However, if these children are consuming less food, they may also be consuming less essential nutrients needed for overall health. Our results suggest providers should screen for mealtime behavior problems among HW children, rather than restricting assessment of mealtime behaviors to children with problematic weight gain. Future research should examine whether specific mealtime behaviors have more utility for clinical care of children with ASD.

Abstract 68

Does it Fit? The Psychometric Properties of the Brief Autism Mealtime Behavior Inventory (BAMBI).

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Purpose:We re-examined the psychometric properties of the BAMBI since previous research has failed to yield a stable factor structure for the BAMBI (Hendy et al., 2013; Meral & Fidan, 2014), which may threaten its validity. **Methods:**Seventy-nine children with autism spectrum disorder (ASD; child age M = 5.37; SD = 1.89; 76.7% male; 65.8% White) were recruited to participate in a larger study examining mealtimes and weight. Childrens' parents completed the 18-item BAMBI (Lukens & Linsheid, 2008), a measure which can quantify child mealtime problems and identify treatment targets. **Results:**We initially conducted an exploratory factor analysis, which yielded a four-factor model with an acceptable RMSEA value of .06, and moderate fit values for CFI=.923 and TLI=.906. But, the EFA model proved to be similar to the four-factor model proposed by Demand et al., 2015. Thus, we conducted a confirmatory factor analysis to see if we could replicate Demand et al.s four-factor model in our sample, which also displayed a promising fit: RMSEA value of .06, and fit values of CFI=.880 and TLI=.850. Subscales for the Demand et al. 2015 model included: Food Selectivity, Disruptive Mealtime Behaviors, Food Refusal, and Mealtime Rigidity. **Conclusion:** We were able to replicate the Demand et al., 2015 four-factor model in our sample, which provides evidence that this model may be more stable than the original 3-factor model (Lukens & Linsheid, 2008) or other proposed models. Future validation studies with the BAMBI should identify new items that maximize the specificity of the BAMBI in identifying problematic mealtime behaviors in children with ASD by including youth from different special needs populations (e.g., Down Syndrome). Improvements to the BAMBI will provide clinicians and researchers with a more accurate and discerning profile of problematic mealtime behaviors in children with ASD, which can facilitate interventions informing parenting practices. Given the prevalence of feeding problems in youth with ASD, it is essential to identify an effective, valid, and quick screening tool

Abstract 69

The Development of an Interdisciplinary Adherence Measure for Children with Failure to Thrive

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Purpose:Failure to thrive (FTT) has a multifactorial etiology that often requires a diversity of treatment recommendations. Currently, there is no measure to assess treatment adherence in this population. We sought to develop an interdisciplinary adherence measure for children with FTT. **Methods:**In Study 1, a taxonomy of the clinics most common recommendations was compiled based on 102 children (infancy to age 5 years, mean BMI z-score = -1.8, SD = 0.9) attending intake evaluations at a specialty clinic for FTT. These recommendations were classified into seven domains: liquid intake, food intake, meal structure, behavior, development, psychosocial, and miscellaneous. In Study 2, we created an adherence measure based on the 29 most common recommendations from Study 1. Participants were 75 families of children attending

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the clinic for a follow-up visit occurring an average of 132 days (SD = 105 days) after their prior visit (age range: 0.7-8.8 years; 41% Black, 21% Hispanic, 18% White, 20% other; mean BMI z-score = -2.0, SD = 1.0). Staff evaluated each recommendation (mean number of recommendations = 8.2, SD = 3.0) following caregiver interview using a 5-point Likert scale (0 = never adherent to 4 = always adherent). **Results:**In Study 2, children exhibited a mean weight gain of 4.9g/day (SD = 4.2). The mean adherence rating across domains was 3.15 (SD = 0.62), indicating fairly high overall adherence. Overall adherence was positively correlated with greater weight gain ($r = .33$, $p = 0.005$), covarying for child age. In particular, adherence to the following recommendations was associated with greater weight gain: eating food before drinking liquids at meals ($r = .40$, $p = 0.05$), reducing mealtime distractions ($r = .50$, $p = 0.05$), and improved overall meal structure ($r = .27$, $p = 0.04$). **Conclusion:** Consistent with research on other pediatric populations, caregiver adherence is associated with a better outcome for children with FTT. This new interdisciplinary tool serves as a feasible and potentially useful measure of adherence for families of children with FTT. Future research with a larger sample will seek to further identify specific recommendations whose adherence is most associated with optimal weight gain.

Abstract 70

Daily Dose of Development: Feasibility of an Online Spaced Education Curriculum for Pediatric Residents

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Purpose:To determine if a novel longitudinal quiz-based curriculum (Daily Dose of Development, a web-based platform for pediatric resident education on normal child development) is a feasible educational approach for teaching the fundamentals of child development to pediatric residents. **Methods:**Spaced education is an educational framework centered on repeated presentation of core concepts in small increments over time. A proof of concept cohort study served as a needs assessment and pilot project to assess the feasibility of the spaced education approach using the Daily Dose of Development curriculum. Pre- and Post Surveys were administered to a) examine resident attitudes of curriculum, b) knowledge of child development and 3) provide formative feedback of the curriculum design through both qualitative and quantitative measures. **Results:**48 residents (52%) elected to participate. Of 48 participants, 16 completed both survey tools (33%). Resident identified goals included: mastery of developmental milestones relevant for clinical practice and identification of developmental red flags. 100% of participants endorsed the curriculum as an effective way to learn child development. Qualitative feedback included enthusiasm for the daily quiz concept and a flexible learner-centered curriculum. Mean percentage of correct answers on the pre-test tool was 52% with no significant difference on post-test scores. Most participants accessed the curriculum monthly or rarely. Identified barriers included lack of daily reminder, difficulty accessing website on mobile device and competing demands on time. **Conclusion:** Pediatric residents have an ongoing need for improved education in child development. Residents endorsed enthusiasm for a longitudinal spaced education approach to learning fundamental concepts, such as normal child development, while highlighting opportunities for improvement in the curriculum platform.

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Abstract 71

New Ways of Screening for Persistent Language Delay in Two Year Olds in Primary Pediatric Care

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Purpose: Language is a significant predictor of academic and psychosocial functioning and considered a useful early indicator of a child's overall development. Nevertheless, evidence on language screening is still inconclusive. The development of instruments is impeded by the high variability of trajectories of language development at young age. We sought to develop an instrument to predict language delay at age 2 that persists up to the age of 3 to be used within the constraints of regular primary pediatric care. **Methods:** Pediatricians were trained to use a language screening instrument developed by the authors consisting of a parent questionnaire with a list of expressive vocabulary and an assessment of vocabulary comprehension by the physician. At age 3 the sample was reassessed by use of parent questionnaires on expressive grammar and grammar reception assessed by the pediatricians. The 3 year instrument had been validated by expert language diagnosis and therefore was used as the outcome variable to be predicted by the language screening at age 2. Feasibility was assessed by questionnaires. **Results:** Complete data sets of language screening at age 2 and 3 were available for 1987 monolingual children. The positive predictive value (PPV) of fails in parent reported vocabulary at age 2 (15.9% late talkers) for persisting language delay at age 3 was 50 (specificity 90.5, sensitivity 47.3). However, by also considering fails in the pediatric screening of receptive language at age 2 (32.5% of the late talkers) the PPV increased to 84%. Parents of children who failed the expressive and receptive parts of the screening were referred for multiprofessional developmental assessment. Besides language delay, general developmental delay and autism spectrum disorders were the most common diagnoses detected. Feasibility of the screening within the time constraints of primary care was reported to be very good (26.1%) and good (65.2%) in most cases. **Conclusion:** A two step language screening at age 2 with parental report and pediatric evaluation of language perception can help to identify persisting language and general developmental delay.

Abstract 72

Psychotropic Polypharmacy among Children Receiving Medicaid

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Purpose: Mental health disorders in children and treatment with polypharmacy (PP) are increasing. We aim to assess factors associated with psychotropic PP. **Methods:** A retrospective cohort study used 2012-2015 Kentucky Medicaid claims. PP was defined as concurrent prescriptions for two or more drugs in different classes by the number of covered months in which a child had PP. Individuals aged 0-17, having at least one behavioral health diagnosis and at least one prescription,

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and those with at least 90 days of continuous enrollment were included. Multivariate linear regression was used. Beta coefficients and 95% confidence intervals are presented. Inclusion criteria were met by 218,978 children. Approximately 10% had at least one covered month with PP in the 4-year study period. **Results:**The primary two-drug classes were combinations of stimulants with alpha-agonists or antidepressants. The primary three or more drug classes were combinations of stimulants, alpha-agonists, and antipsychotics or those with the addition of antidepressants. Males had more covered months with PP compared to females (0.48 [0.43,0.53]). Children aged 6-11 years had more covered months with PP compared to those 12-17 years (0.64 [0.58,0.70]), while those aged 0-5 had fewer (-0.50 [-0.57,-0.43]). Children in foster care had more covered months on PP compared to those not in foster care (0.64 [0.55,0.73]), while children residing in urban areas had fewer covered months on PP compared to children in rural communities (-0.2 [-0.25,-0.15]). Compared to children with only impulse control disorders, children with schizophrenia (2.5 [2.34,2.66]), autism (2.76 [2.66,2.87]), mood disorders (2.24 [2.18,2.30]), disruptive behavior disorders (2.81, [2.76,2.86]), and anxiety disorders (1.07, [1.02,1.12]) had more covered months with PP. **Conclusion:** Efforts to reduce PP for low-income children should target males, children over 5, those living in rural settings, and those in foster care. Minimizing time on PP with certain behavioral health diagnoses may be warranted.

Abstract 73

Differences in Performance on Developmental Screening Tasks in Young Children across Digital and Paper-Based Modalities

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Purpose:The primary objective of this exploratory study was to assess whether young children respond differently to developmental tasks when presented on paper versus tablet devices. **Methods:**Participants were 80 children attending 18, 24, 36, or 48-month well-child pediatrician visits. Twenty children were recruited for each age grouping and were randomized to experimental condition (digital vs paper). Participants were then presented with a series of tasks to assess knowledge/performance across 7 developmental domains (receptive language, expressive language, fine motor skills, early literacy, early mathematics concepts, social-emotional skills, and cognitive/reasoning skills). Output modalities for the items included verbally stating an answer, tapping/touching a picture, or using a crayon or stylus that looks like a crayon to draw on paper or a screen. Each domain had 10 items and items were identical across condition. Within each domain, each child was administered items starting with the easiest item and continuing until the child missed 3 items in a row, resulting in a raw score for each domain ranging from 0-10. Parent interviews provided information about demographic characteristics, developmental and educational background, and technology use. **Results:**A series of 2 (condition) x 4 (visit) ANOVAs were conducted to assess main and interaction effects for each of the domains. For all domains, there were main effects for visit type, with higher scores with increased visit age. There was only 1 main effect for condition. In the Early Numeracy domain paper scores were higher than the digital scores ($F(1, 72) = 10.667; p < .05$). There were no interaction effects. A linear regression analysis indicated that total weekly hours of access to a touchscreen device did not predict total score across domains for those in the digital condition ($F(1, 38) = .27; p = .60$). **Conclusion:** Results indicate that digital approaches to screening early learning and development skills may be appropriate for development

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as children did not display a differential response pattern to paper versus a tablet across most tasks.

Abstract 74

Increased Costs of Identifying Developmental-Behavioral Problems in Non-English Speaking Families

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Purpose: Consistent with mandate 492B (a)(1) requiring clinical research to include members of minority groups, NIH has a strong interest in research on health disparities. Using an NIH-funded study of developmental screening as a case example, we outline increased costs attributable to inclusion of Spanish-speaking families. **Methods:** Using Activities-Based Costing, we estimated marginal fixed costs (i.e., overhead independent of number of children assessed) and variable costs (i.e., expenses dependent on number of children assessed) associated with developmental-behavioral assessments for Spanish-speaking families. **Results:** Marginal fixed costs included translating and back-translating research documents (e.g., consent forms, recruitment materials, etc.), purchasing materials appropriate for use in Spanish, and training staff to conduct tests in Spanish. Marginal variable costs included time required to administer developmental tests (averaging 111 minutes in Spanish vs. 70 minutes in English), time required for coding and scoring for electronic systems and supervision in English, and time required to translate written participation summaries for both Spanish-speaking families and predominantly English-speaking medical providers. We conservatively estimated our fixed costs to exceed \$30,000 and variable costs per evaluation to exceed those in English by 50%. Additional unquantifiable costs included recruitment of diverse bilingual staff and making accommodations for different dialects and degrees of bilingualism. **Conclusion:** Inclusion of Spanish-speaking families in research incurs fixed and variable costs over and above those incurred for the project in English. Marginal costs are expected to be higher if additional languages are included (e.g. Arabic, Chinese). Planning for such costs during protocol development is essential for successful inclusion of diverse populations.

Abstract 77

Treatment Provider Differences in Pediatric Pain and Psychosocial Outcomes

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Purpose: To examine psychosocial functioning in children with chronic pain and to examine group differences in pain intensity and psychosocial variables based on treating provider (i.e., community sample treated by primary care provider [PCP] compared to clinical sample treated by a specialist). **Methods:** Participants (N = 131) were parents (60.3% mothers) ranging in age from 19-58 years (M = 37.32; SD = 6.83) of children (44.3% female) ranging in age from 6 to 18 (M = 10.74; SD = 3.31) with chronic headache (70.2% of total sample) or abdominal pain. In the headache sample, 56.6% were treated by a PCP. In the abdominal pain sample, 61.5% were treated by a PCP. Measures included the Visual Analogue Scale to assess pain, Functional Disability Inventory, Bath Adolescent Pain Questionnaire- Parent Impact, Revised Child Anxiety and Depression Scale, and Pain Catastrophizing Scale. **Results:** Results indicated high pain intensity (M = 7.07 out of 10 for headache; M=6.69 out of 10 for abdominal pain), high disability (FDI, M=23.07, SD = 12.06), and high psychosocial distress: Depression (M= 22.31, SD=5.87); Anxiety (M= 13.15, SD=3.87); Catastrophizing (M=39.32, SD=8.68). A one-way ANOVA was conducted to examine differences in pain intensity (F = 1.35, p=.261), functional disability (F = .940, p=.424), depression (F=1.04, p=.376), anxiety (F=.953, p=.471), and pain catastrophizing (F=.979, p=.405) between treatment provider types, indicating no significant differences between the clinical or community samples. **Conclusion:** Results revealed no group differences in pain severity, functional disability or psychosocial variables, suggesting that both clinical and community samples may experience similarly elevated rates of pain, disability, and distress. Thus, results indicate the importance of attending to these variables in pediatric chronic pain patients in primary care/community settings and intervening before their pain worsens, prompting referral to specialty clinics. High impairment in the community sample also highlights the importance of integrating psychologists into primary care settings to address psychosocial functioning preventatively.

Abstract 78

Preliminary Examination of Pediatrician Perceptions of Communication and Decision-making in ADHD Treatment

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Purpose: This study examines pediatricians' perceptions of their communication and decision-making (CDM) with parents of children with ADHD. **Methods:** 31 pediatricians to date have completed an online study assessing their perceived CDM style with parents of children with ADHD. CDM is assessed on a 5-point Likert-style scale; responses range from 1 (Never) to 5 (Always). Quantitative responses are reported descriptively, and qualitative responses were examined for common themes. **Results:** Seventy percent of physicians indicated that they almost always or always ask their patients' parents to help in choosing treatments. Similarly, 79% of physicians almost always or always make an effort to support parents' control over their child's treatment; however, 23% responded sometimes or rarely, suggesting some physicians are less likely to support parent autonomy. Correlation coefficients indicated that physicians who have more experience (in years) are less likely to support parents' control over their child's treatment ($r = -.588$, $p = .008$). 58% of physicians felt that parents have enough information to make good decisions about their child's health in general. 65% endorsed that parents almost always or always take some responsibility for their child's treatment. Lastly, 94% reported always or almost always seeking to make parents comfortable asking for more information. Qualitative responses indicated that many physicians consider individual differences such as child symptom presentation and family beliefs about medication when discussing ADHD

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treatment. **Conclusion:** This small pilot study indicated that pediatricians generally encourage parent involvement in making decisions about ADHD treatment and encourage parents to ask for more information. The finding that less experience was associated with greater CDM may reflect a change in medical programs to promote more collaborative approaches for recent graduates. Pediatricians appear to be integrating parent and patient characteristics to inform their participatory CDM styles when discussing ADHD medication. Future studies should examine the effects of physician CDM on child ADHD outcomes.

Abstract 80

Strategies to Recruit Latino Community Health Workers to Promote Autism Recognition

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Purpose: In Latino communities, promotores de salud (community health workers-CHWs) are becoming critical participants in prevention, health promotion, and the delivery of health care. Involving culturally diverse participants in research is a national priority. However, recruitment and retention of research participants from under-served groups is a significant barrier, leading to an increased need to identify strategies for successful recruitment of diverse participants. The goal of this study is to discover barriers and facilitators to Latino participant recruitment from an established CHW group and Latino community leaders. **Methods:** We conducted qualitative focus groups with an established community-academic research team, Latinos Unidos por la Salud (LU-Salud), and with leaders of community organizations who serve Latino families. Our study aim was to gain a promotores perspective on barriers and strategies to recruit Latino community members, as well as perspectives from leaders of Latino services. Additionally, we partnered with an existing promotores group and Latino-serving community agencies to increase recruitment for future community-based research efforts. **Results:** Facilitators to engagement as a promotores included wanting to learn and help Spanish-speaking families, despite barriers of transportation, child care, and cultural stressors such as legal issues, language and literacy. Strategies recognized to promote recruitment were reaching out to community places where Latino families frequent and the use of social media. **Conclusion:** These findings will aid in building partnerships with the Latino community to recruit participants for future studies as a means to promote early Autism Spectrum Disorder (ASD) recognition in the Latino community.

Abstract 82

Development and Preliminary Validation of PediaTrac": A Web-Based Tool to Screen and

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Track Developing Infants

Renee Lajiness-O'Neill, PhD, Psychology, Judith Brooks, PhD, School of Health Sciences, Angela Lukomski, PhD, School of Nursing, Alissa Huth-Bocks, PhD, Psychology, Eastern Michigan University, Ypsilanti, MI

Purpose: An efficient, low-cost, comprehensive assessment tool to evaluate and track infant development and intervention outcomes does not exist. To address this need, a multidisciplinary team created PediaTrac[®], a caregiver-report web-based tool that prospectively assesses and tracks infant development across multiple domains at consistent sampling periods that correspond to well-child visits. **Methods:** This study details the creation and initial content validation of PediaTrac, which consists of 363 items administered in modules of about 40 items each at newborn (NB), 2-, 4-, 6-, 9- and 12-months assessing demographics, medical and environmental factors, attachment, and four to six developmental domains: 1) sensorimotor, 2) feeding/elimination, 3) sleep, 4) social/communication (for NB-4-mo periods) or 4) social/emotional, 5) cognitive and 6) speech/language (for 6-12-mo periods). An interdisciplinary team of nine faculty and clinical professionals provided consensus opinion regarding the core conceptual constructs to be included in the PediaTrac survey using the Delphi method. Item bank development was based on an extensive review of the literature/existing tools, informed by developmental theory. Expert panel review and Cognitive Interviews (CI) with caregivers were conducted to validate the item bank. **Results:** The intraclass correlation coefficient (ICC) estimates ($k = 3$) for expert panel review revealed moderate agreement at the 6-mos. sampling period ($r = .72$). At all other sampling periods, NB ($r = .79$), 2-mos. ($r = .76$), 4-mos. ($r = .79$), 9-mos. ($r = .77$), and 12-mos. ($r = .81$), good reliability was achieved. ICC estimates ($k = 10$) for CI revealed that at the NB ($r = .64$) and 4-mos. ($r = .53$) periods there was moderate reliability between the caregivers ratings regarding clarity of the items. At 2-mos. ($r = .88$), 9-mos. ($r = .79$) and 12-mos. ($r = .79$) there was good reliability between raters, and at 6-mos. ($r = .92$) there was excellent reliability. **Conclusion:** Following field-testing, clinicians and researchers can use PediaTrac to assess multidimensional developmental trajectories and intervention outcomes.

Abstract 83

Do Kids With Autism Get The Feels?: Making Sense of Interoception

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Purpose: Professionals suspect that children with Autism Spectrum Disorder (ASD) have differences with their interoceptive system, defined as the sensory system that allows us to experience internal physiological sensations. Awareness of these interoceptive sensations is what underlies our ability to clearly interpret our emotions such as anger, anxiety, calm and distractibility. The purpose of this study was to compare how parents of teens with and without

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high functioning autism interpret their child's levels of interoceptive awareness. **Methods:** This study consisted of a 55 item Likert Scale survey administered to parents of teens with and without high functioning autism, and the responses were compared. For the purpose of this poster, we calculated average composite scores for eleven questions that targeted general emotional awareness (general emotional composite, GEC). Lower scores indicate less interoceptive awareness. A two-sampled t-test was used to compare averages between ASD and controls and Cohens d was used to determine effect size. **Results:** The ASD group consisted of 81 parents of teens. The average age of the teens in the ASD group was 13.65 years and 75% were boys. The control group consisted of 96 parents of teens. The average age of the teens in the control group was 12.91 years and 50% were boys. The ASD group had a significantly lower GEC than the control group (1.80 vs. 2.58, $p < 0.001$, Cohens d 2.19) **Conclusion:** This study was the first to survey interoceptive awareness in teenagers with and without high functioning autism. Results suggest that when compared to neurotypical controls, the parents of high functioning autistic teens interpret their children as less aware of their interoceptive sensations leading to reduced emotional awareness.

Abstract 85

Public Library Use and First Grade Children's Language and Literacy Skills

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Purpose: Public libraries provide information, resources, and programming in the community. Few studies have examined the relationship between public library use and teacher-reported language and literacy skills. **Methods:** We conducted secondary analyses of national data from 1st grade students in 1999-2000 who were enrolled in the Early Childhood Longitudinal Study, Kindergarten Class. Data on demographic and literacy-related behaviors and public library use in the past month were reported by parents. Teachers rated children's language and literacy skills using the Academic Rating Scale (ARS). Teachers rated children's proficiency in expressing ideas, listening, reading on grade level, writing, and computer literacy. Total scores were scaled to range from a low of one and a high of five. **Results:** Complete data were available for >15,000 children; 47% visited a public library in the past month, but rates varied by race: 48% of White children, 43.8% of Black children and 41.4% of Hispanic children visited the library. Among children below the poverty level, 35% visited the public library vs. 49.6% above the poverty line. Library use also varied by maternal education: \leq high school degree 38.5%; college degrees or more 59%. Among children who read books ≤ 2 times/week, 39% visited the public library vs. 49% of children who read ≥ 3 times/week. Fewer children who live in the South visited the public library (40.9% vs. 49.9% in the NE, 50.9% in the MW, and 48.3% in the West). Additionally, fewer children from small town/rural areas visited the public library (40.4% vs. 50.5% in urban fringe/large town, and 46.6% in central city/mid-size city). All p values < 0.05 . Linear regression analysis adjusting for gender, race/ethnicity, poverty level, maternal education, region, urbanicity, family structure, language spoken in the home, child disability status, screen time, child reading books, number of books in the home, and parent telling stories showed that children who visited the public library in the last month had higher teacher-reported language and literacy skills (Beta= 0.09, CI 0.03-0.15). **Conclusion:** This study found disparities in public

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library use of first grade children by demographics and region and that their library use in the past month was associated with higher teacher ratings of language and literacy skills. Further studies to better understand this relationship should be considered.

Abstract 86

Psychopharmacology Consultation Facilitated by Integrated Psychology Residents in a Pediatric Continuity Care Clinic: A Feasibility Study

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Purpose: Primary care pediatricians (PCPs) are often tasked with prescribing psychotropic medications without access to a psychologist (PSY), child/adolescent psychiatrist (CAP) or developmental-behavioral pediatrician (DBP). The purposes of this study were (1) to determine the feasibility of adapting an integrated care model that already incorporates PSY residents in a pediatric continuity care clinic to include CAP consultation and (2) to enhance knowledge of pediatric residents in psychopharmacology. **Methods:** Subjective and objective assessments of knowledge and comfort with prescribing psychotropic medications were conducted with pediatric residents prior to program implementation and again 4 months later. PSY doctoral residents who are embedded in a pediatric continuity care clinic at an urban academic health center collaborated with pediatric residents to identify patients for CAP consultation. PSY residents assessed patients and reviewed cases with the CAP who then messaged recommendations to the pediatric resident and attending PCP through electronic health records. Monthly CAP-led educational conferences were conducted with pediatric and PSY residents. Patient diagnosis, medications prescribed and time spent on consults were tracked within the 4 month pilot feasibility phase. **Results:** 17/19 cases receiving consultation were started on psychotropic medications. Mean time spent by the CAP on consultations was 20 min. Most common diagnoses were ADHD (42%), major depressive disorder (26%) and anxiety disorders (21%). 52% were prescribed SSRIs; 35% were prescribed ADHD medications. Total resident objective knowledge score (possible range 0-10) improved from pre- (M = 5.1, SD = 1.55) to post-intervention (M = 8.1, SD = 1.04, $t=-8.70$, $p<.05$). Resident subjective assessment of knowledge/comfort improved ($p<.05$) on 30/31 items. No patient would have had access to a CAP without the intervention. **Conclusion:** Availability of CAP or DBP psychopharmacology consultation is feasible within an integrated care model when facilitated by an embedded collaborating mental health professional. This approach may increase access to care and offer interprofessional educational opportunities.

Abstract 87

Rates of comorbid Attention Deficit Hyperactivity Disorder and Autism Spectrum Disorder.

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Purpose: The DSM-5 permits comorbid diagnosis of Attention Deficit Hyperactive Disorder (ADHD) in children with Autism Spectrum Disorder (ASD). Previous research on comorbidity was limited by an exclusion in the DSM-IV. Estimates of comorbidity have ranged widely and relied upon small sample sizes and symptoms of ADHD. **Methods:** We used the British Columbia Autism Assessment Network (BCAAN) database to study a large, heterogeneous population based sample of children assessed for ASD between 2010-2014. Comorbid diagnoses made at the time of ASD diagnosis were available including ADHD, Intellectual Disability (ID) and Global Developmental Delay (GDD). Chi-square analyses were used to calculate differences in the prevalence of ASD with ADHD when separated by age (<6,6-12,>13), and ADHD subtype (combined, inattentive or hyperactive). **Results:** The BCAAN database had 4021 assessments for children 1-19 years that met our criteria. Of these, 2143 (53%) were diagnosed with ASD: 1385 (64.6%) <6 years, 589 (27.5%) 6-12 years, and 169 (7.9%) >13 years. In the ASD group, 351 (16.4%) were also diagnosed with ADHD: 57 (4.1%) <6 years, 232 (39.4%) age 6-12, 62 (36.7%) age >13 with significant differences ($p<0.05$) between the <6 year group and the other two groups. Where ADHD subtype was specified, the proportion diagnosed with ASD and ADHD combined type significantly decreased ($p<0.05$) from 92.3% in the <6 group to 74.9% age 6-12 and 49% >13 years. The proportion with ASD and ADHD inattentive type significantly increased from 5.1% <6 years, to 21.1% ages 6-12 and 49% >13 ($p<0.05$). There was no change in the proportion of hyperactive subtype with age. Rates in those with ASD and ID/GDD (8.2%) were significantly lower than those without (19.4%, $p<0.05$). The rates in the ASD group without ID/GDD increased from 4.3% <6 years to 44.3% between 6-12 years and 42.5% >13 years ($p<0.05$). **Conclusion:** There is a high rate of comorbidity of ADHD and ASD >6 years of age. There is a significantly higher rate of ADHD in those with ASD without comorbid ID/GDD. The proportion of ADHD subtype varies with age similar to the general population, with increased inattentive subtype with age.

Abstract 90

Provider Perspectives Regarding the Diagnosis and Treatment of ASD Spectrum Disorder in Chinese Immigrants

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Purpose: To identify cultural factors in Chinese families that impact conceptualization of ASD spectrum disorder (ASD) and the barriers and facilitators to care, as seen through experiences of pediatric providers. **Methods:** Semi-structured qualitative interviews were conducted with healthcare and community-based service providers with experience working with children with ASD and the Chinese immigrant population. Interviews addressed a range of topics specific to this population including: (1) provider background/training, (2) barriers to diagnosis/management of ASD, and (3) facilitators to care and potential recommendations. Data were transcribed verbatim, content coded

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using a modified grounded theory approach. **Results:** Participants included a wide range of health care professionals. All participants reported that they had received professional training in working with children with ASD and 87.5% reported that they had received training in cultural competence. Provider-identified barriers focused on 3 key domains: 1) system-level challenges associated with access (e.g., referral wait times and health insurance obstacles); 2) provider-level challenges associated with communication and trust (i.e., language barriers and difficulties establishing patient-provider relationship due to cultural incongruence); and 3) family-level challenges associated with cultural beliefs (i.e., participants noted the importance of multi-generational family dynamics, parental health literacy, and acknowledgment of a problem). Recommendations to improve the system of care for Chinese children with ASD include: 1) use of interpreters with cultural sensitivity and understanding of ASD; 2) increase in Chinese-speaking providers; 3) increase in the availability of ASD resources in Chinese; and 4) increase care coordination inclusive of patient navigation programming. **Conclusion:** The findings reinforce that interventions to promote early ASD diagnosis and family-centered management in Chinese families should take into account beliefs about child developmental norms, and address systems-, provider-, and family-level barriers, as well as further promote existing facilitators in order to encourage trust and engagement.

Abstract 92

Mom Power Parenting and Mental Health Intervention: Participant Characteristics, Program Feasibility, and Implications for Pediatric Practice

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Purpose: Young children who face adversity are at risk for a wide range of problematic developmental outcomes (AAP, 2012). As high quality parenting is protective, increasing the availability of effective parenting interventions in primary care is vitally important (Shah et al., 2016). Mom Power (MP; Muzik et al., 2015) is a trauma-informed, attachment-based group intervention for mothers and young children (<6 years) that has shown promising results for improving parenting and mental health, and increasing engagement in other services. The purpose of this study was to examine the feasibility of implementing MP through a university-community partnership. **Methods:** Mothers (n=10) were referred to MP from their community mental health provider. During intake, participants completed demographic questionnaires and self-report scales. Evaluators administered an interview about the parent-child relationship (Modified Working Model of the Child Interview; mWMCI; Zeanah et al., 2014) and rated observed parenting sensitivity (Maternal Behavior Q-Sort; MBQS; Pederson & Moran, 1995). After the MP intervention, participants completed an open-ended feedback questionnaire. **Results:** All participants screened positive for depression, 70% screened positive for anxiety, and

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60% screened positive for PTSD. Mothers reported an average of 4 adverse childhood events. MBQS scores (n=9) revealed a range of parenting sensitivity (-.43-.84; mean=.40). Thematic analysis of mWMCIs revealed six themes related to parenting, attachment, parental hardships, and social support. Additionally, mothers showed evidence of applying MP concepts. Fifty percent of mothers attended at least half of the groups; 40% completed the intervention. Post-intervention feedback indicated that MP was well received. **Conclusion:** This study indicates that urban mothers referred to a university-community MP intervention were heavily burdened by exposure to trauma and mental health symptoms, despite a range of parenting behavior. Although attendance rates suggest the need for additional retention efforts, MP shows promise for meeting a critical need in high-risk communities; pediatric settings may be an ideal location for such services.

Abstract 95

Feasibility of a Healthy Steps Program in an Interprofessional Pediatric Continuity Clinic

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Purpose: Developmental and behavioral pediatric (DBP) clinicians have been called to prepare interprofessionals to provide integrated pediatric primary care (Stancin, 2015). One evidence-based, integrated care model designed to provide enhanced primary care services for children 0-3 years is Healthy Steps (HS). Adaptable based on practice needs, HS includes anticipatory guidance, developmental and psychosocial screening, intervention around development and behavior, and supported referrals. The purpose of the present study was to explore the feasibility of adapting the HS model for use in an integrated continuity care clinic with pediatric and psychology residents at an urban medical center. **Methods:** A 5-session didactic and observational HS training curriculum was developed and delivered to psychology doctoral residents, who provide HS alongside pediatric residents as part of their role in an integrated residency continuity clinic whereby psychology and pediatric residents co-managed the care of families. 20 parents of children 0-3 years presenting for appointments were randomly offered the adapted HS intervention at no cost. Following the visit, demographic information, presenting problems, topics discussed, length of HS visit, and providers and family members present for the visit were coded. Surveys of patient satisfaction and usefulness were also collected from parents. **Results:** 20 parents were offered services; 100% agreed to the intervention. Of the 20 receiving services, 80% reported that they learned a great deal about their child's development, while 100% of families reported that they learned at least some about their child's development from the HS visit. All of the families responded that they are very likely to use the new information they learned from the visit and all reported that they are interested in receiving similar services in the future. When asked what they learned, parents provided responses related to self-care, sleep routines and appropriate sleep habits, tools for managing tantrums, and other strategies for promoting development. **Conclusion:** This adapted version of HS appears to be a feasible model of integrated care in an urban continuity clinic and was well received by families. Future data

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collection will include the impact on trainee knowledge, provider satisfaction and team collaboration.

Abstract 96

Resident Autonomy Correlates with Higher Resident Competency in Specific Pediatric Milestones

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Purpose: Developmental Behavioral Pediatrics (DBP) is an important component of pediatric residency training. Limitations in opportunities for hands-on experience is a challenge when teaching DBP and may impact resident satisfaction and comfort with DBP issues. Our objective was to assess the relationship between level of clinical participation and resident satisfaction, proficiency, and competency in DBP. **Methods:** We performed a national, cross-sectional survey of all ACGME-accredited residency programs. Primary predictor was highest reported level of resident clinical participation (observation only, supervised interactions, some independence). Primary outcomes included perceived resident satisfaction of DBP rotation (1=not at all satisfied-10=extremely satisfied), perceived resident proficiency in DBP (1=not at all proficient-10=extremely proficient), and perceived resident competency in DBP using Pediatric Milestones statements. Analysis included ANOVA and Chi-square tests. **Results:** Of 204 programs, 81 surveys were initiated, and 66 surveys were completed. DBP rotation directors accounted for 79% of respondents. DBP rotations averaged 4.2 weeks; 47% were during intern year. 22% of programs offered a longitudinal DBP experience. Average resident satisfaction was 7.6 and proficiency was 6.3. At 63% of programs, residents participated in clinical visits with some level of independence. Resident participation level on interdisciplinary teams was associated with perceived resident competency in taking a developmental history ($p=0.035$) and developing and carrying out management plans ($p=0.017$). Participation level was not associated with resident satisfaction, proficiency, or making diagnostic/therapeutic decisions. **Conclusion:** With more clinical independence, residents demonstrated greater competency on some milestones. Analyses of additional data from our study may help identify other factors that are associated with competency, proficiency, and satisfaction in DBP rotations.

Abstract 97

Examining the Effects of Maternal Depression on Developmental Outcomes for At-Risk Preschool-Age Children

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Purpose: Maternal depression is associated with adverse childhood outcomes. Effects of concurrent maternal depression are not well established. We examined how concurrent maternal depression relates to developmental milestones for at-risk children with high rates of developmental disabilities. We hypothesized concurrent maternal depression would correlate with worsened developmental outcomes. **Methods:** Retrospective data from a nonprofit providing healthcare coordination and school readiness interventions was used. 48-month ASQ-3/SE subscale scores for 436 children were matched to concurrent CES-D scores. Participants were primarily African American, White, and Hispanic. Average maternal age was 28.44 (SD=5.56). **Results:** Bivariate correlations indicated 5 of 6 ASQ subscales were significantly correlated to CESD scores (r 's .117, p 's <.015). Independent samples t-tests confirmed the same pattern with children of depressed moms scoring significantly worse on ASQ subscales compared to children with non-depressed moms (t 's 2.38, p 's <.018). Effect sizes were small to medium. Variance explained ranged from 1.3-6.5% with a single PV/IV. **Conclusion:** Concurrent maternal depression negatively impacts development in multiple domains (e.g., problem-solving, fine motor, social-emotional) associated with school readiness. Given the rate of developmental disabilities and poverty in this population, designing targeted interventions to offset this impact is critical to providing at-risk children more equitable school success opportunities.

t-test Comparing ASQ Scores Based on Maternal Depression Status

	Depressed n=312	NonDepressed n=124						
	Mean	SD	Mean	SD	t	df	p-value	Cohen's d
ASQ-Comm	52.31	12.40	47.94	15.84	2.751	185.899	.007	.307
ASQ-GM	56.89	7.604	56.17	7.216	.907	434	.365	.097
ASQ-FM	45.77	14.481	41.85	15.882	2.380	208.702	.018	.258
ASQ-PrbSlv	53.25	11.115	49.72	13.500	2.588	192.679	.010	.285
ASQ-PerSoc	56.01	7.481	51.41	10.774	4.354	172.158	.000	.496
ASQ-SE	18.69	26.464	35.24	50.790	-3.449	150.284	.001	.407

Abstract 98

Improving Identification and Counseling of Body Mass Index in Children with Neurodevelopmental Disorders

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Purpose: According to the CDC, over 50% of children are overweight/obese. Studies show that children with neurodevelopmental disorders are at increased risk for weight abnormalities. The aim of this quality improvement (QI) project was to increase identification and counseling for children with abnormal body mass index (BMI) seen in Developmental-Behavioral Pediatrics (DBP) Fellow Clinic. **Methods:** Baseline data was obtained through review of electronic medical records (EMR) for 3 months prior to intervention. Documentation of BMI percentile, BMI classification (i.e. underweight, normal, overweight/obese), and counseling of patients for abnormal BMI were reviewed. A Plan-Do-Study-Act QI intervention from July 2016 to March 2017 included patients aged 3-18 years seen in DBP Fellow Clinic. Quality measures included improving documentation of the aforementioned parameters. Our institution exempts QI projects from the IRB process:

<http://academicdepartments.musc.edu/research/ori/irb/HRPP/HRPP%20Guide%20Section%203.8>

Results: Baseline data was 77% for BMI percentile documentation, 0.03% for BMI classification, and 10% for counseling of abnormal BMI. 342 patient encounters occurred during the intervention period. BMI percentile remained well documented throughout the project, increasing to 96%. Dramatic improvements were seen in rates of BMI classification (93%) and counseling for abnormal BMI (90%). Of note, 45% of the sample had abnormal BMI, with 9% underweight and 34% overweight/obese. **Conclusion:** Interval meetings and integration of standard quality measures into EMR were vital interventions for achieving project goals. This included the addition of the following to all EMR templates: BMI percentile in vital signs, cues for providers to classify BMI, and smart-phrases for counseling dependent on BMI classification. Most improvement was seen with classification of weight status and counseling for abnormal BMI. Awareness was brought to the number of visits with underweight patients in addition to those with elevated BMI.

Abstract 99

Parent Information Needs about ADHD Medication

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Purpose: This pilot exploratory study examined parent perceptions of ADHD medication knowledge and their preferred source, timing, and content of information about ADHD medication. **Methods:** A sample of 103 parents of children with ADHD completed an online survey in this exploratory, cross-sectional study. Parents reported demographic information, child diagnosis and medication use, current knowledge of medication side effects, and desired timing and sources of information about medication. **Results:** Correlations and analyses of variance indicated that parent knowledge of medication side effects was not associated with parent age, education, household income, or child ADHD subtypes. Descriptive analyses were conducted to assess parent knowledge and information needs. 29% of the parent sample indicated they know nothing or a little bit about short-term side effects of medication, and 52% indicated they know nothing or a little bit about long-term effects of medication. 63% wanted to know a little or a lot more about short-term side effects, and 77% wanted to know more about long-term effects. The majority (75%) heard about side effects from a pediatrician (primary care or developmental-behavioral), although parents endorsed other sources, e.g., other parents, support groups, package inserts, and online. 85% reported they would prefer to learn about side effects from a physician, although 35% (totals exceed 100% due to multiple response option)

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reported desire to hear about medication side effects from a psychologist or other mental health professional. Parents overwhelmingly felt that they should hear about side effects at the time of diagnosis (62%) and at the time of initial medication discussions with the physician (75%). **Conclusion:** Parent knowledge was not associated with demographic predictors, suggesting need for broad-based and generalizable education strategies. Parents were generally knowledgeable and seeking information from reliable sources, but there was a notable need for more information about long-term effects of medication. Results inform clinical care about communication and education of parents pursuing ADHD medication.

Abstract 100

Comparing Flourishing Between Children with Attention Deficit Hyperactivity Disorder and Asthma

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Purpose: Previous research showed that children with chronic health conditions (asthma and epilepsy) perform poorly on measures of well-being and resilience. Little is known about how resilience or flourishing compare in children with Attention Deficit Hyperactivity Disorder (ADHD) to other chronic medical conditions. This study will compare flourishing between children with ADHD and Asthma. **Methods:** A secondary analysis of the 2011-2012 National Survey of Children's Health (NSCH) was conducted using the composite variable flourishing for ages 6 to 17. Flourishing as a concept contains facets of physical, mental, and emotional health, and it is a measure of child well-being and resilience. Flourishing was divided into low, medium, and high flourishing, with high flourishing indicating positive functioning. Subjects with current diagnoses of ADHD or Asthma by parent report were selected. Co-diagnosis of ADHD and Asthma were removed allowing for independent analysis. Prior to weighting, sample sizes were ADHD $n=5388$ and Asthma $n=5514$. Weighted statistical analyses were conducted using SPSS, including bivariate analyses and multinomial logistic regression. **Results:** 17.5% of children with ADHD had high flourishing, compared to 46% in children with Asthma ($p<0.01$). Low flourishing in ADHD was 56.2% compared to 26.6% in Asthma ($p<0.01$). A multinomial logistic regression was completed controlling for sex, age, socioeconomic status, and race. Resulting odds ratio showed a child with ADHD had 6.7 times higher odds of low flourishing than a child with Asthma ($B=1.899$; Std error 0.002; $p<0.01$). Characteristics including race (black $OR=1.708$), age (age 6 to 12 $OR=1.025$), and SES (below poverty level $OR=2.968$) showed statistically significant relationships to flourishing ($p<0.01$). **Conclusion:** Children with ADHD are at increased risk for low flourishing compared to Asthma, independent of other factors (age, race, SES). Overall, health care providers should be cognizant of the relationship between ADHD and decreased flourishing. Future studies to identify protective factors are indicated to create targeted interventions for this at-risk patient population.

Abstract 101

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Improving Access to Early Diagnosis of Autism Spectrum Disorder through Novel Models of Care: A Pilot Evaluation

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Purpose: Early identification of children with Autism Spectrum Disorder (ASD) is known to improve outcomes. At a children's hospital-based Child Development Center (CDC), three models of care for children under six years were trialed, with the goal of decreasing age of diagnosis and time from referral to diagnosis. This project aimed to compare outcomes across the three models. **Methods:** A retrospective electronic chart review of children newly diagnosed with ASD from 3/1/14 to 9/1/16 was performed. Three models of care were compared: Standard Care (CDC), General Evaluation Model (GEM), and Communication Clinic (CC). For CDC, children were scheduled based on date of referral and appointment availability. GEM prioritized children referred for ASD evaluation, concern for disruptive behavior, or developmental issues concerning for genetic or metabolic disorder. GEM was staffed by a Developmental-Behavioral Pediatrician (DBP) 1 day/mo. CC evaluated young children with concern for speech delay or ASD from one county's Medicaid population, thus limiting referral numbers. Two clinicians (DBP, Psychologist) held 1 clinic/wk. **Results:** 27 patients were newly diagnosed with ASD. One patient was excluded due to initial diagnosis of ADHD that delayed ASD diagnosis. Reductions in key outcomes were found in both models. See table. **Conclusion:** Even in a small pilot sample, differences in age at diagnosis and time from referral to diagnosis are noted, with significantly shorter referral to diagnosis time in CC than CDC. Next steps should include a larger sample size, analysis of cost, and impact on CDC.

Mean Study Results

	Age at Referral (year)	Age at Diagnosis (year)	Referral to Diagnosis (day)
Total (n=26)	3.00	3.87	316.38
CDC (n=16)	2.99	4.04	385.31
CC (n=4)	3.11	3.29	66
GEM (n=6)	2.95	3.77	299.5

Abstract 103

Evaluation of Weekly Dose of Development, a Multimedia Curriculum Teaching Pediatric Developmental Milestones: Is a Weekly Dose Enough?

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Purpose: To evaluate the effectiveness of a novel multimedia curriculum, (Weekly Dose of Development) to improve pediatric resident recall of developmental milestones and confidence in assessing developmental delays. **Methods:** A series of 4 short videos was created using the Explain Everything iPad application to review gross motor and social-emotional milestones. Videos presented children modeling milestones and introduced relevant concepts in normal development. Each week for 4 weeks, residents received 1 video and a 5 question post-video quiz, and a video answer key upon quiz completion. Resident responses on quizzes and pre- and post-study non-identical knowledge tests and qualitative surveys were graded and compared. **Results:** 24 residents participated in the study, including 8 PGY-1s, 11 PGY-2s, and 5 PGY-3s. 80% of residents had completed a rotation in Developmental-Behavioral Pediatrics. 60% of residents viewed WDD content, and 30% used the full curriculum. Residents self-assessment of their knowledge of developmental milestones, knowledge of methods to evaluate child development, ability to observe developmental milestones in clinic, and ability to assess developmental delays significantly increased following the intervention (3.14 vs. 2.67; $p = 0.02$, 3.14 vs. 2.63; $p=0.01$, 3.14 vs. 2.67; $p=0.045$, 2.86 vs. 1.91; $p=0.02$ on a 4-point Likert scale where 1 is not comfortable and 4 is very comfortable). 4 of 7 residents improved in score (25% mean increase) between pre- and post-study tests of knowledge of milestones (47 vs. 50%, $p = 0.80$). Residents agreed that videos helped increase recall, were relevant for clinical practice and boards examinations, and are an efficient study method. **Conclusion:** Many residents remain uncomfortable with their knowledge of developmental milestones despite completion of a Development-Behavioral rotation. Weekly Dose of Development is a useful tool that may be helpful in Developmental-Behavioral Pediatrics rotations. The Explain Everything application for iPad is a valuable tool for creation of short instructional videos.

Abstract 104

Maternal interpersonal sensitivity is more highly related to infant social communication at 9 months than maternal depression

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Purpose: The first three years of life are critical for brain development, but little is known about developmental trajectories that lead to normative development and those that lead to abnormal development. Maternal mental health has been associated with infant development. It was hypothesized that increased maternal depression and interpersonal distress would be significantly correlated with poorer infant social communication. **Methods:** As a part of the development of PediaTrac, a comprehensive and inexpensive tool to track infant and toddler development, 34 mothers of 9 month-old infants were surveyed on various domains of infant development and maternal mental health. Measures included the Brief Symptom Inventory to evaluate maternal psychological distress, the Communication and Symbolic Behavior Scales to

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evaluate infant communication and social functioning, and the Ages and Stages Questionnaire, 3rd edition, to evaluate infant developmental in the domains of communication, problem solving, and personal-social functioning. The dyad sample included 15 male and 19 female infants, and a mean maternal age of 30.9 (SD=5.63). **Results:** Results indicated that increased maternal interpersonal distress (M=47.44; SD=7.16) was significantly correlated with poorer infant social skills (M=11.79; SD=3.55; $r = -0.37$; $p = 0.31$), poorer infant communication (M=43.09; SD=13.48; $r = -0.45$; $p = 0.01$), and poorer total infant social communication and symbolic behavior (M=109.88; SD=17.0; $r = -0.43$; $p = 0.11$). Maternal depression (M=47.79; SD=8.59) was not significantly correlated with maternal interpersonal sensitivity or any of infant social communication measures ($p > .05$). **Conclusion:** Contrary to what was hypothesized, maternal depression was not significantly associated with poorer infant communication outcomes. Instead, the results suggest that increased maternal interpersonal sensitivity has a negative impact on infant social communication as early as 9-months-old. Thus, maternal interpersonal sensitivity appears to be more highly related to infant social communication at 9 months than maternal depression in a community sample of mothers.

Abstract 106

Predictive Validity of the Ages and Stages Questionnaire in Toddlers Born Less than 28 Weeks Gestation

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Purpose: The BSID is a gold standard instrument for developmental assessment from 0-42 months, but administration is costly, time-consuming and requires specialized personnel. Screening can assist with determining who to refer for full evaluation. Texas Medicaid mandates the use of 1 of 2 parent report measures for early childhood screening, but their predictive validity among EP infants is not well-established. The ASQ is more sensitive and specific of the 2, thus we aim to investigate how ASQ scores at 9 and 18 months predict BSID scores to provide a more cost-effective and feasible method of assessing EP infant development. **Methods:** Retrospective study of EP infants followed in a high-risk clinic who had a BSID at 22-26 months and ASQ at 9 and/or 18 months. Sensitivity, specificity, positive (PPV) and negative predictive values (NPV) were calculated to determine whether scores 2SD below the mean on the ASQ Problem Solving, Communication, Gross Motor, Fine Motor scales predicted BSID Cognitive, Language, Gross Motor, Fine Motor scale, respectively. **Results:** See table for details. 67 subjects met inclusion criteria to date (collection ends December 2017). At 9 months ($n = 53$), the ASQ Communication scale had excellent specificity and PPV but poor sensitivity and NPV. The Problem Solving scale had high specificity and NPV but low sensitivity and PPV. The Gross and Fine Motor scales had high specificities, high NPVs, poor sensitivities and PPVs. At 18 months ($n = 26$), the Communication scale had poor sensitivity, specificity, PPV and NPV. The Problem Solving scale had excellent sensitivity and NPV but poor specificity and PPV. The Gross and Fine motor scales had high sensitivities, high NPVs, but poor specificities and PPVs. **Conclusion:** The ASQ at 9 and 18 months does not have strong predictive validity

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for BSID scores at 22-26 months in EP infants. At 9 months, sensitivity is low but improves at 18 months. The high sensitivity at 18 months indicates that the ASQ may be a useful screening tool to identify developmental delay earlier but cannot replace BSID as low PPV indicates that few children with failing ASQ will have poor BSID scores.

Abstract 108

Maternal Early Life Trauma and Associations with Infant Sleep

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Purpose: To study the effects of intergenerational transmission of trauma. **Methods:** Study Design: Non-randomized cohort study Settings: Laboratory of the parent study Participants: 50 mother/infant dyads (35 dyads of mothers who have not been exposed to ELS, and 15 dyads of mothers who have not been exposed to ELS). Infants at ages 6 months and their mothers were evaluated as part of an ongoing study at the University of Pennsylvania. The parent study is examining the associations between maternal early life stress with a number of pregnancy, perinatal and postpartum outcomes, including infant development and infant cortisol levels in response to a stressor. Main Outcomes and Measures: The primary study outcome measures are variables from the Adverse Childhood Experiences Questionnaire, Brief Infant Sleep Questionnaire (BISQ), and demographics questionnaire. **Results:** Preliminary data from the 6 month old visit showed that infants of mothers who have experienced ELS in child were found to have increased sleep disturbances as defined as increased night time awakenings in infants of mothers who have experienced ELS ($M=1.6$, $SD=1.12$) compared to infants of mothers who have not experienced ELS ($M=0.97$, $SD=0.82$); $t(-2.21)$, $p = 0.03$. **Conclusion:** Infants of mothers who have experienced ELS have increased sleep disturbances compared to infants of mothers without this history. It is important that future research examine further the effects of intergenerational transmission of trauma in order to treat and develop prevention programs to hopefully one day stop the transmission process. The next step in the project is to examine infant sleep patterns at 12 months of age using a sleep diary and BISQ.

Abstract 109

Health-Related Quality of Life in Children with Sickle Cell Disease Undergoing Chronic Transfusion Therapy

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Purpose: Sickle cell disease (SCD) is a group of inherited blood disorders associated with significant complications in childhood, including recurrent pain, infection, and stroke. Chronic red cell transfusion (CRCT) is used in children with severe complications and is one of only two disease modifying treatments for SCD. This study examined self-reported HRQL in children with SCD receiving CRCT using the Pediatric Quality of Life Sickle Cell Module (PedsQL SCD). Specifically, we evaluated a group of children receiving CRCT to two comparison groups: children with similar, severe disease risk and children with milder disease risk based on SCD genotype. Based on previous research, we hypothesized that children on CRCT would report higher HRQL for domains assessing pain and pain-related functioning versus children with severe disease risk. **Methods:** Medical charts were reviewed for 67 children with SCD ages 8 to 18 ($M = 14.04$, $SD = 3.09$; 34 male, 33 female), who completed the PedsQL SCD as part of clinic care, including children receiving CRCT ($n = 23$) and children with severe ($n = 29$) and milder disease risk ($n = 15$) not on CRCT. Linear regression was used to examine specific comparisons between the CRCT group and the two comparison groups using dummy codes. **Results:** For overall pain, the regression model was statistically significant, $F(2, 64) = 4.07$, $p = .022$. In contrast to our hypothesis, children on CRCT had higher HRQL ratings, $M = 81.52$, $SD = 18.61$, versus children with both severe, $M = 64.37$, $SD = 29.54$, $t(1, 66) = -2.39$, $p = .020$, and milder disease risk, $M = 60.19$, $SD = 27.19$, $t(1, 66) = -2.50$, $p = .015$. Similarly, for pain-related functioning, the regression model was statistically significant, $F(2, 64) = 4.32$, $p = .017$. Children on CRCT had higher HRQL ratings, $M = 74.29$, $SD = 19.65$, versus children with both severe, $M = 52.93$, $SD = 29.67$, $t(1, 66) = -2.84$, $p = .006$, and milder disease risk, $M = 56.50$, $SD = 30.72$, $t(1, 66) = -1.99$, $p = .051$. **Conclusion:** Children with SCD receiving CRCT may have better HRQL for pain and pain-related functioning compared to children not on CRCT with both severe and milder disease risk.

Abstract 110

Prevalence, Duration and Severity of Idiopathic Toe-Walking in a Large National Sample

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Purpose: Idiopathic toe-walking (ITW) occurs when weight is placed entirely on the ball of the foot while walking. For many children learning to walk, toe-walking is completely normal and often resolves naturally. However, when toe-walking persists more than 25% of the time for more than one month, it can become very difficult to eliminate. This study seeks to examine the prevalence, duration and severity of ITW in a large and national sample of children. **Methods:** Parents of children ages 15 months to 5 years who had walked independently for e3 months were surveyed via Mechanical Turk. Toe-walking was defined in the survey as walking on the e25% of the time for e1 month. Participants were asked about demographics and the presence, duration and severity of ITW. Children whose

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parents indicated they had cerebral palsy or hypertonia were excluded from the analysis. **Results:** Of the 596 parents who completed the survey, 562 were eligible for analysis. Demographics of the respondents children were 53.7% male, 84.27% non-Hispanic, 67.31% white, 4.77% black, 15.90% Asian, 1.94% American-Indian/Pacific-Islander, and 6.71% multiracial. 20.29% of the sample indicated that their child either currently toe-walks (7.83%) or had toe-walked in the past (12.46%); 26.69 % stated that their child had toe-walked for less than 25% of the time or less than a month; 41.46% had never toe walked, and 8.9% stated they did not know. There were no significant gender differences in toe-walking prevalence. Mean onset of toe-walking was 12.69 months. Of the 159 toe-walkers, 28.30% reported that their child toe-walked <25% of the time, 47.17% toe-walked 25-49% of the time, 15.72% toe-walked 50-74% of the time, and 8.81% toe-walked >75% of the time. The mean toe-walking duration for those who toe-walk almost always was 12-13 months and for those who toe-walk often was 6-7 months. **Conclusion:** Although previous studies indicate the prevalence of toe-walking is only 4%, our study suggests that ITW prevalence in the United States is five times higher. Future research should further examine possible causes, risk factors for and effective treatments of ITW.

Abstract 111

Parental Underestimation of Child's Weight Status and Factors Associated With Underestimation in Low-Income Mexican-American Families

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Purpose: Research suggests efforts to decrease childhood obesity may begin with parental recognition of their child's obesity. This study aimed to refine our understanding of parental perception of child weight in a predominantly low-income Mexican American sample. **Methods:** We recruited a convenience sample of 150 parents of 2-to 18-year old children at a Federally Qualified Health Center in Vista, CA. Parents completed a survey including demographics, identification of best match body silhouettes and written Likert scale descriptions of child's weight status. Measured weights and heights of 135 children were available. **Results:** The respondents were mostly mothers (85%), Latino (91%) in Spanish-speaking homes (64%), and reported household annual income of <\$25,000 (69%). Mean age (SD) of the children was 8.0 (4.4) years and 39% were overweight or obese. Age in years ($r=0.19$), fewer days with physical activity ($r=-0.43$), and reported "limiting the child's eating" ($r=0.31$) were significantly correlated with the child overweight/obese status. Parents underestimated their child's weight status using the written descriptions (36%) and the silhouettes (53%). Parental underestimation increased with child age in years (OR 1.1, 95% CI: 1.0-1.2). Parents who had concerns about their child's weight status had 4.4 times higher odds (95% CI: 1.3-17.3) of underestimating their child's weight compared to parents who did not have concerns. **Conclusion:** In this convenience sample of low income Mexican-American children, parents often underestimated their child's weight status. Parental underestimation of child

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weight status was associated with child age, parental concern about child health and preferred child body image. Neither method of assessing parental perception led to accurate estimation of child weight status. Future research should examine how to best support parental understanding of their child's weight status.

Abstract 112

Family characteristics and communication needs in parents of children with ADHD

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Purpose: Attention-Deficit/Hyperactivity Disorder (ADHD) is a highly heritable disorder, and thus parents of children with ADHD often have the disorder as well (APA, 2013). Regardless of parental ADHD, parents of children with ADHD experience elevated levels of stress compared to parents of children without ADHD (Theule et al., 2012). When providing care for families of children with ADHD, a collaborative approach is preferred by both parents and providers (Fiks et al., 2011). The purpose of this study was to examine family factors related to parent-provider communication and decision-making in parents of children with ADHD. **Methods:** A sample of 103 parents of children diagnosed with ADHD was recruited to complete an online survey in this exploratory, cross-sectional study. Parents reported on their child's medication use as well as their own ADHD diagnosis, perceived stress, and communication and decision-making with their child's health care provider. **Results:** Parental perceived stress and parent-provider communication and decision-making were not found to be associated ($r=.08$, $p=n.s.$). In addition, no differences in perceived stress ($t=-1.27$, $p=n.s.$) or parent-provider communication and decision-making ($t=-.67$, $p=n.s.$) were found between parents with and without ADHD. However, parents of children currently taking ADHD medication reported better communication and decision-making with their child's provider than parents of children not taking ADHD medication ($t=2.14$, $p=.04$). **Conclusion:** Results indicate that, contrary to hypotheses, parental stress and parental ADHD diagnosis do not seem to impact quality of communication and decision-making between parents and their child's ADHD provider. Parents of children who are taking medication report better communication and decision-making than parents of children not taking medication, suggesting parents and physicians can experience good communication and decision-making regardless of parental stress or ADHD diagnosis. However, extra provider effort may be needed to form a collaborative relationship with parents who may be resistant to medication.

Abstract 113

Collaborative Project of Medical Service and School Health System to Care for School

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Age Children's Mental Health in Shanghai

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Purpose: The present study aimed to build a mode of collaboration with medical service and school health system to care for school age children's mental health in Shanghai. **Methods:** The sample of this study consisted of 4884 children aged 6-9 years (8.10 ± 1.19) from 12 primary schools in four districts in Shanghai. The Strengths and Difficulties Questionnaire (SDQ) and Mini International Neuropsychiatric Interview for Children and Adolescent (MINI-KID) were administered to screen and interview by trained teachers from school health system. Developmental and behavioral pediatricians then further interviewed children with positive results of MINI-KID to make diagnosis. Eight-week individualized intervention for children with mental issues, mainly Attention Deficit Hyperactivity Disorder (ADHD) was done in schools. The intervention includes group play therapy, behavior therapy, language and neuro-motor therapy and medication. The Chinese version of the Swanson Nolan and Pelham, Version IV (SNAP-IV) Scale, Self-esteem Scale, SDQ and neuro-motor scale were reassessed at the end of the intervention and 3 months later. **Results:** The positive rate of SDQ screening is 9.38% (458/4884), in which about 80% shows positive in domains of conduct problem, partnership problem and hyperactive and attention problem. MINI-KID positive is 18.85% (69/366). All 69 children show ADHD pattern and 12 comorbid anxiety, 7 comorbid ODD, 5 comorbid depression, 4 comorbid conduct disorder and 2 comorbid tics. 46 were diagnosed as ADHD. The detection rate of ADHD by school health system is 79.31% (46/58). The factor scores of SNAP-IV were decreased significantly after intervention. Teacher Edition: inattention Score (1.95 ± 0.70) / (1.50 ± 0.82); hyperactivity score (1.50 ± 0.80) / (1.15 ± 0.73); oppositional defiant score (1.12 ± 0.75) / (0.87 ± 0.66) $P < 0.05$. Parent version: inattention score (1.55 ± 0.59) / (1.26 ± 0.67); oppositional defiant score (0.95 ± 0.54) / (0.78 ± 0.47) $P < 0.05$. **Conclusion:** The mode of collaboration with medical service and school health system to care for school age children's mental health in Shanghai is feasible and effective. ADHD is the main etiology for primary school children with behavioral and mental health problems.

Abstract 115

Readiness to change as a predictor of positive parenting outcomes in pediatric primary care

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Purpose: The study investigated the role of readiness to change (RTC) in predicting positive parenting outcomes in parents who completed a 4 session, one-on-one, evidence based parent training program delivered in a pediatric primary care setting. **Methods:** A single group, pretest-posttest design was employed. Eighty-seven parents of children ($M=6.82$ years, $SD=2.97$ years) who reported disruptive behaviors completed tools at baseline and

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treatment closure on parenting competence, discipline style, and intensity and frequency of child disruptive behaviors (73% retention). **Results:**No differences were found between dropouts and program completers on baseline demographics and pretest outcomes. Paired samples t-tests revealed statistically significant change from baseline to program completion on: parenting competence ($t(86)=-5.76, p<.0001, d=.62$), hostile discipline style ($t(86)=2.62, p=.01, d=.28$), and intensity ($t(86)=9.79, p<.0001, d=1.05$) and frequency ($t(86)=10.48, p<.0001, d=1.12$) of child disruptive behaviors. After controlling for baseline parent and family risk factors, regression analyses indicated that RTC significantly predicted change at service closure in parenting competence ($R^2=.10, F(2,83)=8.41, p=.005; \beta=.31, p=.005$) and hostile discipline style ($R^2=.06, F(2,83)=4.60, p<.05; \beta=-0.23, p<.05$). No relationship was found between RTC and change in child disruptive behaviors. **Conclusion:** The assessment of parents' RTC holds promise for providing information regarding who is likely to benefit from positive parenting interventions. Such information can be used to implement pre-intervention strategies, such as motivational interviewing, to meet a parent at their current level of readiness, address issues surrounding behavioral change, and, in turn, improve intervention outcomes. This research was funded by the St. Louis Mental Health Board.

**Abstracts 10, 16, 20, 21, 22, 23, 24, 25, 27, 32, 34, 35, 36, 37, 40, 41, 45, 46, 48, 49, 50, 52, 53, 56, 65, 75, 76, 79, 81, 84, 88, 89, 91, 93, 94, 102, 105, 107 and 114 were previously published research and are not included in this online publication. Abstracts 57, 58, and 59 were not assigned.*