AACAP Summer Medical Student Fellowship in Child and Adolescent Psychiatry, supported by AACAP’s Campaign for America’s Kids

AACAP’s Summer Medical Student Fellowships, supported by AACAP’s Campaign for America’s Kids, offer an opportunity for medical students to explore a career in child and adolescent psychiatry, gain valuable work experience, and meet leaders in the field of child and adolescent psychiatry. The fellowship opportunity provides up to $3,500 for 12 weeks of clinical or research training under a child and adolescent psychiatrist mentor. The fellowships are administered through AACAP’s Department of Research, Grants, and Workforce, AACAP’s Training and Education Committee, under the direction of Howard Y. Liu, MD, and Sansea L. Jacobson, MD, along with AACAP’s Committee on Medical Students and Residents, under the direction of Lan Chi Krysti Vo, MD, and Isheeta Zalpuri, MD.

Hilary Amissa Brewer, BA  
Columbia University  
Project: Treatment Algorithm for Adolescents With Anorexia Nervosa: A Delphi Study to Determine Expert Recommendations  
Mentors: Evelyn Attia, MD, and Joanna E. Steinglass, MD

Amanda J. Calhoun, BA  
Saint Louis University  
Project: Assessing the Barriers to Increasing Mental Health Care Access for Depressed Adolescents in Guatemala: Clinical Perspectives of a Medical Student  
Mentor: Alicia A. Barnes, DO, MPH

Alexandra K. Desir, BA  
Quinnipiac University  
Project: Attachment and Functioning: The Intersection Between Childhood Events and Children’s Response to an Intensive In-Home, Family-Based Intervention  
Mentor: Linda C. Mayes, MD  
Ms. Desir’s award was partially funded by the Ruth and Peter Metz Family Foundation.

Lucy Gao, BA  
Yale University  
Project: Early Parental Care, Reflective Functioning, and the Neural Markers of Maternal Sensitivity in Pregnancy  
Mentors: Linda C. Mayes, MD, and Helena J. V. Rutherford, PhD
AACAP Summer Medical Student Fellowship in Child and Adolescent Psychiatry, supported by AACAP's Campaign for America's Kids (continued)

Jasmine E. Kim, BS
Tulane University
Project: The Association Between Maternal Adverse Childhood Experience and Maternal Depression: A Longitudinal Cohort Study
Mentor: Stacy S. Drury, MD, PhD

Erica J. Lee, BA
Brown University
Project: Psychopharmacological Treatment in Very Young Children With Severe Psychopathology: A Descriptive Study of Use and Adverse Events
Mentors: John Bockamp, PhD, and Jeffrey I. Hunt, MD

Jacinta Leyden, BS
Stanford University
Project: Factors Influencing Psychiatric Readmissions and the Largest Barriers to Care in the Bay Area, California
Mentors: Thomas Ormiston, MD, and Yasmin Owusu, MD

Marissa J. Luft, BS
University of Cincinnati
Project: Salience Network Dynamic Functional Connectivity in Adolescents With Generalized Anxiety Disorder
Mentor: Jeffrey Robert Strawn, MD

Lindsay Milliken, BS
Rowan University
Project: Complementary and Alternative Medicine Use in Child and Adolescent Psychiatry
Mentor: Consuelo Cagande, MD

Danielle M. Mohabir, BA
University of North Carolina System
Project: Is Emergency Psychiatric Care Right for Everyone? Describing the Experience of Pediatric Patients in the Emergency Department
Mentor: Angela Strain, MD
Ms. Mohabir’s award was partially funded by the Ruth and Peter Metz Family Foundation.
Priya R. Pathak, MPH
University of Wisconsin
Project: Adverse Childhood Experiences (ACE) Assessment in Integrated Child Mental Health
Mentor: Katherine E. Grimes, MD, MPH

Jennifer A. Vasko, BS
University of Minnesota
Project: Emotion Recognition Errors and Social Functioning in ASD
Mentor: Suma Jacob, MD, PhD
Treatment Algorithm for Adolescents with Anorexia Nervosa: A Delphi Study to Determine Expert Recommendations

Hilary Amissa Brewer BA, Samantha Buchman PsyD, Joanna E. Steinglass MD, Evelyn Attia MD
1Department of Psychiatry, Columbia University Irving Medical Center & New York State Psychiatric Institute

BACKGROUND

- Anorexia Nervosa (AN) is a deadly psychiatric disease and is notoriously difficult to treat.
- Guidelines for treatment and pharmacological agents have proven to be ineffective.
- Adolescence is a critical period in AN because pathological dieting emerges during this time and prognosis for adolescents is better than for adults.
- However, specific clinical recommendations for initiating treatment in adolescents and moving patients between levels of care are lacking.

AIMS

The goal of this study is to create an algorithm for both initial treatment recommendations and for steps of care in the management of adolescent patients with AN.

METHODS

PARTICIPANTS:
51 peer-nominated experts in the field of adolescent AN defined as having:
- At least 10 years of experience in the field and
- Membership in 1 of 3 professional organizations
  (Society for Adolescent Health and Medicine, Academy for Eating Disorders, or Eating Disorders Research Society)

PROCEDURES:
Delphi Panel Method: 3 rounds of questions via Qualtrics, answered anonymously
  - Round 1: 5 open-ended questions about recommendations
  - Round 2: Rate level of agreement with statements on a 7-point Likert scale
  - Round 3: Rate level of agreement once more after anonymously viewing peer responses from round 2

ANALYSIS

“Consensus” defined in two tiers:
- Consensus: ≥ 85% in agreement
- Near consensus: ≥ 75% in agreement

TREATMENT RECOMMENDATIONS AT INITIAL EVALUATION

- Inpatient
- Structured OP
- Other OP
- FBT

Agreement score = (8 participants who agree) – (8 participants who disagree) for each statement. Items presented (by number) in Tables 1 and 2.

TRANSITIONS BETWEEN LEVELS OF CARE

- Step Down
- Step Up

FUNDING

Supported by:
1. Hilda and Preston Davis Foundation (PI Steinglass)
2. AACAP Summer Medical Student Fellowship in Child and Adolescent Psychiatry, supported by AACAP’s Campaign for America’s Kids

RESULTS

Table 1. Initial Evaluation Survey Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Agreement Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>20</td>
</tr>
<tr>
<td>Item 2</td>
<td>15</td>
</tr>
<tr>
<td>Item 3</td>
<td>10</td>
</tr>
<tr>
<td>Item 4</td>
<td>5</td>
</tr>
<tr>
<td>Item 5</td>
<td>0</td>
</tr>
<tr>
<td>Item 6</td>
<td>-5</td>
</tr>
<tr>
<td>Item 7</td>
<td>-10</td>
</tr>
<tr>
<td>Item 8</td>
<td>-15</td>
</tr>
</tbody>
</table>

Table 2. Transition Survey Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Agreement Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>20</td>
</tr>
<tr>
<td>Item 2</td>
<td>15</td>
</tr>
<tr>
<td>Item 3</td>
<td>10</td>
</tr>
<tr>
<td>Item 4</td>
<td>5</td>
</tr>
<tr>
<td>Item 5</td>
<td>0</td>
</tr>
<tr>
<td>Item 6</td>
<td>-5</td>
</tr>
<tr>
<td>Item 7</td>
<td>-10</td>
</tr>
<tr>
<td>Item 8</td>
<td>-15</td>
</tr>
</tbody>
</table>

FINAL PARTICIPANTS

25 Respondents in round 1
100% participation in rounds 2 and 3

DISCIPLINE

- 12 Psychologists
- 12 Psychiatrists
- 1 Child Psychologist/Psychiatrist

REGION OF PRACTICE

United States: 17
Europe: 7 (UK, Netherlands, Germany, Austria)
Australia: 1

CONCLUSIONS

- FBT is the primary recommendation for adolescents with AN (including in the presence of OCD, anxiety and/or depression).
- Inpatient level of care is indicated when a patient is medically unstable, at high risk for refeeding syndrome, or actively suicidal.
- Other outpatient is recommended when there is parental abuse.
- There is still little consensus regarding transitions between levels of care, particularly in stepping a patient down to a lower level.
Assessing the barriers to increasing mental healthcare access for depressed adolescents in Guatemala: clinical perspectives of a medical student

Amanda Calhoun, BA1, and Alicia Barnes, DO, MPH1
Saint Louis University, St. Louis MO; (1) Department of Psychiatry and Behavioral Neuroscience

BACKGROUND
- In Guatemala, there are 0.29 adult psychiatrists and 0.53 psychologists per 100,000 residents (Figure 1, 2).
- ALAS Pro Salud Mental is the only non-governmental mental health organization in Guatemala.
- Although mental illness in Guatemala contributes significantly to global burden of disease, it lacks significant governmental funding.
- Although the national suicide rate is reported (Table 1), it is likely that these numbers underestimate the true prevalence, as suicide is associated with cultural stigma and criminality (one can be jailed for a suicide attempt).

TABLE 1. Guatemala National mental health statistics

<table>
<thead>
<tr>
<th>Mental Health</th>
<th>0.29% of national health budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health</td>
<td>90% funds national residents psychiatric/hospital</td>
</tr>
<tr>
<td>Prevalence of neuropsychiatric disorders</td>
<td>20.1% of global burden of disease</td>
</tr>
<tr>
<td>Suicide rate</td>
<td>9.5/year per 100,000 (males vs. females)</td>
</tr>
<tr>
<td>Can one be legally charged for a suicide attempt?</td>
<td>Yes</td>
</tr>
<tr>
<td>Prevalence of depression, anxiety, and psychosis</td>
<td>Unknown</td>
</tr>
<tr>
<td>Prevalence of drug use</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

RESULTS
- A medical student traveled to Sololá, Guatemala and did a psychiatric clinical rotation with ALAS Pro Salud Mental, which included patient home visits and school visits.
- 2 local schools, one in Panajachel and one in Lake Atitlán, within the department of Sololá, were visited with ALAS Pro Salud Mental to increase awareness of depression and mental health disorders.
- 4 in-depth interviews of mental health professionals were completed (2 psychiatrists, 1 psychologist, 1 community health worker).
- 2 in-depth interviews of psychiatric patients, treated by ALAS Pro Salud Mental, were done.

- Sololá is 1 of only 7 of the 22 total departments/states of Guatemala that offers mental health care services (Figure 3).
- Only 8 child specialized psychiatrists exist in the country, all of which are located in Guatemala city.
- The majority of non-psychiatric clinicians are uncomfortable identifying, diagnosing, or treating psychiatric patients.
- There is less than 1 month of training, in medical school, in psychiatry. Non-psychiatric specialties receive no training in psychiatric disorders in residency.
- Teachers represent a strong force in the community who are respected by parents and are invested in improving the mental health of their students.

FIGURE 1. Mental Health Workforce in the United States (rate per 100,000 residents)

- ALAS Pro Salud Mental is open to partnering with U.S. institutions and organizations for mental health interventions, especially given that no child and adolescent mental health professionals exist in the organization.
- It is likely that the lack of child and adolescent psychiatrists in Sololá leads to many children having psychiatric disorders that are not treated nor diagnosed.

FIGURE 2. Mental Health Workforce in Guatemala (rate per 100,000 residents)

FIGURE 3. The 22 departments of Guatemala

CONCLUSION
- Studies that train more non-psychiatrists to identify and treat psychiatric patients could greatly assist in surmounting this barrier to mental care access for Guatemalan youth.
- Using tele-psychiatry between children and adolescent psychiatrists in Guatemala city or those abroad (such as in the United States), to surrounding departments, could help to increase access to psychiatric care in country.

LEGEND
- Mental health services available
- Child psychiatry available

REFERENCES
Available upon request
Objective:
The Intensive In-Home Child and Adolescent Psychiatric Service, IICAPS, serves to assist children with serious emotional disturbances and their families to reduce and prevent use of inpatient admissions. Children and families participating in IICAPS often have histories of multi-generational trauma and adversity. This study aims to evaluate the effectiveness of IICAPS in improving child functioning and symptom severity based on changes in the child's OHIO scale score, a measurement of function and symptom severity, completed at both the beginning and completion of treatment. The study hypothesis is that improvement with IICAPS will be moderated by the severity of childhood adversity as measured by the parents' Adverse Childhood Experience scores.

Methods:
A retrospective analysis of 277 successfully completed IICAPS interventions, children aged 3-18.

Sample chosen from 537 total Yale site cases between 1/1/2015 and 3/31/2018.

Parent ACE scores available for 202 participants.

Examined changes in OHIO scores at baseline and discharge controlled for total therapy time (the number of hours of direct face to face interactions between clinicians and family, child, and parent) for:
1) those with biological parent(s) with ACE scores of 3 or above
2) those with biological parent(s) with ACE scores of 3 or below

Results:
A significant change in OHIO scores from baseline to discharge of all three reporters (parent, child, and clinician).

No significant differences in OHIO score change between two ACE exposure groups

No significant difference in OHIO score change by total therapy time

Discussion
No significant difference in OHIO score change by baseline OHIO scores and number of sessions

Parent ACE scores available for 202 participants.

Examined changes in OHIO scores at baseline and discharge controlled for total therapy time (the number of hours of direct face to face interactions between clinicians and family, child, and parent) for:
1) those with biological parent(s) with ACE scores of 3 or above
2) those with biological parent(s) with ACE scores of 3 or below

Table 1. Mean change in OHIO Scores from Baseline to Discharge

<table>
<thead>
<tr>
<th>Ohio Domain</th>
<th>N</th>
<th>Baseline Mean (SD)</th>
<th>Mean Change (Discharge - Baseline)</th>
<th>p-value</th>
<th>Discharge Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio Parent Problem Severity at Baseline</td>
<td>247</td>
<td>33.3 (16.5)</td>
<td>-9.6 (14.4)</td>
<td>&lt;0.0001</td>
<td>23.7 (14.7)</td>
</tr>
<tr>
<td>Ohio Parent Functioning score at Baseline</td>
<td>245</td>
<td>40.6 (14.4)</td>
<td>7.6 (13.4)</td>
<td>&lt;0.0001</td>
<td>48.0 (14.3)</td>
</tr>
<tr>
<td>Ohio Worker Problem Severity at Baseline</td>
<td>274</td>
<td>33.7 (12.9)</td>
<td>-9.9 (12.3)</td>
<td>&lt;0.0001</td>
<td>23.8 (10.6)</td>
</tr>
<tr>
<td>Ohio Worker Functioning score at Baseline</td>
<td>274</td>
<td>38.9 (11.3)</td>
<td>8.9 (12.2)</td>
<td>&lt;0.0001</td>
<td>47.9 (11.4)</td>
</tr>
<tr>
<td>Ohio Youth Problem Severity at Baseline</td>
<td>111</td>
<td>25.8 (15.4)</td>
<td>6.5 (13.2)</td>
<td>&lt;0.0001</td>
<td>18.3 (14.4)</td>
</tr>
<tr>
<td>Ohio Youth Functioning score at Baseline</td>
<td>111</td>
<td>52.9 (13.3)</td>
<td>3.8 (12.4)</td>
<td>0.0018</td>
<td>56.1 (13.9)</td>
</tr>
</tbody>
</table>

Table 2. Correlation of Change in OHIO scores with ACE scores and Total Therapy Time

<table>
<thead>
<tr>
<th>Change in Parent</th>
<th>Change in Child</th>
<th>Change in Worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functioning Score</td>
<td>Functioning Score</td>
<td>Functioning Score</td>
</tr>
<tr>
<td>P-Value</td>
<td>N</td>
<td>P-Value</td>
</tr>
<tr>
<td>ACE Score</td>
<td>0.02506</td>
<td>184</td>
</tr>
<tr>
<td>Total Therapy Time (Hr.)</td>
<td>-0.02263</td>
<td>247</td>
</tr>
</tbody>
</table>

Conclusions
IICAPS proved to be an effective intervention for all 277 cases analyzed, based on the positive change in OHIO scores.

The amount of change seen was not predicted by ACE scores of the parent or total time spent in therapy.

The change in OHIO scores was clinically significant for worker functioning score but not for problem severity or parent and youth functioning.

While the primary study hypothesis was not supported, the theory behind the hypothesis is grounded in previous studies. There are several limitations to the present study that may have impacted the findings. These are:

A limited sample size confined only to the New Haven site.

Complex family structure with multiple caring adults in the child's life.

A single outcome measure that does not directly reflect parent-child interaction.

The lack of significance of ACE score on OHIO score suggests that the impact of a parent's childhood experiences on their child is complex and individualized. While this study was unable to provide insight into how the impact of parental ACE scores mediates their child's functioning, it allowed us to develop future questions for investigation.

Implications for future studies:
The system and dynamics of family structure that influence the impact IICAPS has on families and children is very complicated. To understand these complexities, future studies would need to investigate measurements of parent functioning as well as changes in parent's reflective functioning. This two measures will provide a better understanding of the parent's ability to parent and how they relate to their children.
Early Parental Care, Reflective Functioning, and the Neural Markers of Maternal Sensitivity in Pregnancy

Lucy Gao, B.A., Linda C. Mayes, M.D., and Helena J.V. Rutherford, Ph.D.
Child Study Center, Yale University, New Haven, CT

1. Introduction

- Becoming a parent is a developmental process marked by neurobiological and psychological changes and can be impacted by prior relationships in early childhood.
- Reflective functioning, or the capacity to interpret mental states and their associations with behavior, is thought to be important to the parent-child relationship and may bridge the gap between parental care received in childhood and later parenting behavior in adulthood.
- One aspect of parenting that may be affected by reflective functioning is maternal sensitivity to infant affective cues, such as infant distress.
- ESCG ERP analysis has previously been shown to be effective in studying maternal sensitivity to infant faces and cries.
- The P300 potential represents attentional engagement and extended processing of stimuli.
- P300 amplitude is modulated by familiarity of infant faces.
- P300 amplitude to infant distress faces is associated with depression symptoms during pregnancy.
- No study to date has examined the associations between P300 amplitude and prenatal reflective functioning in pregnant low-risk women.

2. Hypothesis

- Predictors of Infant Distress P300
- Parental Care
- Mood
- Maternal Education

3. Materials and Methods

- Sample:
  - 45 pregnant women (26 preterm)
  - Age (years): 28.4 ± 5.1
  - Marital Status (%): 31 (66.7)
  - Married 23 (46%)
  - Separated 1 (2%)
- 3rd Trimester (28-36 weeks)
- 1. Administered:
  - Parental Bonding Instrument (PBI), Reflective Functioning Questionnaire (RFQ), Beck’s Depression Inventory-2 (BDI), Perinatal Stress Scale (PSS)
  - EEG/ERP Task: Infant and Adult Distressed and Neutral Faces
- Data Analysis:
  - EEG data was digitized (filtered with 30 Hz low-pass filter, then segmented 100 ms baseline until 900 ms post-stimulus onset).
  - Artifact detection: 300 µV for bad channels, 150 µV for eye blinks, and 350 µV for eye blinks.
  - Channels with artifacts in more than 50% of trials were marked as bad channels and replaced through spline interpolation. Following artifact detection procedures, data were re-referenced to the average reference of all electrodes.

4. Results

- Table 1. Correlation Matrix of Parental Interactions, Mood, and Reflective Functioning, and P300 Amplitude

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>Mood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Care</td>
<td>-1.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Overprotection</td>
<td>-0.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>RFQ Certainty</td>
<td>-0.35</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFQ Uncertainty</td>
<td>-0.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>P300 Infant Neutal</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P300 Infant Distress</td>
<td>-0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P300 Adult Neutal</td>
<td>-0.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P300 Adult Distress</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Note: Mood is an average of anxiety depression, and perceived stress scores. PBI scores were averaged across maternal and paternal scores. |

- Table 2. Backwards Regression Model with Parental Interactions, and Mood Predicting Reflective Functioning Certainty

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1, R^2 = .208</td>
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<td></td>
</tr>
<tr>
<td>PBI Care</td>
<td>0.250</td>
<td>0.03</td>
</tr>
<tr>
<td>PBI Overprotection</td>
<td>-0.275</td>
<td>0.04</td>
</tr>
<tr>
<td>Mood</td>
<td>-0.236</td>
<td>0.01</td>
</tr>
<tr>
<td>Education</td>
<td>-0.138</td>
<td>0.11</td>
</tr>
<tr>
<td>Model 2, R^2 = .270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Care</td>
<td>0.254</td>
<td>0.06</td>
</tr>
<tr>
<td>PBI Overprotection</td>
<td>-0.227</td>
<td>0.03</td>
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<tr>
<td>Mood</td>
<td>-0.218</td>
<td>0.03</td>
</tr>
<tr>
<td>Education</td>
<td>-0.052</td>
<td>0.03</td>
</tr>
<tr>
<td>Model 3, R^2 = .330</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBI Care</td>
<td>0.329</td>
<td>0.12</td>
</tr>
<tr>
<td>Mood</td>
<td>-0.080</td>
<td>0.03</td>
</tr>
</tbody>
</table>

4. Conclusion and Discussion

- Final Reduced Pathway on the Relationship Between Parental Care, Reflective Functioning, and Neural Markers of Maternal Sensitivity
- Our findings suggest that reflective functioning may be a mechanism through which early caregiving experiences shape maternal sensitivity to infant cues of distress, but not infant neutral or adult faces, even before birth.
- Higher levels of past parental care and lower mood symptoms predicted greater certainty about mental states in pregnancy.
- In turn, greater certainty about mental states and higher maternal education predicted greater P300 amplitude to infant distressed faces.
- The absence of a direct effect of past parental care on maternal sensitivity aligns with prior literature on the importance of reflective functioning, rather than history of childhood trauma, in the development of maternal sensitivity.
- Given that our results were specific to infant distressed faces, our findings suggest that mothers who are more certain about their ability to recognize mental states may allocate less attention to infant distress.

We acknowledge that our findings are limited by sample size, self-report, and a cross-sectional study design. Future directions should replicate and extend these results by:
- Inclusion of a larger sample size with fathers and nonparents.
- Use of a longitudinal study design to include multiple time points in pregnancy and postpartum.
- Examination of additional ERP components of perception and cognition.
- Investigation of further cognitive and neurobiological changes that occur during parenthood.
- Exploration of whether neural markers of infant affect perception relate to mother-infant interactions.

Although the limitations of our current work, these findings indicate the need to further study the importance of prenatal reflective functioning to the developing mother-infant relationship.

References


Acknowledgment

We’d like to thank the John Leopold Well and Geraldine Rickard Memorial Charitable Foundation for funding this study.
The Association Between Maternal Adverse Childhood Experience And Maternal Depression: A Longitudinal Cohort Study

Kim J, Clarke T, Jones C, & Drury S.

Behavioral and Neurodevelopmental Genetics Laboratory (BANGL) at Tulane University School of Medicine

Introduction

- **The Adverse Childhood Experiences (ACE) scale** has been linked to negative mental and physical health outcomes in adulthood including major depression. However, no studies to date have examined maternal depression prenatally and postnatally across the first year of life in relation to maternal ACE scores.

- **The aim of the present study was to investigate the association between maternal ACE with both the prevalence and persistence of depression at multiple time points across the prenatal and postnatal time period in a prospective longitudinal cohort.**

- **The hypotheses were that:**
  1. Mothers characterized by high ACE, compared to a low ACE group, would show higher rates of depression at each time point.
  2. A higher maternal ACE score would predict increased persistence of perinatal depression.

### Method

#### Predictor Variables

- **Prenatal (n = 352)**
  - Edinburgh Depression Scale (EDS)
    - Depression: Positive Items (≥10)
    - Scale Range: 0-36

- **4 months (n = 206)**
  - Beck Depression Inventory,
  - Depression: Positive Items (≥14)
  - Scale Range: 0-63

- **12 months (n = 164)**
  - Maternal Depression Experience Scale (ACE)
    - Scale Range: 0-10

- **18 months (n = 115)**

- **36 months (n = 85)**

- **48 months (n = 27)**

- **Persistence of depression:**
  - The number of times a mother screened positive divided by the number of times a woman was assessed for depression.
  - Scale Range: 0-1 to ≥ 30%

#### Outcome Variables

- **Maternal Age**
- **SES**
- **Race**
- **Economic Status**
- **Race**

#### Control Variables

- Maternal Age
- SES
- Race
- Economic Status
- Other

### Analytic Approach

- **Independent Samples T-Test**
  - Between High ACE vs Low ACE
  - Maternal age (covariate)
  - SES (covariate)

- **Chi-Square Test (Pearson)**
  - Between High ACE vs Low ACE
  - Maternal age (covariate)
  - SES (covariate)

- **Linear Regression**
  - Depression at 6 time points (outcomes variables)
  - Maternal age
  - SES
  - Race

### Results

#### Hypothesis 1:

- Mothers characterized by high ACE, compared to a low ACE group, showed higher rates of depression at prenatal (51.5% vs 31.5%, p = .031, n = 355), 10 months (34.7% vs 17.4%, p = .017, n = 158), and 36 months (54.2% vs 17.9%, p = .013, n = 90).

- Rates of depression at 4 months (p = .284, n = 206), 12 months (p = .146, n = 163), and 48 months (p = .373, n = 27) were not statistically different between high and low ACE mothers.

#### Hypothesis 2:

- ACE score characterized as both high and low and a continuous measure, after accounting for relevant covariates, remained significantly associated with maternal depression prenatally and at 18 and 36 months of age; however, there was no significant prediction at 4, 12 or 48 months of age.

#### Figure 1: Difference in rates of depression between high ACE vs low ACE groups.

#### Figure 2: Persistence of depression at 48 months.

### Demographics

<table>
<thead>
<tr>
<th></th>
<th>High ACE (n=10)</th>
<th>Low ACE (n=15)</th>
<th>Total (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACE Score</strong></td>
<td>n = 101 (81.7%)</td>
<td>n = 254 (75.1%)</td>
<td>n = 355 (77.5%)</td>
</tr>
<tr>
<td><strong>Maternal Age</strong></td>
<td>Range: 18-43 (M = 27.7, SD = 5.04)</td>
<td>Range: 18-41 (M = 27.7, SD = 5.00)</td>
<td>Range: 18-43 (M = 27.7, SD = 5.04)</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td>Range: 0-6 (M = 2.2, SD = 1.01)</td>
<td>Range: 0-6 (M = 2.96, SD = 1.76)</td>
<td>Range: 0-6 (M = 2.72, SD = 1.87)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td>African-American: n = 56</td>
<td>African-American: n = 146</td>
<td>n = 202</td>
</tr>
<tr>
<td></td>
<td>Caucasian: n = 29</td>
<td>Caucasian: n = 81</td>
<td>n = 110</td>
</tr>
<tr>
<td></td>
<td>Other: n = 16</td>
<td>Other: n = 27</td>
<td>n = 43</td>
</tr>
</tbody>
</table>

*Significant differences between the two groups: **p** < .05, ***p** < .001.

**SES** was assessed using a structured interview to assess income, education, and occupational status.

### Limitations

- Given the prospective longitudinal nature of this study, not all infants have reached 48 months of age.
- ACE and depression are based on maternal self-report.
- We did not account for lifetime history of depression.
- Current and intervening life stressors were not assessed.

### Discussion

- Maternal ACE is associated with elevated risk of perinatal maternal depression and depression across the first four years of her child's life.
- Despite the blunt and retrospective nature of the ACE score it robustly predicts depression risk.
- The lack of significance only 4 and 12 months, suggests that the first year of a child’s life may be a unique window relative to the chronic cross-domain health effects of maternal ACEs.
- Consistent with the broader ACE literature, the categorical evaluation (<3; low & ≥3; high) of the ACE score likely is a promising screen for maternal depression risk.
- Additional studies examining moderators during the first year of life that moderate depression risk are needed.

### References

- [Link to references page]
Psychopharmacological Treatment in Very Young Children with Severe Psychopathology: A Descriptive Study of Use and Adverse Effects

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1The Warren Alpert Medical School of Brown University, Providence, RI 2Butler Hospital, Providence, RI 3Emma Pendleton Bradley Hospital, East Providence, RI 4Simmons College, Boston, MA

Abstract:

Background:

- Psychotropic medication prescription rates for preschool-age children are steadily increasing, despite the extreme underrepresentation of this age group in medication literature, leading to reliance on studies in older populations.
- Preschoolers are generally at higher risk of adverse drug events (ADEs) due to psychotropic drug administration than school-aged children, adolescents, and adults.
  - The incidence of AE related outpatient or emergency department visits are twice as much in children under 5 than those from age 5-17.
- Preschoolers prescribed SSRIs experienced activation more frequently than older children, who experienced activation more frequently than adolescents (children: 8-17%; adolescents: 1-3%).
- Preschoolers prescribed olanzapine experienced significant weight gain.
- A previous psychotropic medication descriptive study by our group found that fluoxetine was the most frequently AE-associated medication (41.2%), followed by stimulants (methylphenidate: 22.7%); mixed amphetamine salts: 21.4%). Sertraline was not associated with any AEs.

Study Aims:

1. Describe psychotropic medication use in an early childhood partial hospitalization program
2. Characterize parent-reported adverse events (AE) of antidepressants and antipsychotics

Methods:

Sample:

- 172 children (131 males)
- Age 36 to 96 months (mean = 66 ± 13)
- Admitted to an early childhood intensive psychiatric treatment program for serious emotional, behavioral, feeding, sleeping, and/or interpersonal issues.

Procedure:

- A medication tracking form was completed for each participant by a psychiatric nurse and reviewed by a board certified child and adolescent psychiatrist.
- Documenting medication changes over the course of admission.
- A retrospective chart review was conducted to document parent-reported AE as reported to the program clinicians.

Results:

- 78% of participants were prescribed psychotropic medications or melatonin during their partial hospitalization admission, and alpha-agonists were the most commonly prescribed (45.3% of participants).
- Participants were prescribed an average 1.64 ± 0.87 medications during their admission.
- 39.1% of participants prescribed an antidepressant experienced one or more AEs, and 86.9% of those with an AE had to stop taking the antidepressants as a result.
- Fluoxetine was the most common AE-associated antidepressant (40.0%), followed very closely by sertraline (37.5%) and mirtazapine (35.7%).
- Risperidone was the only atypical antipsychotic associated with AEs (20.6%), and was the AE-associated psychotropic agent least frequently with stopping the medication at 57.1% of the time.
- Irritability, anger, and aggression were the most common AEs reported by parents of the participants (51.6% of all reported AE's).

Discussion:

- All antidepressants appeared to be associated with AE very frequently, supporting previous literature.
- Sertraline was significantly associated with AE in this sample, which does not support our group’s previous research that did not find any AE associated with sertraline. We believe this is linked to a larger sample of patients taking sertraline in this follow-up study.
- Risperidone was discontinued only in 57.1% of the cases associated with AEs, suggesting that the associated AEs were not severe enough to warrant stopping the medication or that another medication was added to offset the AE.
- The significant frequency of AEs in all of these classes suggests that close medication management is crucial to psychiatric care for an acute preschool-age population.

Limitations:

- The majority of participants were male, and all were admitted to one early childhood partial hospital program.
- The sample sizes of those taking these medications were relatively small, and limits the power of comparing AE frequencies among and between classes.
- This study design cannot adequately account for any AE-associated medication interaction.
- The parent-reported AEs overlapped with mood and behavior symptomatology presented at intake. Further longitudinal studies assessing physical AE with a larger number of participants would better support the link between these psychotropic agents and AEs.

Future Directions:

- A pilot study using a standardized method of AE reporting will be used to compare the frequency and type of AE's found in spontaneous and structured forms of reporting.

Table 1. Specific parent-reported AEs as documented in chart review

<table>
<thead>
<tr>
<th>Medication</th>
<th>Irritability, Anger, Aggression</th>
<th>Mood Lability</th>
<th>Impulsivity</th>
<th>Hyperactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoxetine</td>
<td>1 (14.3%)</td>
<td>1 (14.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sertraline</td>
<td>11 (37.9%)</td>
<td>2 (6.9%)</td>
<td>5 (17.2%)</td>
<td>1 (3.4%)</td>
</tr>
<tr>
<td>Mirtazapine</td>
<td>2 (14.3%)</td>
<td>2 (14.3%)</td>
<td>2 (14.3%)</td>
<td></td>
</tr>
<tr>
<td>Risperidone</td>
<td>2 (5.9%)</td>
<td>2 (5.9%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References:


Acknowledgments:

- Thank you to Dr. John Boekamp, Dr. Sarah Martin, Lauren Mennick, Mia DeMarco, and the rest of the staff at Bradley PPH for integrating me into your team this summer.
- Thank you, Dr. Jeff Hunt, for your consistent guidance and mentorship throughout my entire research career as an undergraduate and a medical student.
- Thank you to the Brown Summer Asistantship and the AACAP Summer Medical Student Fellowship for the financial and administrative support to attend this conference.
Factors influencing Inpatient Psychiatric Readmissions in Bay Area, California

Jacinta Leyden, Dr. Thomas Ormiston, Dr. Yasmin Owusu
Stanford University, Division of Child and Adolescent Psychiatry

Psychoiatric Admissions

- In adults, studies have pointed to factors that increase risk of a psychiatric hospital readmission (e.g., psychiatric history, severity of disease, discharge planning and follow-up), and have led to intervention and resources to support vulnerable populations.
- Limited studies exist investigating these factors within general pediatric populations.
- Readmissions in child and adolescents due to psychiatric condition have been reported as high as 30-45%.

Demographics

- 739 charts in total 2013-2018
- 421 SCVMC, 318 Stanford Hospital and Clinics
- Average age of patients (14.7 ± 3.8, total), Average age single admission (16.3 ± 3.8), Average age readmission group (15.3 ± 3.9)

<table>
<thead>
<tr>
<th></th>
<th>Single Admission, n (%)</th>
<th>Readmissions, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n=739)</td>
<td>436 (59.0)</td>
<td>303 (41.0)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>170 (39.0)</td>
<td>131 (43.2)</td>
</tr>
<tr>
<td>Female</td>
<td>266 (61.0)</td>
<td>172 (56.8)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>222 (50.9)</td>
<td>140 (46.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>66 (15.1)</td>
<td>62 (20.4)</td>
</tr>
<tr>
<td>Asian</td>
<td>36 (8.3)</td>
<td>27 (8.9)</td>
</tr>
<tr>
<td>African American</td>
<td>20 (4.4)</td>
<td>17 (5.5)</td>
</tr>
<tr>
<td>Unknown</td>
<td>92 (21.1)</td>
<td>57 (18.8)</td>
</tr>
<tr>
<td>Psychiatric Diagnosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar and Related Disorders</td>
<td>44 (10.1)</td>
<td>36 (11.9)</td>
</tr>
<tr>
<td>Depressive Disorder</td>
<td>245 (79.8)</td>
<td>246 (81.2)</td>
</tr>
<tr>
<td>Schizophrenia Spectrum/ Psychotic Disorder</td>
<td>31 (7.1)</td>
<td>15 (5.0)</td>
</tr>
<tr>
<td>Other/Unclassified</td>
<td>13 (3.0)</td>
<td>6 (2.0)</td>
</tr>
</tbody>
</table>

Data Collection

Santa Clara County

- Retrospective review using the patient chart databases at Stanford Health Care and Stanford Hospital and Clinics.
- Identified pre- and post-discharge variables for all children and adolescents that have been admitted to an inpatient psychiatric unit in between January 2013- January 2018. Recorded observed readmission rates during this time period.
- Survey-based evaluation. Prospectively survey and follow patients up to 60 days following an inpatient psychiatric hospitalization at El Camino Hospital to identify to determine major barriers to care. Began with community survey of patients with self-reported psychiatric hospitalization in past.

Survey Data

- 16 adolescents (15-19 years old) ranging from 1 year to 3 years following first inpatient hospitalization
- Discharge planning: 50% of respondents did not know what a “discharge plan” was.
- 50% of patients with no re-collection of discharge plan reported readmission within 1 year.
- 25% of patients who were familiar with their discharge plan reported readmission within 1 year.
- Only 25% had an outpatient appointment in place at time of discharge.
- These 4 individuals did not report a readmission.
- Nearly 60% of participants reported difficulty with scheduling a follow up appointment on their own.

Conclusions

- Mood Disorders account for a majority of psychiatric readmissions in children and adolescents.
- Minorities have a greater rate of psychiatric readmissions than Caucasian or Asian patients.
- Proper discharge planning is crucial in reducing hospital readmissions (patients half as likely to experience readmission).
- Scheduling follow up as one of the most difficult components of access.

Looking Forward

- Continue to elucidate largest barriers to accessing care.
- Provide/design resources to improve immediate post-hospitalization care.
- Reach out to community-based programs to support children and adolescents immediately post-discharge
- Stanford Hospital partners with Stanford Biosignals for Mobile Health to design resources based on community needs.

Acknowledgements

- This project was made possible through the generous support from the SMSF - AACAP Summer Medical Student Fellowship in Child and Adolescent Psychiatry, supported by AACAP’s Campaign for America’s Kids.
- Thank you to Dr. Yasmin Owusu and Dr. Thomas Ormiston for your mentorship and guidance.

References


*Data collection ongoing
Salience Network Dynamic Functional Connectivity in Adolescents with Generalized Anxiety Disorder

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Department of Psychiatry & Behavioral Neuroscience, University of Cincinnati College of Medicine; Department of Pediatrics, Division of Child & Adolescent Psychiatry and Imaging Research Center, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

Introduction

The salience network (SN) processes interoceptive sensory signals resulting from fluctuations in the internal homeostatic milieu and is pathophysiologically implicated in anxiety disorders (Menon, 2015). Comprised of the dorsal anterior cingulate cortex (dACC), anterior insula, temporal pole, and subicular extended amygdala (SLEA) (Figure 1, Seelye et al., 2007), the SN is structurally and functionally dysregulated in adults with generalized anxiety disorder (GAD) (Rabanya et al., 2017).

Altered connectivity within the SN may contribute to an anxious avoidant biotype, defined by an anticipation and circumvention of situations that could result in environmental stimuli overload (Williams, 2016). Little is known about the structural and functional neuroanatomy of the SN in adolescents and its dynamic functional connectivity in adolescents with GAD has never been examined.

By examining resting-state functional connectivity in adolescents with GAD, we sought to assess the relationship between anxiety symptom severity and strength of connectivity within the SN.

Methods

Subjects & Image Acquisition

Participants were unmedicated adolescents (age 12-17 years) with a primary diagnosis of GAD (N=43). The project was approved by the Institutional Review Board (IRB) of the Norwegian University of Science and Technology. All participants had moderate to severe anxiety (Pediatric Anxiety Rating Scale (PARS) score >15). Additional assessments included the Wechsler Abbreviated Scale of Intelligence and the Children’s Depression Rating Scale (CDRS).

T1-weighted, 3D brain scans were acquired using Fast Field Echo (FFE) sequence in the sagittal orientation at 3 Tesla with a 32 channel head coil (Philips Achieva) in the Imaging Research Center at Cincinnati Children’s Hospital Medical Center.

Functional Connectivity

Automated processing was performed using Freesurfer (v. 5.3.0) (Rosas et al., 2002). The CONN toolbox (version 18.1a) was used for spatial and temporal processing of fMRI data, as described previously (Whitfield-Gabrieli & Nieto-Castanon, 2012). ROIs to ROI correlation correlations were computed for SN ROIs: dACC, anterior insula, temporal pole, and SLEA (Beckey et al., 2007). Findings were considered statistically significant at the p<0.05 level.

Results

Table 1: Demographic and clinical characteristics of adolescents with GAD (N = 43).

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Gender</th>
<th>Sex</th>
<th>Race</th>
<th>Ethnicity</th>
<th>Family History of Anxiety</th>
<th>Sal. Network Connectivity</th>
<th>PARS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-17</td>
<td>25</td>
<td>36</td>
<td>32</td>
<td>25</td>
<td>32</td>
<td>25</td>
<td>1.53</td>
</tr>
</tbody>
</table>

Figure 1: The nodes of the salience network (SN): dorsal anterior cingulate cortex (dACC), anterior insula, temporal pole, and subicular extended amygdala (SLEA). Adapted from Williams (2016).

Conclusions:

In adolescents with GAD, increased positive connectivity between the dACC and the bilateral anterior insula, and the right temporal pole are associated with the severity of anxiety symptoms (Figures 1 & 2).

These results are consistent with functional connectivity studies in adults with GAD (Rabanya et al., 2017). Taken together, these findings suggest that SN connectivity may be pathophysiologically related to GAD. Given the role of the SN in processing external threat-related stimuli, our results raise the possibility of a pathophysiological role for processing of external threat-related stimuli in adolescents with GAD.

References


Acknowledgments:

“AACAP Summer Medical Student Fellowship (SMSS) Program, supported by AACAP’s Campaign for America’s Kids (CFAK).”
“National Institutes of Mental Health (NIMH, RS, and MPD).”
“National Institutes of Environmental Health and Safety (KEC).”

Figure 2: Statistical map of functional connectivity between the seed region (dACC) and other SN nodes and PARS score with age and sex as covariates. The overall network connectivity had an F-value of 1.53 and an intensity value of 11.00 (p = 0.191). Individual seed-connectivity threshold was set at p < 0.05 (indicated by bolded terms with a “*”). The dACC was significantly connected with the left (p = 0.0049, pFDR = 0.0342) and right (p = 0.0468, pFDR = 0.1094) anterior insula and the right temporal pole (p = 0.0288, pFDR = 0.1099).

Figure 3: Linear regression of dACC to anterior insula connectivity and PARS score with age and sex as covariates.
Complementary and Alternative Medicine Use in Child and Adolescent Psychiatry

Lindsay Milliken, MS1; Consuelo Cagande, MD, D3; Krystal Hunter, MBA3
1 Cooper Medical School of Rowan University, 2 Cooper University Health Care Department of Psychiatry

Introduction

Complementary and alternative medicines (CAMs) are used by many children and adolescents to address a variety of physical, mental, and emotional health concerns, including anxiety, depression, and attention-deficit/hyperactivity disorder. The use of CAMs is influenced by factors such as patient demographics, practice setting, and years in practice. The purpose of this study was to investigate the use of CAMs in treatment by years in practice, practice setting, and region of practice.

Methods and Materials

- **Objectives**
  - Investigates the utilization in treatment and beliefs about CAM modalities among child and adolescent psychiatrists.
  - A comparison of the scholarly evidence base vs. utilization of specific CAM modalities will be discussed.
  - To quantify the use of CAM modalities in the practice of child and adolescent psychiatrists in the United States, as well as the frequency with which CAM utilization is assessed by practitioners.
  - Assess whether geographic region, years in practice and practice setting play a role in the use of CAMs.

- **Data Collection**
  - 407 CAPs who met inclusion criteria completed the survey.
  - Participants were most likely to ask patients about their use of exercise (85.7%), diet and nutrition (81.1%), and herbal/natural supplements (70.8%), and least likely to ask about biofeedback (10.7%) and acupuncture (12.9%).
  - In their treatment plans, participants were most likely to use physical exercise (84.3%), diet and nutrition (79.1%), and mindfulness meditation (60.2%), and least likely to use biofeedback (16.2%) and acupuncture (13%).

- **Analysis**
  - The use of physical exercise, diet and nutrition, and herbal/natural supplements were the most commonly used CAM modalities.
  - The use of CAM modalities was significantly associated with the region of practice and years in practice. The Northeast was the most likely region to use CAM modalities (23.6%), followed by the Midwest (21.1%).

- **Discussion**
  - The CAM modalities with the highest utilization by participants in this study were exercise, diet/nutrition, and mindfulness meditation.
  - These modalities are less likely to be used in untreated mental health disorders compared to CAM modalities used in treatment.
  - The results of this study show a significant relationship between region of practice and use of certain CAM modalities in treatment by child and adolescent psychiatrists.

- **Conclusions**
  - This study illustrates the relationships between the child and adolescent psychiatrists’ use of CAM modalities and geographical region of practice, years in practice, and practice setting, as well as trends in overall nationwide use of different CAM modalities.

**Table 1. Sample Demographics**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Practice Setting</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>199</td>
<td>49.6</td>
<td>Private Practice</td>
<td>175</td>
<td>43.5</td>
</tr>
<tr>
<td>Female</td>
<td>203</td>
<td>50.4</td>
<td>Academic Medical Center</td>
<td>131</td>
<td>32.5</td>
</tr>
</tbody>
</table>

**Table 2. Utilization of CAMs in treatment by years in practice**

<table>
<thead>
<tr>
<th>Years in Practice</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>22</td>
<td>5.4</td>
</tr>
<tr>
<td>6-10 years</td>
<td>76</td>
<td>18.7</td>
</tr>
<tr>
<td>11-15 years</td>
<td>54</td>
<td>13.3</td>
</tr>
<tr>
<td>16-20 years</td>
<td>46</td>
<td>11.3</td>
</tr>
<tr>
<td>20+ years</td>
<td>209</td>
<td>51.4</td>
</tr>
</tbody>
</table>

References


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Email: millik92@rowan.edu

Lindsay Milliken, MS
Cooper Medical School of Rowan University

407 CAPs who met inclusion criteria completed the survey. Participants were most likely to ask patients about their use of exercise (85.7%), diet and nutrition (81.1%), and herbal/natural supplements (70.8%), and least likely to ask about biofeedback (10.7%) and acupuncture (12.9%). In their treatment plans, participants were most likely to use physical exercise (84.3%), diet and nutrition (79.1%), and mindfulness meditation (60.2%), and least likely to use biofeedback (16.2%) and acupuncture (13%). Geographical region of practice had a statistical significant relationship with the use of physical exercise (P=0.004), mindfulness meditation (p=0.019) and spirituality in treatment planning (p=0.027). Years in practice also had a significant relationship with the use of physical exercise (P=0.007), herbal/natural supplements (P=0.042) and diet and nutrition (P=0.034). Generally, participants in private practice had three times greater odds of using and asking about CAMs and those with 10 or more years in practice had approximately 13 times greater odds of using and asking about CAM with their patients.

The results of this study show a significant relationship between region of practice and use of certain CAM modalities in treatment by child and adolescent psychiatrists. Similar relationships were found in a previous study on CAM usage by region in adults. This may reflect variations in societal values or perhaps access to treatments by region. Despite the apparent trend toward inclusion of CAM in medical education, participants with 0-10 years of experience had the lowest percentage of use across physical exercise, diet/nutrition, and herbal/natural supplements as compared to those with 10 or more years of experience. This may reflect hesitancy among newer practitioners to include methods with a weaker evidence-base in their practice. It is also possible practitioners with more experience are more likely to work in private practice, as working in the private practice setting was also significantly associated with CAM use.
The nationwide prevalence of mental illness among pediatric patients is rising. According to the National Survey of Children’s Health, 1 in 7 children between the ages of 2 and 8 years old has ever had a mental, behavioral, or developmental disorder. Among adolescents and young adults, suicide is now the second leading cause of death. In parallel, reliance upon the emergency department (ED) for psychiatric care has increased in recent years, but EDs are not equipped to handle this growing patient population. In the face of limited healthcare resources, there is a need to further understand these patients and their healthcare outcomes in order to improve the capacity of emergency psychiatric care.

METHODS

The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) is a state-wide surveillance database that collects near real-time information about ED visits. This project used a 5% random sample of pediatric ED visits (age <18) that occurred between January 2008 and September 2015. An ED visit was categorized as mental health-related if the ICD-9-CM codes used to define mental health diagnoses were associated with suicide/homicidal ideation (SI/HI) visits generally had the highest admissions rate and suicidal/homicidal ideation (SI/HI) increased from 7.26% in 2008 to 13.68% in 2015. SI/HI visits generally had the highest admissions rate and consistently the lowest rate of discharge to home. The rate of hospital admissions among visits for bipolar disorders increased from 10.00% in 2008 to 16.67% in 2015, with a decrease in the rate of discharge to home.

RESULTS

Figure 1. Proportion of ED visits related to mental health

Figure 2. Mental health-related ED visits by diagnosis category

Figure 3. Mental health-related ED visits resulting in any hospital admission

Figure 4. Mental health-related ED visits resulting in discharge home

Table 1: Characteristics of All ED Visits

Table 2: Characteristics of Mental Health-Related ED Visits

ACKNOWLEDGMENTS

This study highlights the increasing number of pediatric mental health – related ED visits in North Carolina. Diagnoses of suicidal/homicidal ideation or bipolar disorder in particular were more likely to result in admissions and transfers. An improved understanding of these diagnosis and disposition patterns may provide a foundation to improve triage, treatment, and case management in the face of limited ED resources. Next steps may include further evaluation of these trends, as EDs continue to improve care, or assessment of these same trends at the national level.

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Baldwin, L.J., et al., Mental Health-Related ED Visits 2015*


Hoffman, J.D. and L. Balfour, Pediatric mental health crises in the emergency department. J Pediatr, 2015. 166(4): p. 840-845.e3. The nationwide prevalence of mental illness among pediatric patients is rising. According to the National Survey of Children’s Health, 1 in 7 children between the ages of 2 and 8 years old has ever had a mental, behavioral, or developmental disorder. Among adolescents and young adults, suicide is now the second leading cause of death. In parallel, reliance upon the emergency department (ED) for psychiatric care has increased in recent years, but EDs are not equipped to handle this growing patient population. In the face of limited healthcare resources, there is a need to further understand these patients and their healthcare outcomes in order to improve the capacity of emergency psychiatric care.

METHODS

The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) is a state-wide surveillance database that collects near real-time information about ED visits. This project used a 5% random sample of pediatric ED visits (age <18) that occurred between January 2008 and September 2015.

• N = 332822 total pediatric ED visits

• 48.25% Female, 51.75% Male

• ICD-9-CM codes used to define mental health diagnoses

Table 1: Characteristics of All ED Visits

Table 2: Characteristics of Mental Health-Related ED Visits

BACKGROUND

The nationwide prevalence of mental illness among pediatric patients is rising. According to the National Survey of Children’s Health, 1 in 7 children between the ages of 2 and 8 years old has ever had a mental, behavioral, or developmental disorder. Among adolescents and young adults, suicide is now the second leading cause of death. In parallel, reliance upon the emergency department (ED) for psychiatric care has increased in recent years, but EDs are not equipped to handle this growing patient population. In the face of limited healthcare resources, there is a need to further understand these patients and their healthcare outcomes in order to improve the capacity of emergency psychiatric care.

RESULTS

Figure 1. Proportion of ED visits related to mental health

Figure 2. Mental health-related ED visits by diagnosis category

Figure 3. Mental health-related ED visits resulting in any hospital admission

Figure 4. Mental health-related ED visits resulting in discharge home

Table 1: Characteristics of All ED Visits

Table 2: Characteristics of Mental Health-Related ED Visits

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CONCLUSIONS

This study highlights the increasing number of pediatric mental health – related ED visits in North Carolina. Diagnoses of suicidal/homicidal ideation or bipolar disorder in particular were more likely to result in admissions and transfers. An improved understanding of these diagnosis and disposition patterns may provide a foundation to improve triage, treatment, and case management in the face of limited ED resources. Next steps may include further evaluation of these trends, as EDs continue to improve care, or assessment of these same trends at the national level.

REFERENCES


Adverse Childhood Experiences (ACE) Assessment in Integrated Child Mental Health

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Katherine E. Grimes MD, MPH, Associate Professor, Psychiatry, Harvard Medical School

**Background**
- The Adverse Childhood Experiences Study (ACE Study) adult questionnaire was developed for the CDC-Kaiser ACE Study to collect retrospective information on childhood exposure to traumatic events, including abuse, neglect, and household dysfunction, which have long-term impacts on mental and physical health outcomes.
- Growing interest in ACEs among researchers, policymakers, and practitioners indicates a need to develop screening and intervention strategies to address these issues.
- The pediatric Center for Youth Wellness ACE-Questionnaire (CYW ACE-Q) was developed by Dr. Nadine Burke Harris to facilitate routine universal screening for ACE.
- However, best practices regarding ACE screening in the clinical setting have not been established, and there are critical gaps in the evidence base for how to strategically identify, respond to, and mitigate the negative effects of ACEs.
- Successful demonstration projects of trauma-informed treatment programs, including integrated care and family support, have been shown to assist in early recognition of childhood trauma and improved illness trajectories.

**Methods**

**E-SOC (Enhancing Systems of Care) Model**
- The Enhancing Systems of Care: Supporting Families and Improving Youth Outcomes (E-SOC) intervention is supported by a 5-year system-of-care grant from SAMHSA.

**Study Participants**
- Eight E-SOC team members, including a child psychiatrist, Clinical Care Managers, Family Support Specialists, and 2 Primary Care Pediatrics from CHA primary care clinics.

**Design**
- IRB-approved two-step phenomenological design framework in which pilot data from multidisciplinary E-SOC staff and primary care providers is used to refine question guides and ACE data collection procedures, followed by formal qualitative data collection.

**Data Collection Plan**
- Observation of 4 clinical days; focus groups to gather feedback on participant perspectives and experiences, and identify themes, and in-depth interviews with individuals in unique roles.

**Analysis**
- Data interpretation will be shared with the E-SOC participants and feedback will guide analysis.
- Transcripts will be coded individually, then compared to assess reliability and resolve conflicts.
- Both coding dictionary and themes will be flexible and evolving.
- Cases outside of overarching narrative will also be explored and alternative explanations considered.

**Summary of Preliminary Findings**
- **ACE evaluation in a collaborative practice model is an emerging public health approach which requires further study and refinement.**
- There is a need to standardize ACE assessment procedures and provider roles.
- ACE assessment may be relevant in a number of settings.
- Continued testing of this approach needed to expand the evidence base for ACE assessment in primary care as a way to improve early identification of childhood trauma.

**Implications**
- Preliminary data suggests that ACE assessment is logistically feasible and clinically useful for child mental health providers.
- Early recognition can mitigate the consequences of childhood trauma, consistent with goals of families, clinicians, and policymakers working to improve child mental health.

**Ethical considerations:**
- Participants are instructed to adhere to HIPAA guidelines during focus groups and individual interviews.
- Participation in focus groups and individual interviews will be strictly voluntary, during regular work hours normally used for various E-SOC activities.
- As Principal Investigator, Dr. Katherine Grimes will be excluded from focus group and interview processes.

**References**

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- American Academy of Child and Adolescent Psychiatry (AACAP)
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Emotion Recognition Errors and Social Functioning in Autism Spectrum Disorder
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Background
- Accurately recognizing others’ emotions is a necessary skill for appropriate social interactions and is theorized to contribute to social deficits observed in individuals with autism spectrum disorder (ASD).1
- For both individuals with and without ASD, the easiest emotion to identify, while fear, surprise, anger, and disgust are difficult emotions to correctly identify.2,3
- Fear-surprise and anger-disgust errors are common, the difference between emotion recognition of these emotions in ASD and TDC has been conflicting.2,2
- Few studies have investigated and reported upon the specific pattern of facial emotion recognition errors, with inconsistencies.4-7
- Furthermore, correlations between emotion recognition deficits and measures of broader social functioning in ASD has not been fully addressed in the literature.8

Objective
- Our research aims to further explore emotion recognition, including specific emotion recognition error patterns, in ASD and their correlation to broader social function.

Methods
Sample
- 73 participants, 10-17 years old, age and sex matched (85% males)
- ASD: N=41, 13.05y ± 2.19y
- TDC: N=32, 12.69y ± 1.80y

Procedure
- Emotion recognition was examined using the Dynamic Affect Recognition Direction (DARE: Figure 1).9
- Subjects viewed a series of pictures evolving from a neutral expression to one of 6 emotions (anger, disgust, fear, happy, sad, surprise) and were asked to identify the emotion displayed.
- Direction of the error was defined as the correct answer to the participant’s incorrect response.
- An example: anger – disgust is the participant mistaking anger for disgust.

Within Group Analysis
- ASD:
  - SRS subsections (raw scores) were significantly correlated with:
    - SRS Cognition significantly correlated with fear/surprise error (raw: p<0.029) and fear – surprise error (raw: p<0.025)
    - SRS Communication significantly correlated with total percent correct (raw: p<0.009), anger/disgust errors (raw: p<0.016), and anger – disgust error (raw: p<0.044)
    - SRS Autism Man erisms significantly correlated with anger – disgust error (raw: p<0.015)
    - Trend: SRS Motivation significantly correlated with anger – disgust error (raw: p<0.059)
  - SRS total score was not correlated with emotion recognition
- TDC:
  - Disgust – anger error significantly positively correlated with SRS social awareness (raw: p<0.017)
  - Anger – disgust error (without direction) was correlated with SRS social awareness (raw: p<0.051)

Results
- Between Groups Analysis
  - In children and adolescents with ASD:
    - Significantly fewer fear/surprise errors were made (p=0.008; Figure 2A)
    - More anger/disgust errors were made (trend: p=0.063; Figure 2A)
    - Anger was mistimed for disgust (anger – disgust) significantly more often (p=0.011; Figure 2B)
    - Fear was mistimed for surprise (fear – surprise) significantly less often (p=0.04; Figure 2C)
    - Identification of sad was better (p=0.043; Figure 3)
    - No difference in total percent correct (inset)

Conclusion, Limitations, and Future Research
- In comparison to TDC, children and adolescents with ASD make significantly fewer fear/surprise errors.
- Within the fear/surprise error, the ASD group mistakes fear for surprise significantly less often than TDC counterparts.
- The raising of the upper eyelid initiates both fear and surprise10,11, moving forward the time range at which these two emotions become discernible should be investigated. In addition, other similar emotion pairs should be defined and examined.
- Reduced accuracy of identifying anger and disgust errors is consistent with previous research.
- Error types and patterns significantly correlated with SRS subscores in the ASD group.
- Correlations between deficits in emotion recognition with social impairments suggest that emotion recognition is tied to broader social cognition deficits. This is consistent with previous research. Further studies should explore additional assessments (i.e. measures of anxiety) and their relationship to emotion recognition error patterns.
- Research1 has shown that relevant information needed to identify emotions may distributed across different areas of the face. Additional research has found differences in facial eye gaze patterns in ASD and correlations between eye gaze and facial emotion recognition accuracy.8 Further research should include eye-tracking to determine correlations between eye gaze metrics and accuracy.

Additional Analysis
- Among groups, there was no significant difference in the proportion of children who were correct on emotion recognition vs. incorrect.
- Among groups, there was no significant difference in the proportion of children who were correct on emotion reaction vs. incorrect.
- Among groups, there was no significant difference in the proportion of children who were correct on emotion recognition vs. incorrect.

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Families of participants

References