Do Depression and Inhibitory Control Increase Vulnerability for Family Dysfunction During Adolescence?

BY

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THESIS

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DEDICATION PAGE

This work is dedicated to my husband, Matt Isaia. I am eternally grateful for your encouragement, support, patience, and sacrifice.

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LIST OF ABBREVIATIONS

DEP	Major depression, dysthymia, adjustment disorder with depressed mood, sub-threshold and unspecified depressive symptoms
BRIEF-SR	Behavior Rating Inventory of Executive Function-Self Report
CDRS-R	Children's Depression Rating Scale-Revised
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
FAD	Family Assessment Device
FT	Family Talk Paradigm
GSI	Global Severity Index
HC	Healthy Control
ICC	Intraclass Correlation
IFIRS	Iowa Family Interaction Rating Scale
KSADS	Kiddie Schedule for Affective Disorders and Schizophrenia
MDD	Major Depressive Disorder
PFC	Prefrontal Cortex
PGNG	Parametric Go/No-Go
SCL-90-R	Symptom Checklist 90-Revised

SUMMARY

Adolescence is a period of increased risk for depression. Adolescents experience delayed development of brain regions supporting executive functions (e.g., emotional and behavioral control) and concurrent changes in family dynamics due to increased autonomy and time with peers. Collectively, these changes may increase parent-adolescent conflict and impair family communication, which in turn may exacerbate and maintain depressive illness.

Despite evidence that adolescent depression is associated with deficits in family problem solving and communication, literature in this area is methodologically limited. Moreover, it is unclear whether executive function deficits (e.g., inhibitory control) translate to functional impairments in family interactions, such as difficulties communicating and resolving conflicts. To date, no studies have empirically tested interrelationships between mood, executive functioning, and family functioning. We seek to answer the following research question in a sample of 36 adolescents with a broad range of mood severity: Do depression and inhibitory control increase vulnerability for family dysfunction during adolescence? We capitalize on multi-informant (adolescent, parent, observer) and multi-method (objective, subjective, and observational) assessments and a longitudinal design to examine associations between adolescent depression, inhibitory control, and family problem solving and communication in a demographically diverse sample.

Results indicate that adolescent depression was associated with deficits in family problem solving and communication and impairments in inhibitory control were associated with deficits in family communication among a racially and ethnically diverse sample of youth and their parents. Further, findings highlight the value of multi-informant and multi-method assessments

in gaining a more comprehensive understanding of family dynamics. Finally, we found evidence for racial differences in perceptions and observations of family communication. Our results emphasize the importance of early detection and intervention efforts to address adolescent affective and cognitive processes that may contribute to the maintenance of depression. Results also underscore the importance of incorporating family members into evidence-based treatments for adolescent depression to enhance family problem solving and communication.

I. INTRODUCTION

A. Introduction

Adolescence is a period of transition, marked by significant developmental changes in cognitive, emotional, and psychosocial domains (Steinberg, 2005; Sturman & Moghaddam, 2011). Adolescence is also a period of increased vulnerability for the development of mood disorders, with prevalence rates of major depression rising from 5% to 15% between the ages of 12 and 17 (SAMHSA & Center for Behavioral Health Statistics and Quality, 2015). However, these estimates are conservative given that 25% to 50% of youth report subthreshold depressive symptomatology (Kessler, Avenevoli, & Merikangas, 2001; Klein, Shankman, Lewinsohn, & Seeley, 2009). Even more alarming, major depressive disorder (MDD) is the greatest source of disability and mortality during adolescence (Gore et al., 2011) and is associated with substantial psychiatric burden and psychological distress (Merikangas et al., 2010). Full and subthreshold depression both lead to significant psychosocial impairment (Gonzalez-Tejera et al., 2005; Lewinsohn, Solomon, Seeley, & Zeiss, 2000; Merikangas et al., 2010; Wilson, Hicks, Foster, McGue, & Iacono, 2015), including functional problems at home, at school, and with peers (Birmaher et al., 1996; Kessler et al., 2001; Puig-Antich et al., 1993). Thus, focusing solely on traditional categorical approaches to diagnosis may result in an underestimation of the true burden of depression among youth. This is an important point, as depression that onsets in childhood or adolescence is characterized by a more severe course, greater functional impairments (Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2003; Zisook et al., 2007), higher rates of psychiatric hospitalization (Klein et al., 1999; Korczak & Goldstein, 2009), as well as suicidality in adolescence (Rohde, Lewinsohn, Klein, Seeley, & Gau, 2013) and adulthood (Fergusson, Horwood, Ridder, & Beautrais, 2005; Korczak & Goldstein, 2009), which may be

in-part due to the chronic, recurrent course of early-onset depression (Hammen, Brennan, Keenan-Miller, & Herr, 2008; Wilson et al., 2015).

Understanding this heightened vulnerability to depression during adolescence requires an appreciation for the simultaneous and complex challenges that adolescents face in navigating the transition into adulthood. First, adolescents undergo significant brain development during this period, including maturation of the prefrontal cortex (PFC) and development of subcortical limbic regions (e.g., amygdala and ventral striatum) (Casey, Jones, & Hare, 2008; Casey et al., 2010). These regions are implicated in the cognitive control of emotions and behavior, as well as evaluation of risk and reward, respectively (Steinberg, 2005). Interestingly, these regions do not develop in tandem. The maturity of the PFC is delayed relative to subcortical limbic regions (Casey et al., 2010; Steinberg, 2005). As a result, adolescents rely more heavily on the emotional areas of the brain in social and decision-making contexts than control centers (Arain et al., 2013). This may account for the heightened emotional reactivity and difficulties effectively modulating emotional and behavioral reactions that is characteristic of adolescence. Bolstering these findings is evidence that executive functions, which rely heavily on prefrontal cortical regions (A. Diamond, 2013; Miyake et al., 2000), demonstrate a protracted development and do not fully mature until early adulthood (Wagner, Müller, Helmreich, Huss, & Tadić, 2015).

Adolescence also brings about concurrent changes in family dynamics. Adolescence is characterized by an increasing desire for autonomy (Baumrind, 1991; Laursen & Collins, 1994; Steinberg, 2001), which necessitates renegotiation of power dynamics in the parent-adolescent relationship and greater involvement of adolescents in family decision-making processes (Baumrind, 1991; Sheeber, Hops, & Davis, 2001). Adolescents also begin to develop closer bonds with their peers, spending increasing amounts of time away from family members

(Baumrind, 1991). Together, these changes can lead to strain on the family system, greater frequency and intensity of family conflict (Paikoff & Brooks-Gunn, 1991; Steinberg, 2005), and reduced communication with parents (Nickerson & Nagle, 2005). This, coupled with elevated emotionally reactivity and significant brain development and maturation in regions supporting emotional regulation and cognitive control, may undermine adolescents' ability to effectively communicate and resolve family conflicts. These vulnerabilities may be heightened among youth with depression and may exacerbate and maintain illness characteristics.

B. Links Between Depression and Family Functioning

Child and adolescent depression are associated with impairments in family functioning. Specifically, there has been consistent evidence from both cross-sectional and prospective studies that the family environments of depressed children and adolescents, including those with subthreshold symptomatology (Sheeber, Davis, Leve, Hops, & Tildesley, 2007), tend to be characterized by low levels of support and high levels of conflict (Restifo & Bögels, 2009; Sheeber, Hops, Alpert, Davis, & Andrews, 1997; Sheeber & Sorensen, 1998) based on self-report and observational assessments. Families of depressed youth also tend to demonstrate more impaired communication and ineffective problem solving (Francisco, Loios, & Pedro, 2016; Nezu, 1987; Puig-Antich et al., 1993; Sheeber, Allen, Davis, & Sorensen, 2000; Sheeber & Sorensen, 1998; Slesnick & Waldron, 1997), as measured by self-report, parent-report, and observational assessments. Regarding problem solving, one study found that depressed youth and their mothers engaged in less facilitative behavior during problem solving tasks compared to healthy youth (Sheeber & Sorensen, 1998). Depressed adolescents in this study also demonstrated lower rates of problem-solving behaviors. Further, prior research indicates that adolescents with depressive symptoms have overall more negative relationships with both

mothers and fathers than do healthy adolescents (Puig-Antich et al., 1993). Negative family environments have been found to exacerbate and maintain symptoms of depression among children and adolescents (Asarnow, Goldstein, Tompson, & Guthrie, 1993; Sanford et al., 1995; Sheeber et al., 1997), and may contribute to symptom relapse and recurrence (Birmaher et al., 2000; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2000) as well as impairments in youth's long-term psychosocial functioning (McCauley et al., 1993).

Issues of measurement of family variables emerge as important factors in studies of youth depression and family functioning. It is now well-documented that associations between depression and family variables differ according to the informant (e.g., Tamplin & Gooyer, 2001), and that the use of multi-informant, multi-method assessments of these constructs reduces issues of response bias and shared method variance (Kim Park, Garber, Ciesla, & Ellis, 2008; McLeod, Weisz, & Wood, 2007; Restifo & Bögels, 2009; Sheeber et al., 2001; Wang, Mansfield, Zhao, & Keitner, 2012). Indeed, there is evidence to suggest that youths' judgments of family interactions may be inherently biased by their depressed state (Ehrmantrout, Allen, Leve, Davis, & Sheeber, 2011; Sanders, Dadds, Johnston, & Cash, 1992; Shirk, Van Horn, & Leber, 1997), highlighting the need for multi-informant and multi-method measurement tools. However, the vast majority of studies exploring the family environments of depressed youth have relied exclusively on adolescent self-report measures of family functioning, rather than incorporating parent-report and observational assessments (Restifo & Bögels, 2009; Sheeber et al., 2001). Observational assessment tools offer a unique opportunity to identify specific maladaptive patterns of behaviors during parent-child interactions, which in turn can yield clear targets for intervention (Sheeber et al., 2001).

In addition, observations of parent-child interactions have generated important findings regarding the role of parent psychopathology in family interactions. When engaged in problem solving tasks, depressed mothers are more critical, less positive, and less responsive to their children's problem solving suggestions (Garber, Braafladt, & Zeman, 1991). Further, when children demonstrate negative affect during problem solving, depressed mothers respond with more directive, less supportive, and lower frequencies of problem-solving behavior. Impairments in family communication have also been associated with both maternal and paternal depression (Jacob & Johnson, 1997). Because parent psychopathology increases risk for a wide range of disorders in their offspring (McLaughlin et al., 2012), and also impacts family interactions and parenting behaviors (Berg-Nielsen, Vikan, & Dahl, 2002), it is important for parent psychopathology to be incorporated in studies investigating family functioning among depressed adolescents (Sander & McCarty, 2005). Yet, the relative contribution of parent psychopathology has not consistently been documented in the literature on family functioning in adolescent depression, raising questions as to whether associations with family functioning are stronger for parent versus adolescent psychopathology, particularly among studies that incorporate multi-informant and multi-method assessments.

C. Links Between Executive Functioning and Family Functioning

Executive functions involve higher-order cognitive processes, including the abilities to flexibly plan, organize and remember information, to select, monitor, and successfully inhibit behaviors that facilitate the attainment of chosen goals. The Miyake et al. (2000) model proposes three key components of executive function commonly referred to as inhibitory control (e.g., deliberately stopping or inhibiting an automatic, dominant, or prepotent response), cognitive flexibility (e.g., switching between tasks or mental sets, set shifting, mental flexibility), and

working memory (e.g., monitoring incoming information and replacing task-irrelevant information with new, relevant information). Together, executive functions are critical for thinking flexibility, modulating emotional and behavioral reactions in social and interpersonal contexts, and engaging in effective decision-making and problem solving (Arain et al., 2013).

There is emerging evidence that executive functions in youth are associated with specific aspects of family functioning. Youth's executive functioning is related to parental sensitivity (comprised of measures of warmth and autonomy granting), hostility, control, and discipline (Fay-Stammbach, Hawes, & Meredith, 2014). However, the majority of these studies have been conducted with young children (e.g., Bernier, Carlson, & Whipple, 2010; Bindman, Pomerantz, & Roisman, 2015; Blair, Raver, Berry, & Family Life Project, 2014; Houck & LeCuyer-Maus, 2002) and elementary school-aged children (e.g., Belsky, Pasco Fearon , & Bell, 2007; National Institute of Child Health and Human Development [NICHD], 2005; Schroeder & Kelley, 2008, 2010), and to a lesser extent adolescents (Berthelsen, Hayes, White, & Williams, 2017; Sosic-Vasic et al., 2017). Longitudinal studies have demonstrated that maternal anger or hostility (versus warmth/support) predict impairments in children (Fay-Stammbach et al., 2014) and adolescents' executive functioning (Berthelsen et al., 2017). Surprisingly few studies have examined the reciprocal effects of executive functioning on parenting and family characteristics (see Belsky et al., 2007; Blair et al., 2014; Eisenberg et al., 2005 for exceptions), despite recognition that these relationships are likely bidirectional (Farley & Kim-Spoon, 2014). In addition, there is limited evidence regarding the specificity of relationships between components of executive functioning and family and parenting characteristics. However, a recent cross-sectional study of normally developing children ages 5 to 12 incorporated an array of executive functioning and family/parenting variables to shed light on this question of specificity. Results

indicated that parent ratings of family organization (e.g., established routines, rules, and responsibilities for family organization, timeliness, and household cleanliness) on the Family Environment Scale (Moos & Moos, 1984) were positively associated with parent ratings of children's planning/organizing, organization of materials, working memory, inhibition, shifting, and monitoring skills on the Behavior Rating Inventory of Executive Functioning (Gerard A Gioia, Isquith, Guy, & Kenworthy, 2000); parental support was positively related to children's planning/organizing, working memory, and inhibition; and finally, parental limit setting was positively related to children's emotional control, inhibition, shifting, and monitoring (Schroeder & Kelley, 2010).

Inhibition plays a key role in regulating both emotion and behavior, which is necessary for the development of adolescent social competence and successful peer and family interactions. Surprisingly, extant research on inhibitory control and interpersonal functioning to date has primarily focused on peer relationships rather than parent-adolescent relationships (Farley & Kim-Spoon, 2014). While this may in part be due to the shifting importance of peer relationships relative to parent relationships during the adolescent period, parents continue to play key roles as attachment figures and models for close relationships (Nickerson & Nagle, 2005). In one recent study, adolescent's objective weaknesses in inhibitory control were associated with adolescent perceptions of poorer quality and less secure relationships with mothers and fathers, while no direct association between objective inhibitory control and relationship quality emerged for peers (Herd et al., 2018). Thus, results from this study suggest that difficulties withholding emotional or behavioral responses in social interactions may be particularly detrimental to the development and maintenance of healthy parent-child relationships. A strength of this study involved the use of a performance-based assessment of inhibitory control, but a noted limitation was the use of

only adolescent ratings of relationship quality, rather than multi-informant or multi-method tools. Moreover, this study utilized a global measure of relationship quality, which precludes the ability to establish specificity with regard to how different aspects of parent-adolescent relationships relate to inhibitory control. Theoretically, inhibitory control may play an important role in navigating family interactions and conflicts, including effectively monitoring one's reactions to others while maintaining cognitive and emotional control to communicate and problem-solve.

Thus, despite evidence for elevated rates of family conflict and reduced parent-child communication during adolescence, little work has been done to measure whether objective and subjective deficits in executive functioning translate to functional impairments in real world interpersonal contexts, such as difficulties communicating and resolving family conflicts. To our knowledge, no prior study has explored whether inhibitory control is associated with family problem solving and communication using subjective, objective, and observational measurement tools. This line of research is warranted as it may generate specific targets for intervention to alleviate family discord and improve family communication. Impairments in inhibitory control may serve as a modifiable risk factor implicated in the maintenance of family conflict and dysfunction among adolescents.

D. Study Aims

Despite theoretical support for interrelationships between mood, executive functioning, and family functioning, no prior study has empirically tested associations in a group of adolescents with a spectrum of mood severity. Thus, the present study is the first to pursue an investigation of relationships among adolescent and family variables to better understand the ways in which adolescent mood and inhibitory control may contribute to family functioning, which, in turn, may alter the clinical course and progression of illness during a sensitive period

of development. In line with the Research Domain Criteria (RDoC) framework (Cuthbert, 2014), the present study seeks to better understand the full range of impairments associated with adolescent depressive symptomatology. To this end, the present study incorporates a dimensional approach to classification that includes youth with a wide range of mood disturbance. Building on prior work, the present study aims to investigate relationships between adolescent depression, executive functioning, and family functioning in a sample of youth experiencing any depressive mood disorder (DEP: major depression, dysthymia, adjustment disorder with depressed mood, sub-threshold and not otherwise specified depression) and age-, sex-, and IQ-matched healthy control (HC) adolescents with no past or current personal psychiatric history. This project leverages an existing cross-sectional sample who completed measures of depression and executive functioning at baseline (ages 12 to 17) and adds a follow-up assessment with measures of family functioning approximately 18 months later (ages 14 to 19) to examine the real-world implications of mood symptomatology and objective and subjective deficits in inhibitory control in the family contexts of adolescents with a broad spectrum of mood severity (i.e., healthy, high-risk, sub-threshold, and affected youth). This work is strengthened by a multi-dimensional and developmental conceptualization of these questions, supported by the use of multi-informant (adolescent, parent, observer) and multi-method (objective, subjective, and observational) assessments and a longitudinal design. Moreover, this study includes a sample of ethnically diverse adolescents who have, to date, been underrepresented in the study of family functioning in early course mood disorders (Sheeber et al., 2007). The study aims and hypotheses are as follows:

1. **Aim 1.** The first aim of the present study is to a) test for differences in subjective and observed family functioning among adolescents with depressive disorders (DEP) and

healthy controls (HC), and b) across the whole sample, determine the association between adolescents' depression symptom severity at baseline and family functioning at follow-up using both subjective and observational assessments.

   a. ***Hypothesis 1.*** We predict that a) family dysfunction will be higher in DEP relative to HC adolescents, evidenced by greater impairments in subjective and observed family problem solving and communication at follow-up, and b) higher depression symptom severity at baseline will be associated with greater impairments in subjective and observed family problem solving and communication at follow-up.

2. **Aim 2.** The second aim is to determine the association of objective and subjective impairments in executive functioning measured at baseline with deficits in family functioning at follow-up, also using subjective and observational assessments.

   a. ***Hypothesis 2.*** We predict that performance-based and subjective impairments in inhibitory control at baseline will be associated with greater impairments in subjective and observed family problem solving and communication at follow-up.

This line of research is critical for improving methods of early detection and intervention designed to disrupt the cascade of family processes that contribute to worse clinical course among depressed youth. Such intervention may improve long-term outcomes for youth with depression and impairments in inhibitory control.

II. METHOD

A. Participants

A sample of 71 adolescents (44 females, 27 males; ages 12 to 17) and their consenting parent participated in a baseline assessment for a study investigating links between peripheral inflammation, depression, and cognitive functioning (see Peters et al., 2019 for more details on the full sample). Forty adolescents with any depressive mood disorder (DEP: major depression, dysthymia, adjustment disorder with depressed mood, sub-threshold and unspecified depressive symptoms) and 31 age-, sex-, and IQ-matched healthy control adolescents (HC: no prior or current personal psychiatric history) participated in the baseline assessment. Adolescents were recruited from advertisements and referrals from clinicians in outpatient psychiatry clinics in an urban academic medical center (DEP only) and via local advertisements (i.e., on public transit, fliers) in the surrounding community (DEP and HC).

Initial eligibility for all participants was determined via a semi-structured telephone screening interview. Adolescents in the DEP group were recruited for the study according to significant parent and self-report of depressive symptoms lasting one week or more, which was subsequently confirmed with a clinical interview. At the baseline visit, participants underwent an additional in-person screening to ensure they met strict eligibility criteria. Participants were included in the study if they had an estimated verbal IQ in the 'borderline' or higher range (T-score > 30) and spoke fluent English. Participants were excluded from the study for the following reasons: 1) currently taking psychiatric medication other than a stimulant, 2) formally diagnosed with a neurological disorder or other chronic medical condition affecting cognition (e.g., learning disability, epilepsy, or developmental delay; however, a co-morbid attention-deficit/hyperactivity disorder diagnosis was allowed in the DEP group), 3) actively suicidal with

a plan or intent (passive suicidal thoughts were permitted), 4) history of head injury with loss of consciousness for more than 10 minutes, 5) full-threshold active substance use (alcohol or illicit drugs) disorder in the past 30 days or if they had more than 5 self-reported lifetime instances of use, 6) current smokers, and 7) taking an investigational medication as part of a research protocol.

Additionally, all 71 youth who completed the baseline assessment were eligible to complete a subsequent follow-up assessment 18 months after the baseline visit. The present sample includes 36 youth (23 females, 13 males; ages 14 to 19) who completed the follow-up assessment on average 21.50 months (*SD* = 3.97) after the baseline assessment. Twenty youth from the DEP group and 16 youth from the HC group and their parents (31 mothers, 5 fathers) participated in the follow-up assessment.

B. Procedures

Adolescents who met eligibility for the study after the initial screening were invited to attend a lab visit with their parent. All additional assessments took place in an outpatient medical clinic at an urban academic medical center. Upon arrival, informed consent/assent procedures were followed and then participants were evaluated for study eligibility with formal assessment measures (e.g., IQ estimate, clinical interview). Subsequently, eligible participants completed a neuropsychological assessment battery, self-report measures that collected demographic information and measures of emotional and behavioral functioning. In addition, participants provided a non-fasting blood sample (not pertinent to the present study). Participants were compensated $40 for the baseline assessment.

Eighteen months after the baseline assessment, participants were contacted and recruited for a follow-up assessment. Youth and their parents were invited to attend a lab visit but were

also given the option to complete assessments remotely by phone and video. All youth and their parents completed consent/assent procedures, and then a diagnostic assessment and measures of family functioning. In addition, adolescents and their parents were invited to participate in an optional videotaped family discussion activity. Four youth declined to participate in this task (n = 32). Participants were compensated $50 for their participation for completion of all study tasks (including the optional family discussion activity) and provided an additional $15 to cover transportation-related expenses if they attended an in-person lab visit. Participants who completed the study assessments remotely were compensated $30; they did not receive transportation reimbursement.

C. Measures

1. Clinical and Diagnostic Assessment

a. *Kiddie Schedule for Affective Disorders and Schizophrenia* (clinician-rated assessment at baseline and follow-up). The Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (KSADS; Kaufman et al., 1997) is a semi-structured clinical interview that assesses for current and lifetime history of psychiatric diagnoses in children and adolescents ages 6 to 18. This measure assesses for symptoms of psychiatric disorders, which can be endorsed as absent, or present at subthreshold or full-threshold levels. Adolescents and their parents were interviewed about the adolescents' symptoms by four doctoral students in clinical psychology at baseline and follow-up. The clinical interviewer then made a consensus rating following both interviews according to DSM-IV diagnostic criteria. This measure was used to determine clinical severity, and to assess for substance use and suicidality at baseline. The

entire interview was completed at the baseline assessment, and only the mood modules were completed at follow-up.

b. ***Children's Depression Rating Scale-Revised*** **(clinician-rated assessment at baseline).** The Children's Depression Rating Scale-Revised (CDRS-R; Poznanski & Mokros, 1996) is a valid and reliable clinician-rated measure for assessing the severity of depression in children and adolescents based on a semi-structured interview format with both child and parent. The clinician rated the adolescent across 17 items reflecting depressive symptoms (i.e., depressed feelings, low self-esteem, excessive fatigue) on 5 or 7-point scales at the baseline assessment. Scores were summed to create a total score; higher scores reflect more severe symptoms of depression. Internal consistency was excellent ($\alpha = .94$) for this measure.

c. ***The Symptom Checklist 90-Revised*** **(parent-rated assessment at baseline).** The Symptom Checklist 90-Revised (SCL-90-R; Derogatis, 1996) is a reliable and valid instrument to assess symptoms of psychopathology in adults. Parents rated 90 items that reflected different aspects of psychological functioning. Ratings were on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). The SCL-90-R captures a variety of symptom dimensions. The present study focused on the Global Severity Index (GSI), completed by the parent at the baseline assessment, as an overall indicator of parent psychopathology. Responses were averaged to create the GSI; higher scores on the GSI indicate higher levels of parent psychopathology. Internal consistency was excellent ($\alpha = .97$).

2. Assessments of Executive Functioning

a. Performance-Based Assessment

1. ***Parametric Go/No-Go*** **(objective assessment at baseline).** The Parametric Go/No-Go (PGNG; Langenecker, Zubieta, Young, Akil, & Nielson, 2007) is a neuropsychological assessment tool that captures aspects of executive functioning, including attention, set-shifting, processing speed, and inhibitory control, for individuals 8 years and older. It includes three levels of increasing difficulty. Level 1 consists of a continuous performance task with three static target letters (no contextual inhibition targets). Levels 2 and 3 are progressively more difficult with two and three letters, respectively, that can be either targets or lures depending upon the previous response. Thus, levels 2 and 3 have progressively greater demands on inhibitory control. For this task, participants were presented with a constant stream of letters that display for 500 ms with a 0 ms interstimulus interval. Participants were instructed to respond with a key press using their right index finger. There were two types of trials: go trials (which require a response when a target is displayed) and no-go trials (which require inhibiting a response when a non-target is displayed). Inhibitory accuracy was calculated by taking the number of correct rejections divided by all possible correct rejections (rejections + commissions) for no-go trials. We focus on level 2 inhibitory accuracy as a measurement of novel inhibitory control. Higher scores on this measure reflect greater inhibitory control. This measure was completed at the baseline assessment.

b. Subjective Assessment

1. ***Behavior Rating Inventory of Executive Function-Self Report* (adolescent-rated assessment at baseline).** The Behavior Rating Inventory of Executive Function-Self Report (BRIEF-SR; Guy, Isquith, & Gioia, 2004) is an 80-item standardized self-report measure of adolescents' views of their executive functioning in everyday contexts. The measure is designed for youth ages 11 to 18. For this study, we used adolescents' scores from the inhibit subscale, completed at the baseline assessment, as a comparable measure to the performance-based measure of inhibitory control. This scale assesses adolescents' perceptions of their ability to resist impulses and stop behavior at the appropriate time. T-scores were used as a measure of adolescents' inhibitory control relative to youth of the same age and sex in the standardization sample. Higher T-scores reflect greater adolescent-reported difficulties with inhibitory control. Internal consistency for the inhibit subscale was good ($\alpha = .82$).

3. <u>Assessments of Family Functioning</u>

a. Observational Assessment

1. ***Family Talk Paradigm* (observational assessment at follow-up).** The parent and adolescent participated in a modified version of the Family Talk (FT) paradigm (Wakschlag et al., 2015; Wakschlag et al., 2011) to learn more about how families talk about important topics and resolve problems. The FT paradigm consists of 3 segments: 1) a general discussion about family life and experiences that the parent and adolescent share together (a warm-up activity),

2) a discussion of family values and getting along with each other, and 3) a problem-solving task. The present study focused on the problem-solving task only. For the problem-solving task, the adolescent and their parent were each asked to select a topic that has generated conflict in the parent-adolescent relationship, to discuss it together, and then to try to resolve the conflict. Adolescents were given approximately 5 minutes to discuss their topic and resolve the conflict, followed by an additional 5 minutes for parent topics. Adolescents and parents were asked to select different topics. If adolescents or parents had difficulty identifying a topic to discuss, prompts with common sources of conflict (e.g., disagreement about curfew, use of technology, etc.) were provided. Adolescents were asked to discuss their topic first, followed by the parent topic. The entire session was video recorded. Instructions were provided at the start of the task, and then study personnel left the room. The interaction was monitored remotely from the next room. Around 4 minutes, a prompt was provided through a speaker to "please try to resolve the problem" if there had been no attempts to problem-solve before then. Approximately 5 to 6 minutes after the start of the task, a prompt was provided to switch to the parent topic. At the end of the task, study personnel entered the room and families were debriefed. Study personnel were trained on the administration of the Family Talk paradigm by the developer's research team. The original paradigm (Family Talk About Smoking; Wakschlag et al., 2011) was validated for use with a demographically diverse samples of parent-adolescent

dyads and has since been modified for use with a demographically diverse sample of preadolescent children (in preparation).

Videos were coded by a team of 5 coders using a modified version of the Iowa Family Interaction Rating Scale (IFIRS; J. Melby & R. Conger, 2001) following extensive training procedures originally developed for the Family Talk About Smoking paradigm (Wakschlag et al., 2011). The IFIRS is a global coding system, which considers observations of behavior across the entire problem-solving segment. Ratings incorporate five elements into the coding system: frequency, intensity, emotional tone of the behavior, context, and proportion of the interaction in which the behavior occurs. Coders provided ratings on a 5-point scale for each variable, ranging from "not at all characteristic" to "mainly characteristic." The present study focused on four dependent variables that focus on two key constructs: family problem solving (i.e., how families work together to develop solutions to problems, disagreements, and conflicts) and communication (i.e., how families express and exchange information and ideas). Dependent variables for problem solving include the quality of solution for adolescent topics and the quality of solution for parent topics. The quality of solution is determined by the degree of flexibility in generating alternative solutions, the involvement of both parents and adolescents in generating solutions, and whether the outcome is a viable and satisfactory solution for both individuals. Dependent variables for communication include adolescent communication and parent communication. Communication reflects the ability of the speaker to neutrally

or positively express information or ideas in a clear manner, using reasoning and explanations, while also taking into consideration the other's point of view. The IFIRS has previously been used to evaluate parent-child interactions in ethnically diverse samples (Williamson, Bradbury, Trail, & Karney, 2011).

Coders were blind to study hypotheses and diagnostic status. All coders were required to meet reliability standards (80 percent agreement with master coders across all codes) before proceeding with independent coding (Gwet, 2014). Thirty percent of the videos were double coded by master coders to monitor interrater reliability; disagreements were resolved through consensus. Intraclass correlations (ICCs) with the average estimates coefficient were used to assess interrater reliability. According to guidelines established by Koo and Li (2016), ICCs were all in the moderate to good range for the selected variables (quality of solution for adolescent topics = .73, quality of solution for parent topics = .78, adolescent communication = .56, parent communication = .68).

b. Subjective Assessment

1. ***Family Assessment Device*** **(adolescent and parent-rated assessment at follow-up).** The Family Assessment Device (FAD; Miller, Epstein, Bishop, & Keitner, 1985) is a brief measure of family functioning that captures structural, transactional, and organizational characteristics of families. It contains 60 items that reflect aspects of both healthy and unhealthy family functioning. Items comprise 7 scales: affective involvement, affective

responsiveness, behavioral control, communication, problem solving, roles, and general family functioning. Responses were rated on a 4-point scale ranging from 1 (strongly agree) to 4 (strongly disagree). Prior to summing the items, unhealthy functioning items were transformed by subtracting 5 from each score per instructions. A scaled score was created for each scale by summing the respective items and dividing by the total number of items completed within each scale. Scaled scores range from 1 (healthy) to 4 (unhealthy). Higher scaled scores reflect more unhealthy family functioning. The present study focused on the problem solving (e.g., the family's ability to resolve problems) and communication scales (e.g., the family's ability to exchange information in a clear and direct manner). This measure was rated separately by both the adolescent and parent at the follow-up assessment.

D. Data Analysis

Analyses were performed using SPSS 26.0. Separate hierarchical multiple regression models explored relationships between focal predictors (diagnostic group, depression severity, performance-based inhibitory control, and adolescent-rated inhibitory control) and family problem solving and communication, controlling for parent psychopathology. Results are presented separately for subjective and objective assessments of family problem solving and communication. In order to explore the unique contributions of each variable, predictors were entered in step 1 in each model, followed by parent psychopathology in step 2. Continuous predictors were centered at their respective means. Diagnostic group was dummy coded such that healthy controls were the reference group.

Predictors and observational measures were examined to assess for normality. The Global Severity Index score of the SCL-90-R was positively skewed. A square-root transformation was performed to normalize the distribution, and the transformed variable was used in all subsequent analyses. All participants (n = 36) had complete data for all predictors and for subjective indicators of family functioning. Because the observational task was optional, analyses involving observational assessments of family functioning are missing data for four participants (n = 32). Given the small sample size and hypothesis generating nature of the study, marginal effects are reported at $p < .10$.

III. RESULTS

A. Demographic and Clinical Characteristics

Table I presents baseline demographic and clinical characteristics of the study sample by diagnostic group. Group differences in demographic and clinical characteristics (adolescent age, sex, ethnicity, and race) were explored using one-way analysis of variance or chi square tests as appropriate (see Table I). DEP and HC adolescents were equivalent in terms of age, sex, ethnicity, and race (all p's > .28). Five healthy control youth, referred to as "converters" hereafter, experienced depressive symptoms between the baseline assessment and the follow-up assessment.

Table I. Demographic and Clinical Characteristics

	HC		DEP		Omnibus Test	
	n = 16		n = 20			
	M	***SD***	***M***	***SD***	***F***	***p*-value**
Child Age at Baseline	14.81	1.33	14.30	1.42	1.23	0.28
	N	**%**	**N**	**%**	**χ2**	***p*-value**
Child Sex (% female)	11	69	12	60	0.3	0.59
Child Ethnicity						
Hispanic	3	19	4	20	0.01	0.93
Non-Hispanic	13	81	16	80	-	-
Race						
White	11	69	11	55	2.08	0.72
African American	3	19	5	25	-	-
Asian	2	12	2	10	-	-
American Indian/Alaskan Native	0	0	1	5	-	-
Other/Unknown	0	0	1	5	-	-
Current DSM-IV Diagnosis at Baseline						
Major Depression	-	-	5	25	-	-
Dysthymia	-	-	4	20	-	-
Depressive Disorder NOS	-	-	8	40	-	-
Adjustment Disorder w/ Depressed Mood	-	-	3	15	-	-
Current DSM-IV Diagnosis at Follow-Up					-	-
Major Depression	1	6	0	0	-	-
Dysthymia	0	0	2	10	-	-
Depressive Disorder NOS	0	0	3	15	-	-
Adjustment Disorder w/ Depressed Mood	0	0	1	5	-	-
HC Conversions at Follow-Up*						
Major Depression	3	19	-	-	-	-
Dysthymia	0	0	-	-	-	-
Depressive Disorder NOS	1	6	-	-	-	-
Adjustment Disorder w/ Depressed Mood	1	6	-	-	-	-

*Note. Five HC youth experienced a mood status change between baseline and follow-up: 2 experienced a major depressive episode after baseline and recovered by follow-up, 1 experienced a depressive disorder, not otherwise specified after baseline and recovered by follow-up, 1 experienced a past adjustment disorder with depressed mood after baseline and recovered by follow-up, and 1 was in a current major depressive episode at follow-up.

B. Preliminary Analyses

Relationships between demographic variables (adolescent age, sex, ethnicity, and race) and indicators of family functioning were explored using correlations and one-way analysis of variance as appropriate. There was a significant positive association between age and observed parent communication on the family talk task ($r = 0.37$, $p = .04$). Neither sex nor ethnicity were related to indicators of family functioning (all p's > .10). To explore associations with race, analyses were conducted with only White (n = 22) and African Americans (n = 8) given very few cases within other racial groups. Analyses revealed that White adolescents reported more unhealthy family communication ($M = 2.32$, $SD = 0.35$) than African American adolescents ($M = 2.01$, $SD = 0.44$), $F(1, 28) = 4.05$, $p = .05$) at the trend level. Similarly, White parents reported more unhealthy family communication ($M = 2.06$, $SD = 0.32$) than African American parents ($M = 1.72$, $SD = 0.44$), $F(1, 28) = 5.38$, $p = .03$). In contrast, observations of parent communication indicated marginally better communication among White parents ($M = 4.47$, $SD = 0.77$) compared to African American parents ($M = 3.75$, $SD = 1.17$), $F(1, 25) = 3.64$, $p = .07$). There were no differences in observations of adolescent communication among White ($M = 3.84$, $SD = 0.83$) versus African American adolescents ($M = 3.75$, $SD = 1.040$, $F(1, 25) = .06$, $p = .81$). Race was not associated with any indicators of family problem solving.

Pearson correlations and point-biserial correlations were performed to examine associations among primary variables. Results are presented in Table II. Correlations among focal predictors indicated significant positive associations between diagnostic group and depression severity and between diagnostic group and parent psychopathology, indicating more severe depression and greater parent psychopathology among DEP youth compared to HC youth.

Pearson correlations were also performed to examine relationships between adolescent, parent, and observational assessments of family functioning. There was a significant positive association between observed family problem solving for adolescent and parent topics. Significant positive associations also emerged between adolescent ratings of family problem solving and communication and between parent ratings of family problem solving and communication. Observed adolescent communication was positively associated with observed family problem solving for adolescent topics and for parent topics. Similarly, observed parent communication was positively associated with observed family problem solving for adolescent topics and for parent topics. A significant positive association emerged between observed adolescent and observed parent communication. Finally, adolescent ratings of family problem solving were negatively associated with observations of parent communication.

Table II. Bivariate Associations Among Adolescent, Parent, and Family Variables

	Adolescent Functioning				**Parent Functioning**	**Family Functioning**						
	1	2	3	4	5	6	7	8	9	10	11	12
1. Dx Group												
2. CDRS-R	0.75***											
3. PGNG IC	-0.25	-0.01										
4. BRIEF Inhibit	0.19	0.31	-0.01									
5. Parent SCL-90-R GSI	0.39*	0.31	-0.05	0.08								
6. FAD Adol. Family Problem Solving	0.13	0.35*	-0.19	0.26	0.26							
7. FAD Parent Family Problem Solving	-0.06	-0.07	0.16	-0.02	0.31	0.23						
8. FT Solution Adol. Topic	-0.22	-0.13	-0.05	0.05	-0.08	-0.28	-0.34					
9. FT Solution Parent Topic	-0.45*	-0.22	0.26	0.14	-0.11	-0.20	0.00	0.54**				
10. FAD Adol. Family Communication	0.01	0.16	-0.23	0.31	0.05	0.78***	0.30	-0.21	0.05			
11. FAD Parent Family Communication	-0.09	-0.12	0.29	0.06	0.28	0.03	0.77***	-0.18	0.29	0.21		
12. FT Adol. Communication	-0.28	-0.31	0.21	-0.17	0.06	-0.23	0.15	0.40*	0.45*	-0.11	0.35	
13. FT Parent Communication	-0.22	-0.38*	0.03	-0.27	-0.24	-0.37*	-0.32	0.50**	0.44*	-0.17	0.06	0.39*

* p < .05, ** p <.01, *** p <.001

C. Associations Between Adolescent Depression and Family Functioning

1. **Subjective Reports of Family Problem Solving.** Results are presented in Table III. Diagnostic group was not associated with adolescent or parent ratings of family problem solving. However, there was a significant positive relationship between dimensional depression severity and adolescent-rated family problem solving (B = .01, SE = .01, p = .04), suggesting that adolescents with greater depressive symptoms reported more unhealthy family problem solving. This relationship was slightly attenuated after accounting for parent psychopathology (B = .01, SE = .01, p = .08). Adolescent depression severity was not associated with parent ratings of family problem solving.
2. **Observational Assessments of Family Problem Solving.** Results are presented in Table III. There was no relationship between diagnostic group and observed family problem solving for adolescent topics. However, diagnostic group was associated with observed family problem solving for parent topics (B = -1.09, SE = .40, p = .01). Specifically, DEP youth and their parent demonstrated poorer quality solutions for parent topics relative to HC youth and their parents. This relationship remained significant after the inclusion of parent psychopathology (B = -1.14, SE = .43, p = .01). Dimensional depression severity was not associated with observed family problem solving for adolescent or parent topics.

Table III. Associations Between Adolescent Depression and Family Problem Solving

		FAD Adolescent-Rated Family Problem Solving n = 36			FAD Parent-Rated Family Problem Solving n = 36			Family Talk Observed Quality of Solution Adolescent Topic n = 32			Family Talk Observed Quality of Solution Parent Topic n = 32		
Step	**Predictors**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Diagnostic Group													
1	Diagnostic Group	0.12	0.15	0.13	-0.05	0.13	-0.06	-0.53	0.43	-0.22	-1.09*	0.40	-0.45
	R^2		0.02			0.004			0.05			0.20	
	F		0.61			0.14			1.56			7.55*	
2	Diagnostic Group	0.03	0.16	0.04	-0.16	0.13	-0.21	-0.53	0.47	-0.22	-1.14*	0.43	-0.47
	Parent SCL-90-R GSI	0.37	0.28	0.24	0.51*	0.23	0.39	-0.02	0.80	-0.004	0.22	0.74	0.05
	ΔR^2		0.07			0.13			0.05			0.20	
	ΔF		1.20			2.52^t			0.75			3.70*	
Depression Severity													
1	CDRS-R	0.01*	0.01	0.35	-0.002	0.004	-0.07	-0.01	0.01	-0.13	-0.02	0.01	-0.22
	R^2		0.12			0.004			0.02			0.05	
	F		4.78*			0.15			0.49			1.54	
2	CDRS-R	0.01^t	0.01	0.30	-0.004	0.004	-0.18	-0.01	0.02	-0.11	-0.02	0.02	-0.21
	Parent SCL-90-R GSI	0.25	0.26	0.17	0.48*	0.23	0.36	-0.22	0.78	-0.05	-0.26	0.78	-0.06
	ΔR^2		0.15			0.12			0.02			0.05	
	ΔF		2.87^t			2.28			0.28			0.80	

^{t} p < .10, * p < .05

3. **Subjective Reports of Family Communication.** Results are presented in Table IV. Diagnostic group was not associated with adolescent or parent ratings of family communication. Likewise, no significant associations emerged for dimensional depression severity.
4. **Observational Assessments of Family Communication.** Results are presented in Table IV. Diagnostic group was not associated with observed adolescent or parent communication. In contrast, there was a trend for a significant relationship between dimensional depression severity and observed adolescent communication. Specifically, higher dimensional depression severity was associated with observations of poorer quality adolescent communication at the trend level (B = -.02, SE = .01, p = .08). Higher dimensional depression severity was also associated with observations of poorer quality parent communication (B = -.02, SE = .01, p = .03). The magnitude of this effect was reduced to a trend after accounting for parent psychopathology (B = -.02, SE = .01, p = .06).

Table IV. Associations Between Adolescent Depression and Family Communication

		FAD Adolescent-Rated Family Communication n = 36			FAD Parent-Rated Family Communication n = 36			Family Talk Observed Adolescent Communication n = 32			Family Talk Observed Parent Communication n = 32		
Step	**Predictors**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
Diagnostic Group													
1	Diagnostic Group	0.01	0.13	0.01	-0.07	0.13	-0.09	-0.49	0.30	-0.28	-0.40	0.33	-0.22
	R^2		0.000			0.01			0.08			0.05	
	F		0.002			0.28			2.62			1.49	
2	Diagnostic Group	-0.01	0.15	-0.01	-0.18	0.14	-0.24	-0.60^{t}	0.32	-0.35	-0.28	0.35	-0.15
	Parent SCL-90-R GSI	0.07	0.25	0.06	0.49*	0.23	0.37	0.55	0.55	0.19	-0.57	0.60	-0.18
	ΔR^2		0.003			0.13			0.11			0.08	
	ΔF		0.04			2.41			1.80			1.19	
Depression Severity													
1	CDRS-R	0.004	0.004	0.16	-0.003	0.004	-0.12	-0.02^{t}	0.01	-0.31	-0.02*	0.01	-0.38
	R^2		0.03			0.01			0.10			0.14	
	F		0.86			0.48			3.16^{t}			5.03*	
2	CDRS-R	0.004	0.01	0.16	-0.01	0.004	-0.23	-0.02^{t}	0.01	-0.35	-0.02^{t}	0.01	-0.34
	Parent SCL-90-R GSI	0.002	0.24	0.001	0.47*	0.23	0.35	0.44	0.53	0.15	-0.46	0.55	-0.15
	ΔR^2		0.03			0.13			0.12			0.16	
	ΔF		0.42			2.39			1.92			2.84^{t}	

^{t} p < .10, * p < .05

D. Associations Between Adolescent Executive Functioning and Family Functioning

1. **Subjective Reports of Family Problem Solving.** Results are presented in Table V. Performance-based inhibitory control was not associated with adolescent or parent ratings of family problem solving. Likewise, no significant associations emerged for adolescent self-report of inhibitory control.
2. **Observational Assessments of Family Problem Solving.** Results are presented in Table V. Performance-based inhibitory control was not associated with observed family problem solving for adolescent topics or parent topics. Likewise, no significant associations emerged for adolescent self-report of inhibitory control.

Table V. Associations Between Adolescent Inhibitory Control and Family Problem Solving

		FAD Adolescent-Rated Family Problem Solving n = 36			FAD Parent-Rated Family Problem Solving n = 36			Family Talk Observed Quality of Solution Adolescent Topic n = 32			Family Talk Observed Quality of Solution Parent Topic n = 32		
Step	**Predictors**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
PGNG Inhibitory Control													
1	PGNG IC	-0.37	0.32	-0.19	0.27	0.28	0.16	-0.31	1.10	-0.05	1.56	1.08	0.26
	R^2		0.04			0.03			0.003			0.07	
	F		1.32			0.91			0.08			2.10	
2	PGNG IC	-0.35	0.32	-0.18	0.29	0.27	0.18	-0.36	1.11	-0.06	1.52	1.09	0.25
	Parent SCL-90-R GSI	0.38	0.25	0.25	0.42[t]	0.22	0.32	-0.36	0.76	-0.09	-0.40	0.75	-0.10
	ΔR^2		0.10			0.13			0.01			0.07	
	ΔF		1.81			2.35			0.15			1.17	
BRIEF Self-Report Inhibit T-Score													
1	BRIEF Inhibit	0.01	0.01	0.26	-0.001	0.01	-0.02	0.01	0.02	0.05	0.02	0.02	0.14
	R^2		0.07			0.000			0.002			0.02	
	F		2.44			0.02			0.07			0.62	
2	BRIEF Inhibit	0.01	0.01	0.24	-0.002	0.01	-0.05	0.01	0.02	0.06	0.02	0.02	0.15
	Parent SCL-90-R GSI	0.36	0.25	0.24	0.41[t]	0.22	0.31	-0.36	0.76	-0.09	-0.54	0.76	-0.13
	ΔR^2		0.12			0.10			0.01			0.04	
	ΔF		2.32			1.75			0.15			0.55	

[t] $p < .10$, * $p < .05$

3. **Subjective Reports of Family Communication.** Results are presented in Table VI. Performance-based inhibitory control was not associated with adolescent ratings of family communication, but an association emerged at the trend level between performance-based inhibitory control and parent ratings of family communication (B = .48, SE = .27, p = .09). Contrary to our hypotheses, these results suggest that greater inhibitory control was associated with more unhealthy family communication from the parents' perspective. This association remained stable as a trend with the inclusion of parent psychopathology (B = .50, SE = .26, p = .07). On the other hand, adolescent self-report of inhibitory control was positively associated with adolescent ratings of family communication at the trend level (B = .01, SE = .01, p = .07), indicating that greater self-reported weaknesses in inhibitory control were associated with more unhealthy family communication, according to the adolescent. Adolescent self-report of inhibitory control was not associated with parent ratings of family communication.
4. **Observational Assessments of Family Communication.** Results are presented in Table VI. Performance-based inhibitory control was not associated with observed adolescent communication or observed parent communication. Likewise, no significant associations emerged for adolescent self-report of inhibitory control.

Table VI. Associations Between Adolescent Inhibitory Control and Family Communication

		FAD Adolescent-Rated Family Communication n = 36			FAD Parent-Rated Family Communication n = 36			Family Talk Observed Adolescent Communication n = 32			Family Talk Observed Parent Communication n = 32		
Step	**Predictors**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**	**B**	**SE**	**β**
PGNG Inhibitory Control													
1	PGNG IC	-0.39	0.28	-0.23	0.48[t]	0.27	0.29	0.88	0.77	0.21	0.12	0.84	0.03
	R^2		0.05			0.08			0.04			0.001	
	F		1.89			3.07[t]			1.31			0.02	
2	PGNG IC	-0.38	0.29	-0.23	0.50[t]	0.26	0.30	0.91	0.78	0.21	0.04	0.83	0.01
	Parent SCL-90-R GSI	0.05	0.23	0.04	0.39[t]	0.21	0.30	0.23	0.53	0.08	-0.74	0.57	-0.23
	ΔR^2		0.05			0.17			0.05			0.06	
	ΔF		0.94			3.42*			0.73			0.85	
BRIEF Self-Report Inhibit T-Score													
1	BRIEF Inhibit	0.01[t]	0.01	0.31	0.002	0.01	0.06	-0.02	0.02	-0.17	-0.03	0.02	-0.27
	R^2		0.09			0.004			0.03			0.07	
	F		3.50[t]			0.12			0.90			2.41	
2	BRIEF Inhibit	0.01[t]	0.01	0.30	0.001	0.01	0.04	-0.02	0.02	-0.18	-0.02	0.02	-0.25
	Parent SCL-90-R GSI	0.03	0.22	0.03	0.37	0.22	0.28	0.23	0.54	0.08	-0.67	0.55	-0.21
	ΔR^2		0.09			0.08			0.04			0.12	
	ΔF		1.71			1.47			0.53			1.96	

[t] $p < .10$, * $p < .05$

E. Associations Between Parent Psychopathology and Family Functioning

For analyses in which parent ratings of family problem solving and communication were the dependent variable, parent psychopathology consistently emerged as a significant or marginally significant predictor of greater parent-reported difficulties with family problem solving and communication, except in models with adolescent ratings of inhibitory control and parent ratings of family communication. Parent psychopathology was not a significant predictor of adolescent ratings of family problem solving and communication or observed family problem solving and communication.

F. Post Hoc Analyses

Because the present study involved a longitudinal design that spans ages when youth are most vulnerable to depression, we identified five healthy control youth in the present sample who experienced a mood status change between baseline and follow-up (i.e., "converters"). Additional post hoc analyses explored whether significant associations remained after removal of these five youth. With fewer degrees of freedom following the exclusion of the 5 converters, the general pattern remained the same for analyses with diagnostic group and dimensional depression severity. The relationship between adolescent self-report of inhibitory control and adolescent ratings of family communication became significant (B = .02, SE = .01, p = .02), while there was no longer a marginally significant association between performance-based inhibitory control and parent ratings of family communication (B = .42, SE = .30, p = .17).

IV. DISCUSSION

The present study is the first to investigate adolescent depression and inhibitory control as vulnerabilities for impairments in family problem solving and communication. We capitalize on multi-informant and multi-method assessments and a longitudinal design to examine associations between depression, inhibitory control, and family functioning in a demographically diverse sample of adolescents with a broad range of mood severity. The goal of the present study was to identify potentially modifiable targets for prevention and intervention that may contribute to poorer quality parent-adolescent relationships in an effort to disrupt the cascade of family processes that contribute to the maintenance of depression.

A. Associations Between Adolescent Depression and Family Functioning

Several key findings emerged from analyses exploring relationships between depression and family problem solving. Consistent with our hypothesis, we found a significant association between dimensional depression severity and adolescent ratings of family problem solving. Specifically, adolescents exhibiting more severe depression symptoms reported more unhealthy problem-solving behaviors in their families. Likewise, our results from observations of family problem solving demonstrated differences in the quality of solutions depending on the adolescent's diagnostic group; specifically, DEP youth and their parents exhibited less collaborative and effective solutions to disagreements relative to HC youth and their parents for parent-selected topics. Together, these results align with prior research indicating social problem-solving deficits among youth with depression (Nezu, 1987), which have been theorized to play a role in both the etiology and maintenance of depression. Results of the present study are also consistent with an earlier multi-informant and multi-method study that indicated reduced problem-solving behaviors among depressed adolescents and less facilitative behaviors from

depressed adolescents and their parents relative to healthy controls (Sheeber & Sorensen, 1998). Similar findings have also been demonstrated in studies with undergraduate students that found that depressed individuals generate less effective solutions as well as fewer and less-effective alternatives to interpersonal problems (Nezu & Ronan, 1987). Notably, our use of gold standard depression tools (KSADS and CDRS-R), which utilize information from multiple sources, adds support that our findings do not reflect perceptual biases associated with adolescent or parent psychopathology, concerns that have been raised in prior work (e.g., Sheeber et al., 2007).

There are several potential explanations underlying difficulties with problem solving among depressed youth and their families. First, depressed adolescents have been found to demonstrate difficulties expressing affect in appropriate ways during emotionally charged interpersonal situations, whether currently depressed or in a period of remission (Hamilton, Hammen, Minasian, & Jones, 1993). More specifically, prior research has found increased depressive behaviors during social interactions for both depressed adolescents and their mothers relative to healthy controls (Sheeber & Sorensen, 1998; Slesnick & Waldron, 1997). Thus, adolescents in the present study may have demonstrated more depressive interactional styles with their parents that hindered family problem solving. Another possibility is that conflict resolution in families of youth with greater depressive symptoms is hindered in part due to exposure to heightened family conflict among youth with clinically significant and subthreshold symptomatology (Restifo & Bögels, 2009; Sheeber et al., 2007; Sheeber et al., 2001), which has been shown to disrupt effective problem solving (Forgatch, 1989). Thus, it may be that more frequent or intense family conflict contributes to greater difficulties reaching an effective solution. Alternatively, it is possible that poor family problem solving places youth at risk for depression, which in turn maintains negative family interaction patterns.

Our results also highlighted associations between dimensional depression severity and family communication. As hypothesized, depression severity was negatively associated with observations of parent communication, and with observations of adolescent communication at the trend level. Drawing upon prior research, our results are consistent with findings that parent-adolescent communication is impaired among depressed youth and their parents. Specifically, depressed adolescents and their parents have demonstrated lower amounts of communication and reduced depth of communication, reflected in less sharing of thoughts and feelings (Puig-Antich et al., 1993). Our results replicate and extend prior research indicating significant associations between either severity of depressive symptoms (Brage & Meredith, 1994) or internalizing symptoms more broadly (Francisco et al., 2016) and poorer parent-adolescent communication using only self-report measures. Earlier work has hypothesized that disruptions in the regulation of negative affect (e.g., sadness, anger, frustration) may underlie negative communication patterns in families (Lindahl & Markman, 1990), and prior work indeed supports the presence of less effective strategies for regulating negative affect among depressed adolescents (Sheeber et al., 2000).

Moreover, our finding that adolescent depressive symptomatology was associated with worse *parent* communication can be interpreted in several ways. First, it is possible that adolescents' depressive behaviors may garner sensitivity and/or sympathy from parents that lead to abrupt disengagement from conflictual conversations, which in turn may serve to unintentionally reinforce adolescents' negative affective states (Patterson, 1982). In support of this hypothesis, one study found that mothers of depressed adolescents responded more positively to their adolescents' depressive behavior than mothers of nondepressed adolescents (Sheeber, Hops, Andrews, Alpert, & Davis, 1998). Similarly, another study found that

adolescents' depressive communication tended to suppress aversive parent communication (e.g., hostility) to a greater extent for depressed versus nondepressed youth (Slesnick & Waldron, 1997). Our use of a global coding system precluded our ability to examine parent responses to adolescents' depressive communication and behaviors; however, an event-based coding system would offer an opportunity to explore sequences of interactions in more depth in future work. On the other hand, it is also possible that parents of depressed adolescents have modeled ineffective methods for communicating in situations involving conflict (e.g., using a hostile or coercive tone, not providing clear reasoning or explanations, or failing to listen to other's viewpoints) with their children or partners (Davis, Sheeber, Hops, & Tildesley, 2000). Supporting this latter point, youth have been found to demonstrate similar communication styles as their parents during a conflict resolution task (Hamilton et al., 1993). Results from the present study also demonstrated a significant positive association between observed adolescent and parent communication, suggesting overlap in their approach to communication.

In the present study, neither diagnostic group nor dimensional depression severity were associated with parent ratings of family functioning. Likewise, associations between depression and family communication only emerged with a dimensional predictor (depression severity), not a categorical one (diagnostic group). While associations between depression and family problem solving reflected some degree of convergence between self-report and observational assessment tools, our findings also highlight differing relationships depending upon whether the predictor was categorical (DEP versus HC) or dimensional (depression severity). We speculate that heterogeneity in depression symptoms among individuals with full and subthreshold symptomatology may be contributing to the disparate findings. Specifically, qualitative differences in terms of intensity and frequency of symptoms and quantitative differences in the

number of symptoms present may contribute to a wide range of ratings on the CDRS-R. Thus, the use of a dimensional measure may provide a more sensitive measure for capturing relationships between depression and family functioning relative to categorical classification.

B. Associations Between Adolescent Executive Functioning and Family Functioning

In line with prior findings of poorer parent-adolescent relationship quality among adolescents with weaknesses in inhibitory control (Farley & Kim-Spoon, 2014), findings from the present study indicate a marginal association between adolescent ratings of inhibitory control and family communication. Specifically, adolescent-reported deficits in inhibitory control were related to adolescent reports of more unhealthy family communication. This may be in part due to difficulties effectively regulating or processing emotions, which is associated with reduced inhibitory control (Davidovich et al., 2016). Moreover, adolescents with reduced inhibitory control may exhibit a tendency to violate social rules and norms (e.g., interrupting others, blurting out responses, being quick to anger) that reduces their ability to effectively communicate with family members. Alternatively, it is possible that adolescents who are exposed to unhealthy family communication patterns are at greater risk for deficits in inhibitory control due to poor modeling of emotional and behavioral regulation skills among family members. Notably, results from post hoc analyses indicated that the relationship between adolescent-rated inhibitory control and family communication became stronger without the five HC converters, who demonstrated an inverted relationship between these variables. To our knowledge, this is the first study to demonstrate direct associations between self-report ratings of inhibitory control and family communication among a diverse sample of youth with a broad range of mood severity.

Contrary to our expectations, we did not find support for relationships between adolescent-rated inhibitory control and family problem solving. This was surprising, as

inhibitory control is critical for many aspects of social and interpersonal functioning and emerging research suggests that it may be important for creative problem solving (Cassotti, Agogue, Camarda, Houde, & Borst, 2016). One possibility for the lack of findings may be due to differences in activation of hot and cold executive functions in family interactions and conflicts. Inhibitory control can be thought of as either hot or cold depending on the context. Neutral or abstract situations are likely to evoke cold inhibitory control processes, whereas emotionally or motivationally significant situations tend to evoke hot inhibitory control processes (Zelazo & Müller, 2011). Accordingly, it has been hypothesized that hot executive functions may be more critical than cold executive functions in social interactions due to the salience of emotional information in these contexts (Fenesy & Lee, 2018). As such, it may be that the self-report measure of inhibitory control (the BRIEF self-report; Guy et al., 2004) used in the present study did not adequately capture the hot inhibitory control processes evoked during a family conflict, contributing to our non-significant findings. Based on evidence that emotional and behavioral regulation skills are distinct, an updated version of this measure—the BRIEF-2 (Gerard A. Gioia, Isquiith, Guy, & Kenworthy, 2015)—incorporates scales that assess both behavioral inhibition (Inhibit) and emotional inhibition (Emotional Control). Thus, it will be important to evaluate the influences of both hot and cold inhibitory control processes on family problem solving in future work.

Somewhat surprisingly, we also did not find strong support for relationships between performance-based inhibitory control and family problem solving and communication. While we initially found a marginally significant positive association between performance-based inhibitory control and parent ratings of family communication (contrary to predictions), the relationship became non-significant when the five HC converters were removed. Thus, it appears

that the five HC converters were driving the puzzling findings that greater inhibitory control was associated with more unhealthy family communication from the parents' perspective. No additional associations emerged from analyses involving performance-based inhibitory control and family problem solving and communication. It is possible that performance-based measures of novel inhibitory control may not translate to behavior in everyday social interactions with family members. However, it also may be that the performance-based assessment utilized in the present study may be tapping a slightly different cognitive process than that which is recruited during emotionally laden situations (e.g., hot versus cold inhibitory control). Accordingly, Schulz et al. (2007) found only moderate correlations between emotional and non-emotional go/no-go tasks, suggesting some degree of divergence in cognitive processes when responding to emotionally-charged versus neutral information. Family communication and problem solving are likely to evoke the need for behavioral inhibition and emotion regulation, and thus may demonstrate stronger associations with tasks that elicit similar cognitive processes. An alternative hypothesis is that a two-target inhibitory control paradigm may not fully model the complexity of family interactions. However, neither did a more challenging inhibitory control probe (three-target) relate to family functioning when explored *a posteriori* in the subset of this sample (n = 35) with available data (not shown), lending further credence to the possibility that the intersection of inhibition and emotion may be particularly important to capture in the measurement of family problem solving and communication. Further work should assess an *emotional* go/no-go task as well as broader affective cognition and perception in relation to family problem solving and communication. Moreover, given evidence that processing of emotional information affects performance on behavioral measures of inhibitory control among depressed youth (Ladouceur et al., 2006), it will also be important to include interactions of

depression and inhibitory control in future studies exploring relationships with family problem solving and communication.

Finally, it is worth noting that we did not find a significant correlation between performance-based and adolescent self-report measures of inhibitory control. Our finding is consistent with prior research indicating low correlations between self-report and performance-based assessments of impulsiveness in youth (White et al., 1994) and college students (Reynolds, Ortengren, Richards, & de Wit, 2006; Schulz et al., 2007). These findings suggest that there may be important distinctions between self-report and behavioral measures of inhibitory control. It has been posited that individuals may be biased in their perceptions of their own inhibitory control (Reynolds et al., 2006), thereby affecting adolescents' responses on self-report measures. Also, performance-based assessments may be tapping very specific aspects of behavioral control, while self-report measures may reflect a more global index of behavioral control that generalizes across a wide array of contexts (Reynolds et al., 2006). Finally, it may be that these two types of measures tap into overlapping, but distinct aspects of a multifaceted construct of impulsivity (Evenden, 1999).

C. Associations Between Parent Psychopathology and Family Functioning

Drawing upon earlier research indicating that parent psychopathology plays a role in family interactions (e.g., Slesnick & Waldron, 1997), we examined the unique contribution of parent psychopathology to family problem solving and communication. It was notable that parent psychopathology only contributed to the prediction of parent ratings, not adolescent ratings or observations of family problem solving and communication. This may relate to parents having more insight into the ways in which their psychiatric symptoms contribute to their negative perceptions of family problem solving and communication. However, we did not find

significant associations between parent psychopathology and observations of family problem solving and communication in the present study, raising the possibility that parents own ratings may reflect mood- or symptom- congruent parental biases that contribute to negative views of family dynamics (Sheeber et al., 2007). It is also possible that these associations emerged due to source variance as parents rated both their psychological symptoms and perceptions of family functioning.

D. Correlations Among Assessments of Family Functioning

Examination of correlations among measures of family functioning revealed significant positive associations for family problem solving and communication, suggesting that these constructs are highly related but separable. These results are not all that surprising, as effective communication is thought to directly contribute to interpersonal problem solving, and in turn relationship quality (Sillars, Canary, & Tafoya, 2004). Notably, a positive relationship between family problem solving and communication emerged within informants, but not between informants, with the exception of a negative association between adolescent ratings of family problem solving and observations of parent communication. Within the broader literature on cross-informant discrepancies in youth functioning, our findings are consistent with meta-analyses demonstrating only modest correlations for observational and parent assessments (r = .27) and for parent and self-report assessments (r = .25) of youth functioning (Achenbach, McConaughy, & Howell, 1987). There is also mounting evidence that agreement between raters tends to fall within the low to moderate range for different aspects of family functioning as well (De Los Reyes & Ohannessian, 2016). Prior work suggests that informant discrepancies are not simply a reflection of measurement error, but rather they provide meaningful information regarding youth behavior and functioning (De Los Reyes, 2011; De Los Reyes & Kazdin, 2005).

The lack of agreement between informants may reflect true discrepancies in youths' behavior across contexts (De Los Reyes & Kazdin, 2004) and the differing perspectives and attributions of each informant (De Los Reyes & Kazdin, 2005). Thus, our findings of low to moderate correlations for family problem solving and communication across informants and methods are expected (Achenbach et al., 1987; De Los Reyes et al., 2015; De Los Reyes & Ohannessian, 2016). Our findings highlight the need to assess multiple informants to capture the complex dynamics of family communication, which is a strength of the present study.

E. Diversity and Family Functioning

Another significant strength of our study is the inclusion of a racially and ethnically diverse sample of adolescents. This study is part of a growing body of literature examining links between adolescent depression and family/parenting variables among racially and ethnically diverse families using multi-informant and multi-method assessments. We extend prior work by including novel domains of family functioning—problem solving and communication—that, to our knowledge, have yet to be explored in relation to depression in a diverse sample of youth. The diversity of the sample increases the generalizability of our findings. At the same time, this diversity increases within-sample heterogeneity and indeed we found evidence of some racial differences in family communication patterns when comparing Whites to African Americans. Specifically, White adolescents and parents reported more unhealthy family communication patterns in their families than African Americans. In contrast, observations of parent communication indicated better communication among White parents relative to African American parents, but no differences in communication were observed between White and African American adolescents. Perhaps the racial differences in family communication are related to cultural differences in parenting and communication styles. Alternatively, it may be

that socioeconomic disparities impact how White versus African American families weigh and perceive difficulties with family communication relative to other life stressors. Finally, the variability in observations of parent communication may reflect subtle biases among coders that emerge out of a mismatch between coder race/ethnicity and the race/ethnicity of the family that they rated. Earlier work that has directly examined the effects of coder race/ethnicity relative to family ethnicity has shown that non-African American coders rated parent-adolescent interactions among African American families as more controlling and critical than African American coders (Gonzales, Cauce, & Mason, 1996). While the current study cannot directly test such hypotheses, it will be important to examine the role of race in the context of depression and family functioning in future work.

F. Limitations

Findings from the present study should be interpreted within the context of study limitations. First, given the small sample size and the exploratory nature of this study, we did not correct for the total number of models tested. Accordingly, results will need to be replicated in a larger sample. Second, as family variables were not measured at the baseline assessment, inferences about causality cannot be made and future studies with prospective, longitudinal designs are warranted. Third, a challenge of longitudinal research involves finding measurement tools that can be utilized across different developmental stages. To preserve consistency of measurement across participants, we continued with the same measures beyond the standardized age, which is an approach that has been used in other longitudinal research with depressed adolescents (Brenner et al., 2015). Fourth, for the present study, we chose to focus on two aspects of family functioning with theoretical support for interrelationships between depression, inhibitory control, and family functioning. However, there are many other important family and

parenting variables that were not examined in the present study, such as parental warmth/support, parental control, parental discipline and monitoring, as well as family cohesion, family adaptability and parent-child relationship quality. Fifth, given the broad depression phenotype and ethnic and racial diversity of the sample, there is likely substantial individual heterogeneity in terms of clinical presentation, demographic, and cultural factors that we could not fully model in the current sample. Finally, we did not have the power to test interactions of adolescent depression and inhibitory control on family functioning. It will be important to explore the additive and interactive effects of adolescent depression and executive functioning on family functioning in future work.

G. Conclusions and Future Directions

The present study is the first study to investigate associations between adolescent depression, inhibitory control, and family functioning in a diverse sample of youth with a broad range of depression severity. Results from the present study highlight that adolescent depression was associated with deficits in family problem solving and communication and impairments in inhibitory control were associated with deficits in family communication. Further, findings highlight the value of multi-informant and multi-method assessments in gaining a more comprehensive understanding of family dynamics. Finally, we found evidence for racial differences in perceptions and observations of family communication.

The present study draws upon a larger theoretical framework that emphasizes the reciprocal and transactional nature of relationships among depression, executive functioning and family functioning, reflecting that adolescent and family variables may be part of a feedback loop that mutually reinforce each other and interact longitudinally over the course of development (Restifo & Bögels, 2009). While directionality of these relationships will require

testing in future studies using prospective longitudinal designs and a larger sample of demographically diverse youth, the current study contributes important preliminary data regarding the role of depression and inhibitory control on family functioning.

This line of research has substantial clinical implications for how to target cognitive and family systems through prevention and intervention efforts. Results from the present study highlight the need for early detection and intervention efforts that address adolescent affective and cognitive processes to prevent the deleterious consequences of negative family interactions. It may be particularly important to implement individual and family-based social problem solving and communication interventions in youth "at risk" for depression. In addition, our work suggests that modifications to existing psychosocial treatments for adolescent depression that target inhibitory control and family vulnerabilities in problem solving and communication may reduce the psychosocial burden associated with adolescent depression and also lead to healthier and more adaptive family interactions.

Additionally, our results underscore the importance of incorporating family members into evidence-based treatments for adolescent depression to enhance family problem solving and communication. Surprisingly, despite robust evidence that family interactions are implicated in the onset and course of adolescent depression (Birmaher & Brent, 2007), few family-based interventions have been developed and empirically tested for the treatment of adolescent depression (Restifo & Bögels, 2009). At this time, Systemic Behavior Family Therapy (SBFT; Birmaher et al., 2000; Brent et al., 1997) and Attachment Based Family Therapy (ABFT; G. S. Diamond, Reis, Diamond, Siqueland, & Isaacs, 2002) are two promising standalone family therapies for youth with depression. In addition, adjunctive parent or family components have been incorporated into individual and group treatments with success, including the Treatment of

Adolescent Depression Study (TADS; March et al., 2004), the Coping with Depression course (Clarke, Rohde, Lewinsohn, Hops, & Seeley, 1999; Lewinsohn, Clarke, Hops, & Andrews, 1990), and adjunctive family psychoeducation with treatment as usual (Sanford et al., 2006). Notably, several of these programs already incorporate modules that target improvement of family problem solving and communication skills.

As a final point, future work is needed to determine whether family-based interventions for depressed youth that directly target family problem solving and communication yield long-term changes in family functioning over time as we know problem solving and communication are critical life skills, and may also be essential for sustained remission. In addition, it will be important to explore whether adolescents' response to family-based interventions differs based on the severity of mood symptomatology, executive dysfunction, and/or family dysfunction, which may emerge as important moderators of treatment response. Finally, future work should explore the additive, interactive, and transactional effects of multiple risk factors (e.g., depression, inhibitory control, family dysfunction) on adolescent trajectories in order to contribute to the most accurate, personalized, and effective treatment approaches.

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Zelazo, P. D., & Müller, U. (2011). Executive function in typical and atypical development. In U. Goswami (Ed.), *The wiley-blackwell handbook of childhood cognitive development, second edition* (pp. 574-603): Wiley Blackwell.

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VITA

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EDUCATION AND TRAINING

University of Minnesota Medical Center, Minneapolis, MN 2019-2020
Predoctoral Internship in Clinical Psychology, APA Accredited
Pediatric Neuropsychology-Child & Adolescent Psychiatry Track

University of Illinois at Chicago, Chicago, IL 2014-2020
Doctoral Program in Clinical Psychology, APA Accredited
Master of Arts, 2016
Doctor of Philosophy, 2020

Northwestern University, Evanston, IL 2006-2009
Bachelor of Arts in Psychology, Spanish Minor
Graduated with Departmental Honors in Psychology

University of Illinois at Urbana-Champaign, Champaign, IL 2005-2006

HONORS & AWARDS

Travel Awards
- *UIC Psychology Department* ($600-$800) 2015, 2016, 2018, 2019, 2020
- *UIC Student Presenter Award* ($100) 2017, 2018
- *UIC Graduate Student Council* ($275) 2016, 2018

Elsie Ramos Memorial Student Poster Award, *ABCT* 2016
Edith Dillon Decker Award, *Alpha Phi Sorority* ($10,000) 2008

GRANTS & FELLOWSHIPS

University of Illinois at Chicago 2016
Chancellor's Graduate Research Award ($5,000)
Faculty Sponsor: Amy West, Ph.D.
- Title: "Executive Functioning, Life Stress, and Family Functioning in Adolescent Mood Disorders: An Integrated, Longitudinal, Multi-Informant, and Multi-Method Approach"
- Received support to collect follow-up assessment for dissertation

Northwestern University 2008
Benton J. Underwood Summer Research Fellowship ($3,000)
Faculty Sponsor: Dedre Gentner, Ph.D.
- Title: "Rapid Spatial Learning in an Informal Educational Setting through Analogical Comparison"
- Received support to collect data at the Chicago Children's Museum for senior honors thesis

PEER-REVIEWED PUBLICATIONS

1. Roy, A.L., **Isaia, A.R.,** & Li-Grining, C.P. (2019). Making meaning from money: Subjective social status and young children's behavior problems. *Journal of Family Psychology, 33*(2), 240-245. doi: 10.1037/fam0000487.

2. Shah, R., **Isaia, A.R.,** Schwartz, A, & Atkins, M. (2019). Encouraging parenting behaviors that promote early childhood development among caregivers from low-income urban communities: A randomized static group comparison trial of a primary care-based parenting program. *Maternal and Child Health Journal, 23*(1), 39-46. doi: 10.1007/s10995-018-2589-8.

3. **Isaia, A.R.,** Weinstein, S.M., Shankman, S.A., & West, A.E. (2018). Predictors of dropout in family-based psychosocial treatment for pediatric bipolar disorder: An exploratory study. *Journal of Child and Family Studies, 27*(9), 2901-2917. doi: 10.1007/s10826-018-1126-0.

4. Peters, A.T., Weinstein, S.M., **Isaia, A.R.,** Van Meter, A., Zulauf, C.A., Henry, D.N., & West, A.E. (2018). Symptom dimensions and trajectories of functioning among bipolar youth: A cluster analysis. *Journal of Psychiatric Practice*, *24*(3), 146-157.

5. Weinstein, S.M., Cruz, R.A., **Isaia, A.R.**, Peters, A.T., & West, A.E. (2018). Child- and family-focused cognitive behavioral therapy for pediatric bipolar disorder: Applications for suicide prevention. *Suicide and Life-Threatening Behavior, 48*(6), 797-811. doi: 10.1111/sltb.12416.

6. Gentner, D., Levine, S.C., Ping, R., **Isaia, A.R.,** Dhillon, S., Bradley, C. & Honke, G. (2016). Rapid learning in a children's museum via analogical comparison. *Cognitive Science, 40,* 224–240. doi: 10.1111/cogs.12248.

7. Vrshek-Schallhorn, S., Wolitzky-Taylor, K., Doane, L.D., Epstein, A., Sumner, J.A., Mineka, S., Zinbarg, R.E., Craske, M.G., **Isaia, A.R.**, Hammen, C., & Adam, E.K. (2014). Validating new summary indices for the Childhood Trauma Interview: Associations with first onsets of major depressive disorder and anxiety disorders. *Psychological Assessment*, *26*(3), 730–740. doi:10.1037/a0036842.

BOOK CHAPTERS

1. Weinstein, S.M., **Isaia, A.R.**, & West, A.E. (2018). Bipolar spectrum. In S. Hupp (Ed.), *Child & adolescent psychotherapy: Components of evidence-based treatments for youth and their parents* (pp. 120-136). New York, NY: Cambridge University Press.

PUBLICATIONS UNDER REVISION

1. Roy, A.L., **Isaia, A.R.,** DaViera, A., Eisenberg, Y., & Poulos, C. (Under revision). Redefining exposure: Using mobile technology to explore when and where Chicago adolescents are exposed to neighborhood characteristics.

PUBLICATIONS IN PREPARATION

1. Roy, A.L., **Isaia, A.R.,** & Bessette, K.L. (In preparation). Emotion regulation and daily variability in positive mood among low-income, racial/ethnic minority youth.

2. **Isaia, A.R.**, Roy, A.L., & West, A.E. (In preparation). Parenting young children in poverty: Implications for children's socioemotional development.

INVITED TALKS

1. **Isaia, A.R.,** Bessette, K. & Roy, A. (2018, April). *Emotion regulation and youths' daily variability in positive mood.* Invited talk at the Division H Vice Presidential Session "Chicago School Readiness Project: Tracking low-income youth from early childhood through adolescence." Presented at the 2018 Annual Meeting of the American Educational Research Association in New York, NY.

2. **Isaia, A.R.** (2016, August). *Pediatric Bipolar Disorder: Diagnosis, assessment, and treatment.* Invited talk delivered to the Department of Pediatrics at the University of Illinois at Chicago, Chicago, IL.

CONFERENCE SYMPOSIA

1. Chou, T., Ramos, G., Bufka, L., DeRosier, M., Frazier, S.L., **Isaia, A.R.,** & Kia-Keating, M. (2018, November). *Ethics and policy in technology-based research.* Panel discussion at the 52nd annual meeting of the Association for Behavioral and Cognitive Therapies, Washington, D.C.

2. **Isaia, A.R.** & Roy, A. (2017, April). *Stuck in a rut? Exploring patterns of poverty-related risks and children's development over time.* Talk at symposium "Economic disadvantage in context: Variation in family and community processes" presented at the 2017 Meeting of the Society for Research in Child Development, Austin, TX.

3. Peters, A.T., Weinstein, S.M., **Isaia, A.R.**, Van Meter, A., Henry, D.B, & West, A.E. (2016, July). *Symptom dimensions and trajectories of functioning among bipolar youth: A cluster analysis.* Talk at Samuel Gershon Junior Investigator Award Panel presented at the 2016 Meeting of the International Society for Bipolar Disorders, Amsterdam, The Netherlands.

4. Gentner, D., Levine, S., Dhillon, S., & **Poltermann, A.R.** (2009, July). *Using structural alignment to facilitate learning of spatial concepts in an informal setting.* In B. Kokinov, K. Holyoak & D. Gentner (Eds.) New Frontiers in Analogy Research: Proceedings of the Second International Conference on Analogy. Sofia, Bulgaria.

CONFERENCE PRESENTATIONS

1. **Isaia, A.R.,** Peters, A.T., Weinstein, S.M., Langenecker, S.A., Bessette, K.L., & West, A.E. (2020, February). *Executive functioning and family functioning in adolescents with a broad range of mood severity.* Poster presented at the 2020 meeting of the International Neuropsychological Society, Denver, CO.

2. Hovinen, H.R., **Isaia, A.R.,** Peters, A.T., Weinstein, S.M., Langenecker, S.A., & West, A.E. (2019, April). *Cross-informant agreement in adolescent depression: Correlations among adolescent and parent-reported symptoms of depression.* Poster presented at the 2019 UIC Impact and Research Day, Chicago, IL.

3. Shah, R., **Isaia, A.R.,** Glassgow, A.E. Atkins, M., & Martin, M. (2019, April). *Preschool enrollment in vulnerable populations: Findings from the Coordinated Healthcare for Complex Kids (CHECK) study.* Poster presented at the 2019 meeting of the Pediatric Academic Societies, Baltimore, MD.

4. Shah, R., **Isaia, A.R.,** Msall, M., Atkins, M., & Schwartz, A. (2019, April). *Social determinants of health also determine pre-school enrollment.* Poster presented at the 2019 meeting of the Pediatric Academic Societies, Baltimore, MD.

5. **Isaia, A.R.,** Bessette, K.L., & Roy, A.L. (2018, November). *Emotion regulation predicts variability in positive mood in urban adolescents.* Poster accepted for the 52nd annual convention of the Association for Behavioral and Cognitive Therapies, Washington, D.C.

6. **Isaia, A.R.** & Heideman, E. (2018, June). *Emotion regulation and social skill deficits in a clinical sample of youth with internalizing and externalizing disorders.* Poster presented at the 16th annual conference of the American Academy of Clinical Neuropsychology, San Diego, CA.

7. Shah, R., **Isaia, A.R.,** Schwartz, A., & Atkins, M.S. (2018, May). *Accessible and sustainable models to reduce poverty-related educational disparities: A case for utilizing the primary care setting to encourage positive parenting behaviors.* Poster presented at the 2018 annual meeting of the Pediatric Academic Societies, Toronto, Canada.

8. **Isaia, A.R.,** Bessette, K., & Roy, A. (2018, April). *Emotion regulation and adolescents' daily mood variability.* Poster presented at the 17th Biennial Meeting of the Society for Research on Adolescence, Minneapolis, MN.

9. Shah, R., **Isaia, A.R.,** Schwartz, A., & Atkins, M.S. (2017, December). *Accessible and sustainable models to reduce poverty-related educational disparities: A case for utilizing the primary care setting to encourage positive parenting behaviors.* Poster presented at the 10th annual conference on the Science of Dissemination and Implementation in Health, Arlington, VA.

10. Shah, R., **Isaia, A.R.**, Schwartz, A., & Atkins, M.S. (2017, October). *Sit Down and Play: A primary care-based program to enhance parenting practices in children from low-income families*. Poster presented at the 2017 annual meeting of the Society for Developmental and Behavioral Pediatrics, Cleveland, OH.

11. **Isaia, A.R.**, Weinstein, S.M., & West, A.E. (2016, October). *Family predictors of risk of dropout in family-based psychosocial treatment for pediatric bipolar disorder.* Poster presented at the 63rd annual meeting of American Academy of Child and Adolescent Psychiatry, New York, NY.

12. **Isaia, A.R.**, Weinstein, S.M., & West, A.E. (2016, October). *Predictors of pre-treatment dropout among youth in family-based psychosocial treatment for pediatric bipolar disorder.* Poster presented at the 50th annual convention of the Association for Behavioral and Cognitive Therapies, New York, NY.

13. **Isaia, A.R.** & West, A.E. (2016, May). *Parent predictors of risk of dropout in family-based psychosocial treatment for pediatric bipolar disorder.* Poster presented at the 28th annual convention of the Association for Psychological Science, Chicago, IL.

14. **Isaia, A.R.,** Peters, A.T., & West, A.E. (2015, November). *Mood symptoms, parental stress, and engagement in psychosocial treatment for pediatric bipolar disorder*. Poster presented at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.

15. Peters, A.T., Shankman, S.A., **Isaia, A.R.**, Deckersbach, T., & West, A.E. (2015, November). *Predictors of escalation from sub-threshold mania to first-episode bipolar disorder: A prospective, population-based study.* Poster presented at the 49th annual convention of the Association for Behavioral and Cognitive Therapies, Chicago, IL.

16. Weinstein, S.M., Cruz, R., Katz, A., **Isaia, A.R.,** Peters, A., & West, A.E. (2015, October). *Family-based psychosocial treatment for suicide prevention in pediatric bipolar disorder (PBD).* Poster presented at the 2015 IASR/AFSP International Summit on Suicide Research, New York, NY.

17. **Isaia, A.R.,** Peters, A.T., & West, A.E. (2015, September). *Depression and mania symptoms, parent stress, and engagement in psychosocial treatment for pediatric bipolar disorder*. Poster presented at the 2015 Annual University of Illinois at Chicago Psychiatry Research Forum, Chicago, IL.

18. **Poltermann, A.R.,** Vrshek-Schallhorn, S., Mineka, S., Zinbarg R.E., & Craske, M.G. (2010, November). *Differential associations of six forms of childhood adversity with cognitive vulnerability to depression.* Poster presented at the 44th annual convention of the Association for Behavioral and Cognitive Therapies, San Francisco, CA.

19. Gentner, D., Levine, S., Dhillon, S., & **Poltermann, A.R.** (2009, October). *Using structural alignment to facilitate learning of spatial concepts in an informal setting.* Poster presented at the 6th biennial meeting of the Cognitive Development Society, San Antonio, TX.

20. Wilson, S., Durbin, C.E., Nagendra, A., Appelbaum, A., **Poltermann**, **A.R.,** & Shishido, Y. (2009, September). *Differential effects of depressive, anxiety, and substance-use disorders on the parent-child relationship*. Poster presented at the 23rd annual meeting of the Society for Research in Psychopathology, Minneapolis, MN.

21. **Poltermann, A.R.,** & Gentner, D. (2009, May). *Rapid spatial learning in an informal education setting through analogical comparison*. Poster presented at the Northwestern University Undergraduate Research Symposium, Evanston, IL.

DIDACTIC LECTURES

1. **Isaia, A.R.** (2019, September). *Neuropsychological functioning in childhood adrenoleukodystrophy (ALD): Early indicators of cerebral disease.* Invited talk delivered at the University of Minnesota Medical Center, Minneapolis, MN.

2. **Isaia, A.R.** (2018, May). *Learning with dyslexia.* Invited talk delivered at NorthShore University HealthSystem in Evanston, IL.

3. **Isaia, A.R.** (2016, November). *Parent, child, and family predictors of dropout in psychosocial treatment for pediatric bipolar disorder.* Invited talk delivered at the University of Illinois at Chicago, Chicago, IL.

EDITORIAL EXPERIENCE

Ad-Hoc Reviewer, *Journal of Family Psychology* (with Amanda Roy, Ph.D.) 2018

RESEARCH EXPERIENCE

Pediatric Intervention Research in Affect Dysregulation and Mood Disorders 2014-2020
Graduate Research Assistant, UIC Institute for Juvenile Research
Principal Investigators: Amy West, Ph.D. & Sally Weinstein, Ph.D.

- Dissertation: "Depression and Executive Functioning in Adolescence: Implications for Family Functioning and Course of Illness"
    - Led dissertation study examining whether executive dysfunction is predictive of familial dysfunction among an ethnically/racially diverse sample of adolescents with mood disorders
    - Collected standardized neuropsychological assessments, clinical interviews, observations of family disagreements, and parent and self-reports of emotional and family functioning
    - Supervised a team of 3 undergraduate research assistants
    - Awarded the UIC Chancellor's Graduate Research Award
- Master's Thesis: "Predictors of Dropout in Family-Based Psychosocial Treatment for Pediatric Bipolar Disorder: An Exploratory Study"
    - Explored the impact of modifiable parent, child, and family characteristics (e.g., parent stress, family coping, child symptoms) and stable demographic characteristics (e.g., family income, ethnic minority status) on dropout among youth and families participating in a randomized clinical trial comparing a manualized family-based psychotherapy for pediatric bipolar disorder (CFF-CBT) versus treatment as usual (TAU)
    - Awarded the Elsie Ramos Memorial Student Poster Award from the Association for Behavioral and Cognitive Therapies
- Recruited study participants and coordinated appointments for a final assessment of a randomized clinical trial of CFF-CBT
- Responsible for Institutional Review Board correspondence
- Edited and compiled materials for publication of a treatment manual for the Treatments That Work series; co-wrote book chapter and manuscripts; researched and wrote material for grant submissions

Multidimensional Assessment of Preschool Disruptive Behavior Follow-Up Study 2018-2019
Master Coder, Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University
Principal Investigator: Lauren S. Wakschlag, Ph.D.

- Performed observational coding of parent-child interactions of a family discussion activity, Family Talk, using the Iowa Family Interaction Rating Scales for a longitudinal study investigating developmentally-sensitive markers of atypical irritability and callous traits
- Developed training materials, including gold standard videos, coding sheets, and coding resources
- Trained and supervised undergraduate research assistants
- Supervised reliability and consensus meetings

Sit Down and Play 2016-2019
Project Manager, University of Illinois at Chicago, Department of Pediatrics
Principal Investigator: Reshma Shah, M.D.

- Managed multiple intervention studies and focus groups for a brief primary care-based intervention, Sit Down and Play, designed to support positive parenting behaviors and promote early childhood development in 2 to 24-month-old children
- Developed study protocols and procedures; trained undergraduate and graduate research assistants on intervention delivery and study procedures
- Supervised data collection and management; programed online surveys; conducted analyses; developed manuscripts
- Recruited participants and deliver a play-based intervention to parents during well-child visits in a hospital-based pediatric clinic that serves ethnically and racially diverse, low-income families; completed phone assessments and observational assessments

Environment, Development, & Health Lab 2015-2018
Graduate Research Assistant, University of Illinois at Chicago, Department of Psychology
Principal Investigator: Amanda Roy, Ph.D.

- Preliminary Examination: "Parenting Young Children in Poverty: Implications for Children's Socioemotional Trajectories"
    - Using cluster analysis, explored the extent to which particular combinations of parenting characteristics contribute to children's internalizing and externalizing behaviors from preschool through 5th grade in a sample of low-income, predominantly racial/ethnic minority families enrolled in the Chicago School Readiness Project (CSRP), a longitudinal socioemotional intervention trial implemented in Chicago Head Start sites
- Managed data collection efforts for multiple community-based research studies utilizing intensive longitudinal data collection approaches to examine how environmental risks (e.g. poverty, crime) and protections (e.g. organizational resources, community engagement) can influence youth psychological and physical health and development
- Designed research protocols; developed study manuals; managed Institutional Review Board correspondence
- Administered computer-based neuropsychological assessments; programed and monitored ecological momentary assessments, geotracking devices, dosimeters, and actigraphs
- Conducted detailed interviews of participant travel patterns and activity using ArcGIS mapping tools
- Supervised, mentored, and trained undergraduate research assistants
- Performed data analyses; developed manuscripts; disseminated research findings at national conferences

Brain Motivation and Personality Development Project 2015
Independent Evaluator, Northwestern University, Department of Psychology
Principal Investigators: Robin Nusslock, Ph.D. (Northwestern), Richard Zinbarg, Ph.D. (Northwestern), Michelle Craske, Ph.D. (UCLA), & Susan Bookheimer, Ph.D. (UCLA)

- Administered the Structured Clinical Interview for DSM-V Disorders (SCID-5) for a study of changes in the brain and emotional well-being of adolescents and young adults
- Assigned diagnoses and provided dimensional ratings of psychological symptoms
- Presented individual cases at weekly case conferences

The Project on Children's Thinking 2012-2014
Developmental Lab Manager, Spatial Intelligence and Learning Center, Northwestern University
Principal Investigator: Dedre Gentner, Ph.D.

- Independently managed daily lab operations for a cognitive development lab investigating the development of children's language, thought, and spatial reasoning; coordinated all research studies, ran experiments, and supervised data collection; maintained participant databases and records; ensured compliance with Institutional Review Board policies and procedures
- Recruited and retained participants for child development studies at onsite locations; developed and maintained relationships with preschool administrators for offsite data collection; generated and implemented new recruitment and retention strategies; designed advertising materials
- Hired, trained, supervised, and evaluated research staff

Northwestern-UCLA Youth Emotion Project 2009-2011
Project Coordinator, Northwestern University, Department of Psychology
Principal Investigators: Susan Mineka, Ph.D. (Northwestern), Richard Zinbarg, Ph.D. (Northwestern), & Michelle Craske, Ph.D. (UCLA)

- Coordinated the Northwestern site of a two-site NIMH R01 study of risk and protective factors for mood and anxiety disorders in young adults; supervised undergraduate research assistants; scheduled participants; processed data prior to analysis; coordinated with researchers at the UCLA research site; assisted in compiling annual and triannual NIMH grant reports
- Conducted the Life Stress Interview (LSI) and the Structured Clinical Interview for DSM-IV (SCID) (N=184 of each); assigned chronic life stress ratings for LSIs and diagnoses for SCIDs; presented individual cases twice weekly at case supervision meetings
- Completed reliability assessments for clinical interviews to maintain within-site and cross-site consistency

The Project on Children's Thinking 2008-2009
Thesis Student/Research Assistant, Spatial Intelligence and Learning Center, Northwestern University
Principal Investigator: Dedre Gentner, Ph.D.

- Honors Thesis: "Rapid Spatial Learning in an Informal Educational Setting through Analogical Comparison"
    - Designed thesis study; managed participant recruitment; conducted experiments; coordinated data collection; conducted analyses; prepared manuscripts
    - Designed a video coding system to examine child and parent's use of spatial actions (e.g., diagonal, vertical, or horizontal placement) during a family construction activity at The Chicago Children's Museum; developed an instruction manual for coding; operationally defined spatial actions; trained independent coders; transcribed audio recordings
- Recruited new families for laboratory studies; ran experiments; maintained participant records

Study of Temperamental and Family Environmental Risk for Internalizing Disorders 2008-2009
Independent Coder, Northwestern University, Department of Psychology
Principal Investigator: Emily Durbin, Ph.D.

- Coded videos of parents and children interacting during play activities
- Recommended guidelines to make coding more efficient and reliable
- Attended weekly reliability meetings

PREDOCTORAL INTERNSHIP

University of Minnesota Medical Center, Minneapolis, MN 2019-2020
Predoctoral Internship in Clinical Psychology, APA Accredited

Pediatric Neuropsychology Rotation (July 2019 – December 2019)

Pediatric Neuropsychology Clinic 2019
Supervisors: Margaret Semrud-Clikeman, Ph.D., ABPdN, Richard Ziegler, Ph.D., Julie Eisengart, Ph.D., Kelly King, Ph.D., ABPP-CN, Alicia Kunin-Batson, Ph.D., & Elizabeth (Rene) Pierpont, Ph.D.

- Conducted three weekly neuropsychological evaluations (selection of tests, interview, test administration and scoring, feedback to families, integrated report writing); primary referrals involve infants through young adults with medical and neurological conditions, and academic, emotional, and/or behavioral difficulties; cases included: neurofibromatosis type 1 (NF1), neurodegenerative genetic disorders (e.g., adrenoleukodystrophy (ALD), mucopolysaccharidosis (MPS), Tay Sachs, etc.), pre- and post-hematopoietic stem cell transplant assessments (e.g., acute lymphoblastic leukemia (ALL), acute myeloid leukemia, Fanconi anemia, etc.), fetal alcohol spectrum disorders (FASD), learning disability, developmental delays/intellectual disability, attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), and neuropsychiatric disorders (depression, anxiety, oppositional defiant disorder)
- Consulted with outside providers and community agencies as appropriate
- Attended weekly staffing and didactics

Pediatric Psychology Program 2019
Supervisors: Christopher Boys, Ph.D. & Amy Gross, Ph.D., BCBA

- Provided weekly or biweekly outpatient psychotherapy for a small caseload of children and adolescents referred from pediatric clinics including weight management and hematology/oncology
- Provide CBT-based interventions to address depression, anxiety, and behavior management

Child and Adolescent Psychiatry Rotation (January 2020 – June 2020)

Neuropsychology Clinic for Child and Adolescent Psychiatry 2020
Supervisor: Jeffrey Wozniak, Ph.D.

- Conduct outpatient pediatric neuropsychological assessments (including selection of tests, interviewing, test administration and scoring, feedback to families, integrated report writing); primary referrals involve children with medical and neurological conditions, and academic, emotional, and/or behavioral difficulties; cases will include: neurodevelopmental disorders, brain injury, toxic exposure (alcohol, lead), psychotic disorders, and learning difficulties
- Will supervise practicum student

Anxiety and Mood Disorders Clinic 2020
Supervisors: Alexandra Zagoloff, Ph.D. & Gail Bernstein, M.D.

- Will conduct structured outpatient diagnostic interviews (including test administration, scoring, and report writing) for children, adolescents, and young adults with primary presenting concerns of anxiety and/or mood difficulties
- Patients may subsequently be seen following initial evaluation for CBT, IPT, and/or parent-child interventions

Early Childhood Clinic 2020
Supervisor: Katherine Lingras, Ph.D.

- Will provide psychological services to young children (ages 0-6) and their families, including diagnostic evaluations, parent-child therapy, and parenting groups

Dialectical Behavior Therapy (DBT) Clinic 2020
Supervisor: Helen Valenstein-Mah, Ph.D. & Merav Silverman, Ph.D.

- Will conduct comprehensive diagnostic assessments with a focus on personality (including clinical interviewing, test administration and scoring, and report writing) for adolescents through adults to determine appropriateness for DBT. Will co-lead a weekly multi-family DBT skills group for adolescents and their caregivers as part of a full-model outpatient DBT program

NEUROPSYCHOLOGICAL ASSSESSMENT EXPERIENCE

Pediatric and Adolescent Neuropsychological Services 2017-2019
Psychometrician (2018-2019) & Pediatric Neuropsychology Extern (2017-2018), NorthShore University HealthSystem/University of Chicago Pritzker School of Medicine
Supervisors: Elizabeth Heideman, Ph.D., ABPP & Victoria Tuchscherer, Ph.D.

- Performed neuropsychological assessments with children and adolescents (ages 4-18) addressing referral questions related to autism, learning disorders, attention-deficit/hyperactivity disorder, epilepsy, developmental delay, and cognitive impairments
- Interviewed patients and family members; consulted with schools and other treatment providers
- Selected, administered, scored, and interpreted results; wrote integrated neuropsychological assessment reports and developed empirically supported recommendations relevant to home, school, and medical settings
- Communicated results to patients and families
- Attended bi-weekly didactic trainings related to neuropsychology, neurology, and neuroanatomy, including a brain cutting observation
- Observed and trained practicum students to administer neuropsychological assessments

Pediatric Neuropsychology Clinic 2018
Psychometrician, University of Illinois at Chicago, IL
Supervisor: Lea Ventura, Ph.D.

- Performed neuropsychological and neurodevelopmental assessments with infants, children, adolescents, and young adults (ages 1 – 21) referred from outpatient and inpatient clinics and local schools
- Addressed referral questions related to brain tumor, sickle cell, stroke, epilepsy, concussion/TBI, anxiety, depression, OCD/PANDAS, Tourette syndrome, genetic disorders and developmental disorders
- Administered and scored neuropsychological assessments
- Prepared data summary sheets
- Observed and trained neuropsychological technician to administer neuropsychological assessments

Practicum in Psychological Assessment 2015-2017
Clinical Practicum Student, Office of Applied Psychological Services
Supervisors: Nancy Dassoff, Ph.D. & Amanda Lorenz, Ph.D.

- Conducted neuropsychological and psychodiagnostic assessments with a diverse population of children, adolescents, and adults (school-age children to older adults) referred for learning disorders, intellectual disability, attention-deficit/hyperactivity disorder, psychotic symptoms, and disruptive behaviors
- Interviewed patients and family members; selected and administered neuropsychological test batteries; scored and interpreted test results; wrote comprehensive psychological reports with tailored recommendations for home and school settings
- Communicated findings to patients and families
- Attended an Individualized Education Program meeting and advocated on child's behalf

PSYCHOTHERAPY EXPERIENCE

Pediatric Mood Disorders Clinic 2016-2017
Psychology Extern, UIC Colbeth Clinic and Institute for Juvenile Research
Supervisors: Amy West, Ph.D. & Sally Weinstein, Ph.D.

- Administered semi-structured clinical interviews, developed biopsychosocial case conceptualizations, developed treatment plans, and delivered evidence-based psychotherapy interventions incorporating techniques from Cognitive Behavioral Therapy, Family-Focused Therapy, Parent Management Training, Interpersonal Psychotherapy, Mindfulness-Based Stress Reduction, and Motivational Interviewing to culturally, socioeconomically, racially, ethnically, and religiously diverse children and adolescents (ages 7-17) with mood disorders and their families
- Co-led parent and child groups of a 12-week manualized family-based psychosocial treatment, Child- and Family-Focused Cognitive Behavioral Therapy (CFF-CBT), for children with pediatric bipolar disorder and their families
- Consulted with schools, other treatment providers, and child and family services
- Attended weekly interdisciplinary case conferences, group supervision, and individual supervision

Practicum in Psychotherapy 2014-2017
Clinical Practicum Student, Office of Applied Psychological Services
Supervisors: Nancy Dassoff, Ph.D., Amanda Lorenz, Ph.D., Gloria Balague, Ph.D., & Bibiana Adames, Ph.D.

- Conducted semi-structured clinical interviews with children, adolescents, and adults (from school-age children to older adults)
- Developed comprehensive treatment plans and provided individual therapy using evidence-based interventions in a community clinic for culturally, socioeconomically, racially, ethnically, and religiously diverse adults, youth, and families with a variety of psychological problems, including depression, generalized anxiety disorder, social anxiety disorder, panic disorder, interpersonal difficulties, self-esteem issues, and academic difficulties
- Performed safety and risk assessments
- Monitored progress toward treatment goals with evidence-based assessment tools
- Attended weekly supervision meetings, didactics, and case conferences

SPECIALIZED TRAINING & CLINICAL WORKSHOPS

Neuroanatomical Dissection Course: Human Brain & Spinal Cord 2018
Marquette University, College of Health Sciences
Instructor: William E. Cullinan, Ph.D.

- Three-day anatomical dissection course focusing on the brain and spinal cord; attended didactic sessions covering neuroanatomical structures in the brain and advances in functional neuroscience; performed regional brain dissections; observed a craniotomy and laminectomy

Persistent Symptoms after Pediatric Concussion: Contributing Factors and Behavioral Approach to Intervention 2018
American Academy of Clinical Neuropsychology
Instructor: Kelly A. McNally, Ph.D., ABPP & Tess Simpson, Ph.D.

- Three-hour workshop on the etiology and treatment of persistent post-concussion symptoms (PCS); provided a biopsychosocial framework for understanding mechanisms that maintain concussion symptoms; reviewed current evidence base of treatments for persistent PCS; reviewed treatment protocol and empirical support for C-STEP: Concussion Symptom Treatment and Education Program

Integrated Care for Adolescents Struggling with Traumatic Stress and Substance Abuse 2016
University of Illinois at Chicago, Urban Youth Trauma Center
Instructor: Lisa Suarez, Ph.D.

- Two-day manualized training for treatment of adolescents with traumatic stress and substance abuse problems; learned strategies for assessment/treatment planning, engagement, and stabilization; reviewed and practiced emotional regulation and cognitive processing interventions; learned to implement modular empirically-supported treatment approaches; workshop included lectures, videos, demonstrations, and role-playing exercises

Mindfulness-Based Stress Reduction 2016
University of Illinois at Chicago, Department of Psychology
Instructor: Elana Rosenbaum, MSW

- Eight-hour workshop covering the foundational principles of Mindfulness-Based Stress Reduction with applications for depression, anxiety, and chronic pain; covered the neuroscience of mindfulness and meditation; workshop included lectures, demonstrations, and role-playing

Applying Evidence-Based Assessment to Bipolar Disorder: Assessing Quickly and Accurately to Reach Better Outcomes 2015
Association for Behavioral and Cognitive Therapies
Instructor: Eric Youngstrom, Ph.D.

- Three-hour workshop on evidence-based practices for assessment of bipolar disorder and other emotional disorders; reviewed base rates in different settings, such as public schools, outpatient services, forensic settings, and inpatient units; learned how to use benchmarks to conduct efficient evaluations; practiced utilizing assessment procedures to aid in differential diagnosis and measuring response to treatment; applied new methods for interpreting test results

Enhancing Clinical Skills with Ethnically and Racially Diverse Clients 2015
University of Illinois at Chicago, Department of Psychology
Instructor: Monica Williams, Ph.D.

- Three-hour workshop on culturally competent clinical practices; identified approaches to building cultural sensitivity and humility; engaged in group discussions about racism, multiculturalism, and microaggressions; discussed adaptations of cognitive behavioral therapy for ethnically and racially diverse clients; workshop included videos, lectures, and group activities

TEACHING EXPERIENCE

Theories of Personality 2019
Teaching Assistant, University of Illinois at Chicago, Department of Psychology
Professor: Marie Chesaniuk, M.A.

Laboratory in Clinical Psychology 2018-2019
Teaching Assistant, University of Illinois at Chicago, Department of Psychology
Professor: Erin Berenz, Ph.D.

Introduction to Psychology 2014-2015
Teaching Assistant, University of Illinois at Chicago, Department of Psychology
Professor: Julie Chen, Ph.D.

MENTORING EXPERIENCE

Students Mentored

Brittany Hamling, UIC Undergraduate Psychology Student	2018-2019
Heather Hovinen, UIC Undergraduate Psychology Student	2018-2019
Radhika Patel, UIC Undergraduate Psychology Student	2018-2019
Victoria Eickelberg, UIC Honors College Student	2017

Presentations Mentored

1. Hovinen, H.R., **Isaia, A.R.,** Peters, A.T., Weinstein, S.M., Langenecker, S.A., & West, A.E. (2019, April). *Cross-informant agreement in adolescent depression: Correlations among adolescent and parent-reported symptoms of depression.* Poster presented at the 2019 UIC Impact and Research Day, Chicago, IL.

SERVICE

Best Practices in Writing Letters of Recommendation 2018
Organizer, University of Illinois at Chicago, Department of Psychology
Panelists: Pauline Maki, Ph.D., Katherine Zinsser, Ph.D., & Erin Berenz, Ph.D.

- Spearheaded a professional development panel discussion for the psychology department on writing strong letters of recommendation; organized panel, moderated discussion, and developed resource guide for graduate students, faculty, and staff

Maximizing Access to Research Careers (MARC) 2016
Panelist, University of Illinois at Chicago, Department of Psychology

- Served as a panelist for a presentation promoting research career opportunities in the social sciences for undergraduates from underrepresented groups

PROFESSIONAL AFFILIATIONS

American Academy of Clinical Neuropsychology
American Psychological Association

- *Division 40, Society for Clinical Neuropsychology*
- *Division 53, Society of Clinical Child & Adolescent Psychology*

Association for Behavioral and Cognitive Therapies

- *Bipolar Disorders Special Interest Group*

International Neuropsychological Society
Society for a Science of Clinical Psychology