EXAMINING PREDICTORS OF INITIAL TREATMENT DECISIONS FOR CONDUCT PROBLEMS IN YOUTH: A RETROSPECTIVE ANALYSIS OF PSYCHIATRIC OUTPATIENT MEDICAL RECORDS FROM A UNIVERSITY-BASED CLINIC

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ABSTRACT

EXAMINING PREDICTORS OF INITIAL TREATMENT DECISIONS FOR CONDUCT PROBLEMS IN YOUTH: A RETROSPECTIVE ANALYSIS OF PSYCHIATRIC OUTPATIENT MEDICAL RECORDS FROM A UNIVERSITY-BASED CLINIC

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Conduct problem (CP) treatment guidelines espouse the initial use of psychosocial interventions before resorting to psychotropic medication (a concept referred throughout as the "least intrusive" principle). National prescription data shows a dramatic increase in the use of atypical antipsychotics to treat CP, raising concern that clinicians are disregarding the "least intrusive" principle, and using psychotropic medication as a first-line treatment for CP. Research has identified patient, clinician, organizational, and systemic factors that may be important to understanding this increased reliance on psychotropic medication in treating CP. The present study examines how a subset of these factors affect adherence to the "least intrusive" principle within a university-based outpatient psychiatry clinic. Data from 78 patient medical records (71% male; Mean age = 9.9 years) were analyzed using logistic regression to determine how patient race, gender, travel distance, aggression severity, internalizing severity, age of CP diagnosis, and history of psychosocial intervention for CP affected the likelihood that initial CP treatments included psychotropic medication. Results show that aggression severity and travel distance significantly increased the likelihood that initial treatments included psychotropic medication. Travel distance also significantly interacted with history of psychosocial intervention for CP to predict initial recommendations with psychotropic medication. Clinical implications and directions for future research are considered.

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CHAPTER 1:

INTRODUCTION

Observational research and governmental data demonstrate the negative effects that conduct problems (CP) have on the well-being of individuals and society. Youth with CP are more likely to suffer from depressive and anxiety disorders (Frick et al., 2003), abuse drugs (Lynksey & Fergusson, 1995), experience peer rejection (Frick & Morris, 2004), and drop out of school (Moffitt, Caspi, Harrington, & Milne, 2002). If left untreated, youth with CP are at a heightened risk of being arrested for a crime in adulthood (Moffitt et al., 2002). Additionally, CP have distinct financial costs to society. For example, governmental data show $5.7 billion spent solely on the incarceration of delinquent youth in 2008 (Sickmund, Sladky, Kang, & Puzzanchera, 2008).

According to the American Psychiatric Association, CP serve as the basis of the most commonly diagnosed mental health disorders in youth, including oppositional defiant disorder, conduct disorder, and unspecified disruptive, impulse-control, conduct disorder (APA, 2013). The individual and societal costs of CP have spurred research devoted to understanding how best to treat these disruptive behaviors, yielding an array of treatment options that span from psychosocial interventions (Murrihy, Kidman, & Ollendick, 2010) to psychotropic interventions (Smith & Coghill, 2010). The use of these treatments has been organized within a standard of care for CP that starts with the "least intrusive" treatment necessary (Murrihy, et al., 2010), a principle that is reflected in treatment guidelines for aggressive forms of CP (American Academy of Pediatrics; AAP, 2012a; 2012b) and non-aggressive forms of CP (National Institute for Health & Excellence; NICE, 2014). This "least intrusive" principle specifies that initial treatments of CP should only consist of psychosocial intervention (AAP, 2012a; 2012b; NICE, 2014). Only if a

child's CP persists despite these psychosocial interventions do treatment guidelines recommend the use of psychotropic medication (AAP, 2012a; 2012b; NICE, 2014).

Significant side effect concerns and inconsistent effectiveness data has made the treatment of CP with psychotropic medication a matter of debate within the literature (Mckinney & Renk, 2011), and has precluded the approval of any such treatment by the United States Food and Drug Administration. Regardless, national data shows a 750% increase in the use of atypical antipsychotics in youth from 1995 to 2010 (Olfson, Blanco, Wang, Laje, & Correll, 2014), with CP being the target in the majority of these prescriptions (Olfson et al., 2014). This data suggests that psychotropic medication is increasingly used as a first-line treatment for CP, indicating an emerging disconnect between the initial treatment recommendations provided in outpatient psychiatric clinics and the "least intrusive" care espoused in CP treatment guidelines (AAP, 2012a; 2012b; NICE, 2014). Though important, research has not yet examined this potential disconnect between CP treatment guidelines and outpatient psychiatric practice.

At the same time there are various bodies of research highlighting patient, clinician, organizational, and systemic factors that could be contributing to the increased use of psychotropic medication to treat CP. CP etiology, psychosocial intervention, and implementation research identify numerous patient-level factors that may diminish psychosocial intervention effectiveness and increase the odds that psychotropic medication are included within initial treatment recommendations for CP, including age of CP onset (Bachmann, Lempp, Glaeske, & Hoffmann, 2014), aggression severity, (Rodday et al., 2014), internalizing severity (Beauchaine, Webster-Stratton, & Reid, 2005; Griffith, Smith, Huefner, Epstein, Thompson, Singh, & Leslie, 2012), suicidal ideation (Griffith et al., 2012), previous out-of-home placements (Griffith et al., 2012), maternal age (Beauchaine et al., 2005), parent marital satisfaction (Beauchaine et al.,

2005), race (Griffith et al., 2012), and gender (Griffith et al., 2012). Furthermore, psychosocial intervention implementation research highlights clinician, organizational, and systemic factors that limit patient access to evidence-based psychosocial intervention, which may also affect the likelihood that initial treatment recommendations include psychotropic medication. These barriers include constraints of care settings (Addis, Wage, & Hatgis, 1999), mitigating clinician attitudes (Sanders & Turner, 2005), patient insurance status (Katakoa, Zhang, & Wells, 2002), travel distance to psychosocial intervention providers (Gamm, Stone, & Pittman, 2010), differences in clinician training (APA, 1995), patient referral source (Griffith et al., 2012), and residential placement (Breland-Noble, Elbogen, Farmer, Dubs, Wagner, & Burns, 2004). However, just as the potential disconnect between CP treatment guidelines and outpatient psychiatric practice remains unexamined, no study has investigated how these patient, clinician, organizational, or systemic variables affect initial treatment recommendations for CP.

Studies on the implementation of treatment guidelines for attention-deficit/hyperactivity disorder (ADHD) within primary care settings lay the foundation for the present study (Leslie, Weckerly, Plemmons, Landsversk & Eastman, 2004; Lynch, Sood, & Chronis-Tuscano, 2010; Olson, Rosenbaum, Dosa, & Roizen, 2005). This research provided important insight into the clinical and systemic variables that affect ADHD care delivery in primary care, leading to improvements in ADHD care, and informed revisions of ADHD treatment guidelines (American Academy of Pediatrics, 2011). In a similar vein, the present study investigates how the "least intrusive" principle of CP treatment guidelines affects the likelihood that initial treatment recommendations include psychotropic medication, and how the aforementioned patient, clinician, organizational, and systemic factors affect this relationship.

Current Study

Through a retrospective review of outpatient psychiatry medical records from a university-based clinic (N = 78), this study is the first to examine how the "least intrusive" principle of CP treatment guidelines and potential barriers of its adherence affect the likelihood that initial treatment recommendations include psychotropic medication. To do this, patient history of psychosocial intervention for CP is used as a binary indicator of the "least intrusive" principle (Yes/No). While research highlights numerous patient, clinician, organizational, and systemic factors that may affect the likelihood that initial treatment recommendations includes psychotropic medication, data availability, study design, sample characteristics, and setting characteristics narrow the scope of this study to a subset of these variables. Specifically, this study examines how age of CP diagnosis (as an indicator for age of CP onset), aggression severity, internalizing severity, travel distance to psychosocial intervention provider, race, and gender affect the likelihood that initial recommendations for CP include psychotropic medication. This study also examines if a subset of these factors moderate the relationship between patient history of psychosocial intervention for CP and initial treatment recommendations. Logistic regression is used to test all study hypotheses.

Significance of Study

Similar to research testing the implementation of ADHD treatment guidelines, this study provides a measure of how well CP treatment guidelines translate into outpatient psychiatric practice within a university-based clinic. Importantly, this study also examines the effects that potentially salient patient, clinician, organizational, and systemic variables have on this translation process. Results of this study further the research and treatment of CP, with important clinical and empirical implications.

CHAPTER 2:

LITERATURE REVIEW

Conduct Problems

Societal and human costs of conduct problems. The United States Department of Justice's (USDJ) Uniform Crime Report is an annual tally of all crimes reported by law enforcement agencies in the United States. The most recent data show that people under the age of 18 account for 16% of reported violent crime, 26% of reported property crime, and 11% of reported drug abuse offenses (USDJ, 2012). When also considering unreported crimes, the raw number of delinquent acts increases. Adding additional concern to these numbers is a longitudinal study conducted by the National Center for Juvenile Justice (NCJJ) that shows that 27% of 16-to 17-year-old offenders continue their criminal behavior into adulthood (NCJJ, 2012). This behavior has profound societal costs that can persist with offenders into adulthood if the behavior is not remediated. Incarceration is a prime example of these costs. In 2008, approximately 93,000 youth were incarcerated, costing local, state, and federal governments a total of $5.7 billion just for their internment (Sickmund, et al., 2008). These costs are dwarfed by the $74 billion spent to incarcerate adults over the same period (Bureau of Justice and Statistics, 2012), underscoring the importance of the prevention and early intervention of conduct problems (CP). These financial numbers have spurred researchers to investigate the cost-savings that such prevention and early intervention programs could yield if adopted within the juvenile justice system and associated youth-service agencies. In one such study Cohen and Piquero (2009) estimated the value of saving a 14-year-old high-risk juvenile from a life of crime to range from $2.6 to $5.3 million.

Underlying the excessive financial costs of CP are distinct human costs. Children with CP have been shown to negatively affect the families in which they live and the schools in which they learn. Commonly, the severity and intractability of these behaviors create parent and teacher stress, potentially resulting in ineffective parenting and teaching practices (Frick & Dickens, 2006). Like the adults in their lives, the oppositional and aggressive behavior of youth with CP significantly harms the physical and mental health of their victims (Hanish & Guerra, 2002), and ultimately, they can wreak havoc in the offending child's life as well (Frick & Dickens, 2006). In addition to their characteristic externalizing symptoms, these youth may also report prominent internalizing symptoms such as depression and anxiety (Frick et al., 2003), and are more likely than children without CP to develop substance abuse problems (Lynksey, & Fergusson, 1995). Their CP can also lead these kids to experience peer rejection (Frick & Morris, 2004), and heighten their risk of school expulsion or dropping out (Moffitt et al., 2002). Finally, as the abovementioned NCJJ data demonstrates, these poor childhood outcomes lead to similarly bleak adult outcomes, as longitudinal data shows these children to be more likely to be arrested for a crime as an adult (Moffitt, et al., 2002).

Conduct problems as a diagnostic construct. Clinically, CP comprises a broad range of behaviors from aggressive (e.g., physical harm, threatening, property destruction, etc.) to non-aggressive (e.g., argumentativeness, defiance, deceitfulness, rule-breaking, etc.). Within the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2013), CP are the diagnostic basis for oppositional-defiant disorder (ODD), conduct disorder (CD), and unspecified disruptive, impulse-control, conduct disorder, all which are subsumed within a diagnostic class called Disruptive, Impulse-Control, and Conduct

Disorders (See table 1). See below for detailed diagnostic criteria and epidemiological data for each disorder.

Table 1.

DSM-V Diagnostic Conceptualizations of Conduct Problems

Oppositional Defiant Disorder

Pattern of angry/irritable mood, argumentative/defiant behavior, and vindictiveness.

Anger & Irritability
- Often loses temper
- Is easily annoyed or touchy
- Is often angry or resentful

Argumentative & Defiance
- Often argues with adults
- Often refuses to comply with adult requests or rules
- Often deliberately annoys people
- Often blames others for his or her mistakes

Vindictiveness
- Is often spiteful or vindictive

Conduct Disorder

A repetitive or persistent pattern of behavior whereby the basic rights of others are violated through aggression, property destruction, deceitfulness, and serious rule violations.

Aggression to People & Animals
- Often bullies, threatens, or intimidates others
- Often initiates fights
- Has used a weapon that can cause serious harm
- Has been physically cruel to people
- Has been physically cruel to animals
- Has stolen while confronting a victim
- Has forced someone into sexual activity

Destruction of Property
- Has deliberately engaged in fire setting
- Has deliberately destroyed others' property

Table 1 (cont'd)

Deceitfulness or Theft
- Has broken into someone else's house
- Often lies for material gain
- Has surreptitiously stolen items of nontrivial value

Serious Violations of Rules
- Often stays out at night despite parental prohibitions
- Has run away from home
- Is often truant from school

Unspecified Disruptive, Impulse-Control, Conduct Disorder

This diagnosis applies to presentations of conduct problems that cause clinically-significant distress or impairment in individual's functioning, but do not meet the full criteria of any specific Disruptive, Impulse-Control, Conduct Disorder

Oppositional defiant disorder. The DSM-V (APA, 2013) defines oppositional defiant disorder (ODD) as a pattern of angry/irritable mood, argumentative/defiant behavior, and vindictiveness that lasts at least 6 months as indicated by at least four behavioral markers during that time (See Table 1). These behaviors must be in excess of developmental appropriateness and lead to meaningful social, personal, and familial impairments. The DSM-V specifies ODD severity contingent upon the number of contexts in which the behavior is exhibited, ranging from Mild (confined to one setting), to Moderate (two settings), to Severe (three or more settings). ODD is more common in children from families that have experienced significant disruption of familial relationships (e.g., death of parent, divorce, parent remarries), or harsh, inconsistent, and/or neglectful parenting practices (Lavigne, Gouze, Bryant, & Hopkins, 2014). Symptoms of ODD typically appear during the preschool years, and almost never later than early adolescence (Althoff, Kuny-Slock, Verhulst, Hudziak & Ende, 2014). Developmentally, youth with ODD are at a significantly higher risk than non-ODD peers to develop childhood-onset conduct disorder, however many youth with ODD do not experience such sequela (Kimonis & Frick, 2010).

Attention-deficit hyperactivity disorder and conduct disorder are the two conditions to most commonly to co-occur with ODD, and youth with ODD are at a higher risk than their non-ODD peers to develop significant internalizing disorders such as anxiety and depression (Althoff et al., 2014; Lavigne et al., 2014). This susceptibility to internalization is likely related to temperamental factors that predispose youth to ODD, with ODD youth typically experiencing emotional regulation deficits, including emotional reactivity, and low frustration tolerance (Cavanagh, Quinn, Duncan, Graham, & Balbuena, 2014). ODD affects between 1% and 11% of youth, with prevalence varying considerably by age and gender (APA, 2013). Though 40% more common in males than females before puberty, this discrepancy is not observed in adolescents or adults (APA, 2013).

Conduct disorder. The DSM-V defines conduct disorder (CD) as the presence of chronic and patterned behavior that violates the rights of others and/or major age-appropriate societal norms and rules (APA, 2013). This criterion stipulates that a child needs to present with at least three different types of conduct problems in the last year, and one in the past six months. Conduct problems that are considered in the DSM-V (APA, 2013) include aggression towards people and animals, destruction of property, deceitfulness or theft, and serious violation of rules. The DSM-V defines CD subtypes by the severity of the displayed behavior (i.e., mild, moderate, severe), as well as by the age of onset of these behaviors, yielding the following subtypes: childhood-onset (i.e., CD onset before age 10) and adolescent-onset (i.e., CD onset at or after age 10). These age-graded subtypes have been validated in the literature, with longitudinal studies identifying youth with childhood-onset CD to have a pathological emotional temperament, concomitant ODD behaviors, disturbed peer relationships, and CP that are more severe and aggressive when compared to that of adolescent-onset CD (Pardini & Frick, 2013). Further

differentiating this diagnosis, the DSM-V includes a diagnostic specifier for CD regarding the limited expression of prosocial emotions, such as diminished remorse and empathy, inconsideration of own occupational wellbeing, and flattened or insincere affect (APA, 2013). These qualities (called callous-unemotional traits; CU) are considered a developmental forerunner to adult psychopathy (De Fruyt & De Clercq, 2014). CU are associated with more persistent and aggressive forms of CP typical of childhood-onset CD (Pardini & Frick, 2013).

The prevalence rate of CD within the general population varies by samples and methods, with overall rates being estimated to vary between 2% and 16% (Wolff & Ollendick, 2010), with a median of 4% (APA, 2013). Lifetime prevalence rates have also been established as the National Comorbidity Survey Replication followed up with participants to find it to be 10% (Nock et al., 2007). Prevalence rates rise from childhood to adolescence, with adolescent-onset being the most commonly diagnosed subtype. Like ODD, CD is more commonly diagnosed in males than females (APA, 2013).

Unspecified disruptive, impulse-control, conduct disorder. Unspecified disruptive, impulse-control, conduct disorder is a diagnosis provided to children and adolescents who exhibit CP that cause clinically-significant distress or impairment in their functioning, but do not meet the full criteria of any specific Disruptive, Impulse-Control, Conduct Disorder (APA, 2013).

The human and financial costs associated with these diagnoses have spurred treatment research, yielding both psychosocial interventions (PI; Murrihy et al., 2010) and psychotropic interventions for CP (Smith & Coghill, 2010). As with other psychiatric conditions, treatment guidelines have also been developed to provide practitioner guidance on how best to employ these interventions. Similar to the scope of the present study, research into the implementation of

guidelines for attention-deficit/hyperactivity disorder (ADHD) has been successful in identifying barriers to their implementation and led to improvements in ADHD care. Below is a brief review of how this research was beneficial to clinical care for ADHD before a review of the "least intrusive" principle that is found in CP treatment guidelines.

Treatment Guidelines in Psychiatry and Psychology

The field of psychiatry and psychology has seen an influx in treatment guidelines that are created to help facilitate best practice in the identification and management of psychiatric disorders (Weiden & Daniel, 2005). Based upon relevant clinical literature, these treatment guidelines lay out diagnostic and treatment processes that clinicians should follow for a certain type of patient, illness, or clinical circumstance. Within pediatric psychiatry and psychology, treatment guidelines have been drafted for a range of clinical populations, including children with ADHD (American Academy of Pediatrics [AAP], 2001; 2011), schizophrenia (Weiden & Daniel, 2005), seizure disorders (Saneto et al., 2010), trauma-related disorders (Pynoos et al., 2008), aggressive CP (AAP, 2012a; 2012b), and non-aggressive CP (NICE, 2014). In some cases, the development of these treatment guidelines has spurred research assessing their implementation within clinical practice, which has identified barriers to their implementation, and highlighted avenues towards improving clinical care.

An example closely related to the study of CP treatment guidelines is the American Academy of Pediatrics clinical guidelines for the diagnosis and treatment of ADHD (AAP, 2001). Research since their initial publication has identified important systemic barriers to their full implementation by primary care physicians (PCP; Leslie et al., 2004; Rushton, Fant, & Clark, 2004; Olson et al., 2005). Rushton and colleagues (2004) surveyed PCP knowledge of AAP's ADHD guidelines. This study found that while the majority (77%) of clinicians were

familiar with AAP guidelines on ADHD, only 61% reported incorporating them into their practice. This knowledge gap was reflected in research underscoring the discrepancy between the ADHD diagnostic procedures endorsed by the AAP (2001) and those used by PCPs (Leslie et al., 2004; Olson et al., 2005). While AAP guidelines (2001) recommended that PCP use DSM-IV criteria when diagnosing ADHD, research showed that less than 40% used the DSM-IV diagnostic criteria and less than 37% used behavioral rating scales (Leslie et al., 2004). Moreover, PCP were also found to have difficulty adhering to AAP's (2001) guideline that PCP obtain behavioral data from a second source (Leslie et al., 2004), precluding their ability to assess functioning across contexts.

These studies' findings led to efforts by the AAP to facilitate PCP training, and increasing their access to psychometrically sound ADHD rating scales (AAP, 2002). Subsequent researchers also developed a formalized diagnostic protocol and demonstrated its feasibility and utility within PCP clinics (Olson et al., 2005). Before implementation of their protocol, Olson and colleagues (2005) noted PCP adherence to AAP's ADHD diagnostic guidelines to be as low as 4% of providers; This number increased to 82% after implementing their protocol (Olson et al., 2005). In part based upon the barriers noted by these studies, the AAP drafted an updated set of clinical guidelines that addressed the issues raised by this research (AAP, 2011), at which time it stated a goal to continuously revisit the ADHD guidelines every 5 years in order to ensure their empirical and clinical relevance (AAP, 2011).

Just as this research identified barriers to the implementation of diagnostic procedures from the ADHD treatment guidelines, the present study examines factors that research suggests may affect the implementation of the "least intrusive" principle of CP treatment guidelines (AAP, 2012a; 2012b; NICE, 2014). Based upon data available in university-based outpatient

medical records, the present study investigates if age of CP diagnosis, aggression severity, internalizing severity, travel distance to psychosocial intervention, race, and gender affects the likelihood that initial treatment recommendations include a psychotropic medication. Similar to research on the ADHD treatment guidelines, this study benefits the psychiatric care of CP by identifying factors that affect the implementation of the "least intrusive" principle of CP treatment guidelines. Below is a review of treatment guidelines for aggressive CP (AAP, 2012a; 2012b) and non-aggressive CP (NICE, 2014), followed by a consideration of factors that have been found to affect the implementation of evidence-based guidelines similar to the "least intrusive" principle, and increase the likelihood that initial treatment recommendations include psychotropic medication.

Treatment Guidelines for Conduct Problems

The CP treatment literature has informed unified expert opinions on the treatment of CP (Jensen et al., 2007; Pappadopulos et al., 2011), culminating in formal treatment guidelines for the non-aggressive CP typical of oppositional defiant disorder (NICE, 2014), and the aggressive CP that can occur with conduct disorder and disruptive behavior disorder, not otherwise specified (AAP, 2012a; 2012b). Central to the present study, both treatment guidelines advocate the initial use of "least intrusive" interventions, such as psychosocial interventions when treating aggressive (AAP, 2012a; 2012b) or non-aggressive forms of CP (NICE, 2014).

The American Academy of Pediatrics (AAP) treatment guidelines for aggressive CP specifies a sequence of care recommendations that inform clinicians of which treatments to consider, when to consider these treatments, how to monitor their effectiveness and side-effects, and how to transition between care types (see Table 2; AAP, 2012a; 2012b). Paramount to the present study, the AAP specify the use of evidence-based psychosocial and psychotherapeutic

interventions as a first-line treatment to be used before progressing to more intrusive treatments, such as psychotropic medication. On this point, the AAP states that if clinicians are unable to locate appropriate programs, they should facilitate their provision by obtaining their own training, or seeking colleagues who can provide such treatments (AAP, 2012a; 2012b). The AAP also goes onto to explicate that clinicians need to take efforts to ensure that children and families have an active role in implementing the psychosocial intervention and help them maintain consistency with the program (AAP, 2012a; 2012b). If CP are unaffected by the first-line psychosocial intervention, AAP suggests pharmacologically addressing any primary disorder that may yield secondary aggression (AAP, 2012a; 2012b). If this is also unsuccessful, the AAP recommends clinicians attempt an antipsychotic, and titrate dosage to ensure a full trial before changing medication (AAP, 2012a; 2012b). If the initial antipsychotic is unsuccessful, then clinicians should try a different antipsychotic (AAP, 2012a; 2012b). However, if the antipsychotic is partially successful then they should consider augmenting the existing treatment with a mood stabilizer (AAP, 2012a; 2012b). Throughout this process, the AAP recommends that clinicians regularly monitor side effects through patient and parent report, as well as regular laboratory tests (AAP, 2012a; 2012b).

Similar to the AAP, NICE's (2014) quality standard for CP dictates a continuum of care that spans from prevention to intervention efforts. This sequence of care is delineated through a series of "statements." The first statement underscores the importance of providing classroom-based prevention programming to children between ages 3 and 7 years old who are at-risk for developing CP (NICE, 2014). Statement 2 iterates the importance of a comprehensive assessment of a child suspected of having CP, including an assessment of their parents, in order to inform initial interventions (NICE, 2014). Statement 3 details importance of having a case

worker oversee the child and family's care. Of direct relevance to the present study, Statement 4 and 5 describes the use of psychosocial intervention as "least intrusive" first-line treatment to youth and parents for patients aged 3 to 7 (Statement 4) and patients aged 11 to 17 (Statement 5). The final statement (Statement 6) recommends that for youth who are prescribed risperidone for CP unaffected by initial psychosocial intervention efforts, regular monitoring of effectiveness and drug-specific side-effects.

As summarized in Table 2, current treatment guidelines espouse the initial use of psychosocial intervention as a "least intrusive" first-line treatment of aggressive CP (AAP, 2012a; 2012b) and non-aggressive CP (NICE, 2014). Research on effective psychosocial interventions for CP have found them to comprise a variety of treatment components, including social skills training (Beauchaine et al., 2005), parent management training (Brestan & Eyberg, 1998), social problem-solving (Greene, 2010), family therapy (Henggeler & Sheidow, 2012), and multisystemic collaboration (Henggeler, 1999). Research on psychosocial intervention has also exposed patient factors associated with poor psychosocial intervention implementation and diminished effectiveness. Described later in the document, such factors may compel clinicians to diverge from CP treatment guidelines by including psychotropic medication in their initial treatment recommendations, and account for the increased psychotropic medication usage that current data trends indicate.

Table 2.

Summarized Treatment Guidelines for Conduct Problems

Aggressive Conduct Problems[1]	Non-aggressive Conduct Problems[2]
1.) Provide evidence-based parenting and child skills training, and engage family in taking an active role in implementation*	1.) Youth at-risk of developing CP take part in classroom-based prevention program

Table 2 (cont'd)

2.) If psychosocial intervention is ineffective, follow evidence based guidelines for medicating any underlying disorders	2.) Children suspected of having CP have a comprehensive assessment, including child and parent/caregivers
3.) If aggression persists, treat with atypical antipsychotics with recommended titration schedule	**3.) Provide evidence-based psychosocial intervention to parents and children with CP***
4.) If aggression partially remits, augment with a mood stabilizer. If aggression is unmitigated, try a different atypical antipsychotic medication	4.) If CP do not remit, prescribe risperidone and monitor physical and metabolic status regularly

[1] – *American Academy of Pediatrics, 2012a; 2012b*
[2] – *National Institute of Health and Clinical Excellence, 2014*
***** – *Related to "Least Intrusive" Principle*

Trends in Psychotropic Usage for Conduct Problems

The use of psychotropic medication in children has become exceedingly prevalent, with recent data from the National Ambulatory Medical Care Survey showing outpatient psychotropic prescription rates for children and adolescents to have increased 105% between 1995 and 2010 (Olfson et al., 2014). Contributing to these increasing rates is the medical practice of prescribing drugs outside of their FDA-approved uses, a practice known as prescribing "off-label." Since there are currently no medications that are FDA-approved for the treatment of CP, these "off-label" prescriptions account for the entirety of CP drug treatments.

Most popular among these "off-label" treatments of CP are atypical antipsychotics, which have been the focus of numerous national (Olfson et al., 2014) and international pediatric psychotropic medication usage studies (Bachmann et al., 2014). Bazzano and colleagues (2009) found CP to be one of the most common indications for pediatric off-label prescriptions, with

atypical antipsychotics being the most commonly used for this purpose (Bazzano et al., 2009). More recent reports on clinician prescribing practices further highlight the popularity of treating CP with atypical antipsychotics within outpatient care providers (Olfson et al., 2014). Olfson and colleagues (2014) reports the number of pediatric office visits to include atypical antipsychotics to raise 750% between 1995 and 2010. By 2010, 63% of all children treated for CP received psychotropic medication, with most receiving atypical antipsychotics (Olfson et al., 2014). Data from the Mental Health Research Network further shows the rate of CP amongst youth prescribed atypical antipsychotics within outpatient psychiatry clinics to be as high as 56% (Penfold et al., 2013).

Numerous studies on pediatric atypical antipsychotic prescription rates find their use for CP to be increasing in other westernized countries as well: Bachmann and colleagues (2014) found a 129% increase in German pediatric atypical antipsychotic prescriptions between 2005 and 2012; Pringsheim, Lam, and Patten (2011) found a 114% increase in pediatric atypical antipsychotic prescriptions in Canada between 2005 and 2009; Rani, Murray, Byrne, and Wong (2008) report a 93% increase in pediatric atypical antipsychotic prescriptions between 1992 and 2005 within the United Kingdom; Kalverdjik and colleagues (2008) reports a 127% increase in pediatric atypical antipsychotic usage between 1997-2005 within the Netherlands; Zoëga and colleagues (2009) shows a comparatively modest 22% increase in pediatric atypical antipsychotic use in Iceland between 2003 and 2007. Importantly, across all of these studies CP is the targeted indication in the majority for these pediatric atypical antipsychotic prescriptions.

Overall, prescription rate data from the United States and around the globe highlights the expanding role that psychotropic medication is playing in the treatment of CP. Such data raises concerns that outpatient psychiatry clinics are drifting away from the initial use of "least

intrusive" first-line psychosocial intervention that is espoused by CP treatment guidelines (AAP, 2012a; 2012b; NICE, 2014). Despite scientific precedence for research into the implementation of treatment guidelines (Rushton et al., 2004), no study to date has examined the effect the "least intrusive" principle of CP treatment guidelines has on the likelihood that initial treatment recommendations include psychotropic medication. The next section will consider a range of patient and non-patient factors that may contribute to this increase in psychotropic medication usage for CP, and spur a departure from the "least intrusive" principle of CP treatment guidelines.

Predictors of Initial Treatment Recommendations for Conduct Problems

The apparent gap between CP treatment guidelines and outpatient psychiatric practice may be attributable to a confluence of patient, clinician, organizational, and systemic factors. CP etiology studies highlight organic patient factors and CP patterns that recent survey research suggests may increase use of psychotropic medication for CP (Rodday et al., 2014). Similarly, research evaluating psychosocial intervention provides insight into patient characteristics that may diminish psychosocial intervention adherence (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997), diminish effectiveness (Hawes & Dadds, 2007), and possibly compel clinicians to bypass these practices in favor of psychotropic medication. At the same time, important non-patient factors have been long considered barriers to the dissemination of evidence-based psychosocial intervention within mental health settings, spurring the American Psychological Association's Task Force on Promotion and Dissemination of Psychological Procedures (APA, 1995). Research since the APA's task force has identified clinician barriers (Sanders & Turner, 2005), organizational barriers (Novin, Green, Legha, & Aarons, 2013), and systemic barriers (Gamm, Stone, & Pittman, 2010) to psychosocial intervention dissemination efforts, which may

effectively narrow a provider's treatment options to psychotropic medication. Together, these patient and non-patient factors may increase the likelihood that initial treatment recommendations for CP includes psychotropic medication, and help explain the burgeoning disconnect between outpatient psychiatric practice and the "least intrusive" principle of CP treatment guidelines. It is for these reasons these factors are investigated by the present study.

Patient factors. CP etiology, psychosocial intervention effectiveness, and psychotropic medication usage research highlights numerous patient characteristics that may contribute to the increased use of psychotropic medication to treat CP. This research has shown key patient factors to frame the development of aggressive CP (Dorfman, Meyer-Lindenberg, & Buckholtz, 2014), diminish psychosocial intervention adherence (Henggeler et al., 1997), diminish psychosocial intervention effectiveness (Hawes & Dadds, 2007), or predict psychotropic medication usage with inpatient samples (Griffith et al., 2012). These factors are considered below according to the field of research that indicates their importance to the present study.

Factors identified in etiological research. CP etiology research highlights distinct developmental pathways to CP that are delineated by age of CP onset, with adolescent-onset CP occurring at or after 10 years and childhood-onset CP occurring before 10 years. This age-graded distinction is incorporated into the diagnostic criteria for conduct disorder within the DSM-V (APA, 2013), though its empirical importance expands beyond this criteria as research has identified unique risk factors that instigate and maintain CP within each of these developmental pathways (Pardini & Frick, 2013). While adolescent-onset is considered governed wholly by psychosocial factors, neurobiological (Dorfman et al., 2014) and epigenetic research (McGowan et al., 2009) indicates that childhood-onset possess impairments with organic contributors that may be more amenable to psychotropic medication treatments than psychosocial intervention.

Furthermore, the organic impairments associated with childhood-onset are related to exceedingly aggressive form of CP, which surveyed psychiatrists have endorsed as a popular indication for treating youth with psychotropic medication (Rodday et al., 2014). Below is a brief overview of adolescent-onset CP before addressing the patient factors associated with childhood-onset CP that are investigated as predictors of psychotropic medication usage in the present study.

Adolescent-onset CP has been conceptualized as an embellished manifestation of adolescents' developmentally-appropriate pursuit of autonomy (Dandreaux & Frick, 2009). Unlike childhood-onset, adolescent-onset is without biological or genetic links (Dorfman et al., 2014), and is less likely to experience early childhood interpersonal trauma (Buckholtz & Meyer-Lindenberg, 2008). Rather, key psychological and psychosocial risk factors have been found to drive CP in adolescent-onset youth. These youth are more likely to hold disrespectful views for authority figures (Moffitt, 2003), subversive or rebellious attitudes (Dandreaux & Frick, 2009), engage in CP in that is driven by deviant peer associations (Moffitt & Caspi, 2001), and to come from homes with diminished parental control mechanisms (McCabe, Hough, Wood, & Yeh, 2001). Adolescent-onset CP has been shown to be limited to adolescence and much less severe than youth with childhood-onset (Frick & Vinding, 2009). Possibly because adolescent-onset CP is wholly governed by these psychosocial risk factors, it is not associated with any patient factors that may increase the likelihood that initial treatment recommendations include psychotropic medication. The origins and topography of adolescent-onset CP are at odds with that of childhood-onset CP. CP etiology research indicates that the latter comes from one of two distinct emotional temperaments, emotional dysregulation (ED) and callous-unemotional traits (CU). Each temperament has unique neurobiological mechanisms that result in distinct constellations

of organic contributors that may increase the likelihood that initial treatment recommendations include a psychotropic medication.

ED is marked by a heightened arousal of negative emotions (Pardini & Frick, 2013) and a hostile attribution bias when interpreting social situations (De Castro, Veerman, Koops, Bosch, & Monshouwe, 2002). Neurobiological data aligns with this profile as these youth are shown to have dampened responsivity in the anterior cingulate cortex (Buckholtz & Meyer-Lindenberg, 2007), which is responsible for social decision making and emotional regulation, and hyperactivity of the hypothalamic-pituitary-adrenal (HPA) axis (Herpertz et al., 2008), which facilitates fight or flight responses. These functional impairments predispose ED youth to exhibit aggressive forms of CP in reaction to situations that evoke intense anger or fear, commonly doing so without first considering the consequences of their behavior (Loney, Frick, Clements, Ellis, & Kerlin, 2003). Current ED theories associate these impairments with an ontogenetic excess of serotonin within these neural structures via epigenetic processes (Dorfman et al., 2014; McGowan et al., 2009).

Though starkly different in clinical presentation, the CU temperament also has extensive literature supporting the organic base of its unique functional limitations. CU is marked with significantly diminished responsivity in the HPA axis and amygdala (Jones, Laurens, Herba, Barker, & Viding, 2009), and is associated with a dampened ability to perceive and experience negative emotions (Blair, Budhani, Colledge, & Scott, 2005; Blair, Colledge, Murray, & Mitchell, 2001). These functional impairments are reflected in a flat affect, a prominent lack of empathy, and severely aggressive forms of CP (Frick & Moffitt, 2010). Twin studies have shown CU to derive largely from distinct biological mechanisms (Fontaine, McCrory, Boivin, Moffitt, & Viding 2011; Larsson, Viding, Rijsdijk, & Plomin, 2008; Viding, Bair, Moffitt, & Plomin,

2005), while recent epigenetic research details a potential gene-environment interaction to CU (Cecil et al., 2014).

Given the neurobiological contributors to these functional impairments, clinicians may be more likely to provide psychotropic medication to youth with childhood-onset CP compared to adolescent-onset CP, which is without such contributors. It is based upon the data and theory supporting the neurobiological contributors of childhood-onset that the age of CP diagnosis within the study clinic is used as an indicator of age of CP onset, and examined as a predictor of initial treatment recommendations for CP that include psychotropic medication. Related to these functional limitations, clinicians may feel compelled to use psychotropic medication for childhood-onset CP to quickly address the heighted aggressive symptoms associated with this subtype (Pardini & Frick, 2013). This notion is supported by recent survey of child and adolescent psychiatrists from the American Medical Association (N =340). Of its results, this study found the indications that significantly predicted psychiatrist willingness to prescribe off-label atypical antipsychotics were severe aggression (OR = 7.1, $p < 0.0001$) and severe delinquent behaviors (OR = 1.9, $p = 0.03$). These results may reflect practitioner anxiety to reduce a patient's potential for harm by stabilizing their dangerous and aggressive behavior. To address such a potential, the present study also examines pretreatment aggression severity as it may affect the likelihood that initial treatment recommendations bypass the "least intrusive" principle and include psychotropic medication.

Factors identified in psychosocial intervention research. To date, numerous studies have assessed the effectiveness of psychosocial intervention for CP, including social skills training (Beauchaine et al., 2005), parent management training (Brestan & Eyberg, 1998), social problem-solving (Greene, 2010), and multisystemic collaboration (Henggeler, 1999). Central to

the purpose of the present study, psychosocial intervention research has uncovered numerous patient factors that diminish psychosocial intervention adherence and diminish psychosocial intervention effectiveness. These moderating variables have importance in the present study as treating psychiatrists may be aware of their bearing on psychosocial intervention when determining initial treatment recommendations for CP, and may consider psychotropic medication for patient cases that present with these factors. Aligning with CP etiology research, this research indicates aggression severity (Henggeler et al., 1997), and age of CP onset (Nowak & Heinrichs, 2008) as important determinants of psychosocial intervention efforts. This research also puts forth other novel patient factors that are associated with diminished psychosocial intervention efforts, including parent marital satisfaction (Beauchaine et al., 2005), maternal age (Beauchaine et al., 2005), and internalizing severity (Beauchaine et al., 2005).

Outcomes of psychosocial intervention research provide additional context to interpret Rodday and colleagues' (2014) finding that aggression severity may fuel off-label psychotropic medication usage. While the danger of severely aggressive patients creates an obvious rationale for swift remediation via psychotropic medication, psychosocial intervention research associates severe aggression with diminished psychosocial intervention adherence (Henggeler et al., 1997), something that may also contribute to Rodday and colleagues (2014) survey findings. In one study that found such an effect, Henggeler and colleagues (1997) compared multisystemic therapy (MST) with individual and family counseling within county juvenile justice services for chronic and violent adolescent juvenile offenders (N = 155 youth and families). Findings immediately post-treatment indicated MST participants had significantly improved CP compared to non-MST participants (Henggeler et al., 1997). However, ratings of treatment adherence were significantly higher in MST participants with lower levels pretreatment aggression. Such an

association between aggression severity and diminished psychosocial intervention adherence was also found by Epstein and Saltzman-Benaiah (2010), which tested the feasibility and efficacy of delivering parent problem solving skills treatment in a group format. Specifically, group session attendance and parent use of learned communication skills were significantly diminished for parents reporting higher levels of pretreatment aggression (Epstein & Saltzman-Benaiah, 2010). While these studies imply diminished outcomes via poor treatment adherence, another study assessing a parent-training program for child CP found parent reports of aggression severity to significantly moderate treatment effectiveness (Hawes & Dadds, 2007). This study found CP scores to drop significantly for a subset of the sample at post-treatment and 6 month follow-up, with youth with more severely aggressive CP demonstrating the poorest outcomes (Hawes & Dadds, 2007). Together, these studies show aggression severity as a potential exception to the "least intrusive" principle of CP treatment guidelines, provide a context for the psychiatric decision-making indicated by Rodday and colleagues (2014), and reassert the importance of examining aggression severity as a predictor of psychotropic medication use within initial treatment recommendations for CP.

Psychosocial intervention research also agrees with CP etiology literature in showing age of CP onset to be an important patient level predictor of initial treatment recommendations for CP. Nowak and Heinrichs (2008) completed a meta-analysis of fifty-five studies (N = 55) to examine the overall effectiveness of a parenting program on CP. This meta-analysis found studies with younger samples demonstrated significantly improved CP from at post intervention and follow up measurements than compared to studies that had older samples of children (Range of Mean Ages = 2.2 – 12.3 years). While these results echo the importance of age of CP onset when determining psychosocial intervention effectiveness, they run contrary to the implications

from CP etiology literature by implying that older youth may have a higher likelihood of receiving initial treatment recommendations with psychotropic medication. The present study provides data on this variable.

Another reanalysis using data from clinical trials of the Incredible Years program (N = 514) highlights additional moderators of psychosocial intervention effectiveness (Beauchaine et al., 2005). Using latent growth curve modeling, Beauchaine and colleagues (2005) found children who had younger mothers, parents reporting higher marital satisfaction, and higher pretreatment reports of internalizing severity demonstrated significantly improved mother-reported CP at 1 year follow up than youth without these factors (Beauchaine et al., 2005). Askew from other findings reported here, this reanalysis did not find pretreatment aggression severity to predict treatment adherence or the size of CP improvements at all waves of data collection. The authors associated the moderating effect for maternal age with significant associations between older mothers and maternal reports of harsh discipline at post treatment, suggesting that older mothers' parenting was less affected by the intervention than younger mothers' parenting (Beauchaine et al., 2005). The significant moderation of pretreatment marriage satisfaction is perhaps tapping into the overall functioning of the parental dyad, and is a barometer of parents' capacity to effectively learn and implement program strategies. Finally, that children with higher reports of internalizing severity would improve better than youth without such symptoms highlights the relationship between internalizing and externalizing problems, and aligns with CP etiology research showing increased internalization severity for youth with ED conduct problems.

In sum, psychosocial intervention research restates the importance of aggression severity (Hawes & Dadds, 2007) and age of CP onset (Nowak & Heinrichs, 2008) to the study of initial

treatment recommendations for CP. This research also highlights other patient factors that may affect initial treatment recommendations via diminished psychosocial intervention efforts, including parental marriage satisfaction, maternal age, and internalizing severity (Beauchaine et al., 2005). Though limited data accessibility precludes examination of marital satisfaction and maternal age, the present study also tests how internalizing severity affects the likelihood that initial treatment recommendations include psychotropic medication.

Factors from previous studies of psychotropic medication with youth. Recent research assessing psychotropic medication usage with samples from child protective services (Leslie, Raghavan, Zhang, & Aarons, 2010) and out-of-home placement programs (Breland-Noble, Elbogen, Farmer, Dubs, Wagner, & Burns, 2004; Griffith et al., 2012) sheds light onto additional patient factors that could increase the likelihood that initial treatment recommendations for CP includes psychotropic medication.

Using data from National Institute of Mental Health, Breland-Noble and colleagues (2004) examined the use of psychotropic medication among youths in foster care (N = 304). This study found the use of psychotropic medication to be more likely among youth who were Caucasian (OR=1.89, p <. 05), or had clinically significant ratings on the internalizing subscale of the Achenbach Child Behavior Checklist (CBCL; OR = 2.66, p < .001). Griffith and colleagues (2012) found similar results in an examination of archival data from a large Midwestern residential treatment program (N = 1010). This study found being Caucasian (OR = 2.8, p < .001), increased number of previous out-of-home placements (OR = 3.87, p < .001), heightened reports of internalizing symptoms on the CBCL (OR = 1.38, p < .01), and increased ratings of suicidal ideation (OR = 1.23, p < .01) to significantly increase the likelihood that youth had a psychotropic prescription (Griffith et al., 2012).

In a similar study, Leslie and colleagues (2010) completed a longitudinal investigation of the variables predictive of three distinct psychotropic use trajectories amongst youth involved with child welfare and child protective services (N = 2521). Using data from the National Survey of Child and Adolescent Well-Being, Leslie and colleagues (2010) delineated three distinct use trajectories: 85% of youth were prescribed psychotropic medication rarely or never (Low Use); 4% started a psychotropic medication after the investigation (Increasing Use); 12% endorsed psychotropic prescriptions at multiple data points (High Use). Similar to Breland-Noble and colleagues (2004) and Griffith and colleagues (2012), this study found that being Caucasian (OR = 1.69, $p < .01$) and being male (OR = 4.42, $p < .01$) significantly increased the odds of being in the High Use group (Leslie et al., 2010).

Together, this research echoes Beauchaine and colleagues' (2005) study that indicates internalizing severity to be an important patient factor while also finding gender, race, suicidal ideation, and previous out-of-home placements to significantly increase the likelihood that youth receive psychotropic medication. Data availability at the study clinic prevents the examination of suicidal ideation in the present study. Similarly, the study sample includes a small number of participants with a history of out-of-home placement (5% of sample), precluding a meaningful examination of this variable.

Thus far, the CP etiology, psychosocial intervention effectiveness, and psychotropic medication usage literatures provide numerous patient factors that may increase the likelihood that initial treatment recommendations include psychotropic medication. Based upon setting and sample characteristics, the present study examines how age of CP diagnosis within study clinic (as an indicator of age of CP onset), aggression severity, internalizing severity, race, and gender affect the odds that initial treatment recommendations for CP include psychotropic medication.

Next, this paper will broaden its focus to research on clinician, organizational, and systemic factors affecting the implementation of evidence-based psychosocial intervention within clinical practice. The gap between science and practice is long-standing issue within the field of child and adolescent mental health, and is particularly important to the present study's objective of examining variables that increase the likelihood of initial treatment recommendations that include psychotropic medication.

Clinician factors. Research has identified key clinician factors that can diminish the successful implementation of psychosocial intervention in mental health settings. They are included here as factors that could increase the likelihood that initial treatment recommendations for CP misalign with CP treatment guidelines by including psychotropic medication. These factors include clinician attitudes of psychosocial intervention (Turner & Sanders, 2006), clinician training (Calebrese, Sciolla, Zisook, Bitner, Tuttle, & Dunn, 2010), and clinician self-efficacy (Zisook et al., 2011).

In a review of clinician opinions, Addis and colleagues (1999) highlight numerous factors of this type. This review found clinicians to resist evidence-based psychosocial interventions because of concerns regarding their manualized delivery format (Addis et al., 1999). Clinicians reported concerns that such format would be detrimental to the therapeutic relationship (Addis et al., 1999), restrict clinical innovation (Addis et al., 1999), and diminish their self-efficacy as clinicians (Addis et al., 1999). Research into the dissemination of parent training for CP further indicated that clinicians believed implementation of manualized treatments was unfeasible in clinical practice (Sanders & Turner, 2005; Turner & Sanders, 2006) and would lead to a loss of job satisfaction for clinicians (Sanders & Turner, 2005; Turner & Sanders, 2006). Importantly, many of these issues have been directly addressed by the APA Task Force on Evidence-Based

Practice in Psychology, which sought to merge efficacy data with qualitative factors championed by clinician respondents including clinical experience and patient factors, to inform a science-based approach that is more relevant to clinical practice (APA, 2006).

Adding to these clinician-level factors is research into the training of psychiatry residents that indicates that trainees may feel uncomfortable providing psychosocial intervention services (Calebrese et al., 2010), or grow disinterested in psychosocial intervention as they go through their residency (Zisook et al., 2011). A recent multisite survey tapped into psychiatric residents' views of their newly added psychotherapy training (Calebrese et al., 2010). Of all responders (N = 249), only 50% reported a belief that their psychiatry residency provided high quality psychotherapy training, and 28% reported concerns with the adequacy of time and resources devoted to their psychotherapy training (Calebrese et al., 2010). More recently, a cross sectional survey of psychiatry residents from training sites across the United States (N = 229) found that the proportion of residents who reported interest in psychosocial intervention significantly diminished from the first of their residency training (4%) to their last year (17%; Zisook et al., 2011). Like Calebrese and colleagues (2010), this survey found negative attitudes towards psychosocial intervention training, negative supervisor influence, and lack of resident support of psychosocial intervention training had significant associations with diminished resident interest in psychosocial interventions. Moreover, residents reporting diminished interested in psychosocial intervention were significantly more likely than others to endorse lower self-rated competence in their implementation (Zisook et al., 2011).

Related to the present study, such findings suggest that outpatient psychiatrists may have negative attitudes, diminished training, and/or low self-efficacy when presented with cases that require first-line psychosocial intervention treatments, making them more likely to include

psychotropic medication within their initial treatment recommendations for youth CP. Unfortunately, the retrospective design of this study precludes the collection and evaluation of data on these important clinician factors. However, because the study clinic includes a staff of licensed psychologists to whom psychiatrists routinely refer children for a range of psychosocial interventions (see 'Setting' section), the effect these clinician variables have on initial treatment recommendations for CP may be absent compared to outpatient psychiatry clinics that do not provide psychosocial intervention services.

Organizational factors. Research has also documented how the implementing organization can obstruct the successful implementation of evidence-based interventions, reducing patient access to these essential treatments. Most recently, Novins, Green, Legha, & Aarons (2013) conducted a systematic review of the literature (N = 73 studies) to determine the organizational factors that affect the implementation of evidence-based interventions in child and adolescent treatment settings. Using the Exploration, Preparation, Implementation, Sustainment Framework of implementation, this review delineates barriers to implementation at each of these stages. Of all reviewed studies, sixty (n = 60) focused on the implementation stage, and found staff training, fidelity monitoring, staff support, and supervision to be the largest predictors of implementation success (Nivons et al., 2013). Echoing the findings of Calabrese and colleagues (2010), this review also found that as clinicians received less material support and training from organization administrators, the less prepared they felt in implementing the studied intervention (Novins et al., 2013). Of particular importance, organizations that lacked formal supervisory experiences for clinicians and regimented fidelity monitoring (e.g., checklists, observations) demonstrated poorer treatment outcomes, increased staff burnout, and poorer staff retention (Novins et al., 2013). Implementation studies focused on CP interventions found similar results

as Turner and Sanders (2006) articulate clinician supervision, administrative support, and adequate funding as being the largest organizational predictors of successful parent-focused psychosocial intervention implementation. Also similarly, Henderson, Mackay, and Peterson-Badali (2006) investigated variables affecting implementation of an arson-prevention program across all phases of implementation and found significant predictive effects for educational exposure and self-efficacy across all phases. These authors linked these findings by indicating that clinicians with less exposure to the program's training materials reported less confidence in implementing the program, and lower self-efficacy (Henderson et al., 2006).

Organizationally, the literature reiterates the importance of training and support (e.g., fidelity checks, supervision, financial support) to ensure that clinicians possess the self-efficacy necessary to provide patient access to evidence-based interventions that are implemented appropriately. These variables are directly related to improvements in program fidelity, patient outcomes, and organizational outcomes (e.g., reduced burnout, staff retention). However important, data availability prevents the present study from examining how these organizational variables may affect the use of psychotropic medication within initial treatment recommendations.

System-level factors. Also affecting patient access to evidence-based psychosocial intervention are larger systemic variables such as health insurance status, which can greatly affect the types and durations of care available to patients (Katakoa, Zhang, & Wells, 2002). Research on this issue shows youth without health insurance to experience significantly higher rates of unmet mental health needs compared to youth with public or private forms of insurance (Inkelas, Raghavan, Larson, Kuo, & Ortega, 2007; Katakoa et al., 2002). As such, patient insurance status is important to the present study's focus of variables affecting the likelihood that

initial treatment recommendations include psychotropic medication. Katakoa and colleagues (2002) used three national data sets to examine disparities in unmet mental health needs among American youth. In a 12-month period, this study found that between 2-9% of youth used mental health services. Of children and adolescents 6–17 years old who were defined as needing mental health services, nearly 80% did not receive mental health care. Controlling for other factors, the authors determined that the rate of unmet need was greater among uninsured than publicly insured children (Katakoa et al., 2002). Inkelas and colleagues (2007) completed similar study using data from the National Center for Health Statistics' survey of children with special health care needs (N = 38,866). This study found children without insurance were significantly more likely to have an unmet mental health need compared to their insured peers (OR = 4.37, $p < .001$). These data indicate that the effect of insurance status on initial treatment recommendations cannot be overstated. However, the high rate of insurance coverage in the present sample makes analysis of this variable statistically meaningless (97% report insurance), resulting in the omission of this variable from the present study.

Travel distance to psychosocial intervention providers (travel distance) has long been identified as another salient systemic predictor of mental health care access and mental health care quality (Gamm, Stone, & Pittman, 2010). Though there is little data on the effect that travel distance has on child and adolescent psychiatric treatment, let alone CP treatment, existing literature with rural adult populations (Gamm et al., 2010; Goldsmith, Wagenfeld, Manderscheid, & Stiles, 1997; Jameson & Blank, 2007; Pullmann, VanHooser, Hoffman, & Heflinger, 2010) and substance abusing populations (Beardsley, Wish, Fitzelle, O'Grady, & Arria, 2003; Fortney, Booth, Blow, Bunn, & Cook, 1995; Fortney, Owen, & Clothier, 1999; Schmitt, Phibbs, & Piette, 2003) highlight the diminishing effects this factor has on mental health care. This is salient to the

present study, as the treatment of CP is increasingly consisting of psychotropic medication, whose portability may be seen as a solution for families who cannot easily access providers of "least intrusive" interventions such as psychosocial intervention.

Rural communities present numerous unique challenges to accessing mental health care, though a prominent concern are the prohibitive travel distances resulting from a shortage of qualified mental health professionals in rural areas (Goldsmith et al., 1997). Though there is considerable attention on this issue, a United States Department of Health and Human Services report of 1,253 semi-rural counties (population between 2,500 and 20,000) indicates that 50% are still without licensed social worker or psychologist working within their borders, 75% are without a psychiatrist of any kind, and 95% are without a child psychiatrist (Jameson & Blank, 2007). Based upon this data, a recent review of barriers facing rural child and adolescent mental health care indicates a scarcity of care providers as being paramount to all others (Gamm et al., 2010). Reflecting this concern, Pullmann and colleagues (2010) interviewed rural community members and clinicians to understand the barriers to family involvement in a system of care for emotionally and behaviorally disordered youth. Coded interview data indicated the most commonly endorsed themes to be isolation from care providers and lack of transportation (Pullmann et al., 2010). This scarcity of care providers entails that youth and families must travel great distances to obtain outpatient mental health services, likely diminishing the potential that they will access such services (Gamm et al., 2010). Available data seems to support this outcome, as research into urban-rural mental health care disparities notes that rural youth receive significantly less mental health services than urban youth (Jameson & Blank, 2007).

Though the direct effects that travel distance has on child and adolescent mental health care access remains unstudied, research with substance-abusing adults corroborates the

mitigating effects that travel distances can have on care access (Beardsley et al., 2003; Fortney et al., 1995; Schmitt et al., 2003) and care quality (Fortney et al., 1999). Using a sample of patients discharged from one of 33 Department of Veterans Affairs (VA) hospitals (N = 4,621), Fortney and colleagues (1995) tested if travel distance affected the probability that individuals would participate in alcoholism aftercare appointments. An analysis of their outpatient records indicated that travel distance significantly reduced participation in aftercare services, especially for elderly and rural veterans. A replication of this study used national a sample of veterans discharged from VA hospitals (N = 33,952), and found that patients who travelled 10 miles or less were 2.6 times more likely to obtain aftercare services than those who travelled more than 50 miles (Schmitt et al., 2003). Beardsley and colleagues (2003) found similar outcomes for clients receiving outpatient drug treatment (N=1,735). This study found that clients who travelled less than 1 mile were 50% more likely to complete treatment than clients who traveled over 1 mile. Moreover, clients who traveled 4 miles or more were significantly more likely to have a shorter stay in treatment than clients who traveled less than 1 mile (Beardsley et al., 2003).

While this research relates to the present study by showing how travel distance can diminish mental health care access, the present study is more specifically focused on how travel distances affect the quality of care provided. With a similar focus in mind, Fortney and colleagues (1999) studied how travel distances to acute outpatient psychiatric services affected the quality of care for rural communities. This study found that patients living more than 60 miles from outpatient psychiatry clinics were 4.8 times more likely to be hospitalized for acute psychiatric treatment than those who lived less than 60 miles away (Fortney et al., 1999). As such, this study found that travel distance to outpatient providers increased the likelihood of an otherwise unnecessary hospitalization (Fortney et al., 1999). This finding is relevant to the

present study as CP treatment guidelines' recommended initial use of psychosocial intervention would require weekly face-to-face sessions for youth and their families. Based upon Fortney and colleagues (1999), the prospect of making weekly trips over long distances to psychosocial intervention providers may prompt families and clinicians to opt for more portable solutions such as psychotropic medication. Based upon this research and data availability within patient medical records, the present study examines how travel distance to psychosocial intervention provider affects the likelihood that initial treatment recommendations for CP include psychotropic medication.

Overview of predictors of initial treatment recommendations. National prescription data shows that the psychotropic treatment for CP has become increasingly common (Olfson et al., 2014), indicating that initial treatment recommendations are being influenced by predictors beyond the "least intrusive" principle of CP treatment guidelines (AAP, 2012a; 2012b; NICE, 2014). CP etiology, psychosocial intervention effectiveness, and implementation research highlight many potential factors that may influence clinical care for CP, however research has not yet investigated if any of these factors affect the likelihood that initial treatment recommendations for CP include psychotropic medication. Based upon sample characteristics, setting characteristics, and data availability, the present study examines how a subset of these factors affect initial treatment recommendations, including age of CP diagnosis, aggression severity, internalizing severity, travel distance to psychosocial intervention provider, race, and gender (see Table 3). The study also assesses if a subset of these factors moderate the relationship between the "least intrusive" principle (i.e., History of psychosocial intervention for CP) and the likelihood of initial psychotropic recommendations. Specific hypotheses and their supporting rationales are detailed below.

Table 3.

Reviewed Predictors of Initial Psychotropic Treatments for Conduct Problems

Patient Predictors	Study Disposition
History of Psychosocial Intervention for CP	Examined
Race	Examined
Gender	Examined
Age of CP Diagnosis	Examined
Aggression Severity	Examined
Internalizing Severity	Examined
Previous Out-of-Home Placements	Precluded by Sample (95% Without Placement)
Suicidal Ideation	Data Unavailable
Parent Marital Satisfaction	Data Unavailable
Clinician Predictors	**Study Disposition**
Clinician Attitudes	Precluded by Treatment Setting
Clinician Training	Precluded by Treatment Setting
Clinician Self-Efficacy	Precluded by Treatment Setting
Organizational Predictors	**Study Disposition**
Fidelity Checks of Implementation	Precluded by Treatment Setting
Supervision of Implementation	Precluded by Treatment Setting
Financial Support of Program	Precluded by Treatment Setting
Systemic Predictors	**Study Disposition**
Patient Insurance Status	Precluded by Sample (97% Insured)

Table 3 (cont'd)

Travel distance to Psychosocial Intervention Provider	Examined

Research Hypotheses

Hypothesis I. History of psychosocial intervention for CP, as a proxy indicator of the "least intrusive" principle, will be the most significant main predictor of initial treatment recommendations amongst all tested main effects in the final model. Having a history of psychosocial intervention for CP will significantly increase the likelihood that clinician recommendations include psychotropic medication.

Rationale. Treatment guidelines for aggressive (AAP, 2012a; 2012b) and non-aggressive CP (NICE, 2014) indicate that initial treatment recommendations for CP should not consist of psychotropic medication until treatment with "least intrusive" psychosocial intervention has been attempted. This hypothesis assumes that outpatient psychiatric practice is governed by these treatment guidelines in stating that a history of psychosocial intervention for CP will be the most significant main predictor of initial treatment recommendations for CP.

Hypothesis II. Aggression severity will significantly moderate the relationship between history of psychosocial intervention for CP and initial treatment recommendations. Youth without a history of psychosocial intervention for CP and higher aggression severity will be more likely to have initial treatment recommendations that include psychotropic medication. Youth without a history of psychosocial intervention for CP and lower aggression severity will be less likely to have initial treatment recommendations with psychotropic medication.

Rationale. Various streams of literature inform this hypothesis. The mitigating effects that aggression severity has been shown to have on adherence to psychosocial intervention principles (Henggeler et al., 1997), and psychosocial intervention effectiveness (Hawes & Dadds, 2007) may reflect the difficulty of treating severe aggression that psychiatrists encounter within their practice, facilitating their willingness to initially treat CP with psychotropic medication. Furthermore, as Bachmann and colleagues (2014) suggest, the rapid onset of psychotropic effectiveness may also bear on initial treatment recommendations for youth with severely aggressive CP. Finally, a recent study of how psychiatrist beliefs predict practice found severity of aggression and delinquent behaviors to be most predictive of off-label prescriptions (Rodday et al., 2014). Based upon this literature, the present study hypothesizes that elevated aggressive severity will significantly increase the likelihood that initial treatment recommendations include psychotropic medication for youth without a history of psychosocial intervention for CP.

Hypothesis III. Internalizing severity will significantly moderate the relationship between participant history of psychosocial intervention for CP and initial treatment recommendations. Youth without a history of psychosocial intervention for CP and higher internalizing severity will be more likely to have initial treatment recommendations that include psychotropic medication. Youth without a history of psychosocial intervention for CP and lower internalizing severity will be less likely to have initial treatment recommendations with psychotropic medication.

Rationale. This hypothesis is informed by CP etiology (Pardini & Frick, 2013) and psychotropic usage research (Griffith et al., 2012). CP etiology research has shown a subset of youth with CP to present with significant emotional dysregulation symptoms that leaves them

vulnerable to higher rates of internalizing disorders (Pardini & Frick, 2013). Similar to the rationale of the second hypothesis, clinicians may include psychotropic medications within their initial treatment recommendations due to their ability to quickly address severe internalizing symptoms, and the CP that stem from them. Additionally, Breland-Noble and colleagues (2004) and Griffith and colleagues (2012) both showed internalizing severity to significantly increase the likelihood that youth are prescribed with psychotropic medication in out-of-home placement settings. Based upon these studies, this hypothesis states that internalizing severity will significantly increase the likelihood that initial treatment recommendations include psychotropic medication for youth without a history of psychosocial intervention for CP.

Hypothesis IV. Travel distance to psychosocial intervention provider (Travel Distance) will significantly moderate the relationship between participant history of psychosocial intervention for CP and initial treatment recommendations. Youth without a history of psychosocial intervention for CP and with longer travel distances will be more likely to have an initial treatment recommendation that includes psychotropic medication. Youth without a history of psychosocial intervention for CP and with shorter travel distances will be less likely to have an initial treatment recommendation with psychotropic medication.

Rationale. This hypothesis is based upon research showing travel distances to be a significant barrier to accessing mental health care (Fortney et al., 1995), and diminishing the quality of mental health care when accessed (Fortney et al., 1999). This research has repeatedly shown travel distance to significantly diminish veteran's involvement in aftercare services (Schmitt et al., 2003), with one study finding that those who travelled less than 1 mile were 50% more likely to complete treatment than clients who traveled over 1 mile (Beardsley et al., 2003). It is because of these findings that travel distance is noted to be the largest barrier to child and

adolescent mental health care in rural settings (Gamm et al., 2010). These findings bear on the present study as they may also provide context for the increased use of psychotropic medication for CP (Olfson et al., 2014). Quite possibly, families may be unable to partake in "least intrusive" psychosocial intervention services because they live so far away from psychosocial intervention providers. In such cases, psychiatrists may favor the portability that psychotropic medication can provide when treating CP. Travel distance is not predicted to increase the likelihood that initial treatment recommendations include psychotropic medication for youth without a history of psychosocial intervention for CP, except when travel distances are longer.

CHAPTER 3:

METHODS

Design

This study is a retrospective review of patient medical records (Gearing, Mian, Barber, & Ickowicz, 2006). This particular design is uniquely beneficial to this study's objectives of investigating the actual translation of science into clinical practice. By being a retrospective investigation, this study controls for deviations in clinician behavior that could result from observer bias in prospective studies. Furthermore, a naturalistic investigation yields data without *a priori* variable manipulations that could also cause clinician behavior to deviate from its natural state. These design considerations enhance the degree to which this study reflects unencumbered clinical practice with CP, and provides a meaningful preliminary analysis of hypothesized barriers to optimal CP care provision.

Setting

Medical records for this study come from an outpatient clinic that is housed within the Department of Psychiatry of a large research university located within a Midwestern urban area (United States 2010 Census metropolitan area population = 464,036). The metropolitan area is 82% European-American, 9% African-American, 4% Asian-American, 4% Latino or Hispanic, and 3% multiracial, and has a median family income of $60,602 (U.S. Census, 2010). The clinic provides comprehensive evaluation, consultation, and therapeutic services for a range of child and adolescent psychiatric problems. As part of the Department of Psychiatry, this clinic serves clinical, research, and teaching functions for the College of Human Medicine and College of Osteopathic Medicine within the university. At the time of this study there were 21 providers at the clinic: 17 clinicians and 4 child-adolescent psychiatry residents. Staff clinicians possess a

range of degrees: 9 possess medical doctorates; 8 have doctorates of osteopathy; and 4 have doctorates of philosophy in psychology. Psychiatry residents handle the majority of child and adolescent patient cases, and make treatment recommendations under the supervision of a licensed medical practitioner. Psychiatry residents provide management of psychotropic medications and can refer for other therapeutic services include problem solving skills training, social skills training, parent group therapy, family therapy, parent management training, individual therapy. Parents requesting appointments for their child or family are requested to complete an Achenbach Child Behavior Checklist (CBCL), psychiatric assessment and intake questionnaire, and patient registration form prior to their appointment (see below for descriptions of each).

Participants

Due to the retrospective nature of this project, this study employs convenience sampling in the selection of medical records of patients who have received care for conduct problems through Michigan State University's (MSU) psychiatry clinic over the past five years (2009 and 2014). Eligible medical records are from males and females with a DSM-IV-TR diagnosis for opposition defiant disorder, conduct disorder, and/or unspecified disruptive, impulse-control, conduct disorder, an initial treatment age of less than 18 years, and initial recommendations that include some form of treatment. The selected time frame (i.e., past five years) was derived to increase the relevance of derived outcomes to current psychiatric practices and treatment recommendations from professional groups (Griffith et al., 2012; Leslie, 2010). This time frame also provides a sample size that meets the most conservative estimate of cases needed per variable (i.e., 10) to obtain results that are likely to be both true and clinically useful when conducting a retrospective chart review (Field, 2009; Gearing et al., 2006). Moreover,

Demidenko's (2007) sample size calculator for logistic regression supports these estimates by indicating a minimum sample of seventy cases for the given study parameters (i.e, number of predictors, equal proportion on binary outcome variable).

Based upon these criteria, eighty-one (N = 81) patient files were reviewed for this study. From this sample, three (n =3) are omitted from analyses due to patient absenteeism (n = 2) or provision of non-treatment recommendations (i.e., monitoring existing strategies; n = 1), yielding a final sample of seventy-eight patient records (n = 78). Demographic data and sample characteristics are presented in Table 4. Participants averaged 9.9 years at the time of CP diagnosis within the study clinic. The majority of the sample was male (71%), Caucasian (83%), received a diagnosis of oppositional defiant disorder (59%), and reported some form of insurance (97%). A majority reported a history of psychosocial intervention for CP (53%), and the average travel distance to the study clinic 17.3 miles. Respondents on the CBCL scales were mostly biological mothers (76%), with average internalizing symptoms ($T = 63.6$), externalizing symptoms ($T = 69.7$), and aggression symptoms ($T = 72.7$) settling in the clinically-significant range. Most participants received an initial treatment recommendation that included psychotropic medication (initial treatment recommendations-psychotropic medication = 55%). Of the prescribed medication, psychostimulants (47%), selective serotonin reuptake inhibitors (SSRI; 26%), and atypical antipsychotics (16%) were the most common, with antihypertensives, antihistamines, and selective norepinephrine reuptake inhibitors being less common (2% combined). No participants received more than one medication within an initial treatment recommendation.

Table 4.

Demographic Data & Sample Characteristics

	n (%)	Mean (SD)
Age at CP Diagnosis at Clinic (years)		9.9 (3.4)
9 years or younger; Childhood Onset	45 (58%)	
10 years and older; Adolescent Onset	33 (42%)	
Gender		
Male	55 (71%)	
Female	23 (30%)	
Ethnicity		
Caucasian	65 (83%)	
Hispanic-Latino	5 (7%)	
African American	4 (5%)	
Indian	2 (3%)	
Arab	2 (3%)	
Insured	76 (97%)	
Travel Distance to Psychosocial Intervention Provider (Miles)		17.3 (12.5)
Conduct Problem Diagnosis		
ODD	46 (59%)	
DBD-NOS	30 (39%)	
CD	2 (3%)	
Reported History of Psychosocial Intervention for CP	41 (53%)	
Reported History of Psychotropic Intervention	41 (53%)	
CBCL Respondent		
Biological Mother	59 (76%)	
Biological Father	9 (12%)	
Adoptive Parent	9 (12%)	
Stepparent	1 (1%)	
CBCL Internalizing (T-Score)		63.6 (9.8)
CBCL Externalizing (T-Score)		69.7 (8.2)
CBCL Aggression (T-Score)		72.7 (11.2)
Initial Treatment Recommendation		
Without Psychotropic Medication	35 (45%)	
With Psychotropic Medication	43 (55%)	
Psychostimulant	20 (47%)	
SSRI	11 (26%)	
Atypical Antipsychotic	7 (16%)	
Other	5 (12%)	

Data Sources

All data for this study is from the medical records of patients who received care at Michigan State University psychiatry clinic (see 'Participants' for eligibility criteria). Patient medical records are maintained on the Centricity Electronic Medical Record program, which is software that is designed to facilitate the clinical and financial aspects of healthcare provision. Measures and tools for the present study are implemented through regular clinical practice at MSU psychiatry clinic, and are regularly maintained within patients' records. Below are a description of these measures, including their respective uses within clinical practice at MSU and locations within patients' electronic records.

Achenbach Child Behavior Checklist. The Achenbach Child Behavior Checklist (CBCL) comes in two forms: One for preschoolers (Ages 1.5 to 5 years), and another for school-age children (Ages 6 to 18 years). The preschool version (Pre-K; 99 items) and the school-age version (SV; 113 items) are both norm-referenced batteries that capture parent perception of children's emotional, behavioral, and social functioning (Achenbach & Rescorla, 2001). The CBCL yields aggregate measures of externalizing symptomology and internalizing symptomology, providing T-scores (Mean = 50, SD = 10) that enable normative comparisons. T-scores over 63 are considered clinically-significant, scores 60 to 63 are in the borderline range, and scores below 60 are considered to be indicative of normal functioning (Achenbach & Rescorla, 2001). CBCL scales comprises numerous subscales that focus on either youth adaptive skills, symptomology, or the degree to which youth profiles match diagnostic criteria within the DSM-IV-TR (APA, 2000). Items on the CBCL provide three possible response classes (0 = Not True, 1 = Sometimes True, 2 = Very True). Since its creation, the CBCL has accumulated large body of psychometric data to support its use in both referred and non-referred samples. The Total

Problem Score of the CBCL has been shown to have acceptable to good inter-rater reliability between parents (Pre-K r = .65; SV r = .80), excellent test-retest reliability (Pre-K r = .90; SV r = .94), and good convergent validity with the Behavior Assessment System for Children Total Problems Scale (BASC; Pre-K r = .73; SV r = .89). In addition to using CBCL data for race and gender, the current study uses data from the Aggression subscale and Internalizing Total Scale of the Pre-K and school-age versions. Similar to the rest of the Total Problem Score of the CBCL, these subscales have been found to have acceptable to good inter-rater reliability (Pre-K Aggression r = .66; Pre-K Internalizing r = .59; SV Aggression r = .82; SV Internalizing r = .72), good to excellent test-retest reliability (Pre-K Aggression α = .87; Pre-K Internalizing α = .90; SV Aggression r = .90; SV Internalizing r = .91), and acceptable to good convergent validity with similar scales on the BASC (Pre-K Aggression r = .86; Pre-K Internalizing r = .63; SV Aggression r = .72; SV Internalizing r = .83).

Similar to Griffith and colleagues (2012) this study analyzed CBCL T-scores, as the differing number of items on the Aggression and Internalizing Scales from the Pre-K to the school-age version precludes the simultaneous analysis of raw data across these versions. Additionally, the analysis of T-scores allows a norm-referenced interpretation of the odds ratio statistic used by the present study. That is, using T-scores allows odds ratios to be interpreted as the likelihood of an outcome per 1-point increase in norm-referenced symptomology (i.e., .1 standard deviation). Parents complete the CBCL during intake appointments at MSU, providing clinicians with a norm-referenced measure of a patient's functioning and helping them inform diagnostic impressions. It is stored in each patient's electronic record in the following location: Patient Name >Documents>Internal Other.

Psychiatric Assessment and Intake Questionnaire. The psychiatric assessment and intake questionnaire (intake questionnaire) is a non-standardized screening tool that is used by MSU psychiatry staff to obtain information regarding the onset and course of presenting problems, present level of functioning, and a history of previously attempted interventions. The psychometric properties of the intake questionnaire have not been examined. The present study utilized items on the intake questionnaire that gather information regarding previous and current psychosocial interventions that have been used to address conduct problems. Parents complete the intake questionnaire during intake appointments at MSU. It is stored in each patient's electronic record in the following location: Patient Name >Documents>Internal Other.

Treatment Notes. All psychiatric care at the MSU Psychiatry Clinic is documented through structured treatment notes for each appointment. These treatment notes are non-standardized and have not been psychometrically tested, however they are structured to provide the diagnostic and functional status of the patient on the date of an appointment, as well as the resulting treatment recommendations. The effect is a chronological narrative tracking the illness and treatment course as observed during patient appointments. This study obtained data on initial treatment recommendations and age of CP diagnosis from the note of a patient's first appointment with a diagnosis of ODD, CD, or DBD-NOS. These notes are stored in each patient's electronic record in the following location: Patient Name > Documents > Notes.

Patient Registration Form. The patient registration form is a non-standardized tool used by the MSU psychiatry clinic to gather general patient information, including contact information and insurance coverage. Its psychometric properties are currently unknown. Parents complete the registration form before attending initial appointments at MSU. The present study used patient addresses reported on this form to calculate the variable Travel Distance to

Psychosocial Intervention Provider. The registration form is stored in each patient's electronic record in the following location: Patient Name>Documents>Internal Other.

Variables & Operationalizations

Initial treatment recommendations (DV). The sole dependent variable for this study was the initial treatment recommendations made by clinicians to address patient conduct problems. Reflecting this study's focus on the "least intrusive" principle, initial treatment recommendations comprised two response classes: 0 = Without psychotropic medication and 1 = With psychotropic medication. Data for this variable came from the treatment note for the appointment when a CP diagnosis was first given to a participant within the study clinic (see Table 4).

History of psychosocial intervention for conduct problems (IV). This independent variable is a binary measure of patient history of psychosocial intervention for CP. According to the "least intrusive" principle of CP treatment guidelines, patients without a history of psychosocial intervention for CP should be initially treated with psychosocial intervention before psychotropic medication is considered (NICE, 2014; AAP, 2012a; 2012b). Based upon this, the present study conceptualized history of psychosocial intervention for CP as a proxy measure of the "least intrusive" principle, comprising two possible response classes (0 = Without history of psychosocial intervention for CP; 1 = With history of psychosocial intervention for CP). Data for this variable came from the intake questionnaire, on which parents of patients list a history of previous psychological and psychiatric interventions that the child has received and the targets of these interventions (see Table 4).

Aggression severity (IV). Aggression severity has been found to diminish adherence to psychosocial intervention principles (Henggeler et al., 1997) and diminish psychosocial intervention treatment outcomes (Hawes & Dadds, 2007). Recent literature also notes that

psychiatrist attitudes may be driving the observed increase in psychotropic treatments for CP (Rodday et al., 2014). Based upon this research, the present study examined aggression as an independent variable. Aggression severity is operationalized in the present study as the T-Score from the aggression subscale of the parent-reported CBCL (see Table 4).

Internalizing severity (IV). Internalizing severity has been found to increase the likelihood that youth is prescribed psychotropic medication for youth in out-of-home placements (Breland-Noble et al., 2004; Griffith et al., 2012; Leslie et al., 2010). The present study attempted to replicate this effect within outpatient psychiatric practice. Internalizing severity is operationalized in the present study as the T-Score from the internalizing subscale of the parent-reported CBCL (see Table 4).

Travel distance to psychosocial intervention provider (IV). Travel distance to psychosocial intervention providers is a well-known barrier to receiving quality mental health care that has been found in both rural (Fortney et al, 1999) and urban communities (Beardsley et al, 2003). This study conceptualized travel distance to psychosocial intervention provider **(**Travel Distance) as the number of miles between the patient's home address as reported on the patient registration form and the psychiatry clinic at MSU, where various psychosocial intervention for CP are available (e.g., family therapy, parent management training). Travel distance was calculated using Google Maps (see Table 4).

Age of conduct problem diagnosis within study clinic (IV). The construct, age of CP onset is strongly associated with distinct CP patterns, as youth with childhood-onset CP have been found to demonstrate more aggressive forms of CP than youth with adolescent-onset CP (Pardini & Frick, 2013). As an indicator of this construct, the present study compared patient age at the time of CP diagnosis within the study clinic with the DSM-V criteria to create a

dichotomous indicator of this construct. Youth who were younger than 10 years at the time of CP diagnosis at the study clinic were considered to have childhood-onset CP, and youth who were 10 years and older at the time of CP diagnosis at the study clinic were considered to have adolescent-onset CP (0 = adolescent-onset CP; 1 = childhood-onset CP). Data for this variable was obtained by subtracting patients' date of birth as reported on Patient Registration Form from the date of the appointment when a CP diagnosis was first present (see Table 4).

Race (IV). Previous research finds race to significantly increase the likelihood that a youth is prescribed psychotropic medication (Breland-Noble et al., 2004; Griffith et al., 2012; Leslie et al., 2010). These studies find Caucasian youth to be significantly more likely to have a psychotropic prescription compared to non-Caucasian youth. Reflecting these findings, a dichotomous form of this variable was used in an attempt to replicate these findings (0 = Non-Caucasian; 1 = Caucasian). Data for this variable came from the CBCL (see Table 4).

Gender (IV). Gender has been found to significantly increase the likelihood that a youth is prescribed psychotropic medication (Breland-Noble et al., 2004; Griffith et al., 2012; Leslie et al., 2010). In particular, these studies found males to be significantly more likely to have a psychotropic prescription compared to females. Reflecting these findings, this variable is dichotomous in an attempt to replicate these findings (0 = Female; 1 = Male). Data for this variable is obtained from the CBCL (see Table 4).

Table 5.

Variables, Data Sources, & Operationalizations

Variable	Data Source	Operationalization
Outcome Variable Initial Treatment Recommendation	Treatment recommendations located in 'Treatment Notes' section of patient medical record	0 = Without medication 1 = With medication

Table 5 (cont'd)

Predictor Variable 1 History of psychosocial intervention for CP	Psychiatric assessment and intake questionnaire	0 = Without history of psychosocial intervention for CP 1 = With history of psychosocial intervention for CP
Predictor Variable 2 Aggression Severity	Achenbach's Child Behavior Checklist (CBCL)	Aggression Scale T-Score
Predictor Variable 3 Internalizing Severity	CBCL	Internalizing Scale T-Score
Predictor Variable 4 Travel Distance to Psychosocial Intervention Provider	Patient Registration Form & Google Maps	Travel distance from home address to Psychiatry Clinic (miles)
Predictor Variable 5 Age of CP Diagnosis	Patient Registration Form & Treatment Notes	Age at CP Diagnosis 0 = Adolescent-onset (Onset >/= 10 years) 1 = Childhood-onset (Onset < 10 years)
Predictor Variable 6 Race	CBCL	0 = Non-Caucasian 1 = Caucasian
Predictor Variable 7 Gender	CBCL	0 = Female 1 = Male

Statistical Analyses

Study hypotheses were tested using logistic regression analyses from the Statistical Package for the Social Sciences (SPSS). Logistic regression is a method of statistical classification that predicts the probabilities of all outcomes of a dichotomous dependent variable based upon a set of predictor variables. This statistical method was used by other studies that examined predictors of psychotropic medication for youth within in other treatment settings (Breland-Noble et al., 2004; Griffith et al., 2012). These analyses were carried out using the

backward elimination of predictor variables and interaction terms, with final model fitness being assessed with log-likelihood ratio, chi-square, Hosmer-Lemeshow statistics, and percentage accuracy in classification (Field, 2009). Model testing started with all main and interaction terms. Subsequent models were run after removing the least significant contributor to the overall model, which were determined using changes in the likelihood ratio between models. Model testing proceeded in this fashion until all included main and interaction terms were contributors to the overall model, and their removal would have yielded a statistically significant change in model fit. The predictive value of all remaining main and interaction terms were then examined using odds-ratios and p-values.

Assumption testing. Assumptions of logistic regression include: absence of complete separation (i.e., no perfect predictors), an absence of outliers, absence of multicollinearity, and continuous predictors that are linearly related to the outcome variable. While the final model was without perfect predictors (see Results, below), *a priori* analyses were conducted to vet the data for the remaining assumptions.

Boxplots on all continuous predictors indicated no outliers for aggression severity, one outlier for travel distance to psychosocial intervention provider (travel distance; Figure 1), and two outliers for internalizing severity (Figure 2). The impact these outliers had on the overall model and their respective predictors was examined within the main analyses by producing standardized residuals and Cook's Distance for the model. A review of the standardized residuals obtained from the tested model indicated no statistical outliers (Standardized Residuals Range = -1.954-2.486). Likewise, Cook's Distance did not indicate these cases to have an inordinate influence upon model fit or predictor effects for any case (Cook's Distance = .008-.510). Based upon these diagnostic tests, these cases were included in logistic modeling procedures. Tests of

multicollinearity showed that while aggression severity and internalizing severity were moderately correlated in the present sample ($r = .441$, $p < .01$), no predictor had a Tolerance Estimate below .667, or Variance Inflation Factor above 1.49, suggesting that this assumption was met.

Finally, Box-Tidwell procedures were run to see if continuous predictors were linearly related to the logit of the outcome variable (i.e., initial treatment recommendations). This assumption was also upheld as these procedures found no predictors to significantly interact with their respective log transformations in predicting initial treatment recommendations. However, it should be noted that aggression severity was approaching significance ($p = .057$).

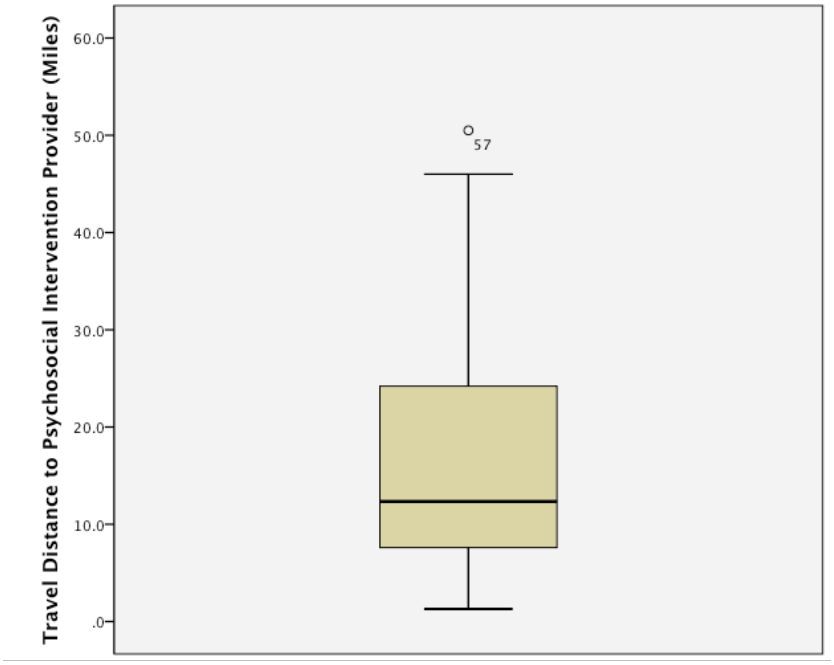

Figure 1: Boxplot of Data for Travel Distance to Psychosocial Intervention Provider

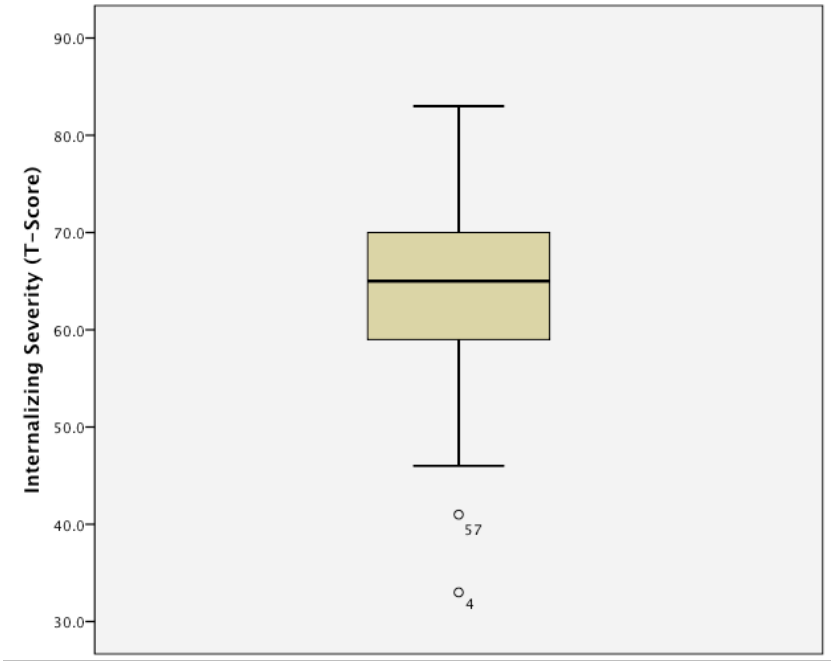

Figure 2: Boxplot for Internalizing Severity Data

CHAPTER 4:

RESULTS

Overall Model

Without predictors, the null model was able to correctly classify 55% of cases (Percentage Accuracy in Classification [PAC] = 55%). Model testing procedures resulted in six separate models between the first full model (Step 1), and the final model (Step 6). The final model was significantly better than the null model in classifying participant cases $\chi^2(5) = 16.089$, $p < .01$, and increased the PAC to 73% of cases. Cox & Snell and Nagelkerke Pseudo R^2 estimates indicate that the final model explained between 19% and 25% of variance in participant initial treatment recommendations. Similarly, the Hosmer-Lemeshow test was non-significant ($p = .455$), further indicating the fitness of the final model.

Hypothesis I

The first hypothesis of this study stated that participant history of psychosocial intervention for conduct problems (CP) would be the most significant main predictor of initial treatment recommendations. Contrary to this hypothesis, the results in Table 6 show that this variable was not the most significant main predictor of initial treatment recommendations ($OR = 2.11$, $p = .150$). However, its inclusion in the final model suggests its importance to overall model fit, while a comparison of the PAC of the final model (73%) with the PAC after manually removing history of psychosocial intervention for CP from the final model (67%) also indicates its importance.

Results show significant main effects that were not hypothesized by the present study by showing travel distance to psychosocial intervention provider (travel distance) and aggression severity to significantly predict initial treatment recommendations with psychotropic medication

(Table 6). Specifically, every one-mile increase in travel distance (*OR* = 1.071, *p* = .028) and one-point increase in aggression T-score (*OR* = 1.053, *p* = .039) significantly increased the likelihood that initial treatment recommendations included a psychotropic medication. Graphical representations of these significant main effects are illustrated using categorical forms of these variables to facilitate interpretation (Figure 3 & Figure 4). These categorical forms of the variables were created in the following manner: Low = beyond 1 SD below mean; Moderate = Within 1 SD of mean; High = beyond 1 SD above mean. Non-significant main predictors and interaction terms are noted in Table 7, including the order in which they were removed.

Table 6.

Final Logistic Regression Model Predicting Likelihood that Initial Treatment Recommendations Include a Psychotropic Medication

Predictor Terms	B	S.E.	Wald	P-Value	Odds Ratio	95% Confidence	
						LB	UB
Age of CP Diagnosis	-.824	.559	2.176	.140	.439	.147	1.311
History of Psychosocial Intervention for CP	.747	.519	2.075	.150	2.112	.764	5.839
Aggression Severity	.052	.025	4.250	*.039**	1.053	1.003	1.107
Travel Distance	.069	.031	4.808	*.028**	1.071	1.007	1.139
History of Psychosocial Intervention for CP x Travel Distance	-.095	.044	4.648	*.031**	.909	.833	.991
Constant	.240	.513	.218	.640	1.271	--	--

Table 7.

Non-significant Predictor Terms and Order of Removal

Predictor Terms	B	S.E.	Wald	P-Value	Odds Ratio	Order Removed
Main Effects						
Race	.187	.707	.070	.792	1.205	1
Internalizing Severity	-.013	.042	.094	.759	.987	3
Gender	.234	.600	.152	.696	1.264	4
Interaction Effects						
History of Psychosocial Intervention for CP x Aggression Severity	-.023	.056	.167	.683	.978	2
History of Psychosocial Intervention for CP x Internalizing Severity	.018	.046	.152	.697	1.018	5

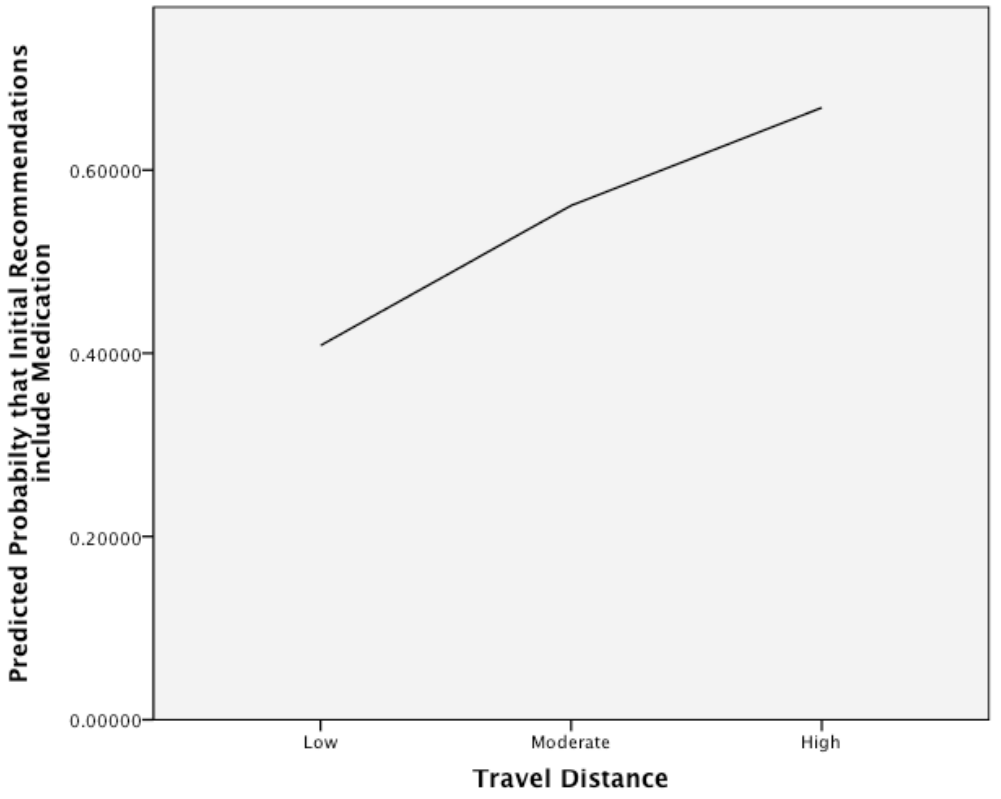

Figure 3: Line Graph of Significant Main Effect for Travel Distance to Psychosocial Intervention Provider

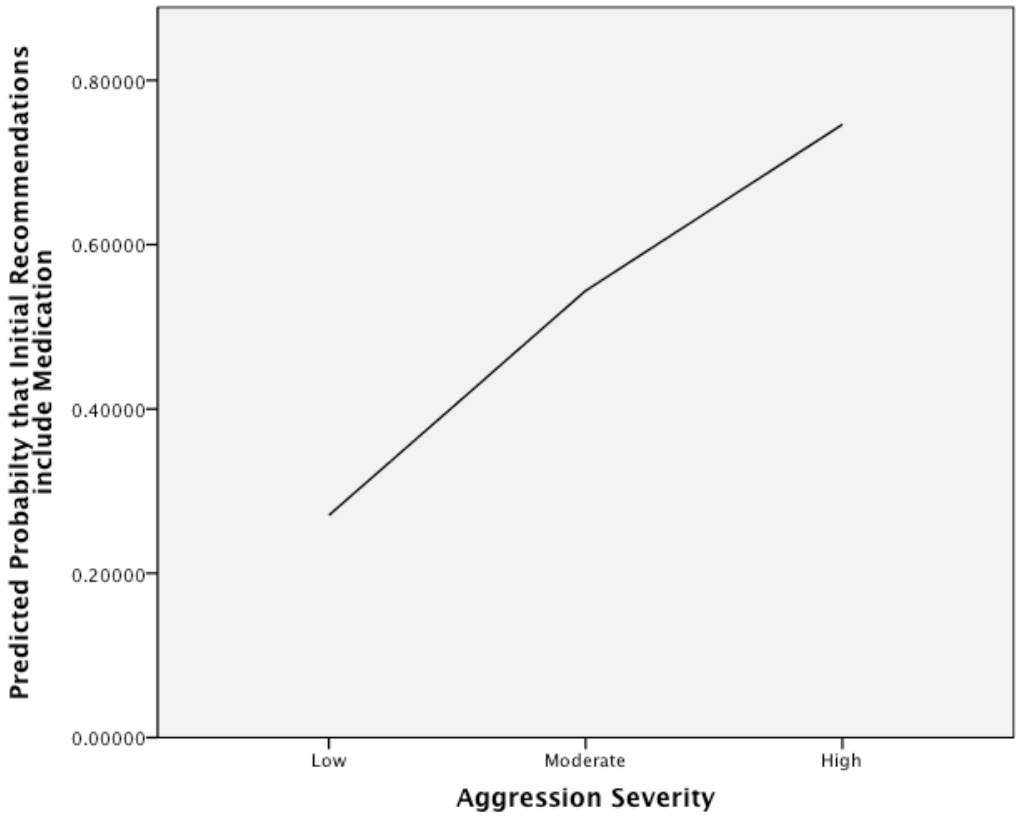

Figure 4: Line Graph of Significant Main Effect for Aggression Severity

Hypothesis II

The second hypothesis predicted that aggression severity would significantly moderate the relationship between history of psychosocial intervention for CP and initial treatment recommendations. The current results do not support this hypothesis. As noted in Table 7, the interaction term for aggression severity and history of psychosocial intervention for CP was the second predictor removed during model testing, suggesting that it was the second least contributive term to overall model fit (*OR* = .978, *p* = .683).

Hypothesis III

The third hypothesis predicted that internalizing severity would significantly moderate the relationship between history of psychosocial intervention for CP and initial treatment recommendations. The current results do not support the hypothesis. As can be seen in Table 7,

the interaction term for internalizing severity and history of psychosocial intervention for CP was the fifth predictor removed during model testing, suggesting that it was the fifth least contributive term to overall model fit (*OR* = .1.018, *p* = .697).

Hypothesis IV

The final study hypothesis predicted that travel distance would significantly moderate the relationship between history of psychosocial intervention for CP and initial treatment recommendations. Current results support this hypothesis with the interaction term between history of psychosocial intervention for CP and travel distance significantly predicting initial treatment recommendations with psychotropic medication (*OR* = .909, *p* = .031). To aid in an accurate interpretation of this result and its bearing on the study hypothesis, a graphical representation of this interaction using a categorical form of travel distance is provided below (Figure 5). From Figure 5 it can be seen that participants without a history of psychosocial intervention for CP had a higher likelihood of receiving initial treatment recommendations with a psychotropic medication when travel distances were longer versus shorter. Surprisingly, this effect was reversed for participants with a history of psychosocial intervention for CP, as their likelihood of receiving initial treatment recommendations with psychotropic medication was higher at low travel distances than at high travel distances. These results support the moderation effects predicted by this hypothesis.

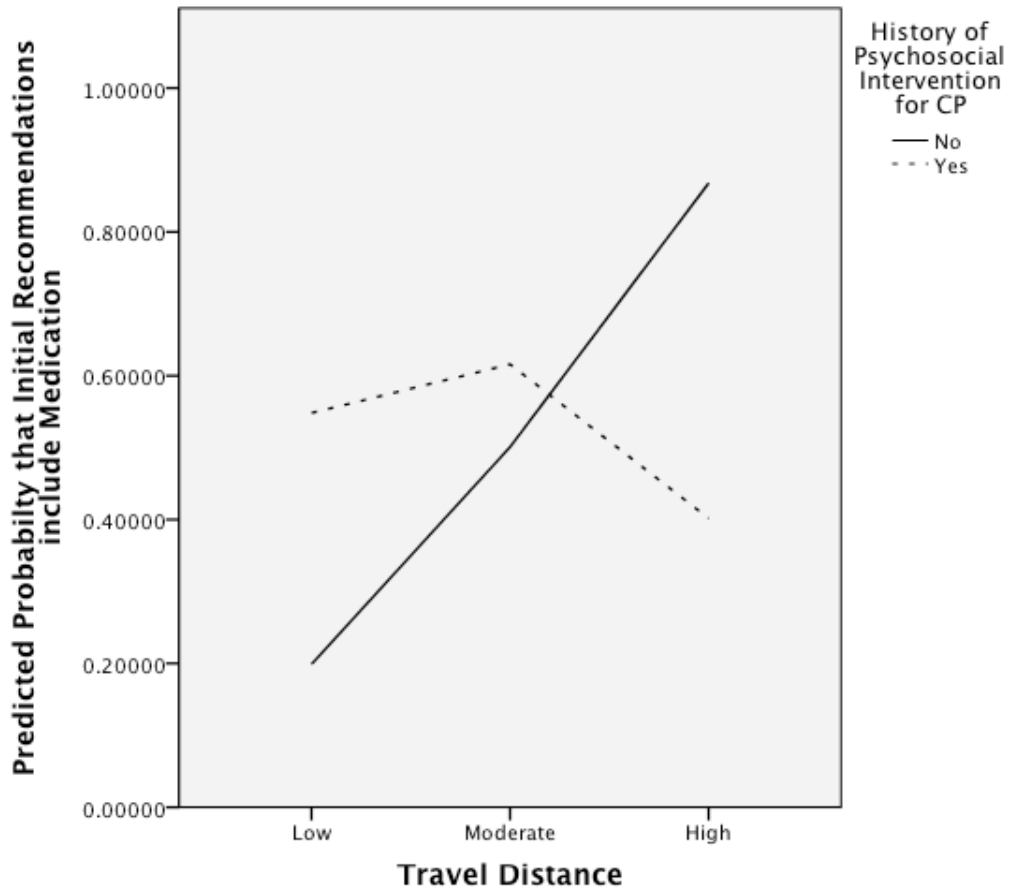

Figure 5. Line Graph of Significant Interaction Effect Between History of Psychosocial Intervention for Conduct Problems and Travel Distance to Psychosocial Intervention Provider

CHAPTER 5:

DISCUSSION

This study is the first to examine the implementation of conduct problem (CP) treatment guidelines within any mental health setting. It used patient history for psychosocial intervention for conduct problems as a binary indicator of the "least intrusive" principle to examine how this key element of CP treatment guidelines affected the likelihood that initial treatment recommendations included psychotropic medication when considered within the context of other known and potential predictors of medication use. Additionally, this is also the first study to provide preliminary data on how important patient and non-patient factors affect initial treatment recommendations for children and adolescents receiving outpatient psychiatric care for CP. These qualities make this study a unique contribution to the literature, with important clinical implications and guidance for future research.

History of Psychosocial Intervention for Conduct Problems

History of psychosocial intervention for CP was included in this study as a binary indicator of how well the "least intrusive" principle of CP treatment guidelines is implemented in outpatient practice (AAP, 2012; NICE, 2014). Given this scope, the finding that history of psychosocial intervention for CP is not the most significant main predictor of initial treatment recommendations shows that patients were treated with psychotropic medication regardless of if they had previous treatment attempts with psychosocial intervention, and indicates outpatient care for CP that does not fully reflect the "least intrusive" principle (AAP, 2012; NICE, 2014). These results provide preliminary data that confirms a gap between CP treatment guidelines and the outpatient treatment of CP, and links this gap with the increased use of psychotropic medication for CP that is observed in numerous countries (Bachmann et al., 2014; Olfson et al.,

2014; Pringsheim et al., 2011). Additionally, these results echo previous research in showing travel distance and aggression severity as potential contributors to this guideline-treatment gap, and suggest that addressing these factors could improve the relevance of the "least intrusive" principle to the outpatient psychiatric treatment of CP.

It is important to note that these results do not suggest the wholesale disregard for the "least intrusive" principle within the study clinic. The inclusion of history of psychosocial intervention for CP in the final model indicates its importance to improving overall model fit, a fact that may owe much to a significant interaction with travel distance. The ambiguity of these finding suggests that the study clinic strives to follow the "least intrusive" principle, but may be compelled not to due to the influence of other factors, such as travel distance and aggression severity.

Travel Distance to Psychosocial Intervention Provider

The distance participants travelled to receive psychiatric services within this study (i.e., Travel distance) significantly increased the likelihood that they received initial recommendations with psychotropic medication. Specifically, these preliminary results suggest that every 10 miles participants lived away from the study clinic increased the likelihood that they received medication by 11%. These data align with previous research showing travel distance to significantly diminish the likelihood that veterans (Schmitt et al., 2003) and substance abusers (Beardsley et al., 2003) access outpatient services, and suggests that this variable affects mental health treatment for children and adolescents. The significant interaction between travel distance and history of psychosocial intervention for CP suggests that the main effect for travel distance was driven by youth without such a treatment history, as youth with a history of psychosocial intervention for CP demonstrated an opposing trend at longer travel distances (See Figure 5).

The finding for youth without a history of psychosocial intervention for CP would seem to indicate initial treatment recommendations that are not aligned with the "least intrusive" principle of CP treatment guidelines. There are a couple potential explanations for these findings. First, they may reflect psychiatrist and parent concerns with the prospect of making routine trips to the study clinic to receive psychosocial intervention services, possibly augmenting the appeal of psychotropic medication treatments and their inherent portability. Related to this possibility, treating psychiatrists may not be familiar with psychosocial intervention providers closer to participants home addresses, precluding their ability to refer to outside psychosocial intervention providers. Though this study is silent on these potential explanations, the current results are the first to find the mitigating effect that travel distance can have on child and adolescent mental health services.

Aggression Severity

Aggression severity significantly increased the likelihood that a participant received an initial treatment recommendation with psychotropic medication. This finding corroborates Rodday and colleagues (2014) results that showed aggression to be a psychiatric symptom that significantly predicted psychiatrist willingness to use off-label psychotropic medication with youth. Current findings also align with other research pointing towards specific clinician motivations that may drive this pattern of psychotropic medication use. First, this study complements research demonstrating the mitigating effect that aggression can have on psychosocial intervention adherence (Henggeler et al., 1997) and psychosocial intervention effectiveness (Hawes & Dadds, 2007). It is possible that study clinicians were influenced by this research, or had corresponding clinical experience that led them to view psychosocial intervention to be ineffective in cases of severe aggression. A second potential explanation for

the current finding is posed by Bachmann and colleagues (2014), who suggested that the dangers of aggressive behavior may compel clinicians and parents to consider psychotropic medication due to its rapid onset and ability to quickly mitigate any risk of harm. These authors go on to detail psychotropic medication as a far less time-intensive treatment option than psychosocial intervention, which may also be a motivating factor in its own right (Bachmann et al., 2014).

Contrasting with research supporting a relationship between aggression and psychotropic medication, Griffith and colleagues (2012) used the same measure of aggression as the current study and was unable to find such an association within a sample of youth from residential treatment, who are arguably more severely impaired than the current outpatient sample. It is possible that another variable better accounted for the variance of aggression within Griffith and colleagues (2012), which unlike the present study, found internalizing severity to be a significant predictor of psychotropic prescriptions. While this may indicate that Griffith and colleagues (2012) is drawing from a different population than the present study, the frequent co-occurrence of internalizing symptoms and aggression within childhood psychiatric disorders such as ED-type CP could muddle attempts to parse their relative importance to an outcome like initial treatment recommendations. Though multicollinearity diagnostics did not show it to be an issue in the present study, the moderate correlation found between these two variables suggests that it could affect similar studies in the future.

Internalizing Severity

Internalizing severity did not significantly affect the likelihood that initial treatment recommendations include psychotropic medication. Nor did it significantly moderate the relationship between participant history of psychosocial intervention for CP and initial treatment recommendations, as predicted by this study. This finding runs contrary to studies that used the

same measure of internalizing severity as the present study, and found it to significantly increase the likelihood of psychotropic medication use for youth in foster care (Breland & Noble, 2004), and a residential treatment facility (Griffith et al., 2012). Though surprising, this departure from empirical precedent may be in part attributable to the variance shared by internalizing severity and aggression severity, the latter which was a significant main predictor in the present study but, interestingly, not in Breland and Noble (2004) and Griffith and colleagues (2012). As explained above, this is possible based upon the overlap of CP and internalizing symptoms observed within the ED-type CP (Pardini & Frick, 2013), as well as the moderate correlation between internalizing severity and aggression severity within the present sample.

This incongruent finding could also tap into salient population differences between youth in outpatient psychiatry clinic and those who are placed in foster care, or a residential treatment facility. For instance, children placed in foster care likely experience home environments that are more dysfunctional compared to that of youth seen in an outpatient clinic, yielding heightened internalizing severity that compels treatment with psychotropic medication. Similarly, youth placed within a residential treatment facility may have an extensive psychiatric treatment history that predates their placement in such an intensive treatment setting, increasing the likelihood that their internalizing symptoms are treated with psychotropic medication. Finally, current results affirm the implications of Beauchaine and colleagues (2005), who found youth with higher reports of internalizing severity to significantly benefit from psychosocial intervention.

Age of Conduct Problem Diagnosis

Age of CP diagnosis within the study clinic did not significantly affect initial treatment recommendations in the present study. This result stands in opposition to the CP etiology and psychosocial intervention effectiveness literatures, which themselves conflict regarding if

childhood-onset CP or adolescent-onset CP is more likely to receive psychotropic medication. CP etiology research shows childhood-onset CP to be associated with neurobiological impairments that may be perceived to be amenable to psychotropic medication (Dorfmann et al., 2014), and aggressive CP (Pardini & Frick, 2013) that may prompt clinicians to prescribe psychotropic medication (Bachmann et al., 2014). In contrast, Nowak and Heinrichs (2008) meta-analysis of a parenting program effectiveness research showed younger samples to have significantly improved CP than compared to older samples, suggesting a higher risk for psychotropic medication for adolescent-onset youth.

When considering the diverse implications of these CP etiology and psychosocial intervention studies, it is surprising that no significant association was found in the present study. However, two important methodological considerations may shed light onto these results. First, that age of CP diagnosis was included within the final model indicates its importance to improving the overall ability of the model to predict initial treatment recommendations. As the case with participant history of psychosocial intervention for CP, it is possible that the modest sample size used by the present study may have barred the necessary statistical power to observe a significant main effect for age of CP diagnosis. Finally, age of CP diagnosis within the study clinic is an imprecise measure of the participants' true age at CP onset. This variable operationalization does not control for CP diagnoses that existed prior to attending the study clinic, and likely overestimates participants actual age at CP onset. These drawbacks possibly muddle a true depiction of how this construct affects initial treatment recommendations.

Race

Participant race did not significantly affect initial treatment recommendations in the present study. Previous studies have found Caucasians to be significantly more likely to receive

psychotropic medication than non-Caucasians within foster care (Breland & Noble, 2004), residential treatment settings (Griffith et al., 2012) and child protective services (Leslie et al., 2010). Though important differences may exist with the samples of these studies, it is also possible that the present study was far too homogenous to yield a meaningful analysis of racial influence (n = 65; 83% Caucasian). Such a sample distribution limits the amount of variance to analyze, restricting the emergence of statistically important patterns.

Gender

Participant gender did not significantly affect initial treatment recommendations in the present study. This finding stands in direct contrast to Leslie and colleagues (2010), which found males to be significantly more likely than females to have high rates of psychotropic medication prescriptions within a sample of youth from child protective services. Similar to Breland and Noble (2004) and Griffith and colleagues (2012), setting caveats may be in play when interpreting this finding. Specifically, child protective services may be systematically more likely to serve a population with an imbalance in male to female psychotropic medication usage ratios compared to outpatient clinics. However, similar to participant race, the current non-significant result may also reflect the homogeneity of the present sample precluding a meaningful of this variable (n = 55; 71% male).

Clinical Implications

Results of this study have important implications to child and adolescent mental health care system and the treatment of CP in an outpatient psychiatric setting. Paramount is this reassertion of how travel distance can influence patient treatment. Hardly a new concern, this issue is central to the provision of mental health services within rural areas, and has been an impetus of efforts to merge general and specialist mental health care within primary care clinics

(Gamm et al., 2010). Results of the present study imply that despite these efforts, travel distance still sways child and adolescent mental health treatment away from accepted CP treatment guidelines, and possibly contributes to the escalating use of off-label psychotropic medication for children and adolescents with CP (Olfson et al., 2014). Continued and varied efforts towards addressing these geographic mental health disparities are needed to help reduce the unnecessary use of psychotropic medication by increasing patient accessibility to "least intrusive" psychosocial intervention providers (AAP, 2012; NICE, 2014).

The present finding that aggression severity increased the likelihood that patient initial treatment recommendations included psychotropic medication makes sense given the risk of harm such symptoms can present to patients and others in their environment (Bachmann et al., 2014). Still, this significant finding indicates a discrepancy between outpatient psychiatric treatment of CP and CP treatment guidelines (AAP, 2012). It is possible that treating psychiatrists are not only sensitive to the potential for harm articulated by Bachmann and colleagues (2014), but also the liability associated with not sufficiently addressing it, making them less likely to take a perceived risk with a child's aggression symptoms by initiating trials of psychosocial intervention prior to attempting psychotropic medication. Research has addressed similar issues by showing how malpractice concerns can lead to excessively over-cautious medical care in fields other than psychiatry (Richman & Huesch, 2012). This possibility would imply that CP treatment guidelines are not inclusive of all considerations that go into a clinical decision for CP, indicating their diminished relevance to clinical practice and a need for revision. As noted previously, amending treatment guidelines is not without precedent, as the AAP revisits ADHD treatment guidelines every five years to ensure their relevance to primary care physicians

(AAP, 2011). The current results perhaps allude to a need to employ similar procedures with CP treatment guidelines.

Future Research

Results of the present study confirm data from multiple sources, as found within extant medical records, to indicate that initial treatment practices for CP may be influenced by factors other than CP treatment guidelines. Future research can build upon these findings by further exploring the patient, clinician, organizational, and systemic variables that this study was not able to address. Doing so would provide an exhaustive examination of all factors affecting the clinical decision-making process within outpatient psychiatry, and yield results about their relative importance to care delivery. To do so, future research will need to address the limitations of the present study in order to facilitate data access, improve generalizability, and increase statistical power.

Data access and sample characteristics precluded a meaningful examination of numerous variables that research shows to be important when examining initial treatment recommendations. The present study did not have access to data on maternal age, marital satisfaction, suicidal ideation, clinician attitudes of psychosocial intervention, clinician self-efficacy of psychosocial intervention, clinician psychosocial intervention training, organizational support of psychosocial intervention, organizational supervision of psychosocial intervention, and organizational fidelity checks of psychosocial intervention. Similarly, sample characteristics precluded the examination of patient insurance status and history of out of home placements. Future research can facilitate data access by implementing quasi-experimental methods such as the use patient, clinician, and organizational surveys on the omitted factors. Likewise, considering data from a representative sampling of multiple outpatient psychiatry clinics may

provide more variability on measures of patient insurance status, out of home placements, and race, which was considered in the present study but still quite homogenous (83% Caucasian). Important to the current study, a sampling of clinics from university and non-university settings would also serve to improve the generalizability of results. Expanding recruitment to multiple sites would also increase sample size to accommodate for the additional predictors, and increase statistical power.

Limitations

Design. The retrospective design of this study facilitated an externally valid depiction of how outpatient psychiatric practice weighs history of psychosocial intervention for CP amongst other salient patient and non-patient factors to determine initial treatment recommendations for CP. However, this design presents important limitations to this study. First, this design provided no control over data accessibility, preventing any investigation of how important patient, clinician, and organizational factors affected the likelihood that initial treatment recommendations included psychotropic medication. Second, this design restricted data collection only to sources that were already collected as part of clinical practice. In the case of the psychiatric assessment and intake questionnaire, patient registration form, and treatment notes, this resulted in indicators of participant history of psychosocial intervention for CP, initial treatment recommendations, and travel distance that were gathered from instruments with unknown psychometrics. Relatedly, this study does not control for patient diagnoses prior to attending the study clinic, medication history, or how these aspects of patient's histories may have affected initial treatment recommendations within the study clinic. These variables may have an unknown effect within the present results, and future replications would be well served in controlling for these potential confounding variables. Lastly, the use of age of CP diagnosis as

an indicator for age of CP onset may have resulted in an overestimation of this construct, since the diagnosis occurred only after these behaviors become sufficiently problematic to caregivers and families that they sought medical assistance within the study clinic.

Setting. The uniqueness of the clinic itself may also limit the generalizability of the study results to other outpatient psychiatry clinics. Its setting within a research-based university may reflect clinic characteristics and a patient population that is unlike that what might exist in other outpatient clinics. The clinic's role as a research and training center is reflected in clinicians that come from a wide range of training backgrounds (MDs, DOs, PhDs), and its provision of a wide range of clinical services including psychosocial intervention and psychotropic medication. However, it is important to note that the latter characteristic supports this study's operationalization of travel distance to psychosocial intervention provider as an accurate indicator of geographical accessibility to psychosocial intervention services. Homogeneous demographic data for the present sample suggest that the population served by the clinic also may be unique from other outpatient clinics, as this sample is markedly Caucasian (83%), insured (97%), and without a history of out-of-home placement (94%). While the rate of Caucasian participants is comparable to the population of the metropolitan statistical area (MSA) in which the clinic is located (82% Caucasian; US Census, 2013), there presently is no reliable data to determine how insurance status and placement history might compare, leaving doubt as to if the patient population is meaningfully different from the larger MSA. Lastly, because aggregate demographic and diagnostic data on the population of the study clinic were not available, it is uncertain if the present sample is reflective of the patient population at the clinic, or how this population might compare to those served at other outpatient psychiatry clinics.

Sample Size. This study's sample of seventy-eight cases (N = 78) meets established sample guidelines for meaningful results when conducting a retrospective chart review (Gearing et al., 2006) or analyzing data with logistic regression (Field, 2009). However, this study just satisfies the minimum cases per predictor (11.1 cases per predictor), likely diminishing this study's ability to detect statistically significant effects, and undervaluing theoretically important predictors of initial treatment recommendations with psychotropic medication. Demidenko's (2007) sample size calculator for logistic regression reasserts this study's minimal statistical power by indicating a minimum sample of seventy cases for the given study parameters (i.e, number of predictors, equal proportion on binary outcome variable).

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