INTRODUCTION

- Attention-deficit/hyperactivity disorder (ADHD) is characterized by inattention, hyperactivity, and impulsivity that impair daily functioning (American Psychiatric Association, APA, 2013). Approximately 5%-11% of school-aged children in the United States have been diagnosed with ADHD (APA, 2013; Centers for Disease Control, 2011).
- Children with ADHD exhibit deficits in social functioning (Maedgen & Carlson, 2000), have impaired relationships with their peers (Hosza et al., 2005), score significantly lower in academic achievement (Latimer et al., 2003), and have an increased risk of suspension and expulsion from school compared to children without ADHD (Martin, 2014). Additionally, children with ADHD frequently exhibit externalizing behavior problems (Kuja-Halkola, Lichtenstein, O’Donofrio, & Larsson, 2015), and 27% have a comorbid diagnosis of conduct disorder (Larson, Russ, Kahn, & Halfon, 2011).
- Research has demonstrated that caregivers of children with ADHD have poorer parenting practices when compared to caregivers of typically developing children (e.g., Johnston & Mash, 2001). This can be especially problematic, as negative parenting and conduct problems may have a bidirectional relationship in families of a child with ADHD (e.g., Johnston & Mash, 2001).
- For example, studies have found that negative parenting practices can predict conduct problems overtime (e.g., August, Realmuto, Joyce, & Hektner, 1999). Additionally, the presence of child conduct problems has been shown to increase negative parenting behaviors (Pardini, Fite, & Burke, 2008). Further, negative parenting may interact with children’s ADHD symptoms to put them at greater risk for conduct problems (Loeber, Green, Centres, & Loeber, 1996).
- However, the relations between ADHD symptoms, conduct problems, and parenting practices still remain unclear, and further research is needed to better understand how family factors influence both ADHD and conduct problems (Johnston & Mash, 2001). To address this issue, the present study evaluated the three-way interaction among ADHD symptoms, negative parenting, and positive parenting predicting conduct problems.

METHODS

Participants
- Participants were 59 caregivers (56 females, 3 males) and their 59 children (25 females, 34 males). Caregivers were ages 24 to 68 years (M = 38.11; SD = 8.32).
- Children were ages 8 to 13 years (M = 10.53; SD = 1.22), and the majority were identified as European American (67.8%) and African American (30.2%).

Measures
- Caregivers completed a battery of assessments including: DSM-IV ADHD Checklist – Parent Form, adapted from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). This checklist includes a list of the nine inattention symptoms and the nine hyperactivity-impulsivity symptoms of ADHD.
- Behavior Assessment System for Children - Parent Rating Scale (BASC-PRS; Reynolds & Kamphaus, 1993). The BASC-PRS is an omnibus rating scale designed to take a broad sampling of a child’s behavior. Caregivers rate how often they observe the child engaging in various behaviors on a 4-point scale, ranging from “never” to “always.” The Conduct Problems Subscale T-score was used as the outcome variable.
- Alabama Parenting Questionnaire (APQ; Shelton et al., 1996). The APQ is a 42-item measure which assesses the frequency of the following parenting practices: Parental Involvement, Positive Parenting, Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment. Items are rated on a 5-point scale, ranging from 1 (never) to 5 (always).
- The Positive Parenting domain was used to measure positive parenting. The Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment domains were combined to create a negative parenting variable.

Procedures
- This project was approved and conducted in compliance with the University of Wisconsin Institutional Review Board.
- Participants were part of a larger study investigating ADHD symptomatology and aggression.
- Caregivers read the informed consent letter prior to participation. They received $20 for their participation in the study as compensation for their time.

RESULTS

- Positive parenting was negatively correlated with ADHD symptoms, r = -.27, p = .04, conduct problems, r = -.32, p = .01, and negative parenting, r = -.29, p = .03. Negative parenting was positively correlated with ADHD symptoms, r = .45, p < .001, and conduct problems, r = .44, p < .001. ADHD symptoms and conduct problems were positively correlated, r = .46, p < .001 (Table 2).
- A three-way interaction model with ADHD symptoms, negative parenting, and positive parenting predicting child conduct problems was tested. The overall model accounted for a statistically significant amount variance in child conduct problems, $R^2 = .41$, F(7, 51) = 5.00, p = .002 (Table 2).
- There was a main effect for negative parenting, b = 3.95, SE = 1.45, p = .009, but not for ADHD symptoms, b = .18, SE = .18, p = .32. The main effect for positive parenting approached significance, b = -6.38, SE = 3.28, p = .06 (Table 2).
- There was no interaction between negative parenting and ADHD symptoms, b = .05, SE = .02. There was a significant interaction between positive parenting and ADHD symptoms, b = -.75, SE = .30, p = .02 (Table 2, plotted in Figure 1). The interaction between positive parenting and negative parenting approached significance, b = 4.10, SE = 2.18, p = .07 (Table 2, plotted in Figure 2).
- The three-way interaction was not significant, b = .24, SE = .30, p = .44 (Table 2).

DISCUSSION

- As expected, negative parenting predicted unique variance in child conduct problems, with elevated levels of negative parenting predicting more severe conduct problems. Positive parenting predicted an amount of variance approaching significance, with elevated levels of positive parenting predicting lower levels of conduct problems. Although ADHD symptoms were significantly correlated with conduct problems, it did not predict unique variance in this model considering other predictors.
- The interaction between negative parenting and ADHD symptoms was nonsignificant. There was a significant interaction between positive parenting and ADHD symptoms with conduct problems being lower when ADHD symptoms were lower regardless of positive parenting. However, when ADHD symptoms were higher, conduct problems were lower if positive parenting was higher.
- The interaction between negative and positive parenting approached significance with conduct problems tending to be highest with higher negative parenting and lower positive parenting, and conduct problems tending to be lowest with lower negative parenting and higher positive parenting.
- The three-way interaction among ADHD symptoms, negative parenting, and positive parenting was nonsignificant. Overall, results suggest the importance of parenting behaviors on child conduct problems, for children with and without ADHD symptoms.
- This study was limited by its reliance on parent report for child ADHD symptoms and conduct problems. Studies should include behavioral observations for children in addition to standard assessments, as behavioral observations are considered the standard for objectivity in behavioral research (Pelham, Fabiano, & Massetti, 2005).
- Future research should continue to discover ways to decrease negative parenting, as decreases in negative parenting have been associated with decreases in disruptive behavior for children with ADHD (Chonis-Tuscano et al., 2011).