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# A Longitudinal Investigation of the Bidirectional Relations Between Parental Sources of Knowledge and Child Disruptive Behavior

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To the Graduate Council:

I am submitting herewith a thesis written by Amber Rochelle Wimsatt entitled "A Longitudinal Investigation of the Bidirectional Relations Between Parental Sources of Knowledge and Child Disruptive Behavior." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Paula J. Flte, Major Professor

We have read this thesis and recommend its acceptance:

Deborah Welsh, Jenny Macfie

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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A Longitudinal Investigation of the Bidirectional Relations between Parental Sources of  
Knowledge and Child Disruptive Behavior

A Masters Thesis Presented for  
the Masters of Arts  
Degree  
The University of Tennessee, Knoxville

Amber Rochelle Wimsatt

December 2010

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Dedication

To my Father and Mother for breaking the cycle.

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## Abstract

Research indicates that parental sources of knowledge (i.e., child disclosure, parental solicitation, and parental control) play a role in the occurrence of antisocial and other problem behaviors in childhood and adolescence. Because sources of knowledge have not been examined regarding the extent to which they are specifically related to change in disruptive behavior disorder (DBD) symptoms and no research has examined the influence of child symptom clusters of DBD on parental sources of knowledge, the current study longitudinally examined reciprocal relations between child disclosure, parental solicitation, and the DBD symptom clusters of Attention Deficit/Hyperactivity Disorder (ADHD), Conduct Disorder (CD), and Oppositional Defiant Disorder (ODD). Participants were 89 children (56% males) recruited from a mid-sized southeastern community with ages ranging from 9-12 years ( $M = 10.4$  years,  $SD = 1.1$  years) at baseline. Results indicated that disclosure was negatively associated with both ODD and CD symptoms and solicitation was positively predictive of CD symptoms within time. However, associations were not maintained across time. Furthermore, disclosure and solicitation were unrelated to ADHD symptoms at baseline and across time. In turn, ODD symptoms were negatively related to child disclosure within as well as across time; however this association was only marginally statistically significant within time. ADHD and CD symptoms were unrelated to disclosure at both time points. Finally, only ODD symptoms were marginally statistically negatively related to parental solicitation within time, but no symptom clusters were associated with solicitation across time. Implications and future directions are discussed.



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## Introduction

The host of negative outcomes, emotional consequences, and the potential antisocial pathways followed by children who suffer from symptoms of disruptive behavior disorders (DBD) has been well documented (e.g., O'Reilly, 2005; Robin, 1998). The DBDs, which include Attention Deficit and Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD), are a category of disorders that are broadly characterized by a number of externalizing behavioral problems in the DSM-IV (American Psychological Association [APA], 2000). As a result, children demonstrating DBD symptom clusters tend to experience a number of harmful social and academic outcomes (Pardini & Fite, in press). More specifically, research has shown that disruptive behavior is associated with peer rejection (Burke, Pardini, & Loeber, 2008; Coie & Dodge, 1998; Guevremont & Dumas, 1994; Hinshaw, Zupan, Simmel, Nigg, & Melnick, 1997; Laird, Jordan, Dodge, Pettit, & Bates, 2001; Landau & Moore, 1991), internalizing behavior problems such as depression and anxiety (Boylan, Vaillancourt, Boyle, & Szatmari, 2007; Burke, Loeber, Lahey, & Rathouz 2005), peer delinquency (Laird et al., 2001; Snyder, Dishion, & Patterson, 1986), and poor academic performance (Frick, 1998; Hinshaw, 1992; Pardini, 2008; Timmermans, van Lier, & Koot, 2009). In light of the aforementioned issues, researchers have worked toward identifying information that may inform prevention, intervention and treatment efforts for children demonstrating these behavior problems. One key component that has received consistent focus in the literature to this end is parenting behavior.

Indeed, the effect of parenting behaviors on disruptive and delinquent behaviors in children has been well established. Negative parenting practices and familial environments (i.e., parental mental health issues, etc.) have frequently been associated with increases in DBD

symptoms or other antisocial behaviors (reviews: Barkley, 1998; McMahon & Wells, 1998; O'Reilly, 2005; e.g., Pffiffer, McBurnett, Rathouz, & Judice, 2005). An exemplar study, conducted by Stormshak, Bierman, McMahon, and Lengua (2000), examining the relationship between several negative parenting practices (i.e., inconsistent discipline, punitive discipline, physical punishment, spanking, and low warmth and involvement) and three specific disruptive behavior symptoms (child opposition, aggression, and hyperactivity), found support for the association of negative parenting with disruptive behavior. Consistent with previous research examining parenting and DBD behaviors in general, researchers found that discipline characterized by nagging, yelling, and or threatening a child in an attempt to achieve compliance (punitive), was associated with internalizing behaviors in addition to the presence of the three disruptive symptoms of interest. Further, use of physically aggressive punishment was related to higher levels of aggression in children and low levels of parental warmth and involvement were related to higher levels of oppositional behaviors in children (Stormshak et al., 2000).

In addition to involvement and various methods of discipline, one parenting practice that has received considerable attention for its association with child behavior is monitoring. The effects of parental monitoring, or a parent's active efforts to remain aware of their child's activities and whereabouts (Dishion & McMahon, 1998), on disruptive and delinquent behaviors in children has also been well established in the literature. Indeed, children with parents who did not engage in adequate monitoring have been found to be more likely to participate in a number of delinquent activities and disruptive behaviors (Dishion, Nelson, & Bullock, 2004; Laird, Criss, Pettit, Dodge, & Bates, 2008; Pettit, Laird, Dodge, Bates, & Criss, 2001). Although parental monitoring has often been isolated as an important buffer against deviant behavior, Stattin and Kerr (2000) argued that the literature examining this construct was lacking the key

component of how parents actually find out about their offspring's behaviors, peer associations, and activities. That is, the efficacy of monitoring in reducing delinquent peer associations and behaviors may depend on the methods by which parents acquire information about their child's comings and goings. In order to address this issue, these authors suggested that parental monitoring be re-evaluated to include parental sources of knowledge. These sources of knowledge include parental solicitation of a child's activities via direct inquiry of the child and/or the child's friends, spontaneous disclosure of activities and behaviors, and parental control or parental restriction of particular activities and social relationships (Stattin & Kerr, 2000). Despite sources of knowledge having been studied to examine overall adolescent outcomes as they are related to delinquency, and more recently covert and overt forms of aggression (Gaertner, Rathert, Fite, Vitulano, Wynn, & Harber, 2010), these sources of knowledge have not been explored in the context of specific DBD symptom clusters. Likewise, the bidirectional link between sources of knowledge and child disruptive symptom clusters has been largely neglected. Thus, the current study proposes to explore the reciprocal relations between parental sources of knowledge and clusters of the child disruptive symptoms of ADHD, CD, and ODD.

### ***Disruptive Behavior Symptom Distinctions and Co-morbidities***

Multiple factors have been found to influence the developmental course and/or progression of DBDs (Sadock & Sadock, 2007). Biological characteristics related to the particular disorder, psychosocial factors related to the child, and environmental factors such as parenting, neighborhood characteristics, and other social relationships all play a role in how the symptoms of a disorder manifest themselves. Likewise, the psychological and behavioral manifestations of the symptoms influence characteristics about the child's environment

(Monastra, 2008; O'Reilly, 2005). Although similar in their general characteristics, each set of disruptive behavior symptom clusters may be uniquely affected by these factors and specific symptoms may influence a child's environment and psychosocial functioning differently (Lytton, 1990; McMahon & Wells, 1998; O'Reilly, 2005). Thus, the groups of symptoms associated with each disorder should be examined separately in order to gain the best understanding of the bidirectional relations between disruptive behavior symptom clusters and parental sources of knowledge.

Of the DBDs, symptoms characteristic of ADHD have been most frequently associated with biological factors related to the child (Barkley, 1998; Monastra, 2008; Swanson & Castellanos, 2002). Symptoms of hyperactivity, inattention, and impulsivity are thought to be associated with subtle brain structural differences and differences in transmission and availability of particular chemicals in the brain (Monastra, 2008; Sadock & Sadock, 2007). Additionally, several genetic interactions have been implicated in the occurrence of ADHD symptoms (Swanson & Castellanos, 2002). Symptoms of ADHD have been associated with several outcome risks including social rejection from peers and parents (Hinshaw, 2002; Hoza, 2007; Hoza et al., 2005), poor academic performance and learning outcomes, and a higher likelihood of becoming involved in criminal activities (Monastra, 2008). It is also not uncommon for children with ADHD to become easily frustrated, argumentative, and/or irritable when asked to perform certain tasks by parents and teachers, despite being medicated with stimulant or non-stimulant medications (Solanto, 1998). Despite a heavy biologically focused etiology, symptoms of ADHD are not immune to the influence of environmental factors. In addition to medication (Solanto, 1998), treatment efforts focusing on training parents how to interact with their child and respond to their behavioral symptoms have been found to be effective in behavioral improvement for

children with ADHD symptoms (Barkley, 2006; Monastra, 2008; Robin, 1998). For example, parents who reminded children of and positively reinforced appropriate behaviors, and implemented a great deal of structure and consistency with non-aggressive discipline and compliance requests, were more likely to be successful in reduction of ADHD symptoms (review: Barkley, 1998; see also: Douglas, 1983).

Although there is some evidence to support the contribution of physiological and biological issues in the developmental models of pathways to symptoms related to ODD and CD (i.e., gender, temperament, neuropsychological factors, social skills and academic deficits) from the framework of the child deficit hypothesis (Webster-Stratton & Herbert, 1994), much of the literature surrounding ODD and CD etiology focuses on environmental (i.e., parental modeling of antisocial and/or oppositional behavior, parental psychopathology, socio-economic disadvantage, negative parent-child communication and interactions) and psychological factors as contributors (Lytton, 1990; O'Reilly, 2005). ODD is characterized by an extremely maladaptive pattern or need for autonomy and enforcement of one's own will. This typically manifests as disobedience and hostility toward adults, an inability to accept responsibility for one's own actions and a tendency to redirect blame, an inclination to argue and throw temper tantrums, and an often times easily irritated mood (APA, 2000). Although possible, children demonstrating ODD symptoms are less likely than individuals with CD symptoms to engage in acts of physical aggression. Because many of the symptoms are directed at a primary source of authority such as a caregiver, parent focused training is a staple in ODD symptom treatment and intervention programs (O'Reilly, 2005). Changes in parenting, including appropriate monitoring (traditionally defined) of the child's behaviors and whereabouts, reinforcing positive behavior,



and imposing structure and limits to inappropriate behavior have proved effective in symptom reduction and achieving compliance (O'Reilly, 2005).

CD symptoms include severe aggression that may be harmful to the child him or herself or to others, consistent violation of the rights of others, destruction of property, theft, and rule violation. Although research remains largely inconclusive, symptoms of CD have been thought to be more highly associated with underlying child deficits and may be related to the biological characteristics of the individual more so than ODD symptoms (APA, 2000; Burke, Loeber, & Birmaher, 2002). However, children with CD symptoms also experience higher levels of environmental risk factors such as lower socioeconomic status (SES), familial conflict and violence, and a family history of psychiatric and substance abuse disorders (McMahon & Wells, 1998; Monastra, 2008). Thus, in addition to having several environmental contributors, research has examined the possibility of biological and genetic influences to CD. Note also, that although currently determined to be diagnostically distinct from CD (APA, 2000), ODD symptoms have sometimes been interpreted as a milder version of or as precursors to symptoms of CD. Although this symptom may not necessarily develop into a more severe symptom, the refusal to comply with or follow adult rules in a child with ODD might be seen as a milder version of the violation of others' rights and the violation of social rules characteristic of a child with CD. As such, addressing risk factors, especially those surrounding the heavily influential behaviors and practices employed by parents, has been highlighted as a focus point for intervention and treatment efforts for symptoms of ODD and CD (reviews: Burke et al., 2002; O'Reilly, 2005).

Finally, because DBD symptom clusters are similar and often intertwined, there are high incidences of co-morbidity among the disorders (Biederman et al., 2006; Kadesjo, Hagglof, Bjorn, & Gillberg, 2003; Kessler et al., 2006). In order to examine the reciprocal relationships

between disorder specific symptom clusters and parental sources of knowledge without arriving at misleading conclusions, frequently co-occurring disorder specific symptoms must be recognized and controlled for. This will allow for a more accurate examination of the actual influence of specific sets of symptom clusters on parenting behavior and vice versa. Symptom differences in outcomes and pathways to subsequent behavior must also be considered (Lahey & Loeber, 1997). Although a child cannot carry simultaneous diagnoses of ODD and CD according to DSM-IV criteria (American Psychological Association, 2000), as can be seen above, symptom clusters of these two disorders are highly correlated and often overlapping (O'Reilly, 2005). Moreover, ADHD symptom clusters have been frequently found to co-occur with both ODD and CD symptom groups (Barkley, 2002, 2006; Klein & Mannuzza, 1991; Pliszka, 2000; Pliszka, Carlson, & Swanson, 1999; Robin, 1998).

Despite the overlap and co-occurring nature of symptom groups, each of the disruptive behavior disorders is differentially associated with etiological risk factors and subsequent problem behavior, further supporting the need to examine unique associations (Taylor, 1994).

### ***Reciprocal Relations Between Sources of Knowledge and Disruptive Behavior***

Although several studies, such as those briefly discussed above, have examined the unidirectional impact of parenting on DBD symptom groups, there is also some literature to support the influence of child behavior on parenting. Parenting may impact behavioral symptoms above and beyond those that are accounted for by biological factors. In turn, disruptive behavior symptoms may also have a large influence on how parents respond to their children. For example, high levels of ADHD symptoms were found to be associated with less effective parenting practices in mothers (McLaughlin & Harrison, 2006). Because a relation between ADHD symptoms in children and higher levels of parental stress has been found (Anastopoulos,

Guevremont, Shelton, & DuPaul, 1992; Dix, 1991), it is conceivable that the parents of children with ADHD may become frustrated with their child's behaviors and that their parenting suffers as a result. Furthermore, a particular set of behavioral symptoms may differentially influence parenting behaviors (Burke et al., 2008). For example, parents of highly oppositional children who react extremely negatively at any challenge of their own will may be less likely to follow through with discipline. That is, in an attempt to avoid negative interactions with their child, parents may withdraw commands and lessen repercussions for deviance (i.e., via coercion; Baum, 1994; Patterson, Reid, & Dishion, 1992). Moreover, parents may become overwhelmed by behavioral symptoms and may become more inclined to use physically aggressive punishment and/or discipline to enforce their authority (Stormshak et al., 2000; Woodward, Taylor, & Dowdney, 1998). Alternatively, symptoms of inattention and/or hyperactivity may prompt parents to repeat commands more often or revert to using yelling, nagging, or threats to produce compliance (Heller & Baker, 2000; Stormshak et al., 2000). Parents may be less likely and/or able to supervise the behaviors of a child demonstrating symptoms of CD for example, because the nature of their behavioral symptoms dictates that they spend more time outside of the home (vandalizing property, theft, substance abuse, etc) and requires that they deliberately avoid contact with parents so that they may continue with their behaviors (Stoolmiller, 1994). This logic may lend itself to the finding that symptoms of CD have been shown to be predictive of poor parental supervision (Burke et al., 2008).

However, despite a wealth of unidirectional literature supporting the link between parenting behavior and child behavior, fewer studies in comparison have examined the reciprocal nature of these relations (Burke et al., 2008; Pardini, Fite, & Burke, 2008). More importantly, to date, the bidirectional relation between parental sources of knowledge and disruptive behavior

symptom clusters has not been explored. Despite this omission in the literature, it is conceivable that trends similar to those found in studies examining the reciprocal relations between parental monitoring and child externalizing and/or delinquent behaviors in general, might also appear when specifically exploring sources of knowledge and groups of DBD symptoms.

Bell's control systems theory, which provides a framework from which to examine these potential relations, posits a reciprocal sensitivity of behavior between a parent and child (Bell, 1977; Bell & Chapman, 1986). Bell theorized that both parents and children have a certain threshold of toleration for one another's behaviors, an upper and lower level, and when these set points are reached or violated, one individual will adapt their behaviors to the other in order to restore balance. For example, if a child's oppositional behavior surpasses a parent's tolerance threshold, the parent will adjust their behaviors in response to this disturbance and the child's behaviors will change negatively or positively depending on the parent's choice of response. Likewise, the coercion model put forth by Patterson and colleagues (Patterson, 1982, 1995, 2002; Patterson et al., 1992; Snyder & Stoolmiller, 2002) conceptualizes this association. The coercion model postulates a cyclical and mutually influencing relationship between child behavior and parental response. This relationship depends on a complex series of positive and negative reinforcement. When parents respond to negative behavioral symptoms with submission, the negative behaviors are positively reinforced. Similarly, when parents respond negatively to problem behavior in attempts to reduce symptoms and achieve compliance, these negative parenting behaviors are negatively reinforced if the child does show a reduction in symptoms. However, these negative and/or hostile parental interactions may also initiate continued or worsened behavior from the child (Gershoff, 2002), which in turn may induce further negative parental behavior or parental submission. In this way, the pattern of coercive

behavior is cyclical and depends on a pattern of reciprocal reinforcement. This theory also suggests that as parents become wearied of this negative cycle they begin to withdraw their discipline strategies in order to avoid conflict. Deterioration of the parent-child relationship and communication structure may give children more independence than appropriate, leaving them room to continue negative behavior.

Some empirical research has supported the idea that parenting and child disruptive behavior mutually influence one another simultaneously (Burke et al., 2008; Laird, Pettit, Bates, & Dodge, 2003; Snyder, Afank, & Patterson, 2005). In one investigation that longitudinally examined the bidirectional impact of disruptive behavior symptoms and parenting, a cluster of symptoms related to ODD predicted a decline in the quality of parenting behaviors (i.e., poor communication and supervision, lack of involvement, and harsh discipline) and reduced parents to using only timid disciplinary behaviors (Burke et al., 2008). That is, high levels of ODD symptoms were associated with negative parenting behavior, and in turn poor parenting behavior was associated with high levels of ODD symptoms. Likewise, in their investigation of the mutual influence of parent monitoring knowledge and delinquent behavior, Laird, Pettit, Bates, and Dodge (2003) found reciprocal associations such that regardless of the informant, lower levels of parental knowledge about the teenager's activities and behaviors were predicted by higher levels of delinquent behavior, and lower levels of parental knowledge were predicted by higher levels of child engagement in delinquent activity for boys in high school.

Bell and Patterson's theoretical perspectives coupled with previous literature examining the reciprocal relationships between monitoring and child externalizing behavior in general, supports the development of hypotheses about the bidirectional relations between parental sources of knowledge and sets of behavioral symptoms specific to disruptive behavior disorders.

Stattin and Kerr's (2000) initial findings are also an important component of rationale development for the current study. These authors indicated that although parents did acquire information via solicitation, this source of knowledge was a less strong predictor of a parent's knowledge (monitoring) about their child's activities and behaviors than spontaneous child disclosure in a sample of fourteen year olds. Child disclosure was also the most important source of knowledge in independently predicting delinquent behavior, such that high levels of disclosure were associated with low incidence of delinquent behavior. Child report of parental control was also linked with lower incidence of norm-breaking behavior. Furthermore, child and parent report of each disclosure, solicitation, and control were highly correlated and regardless of whether parents or children reported, results continued to indicate that child disclosure was most predictive of parent's actual knowledge. That is, both parent and child reports are valid gauges of 'monitoring' and how much parents know.

Due to limitations in data collection and the overarching goals of the larger study from which data for the current study are drawn, which did not include parental control, this study restricts exploration of sources of knowledge to parental solicitation and child disclosure. Specifically, the focus of the larger study surrounded information that parents learned from their children after they had engaged in a particular course of behavior. The construct of parental control is a tactic parents use in order to prevent a child from engaging in a particular course of behavior. The focus of the current study, similar to that of the larger study, is to explore the strategies that allow parents to find out about what behaviors their children have already engaged in.

*Parental Solicitation.* Stattin and Kerr (2000) found that instead of buffering against negative behaviors, when parental control and child disclosure were held constant, parental

solicitation was actually associated with a higher incidence of delinquent behavior. That is, despite being predictive of ‘monitoring’ as noted above, the more parents tried to ask about their adolescents’ behaviors, the more likely the children were to actually engage in norm-breaking behaviors. However, a recent longitudinal investigation examining the relations between solicitation, disclosure, and delinquency found that both of these sources of knowledge were negatively related to delinquency (Eaton, Krueger, Johnson, McGue, & Iacono, 2009). Although not replicated in the study conducted by Eaton and colleagues mentioned above, one reason why Stattin and Kerr’s (2000) initial investigation found that solicitation was associated with higher levels of norm-breaking behavior could be related to the age of the individuals (teenagers) on which their study was conducted.

Adolescence marks a developmental period in which individuals are seeking greater levels of independence from their parents and in which peer relationships may begin to exert a greater degree of influence over decision making processes (Csikszentmihalyi & Larson, 1984; Snyder et al., 1986). Although a developmentally appropriate shift from direct supervision to more remote supervision should occur during adolescence, effective strategies call for parents to incrementally scale back the degree to which they monitor their child’s activities and whereabouts (Steinberg & Silverberg, 1986). Despite this process of autonomy granting (e.g., Steinberg & Silverberg, 1986), in which parents give more independence to adolescents who demonstrate developmentally appropriate skills and behaviors, parental monitoring and management of their offspring’s activities are still important factors in predicting antisocial behavior (Dishion et al., 2004), especially when individuals are exhibiting symptoms of disruptive behavior disorders. Thus, parents must adapt their monitoring strategies and methods of garnering information about their children accordingly. Negative youth reactions, however,

(i.e. rebellion and/or increased in negative behavior) to parental solicitation may deter parents from engaging in this monitoring behavior. This possibility is further compounded when considering the behavioral characteristics of individuals demonstrating symptoms of ODD and CD. Parents are placed in a particularly conflicting position especially when considering that failure to solicit information may also reduce opportunities for correction of disruptive behavior. In sum, despite the theoretical benefits of solicitation for adolescents with DBD symptoms, the potential risk of rebellion may outweigh positive parenting behavior.

In contrast to adolescents, pre-adolescents and younger children have fewer of the skills necessary for independent decision-making, and because it is more developmentally appropriate (Dishion et al., 2004), parental solicitation may still carry more benefit than risk for prevention and/or reduction of disruptive behavior. That is, instead of inciting rebellion in an adolescent seeking autonomy regardless of symptomology, asking about a younger child's activities may have a positive impact in reducing behavioral symptoms. For example, parental solicitation may serve to decrease the group of behavioral symptoms related to ADHD, because this active parental role may help to reinforce and remind children of appropriate behaviors helping them to stay on track. Research on parenting and academic intervention strategies for children with ADHD, touts that high levels of supervision and provision of structure are essential for ensuring positive outcomes (Monastra, 2008; Robin, 1998). Solicitation of the child's activities would provide parents with these opportunities. In turn, ADHD symptoms may elicit high levels of parental solicitation. Thus, high levels of parental solicitation may lead to fewer ADHD symptoms, and high levels of ADHD symptoms may lead to high levels of parental solicitation.

In contrast, due to the nature of ODD and CD symptom clusters, it may still be the case that solicitation could prompt rebellion (increased symptoms of ODD and CD) in children with



these symptoms regardless of developmental period. ODD, in particular, may be the most strongly associated with negative reactions to solicitation, because the characteristic symptoms of defiance, stubbornness, argumentativeness, and temper tantrums are most frequently directed at parents (and teachers) (APA, 2000). In sum, high levels of ODD and CD symptoms might decrease the extent to which parents engage in solicitation behavior due to intense negative child reactions.

*Child Disclosure.* As mentioned previously, Stattin and Kerr (2000) found that child disclosure of was the strongest predictor of low levels of child problem behavior. However, it is not yet clear how disclosure is associated with the distinct DBD symptom clusters. Poor child disclosure may be strongly related to increases in clusters of CD and ODD symptoms because children may be granted inappropriate leeway to carry on with negative behaviors and activities when parents are less informed. In contrast, poor child disclosure may be unrelated to ADHD symptoms because the impulsive and hyperactive nature of these symptoms is likely to prompt children to unthinkingly disclose their activities regardless of consequences. Conversely, high levels of ODD and CD symptoms, particularly symptoms of CD, may result in low levels of disclosure because children may hide their symptom related behaviors from their parents with the goal of avoiding correction (Stoolmiller, 1994). That is, youth may choose to reduce the amounts and content of information they provide to their parents (Marshall, Tilton-Weaver, & Bosdet, 2005). Finally, ADHD might be unrelated to disclosure because these behaviors are less easily hidden and may speak for themselves.

### ***The Current Study***

In order to address the aforementioned gaps in the literature, the current study examined the bidirectional relations between pre-adolescent disruptive behavior symptoms and parenting

sources of knowledge (solicitation and child disclosure) using a longitudinal, community-recruited, normative sample of children ranging from 9 to 12 years of age at baseline.

Specifically, this study focused on two questions related to the impact of parental knowledge on child disruptive behavior. First, how does parental solicitation of a child's activities and a child's spontaneous disclosure affect change in symptoms of disruptive behavior disorders? Likewise, how do symptom clusters of disruptive behavior disorders predict change in parental solicitation and child disclosure? The current study posits several hypotheses regarding the relations between child disclosure, parental solicitation, and DBD symptoms.

First, parental sources of knowledge may have an impact on the level of groups of DBD symptoms expressed. Similar to what was previously found, low levels of child disclosure were expected to be associated with high levels of CD, and ODD symptoms. However, disclosure was expected to be unrelated to ADHD symptoms, because the impulsive biological nature of ADHD symptoms might prompt children to reveal their activities regardless of their content or subsequent consequence. Further, high levels of solicitation are expected to predict low levels of ADHD symptoms because parents increase opportunities to help these distractible and hyperactive children stay on track. Due to the possibility of rebellion in response to perceived parental intrusion, high levels of solicitation are expected to be predictive of subsequently high levels of ODD and CD symptoms.

Secondarily, the behavioral symptoms of ODD, ADHD, and CD may influence the extent to which children disclose and parents' willingness to solicit. Child symptoms may impact child disclosure such that children who exhibit high levels of ODD or CD symptoms will be less likely to disclose because they have more to hide. ADHD symptoms may be unrelated to child disclosure because the impulsive nature of these children might prompt children to reveal their

activities and whereabouts regardless of their content and the behaviors may speak for themselves. Moreover, high levels of ADHD symptoms were expected to predict high levels of parental solicitation. Due to the impulsive and hyperactive nature of these children parents may be particularly inclined to ask about behaviors in order to, again, help the child stay on track. Although likely with CD symptoms, ODD symptoms in particular may lead to low levels of parental solicitation because parents are either attempting to avoid negative reactions and/or are withdrawing from their child in response to these particular groups of symptoms.

## Method

### *Participants*

Participants included 89 children who ranged from 9- 12 years of age ( $M = 10.44$  years,  $SD = 1.14$  years) at baseline. Participants responded to recruitment advertisements posted at local daycares, health care provider facilities, and various restaurants in a medium sized southeastern community. Participant eligibility was determined through a telephone screening process that purposively selected individuals based on the child's age and several exclusionary criteria. That is, individuals suffering from severe developmental and/or learning delays, those taking medications that altered information processing speed, and non-English speaking individuals met criteria for exclusion. The racial make-up of the sample is consistent from the community in which it was drawn, with the majority of participants (74%) identifying as Caucasian, 20.5% identifying as African American, and the remaining 5.5% identifying as bi-racial or 'other' at baseline. All participants who completed the study at baseline were invited to participate in the 1-year follow-up by receiving a packet of questionnaires in the mail. Of the 89 original participants 57 individuals completed the included informed consent and questionnaires, for a total response rate of 64.04%.

In order to determine whether group differences existed between those participants who completed participation at both the baseline and follow-up time points and those who did not participate in the follow-up ( $n = 32$ ), t-tests and chi-squared tests were estimated. Participants did not differ based on gender ( $\chi^2 = .77, p = .38$ ) age, ADHD, ODD, or CD symptoms, ( $t_s = -1.45$  to  $-.85, p_s > .15$ ). Groups, however, did differ on child disclosure ( $t = 2.73, p = .009$ ) and parental solicitation ( $t = 2.43, p = .02$ ) such that disclosure and solicitation at baseline was lower in those that did not participate in follow-up. Finally, participants also differed based on race such that Caucasian participants were more likely to have participated in the follow-up time point than Minority participants ( $\chi^2 = 5.41, p = .02$ ).

### *Procedures*

At baseline, children and their caregivers participated in an IRB approved study lasting approximately one and a half hours in a child behavior laboratory at The University of Tennessee. Both the caregiver and child voluntarily provided consent and assent, respectively for their participation prior to study completion. In order to ensure accuracy and confidentiality of responses, children and their primary caregivers were interviewed separately. Although both caregivers and children answered questions regarding the child's behaviors, only caregivers answered questions related to DBD symptoms and sources of knowledge and thus only caregiver report was of interest to the current study. All questions were read aloud by a trained research assistant and responses entered into MediaLab software by the interviewer. Families were compensated \$45 for their participation and children received an additional small prize. At follow-up 1 year later, caregivers completed an IRB approved abbreviated set of similar questionnaires received through the mail. Caregivers then returned the packets in self-addressed

stamped envelopes to the lab. Caregivers were compensated with a \$10 gift card for their participation.

### *Measures*

*Disruptive Behavior Symptoms.* Caregiver report of child behaviors were assessed at baseline and at 1-year follow-up using the DSM-Oriented scales on the Child Behavior Checklist (CBCL/6-18; Achenbach & Rescorla, 2001). The CBCL/6-18 is a 113-item caregiver report measure that has been found to be valid and reliable for measuring emotional and behavioral problems in children. The DSM-Oriented scales were also rated as *very consistent* with DSM-IV diagnostic criteria by 64% of health care professionals with extensive experience in research on children's behavioral and emotional problems (Achenbach & Rescorla, 2001). Additional analyses indicated correlations of .80 for ADHD symptoms, .61 to .63 for CD symptoms, and .60 to .64 for ODD symptoms between the DSM-IV checklist scores and CBCL/6-18 DSM-Oriented scales (Achenbach & Rescorla, 2001). The ADHD symptom grouping consists of five items related to inattention (e.g. 'can't concentrate', etc) and eight items related to hyperactivity-impulsivity (e.g. 'can't sit still', 'unusually loud', etc). Due to an oversight in collection, the ADHD symptom item 'talks to much' was not administered at the follow-up, and was substituted in follow-up analyses with a similar item 'often talks excessively' from the Disruptive Behavior Disorders checklist (Pelham, Gnagy, Greenslade, & Milich, 1992). Internal consistencies for the ADHD symptom cluster for the following sample were high (baseline  $\alpha = .88$ , follow-up  $\alpha = .90$ ; reported raw). The ODD symptom grouping consists of five items related to oppositionality (e.g. 'argues a lot', 'temper tantrums', etc), and the CD symptom grouping consists of 13 items related to conduct problems (e.g. 'truancy, skips school', 'physically attacks people', etc). Another oversight in collection resulted in the failure to administrate the CD symptom item 'cruel to

animals' at follow-up, which unfortunately could not be replaced using an alternate item and thus was omitted from analyses at both time points. Internal consistencies for the ODD (baseline  $\alpha = .86$ , follow-up  $\alpha = .87$ ) and CD symptom groups (baseline  $\alpha = .86$ , follow-up  $\alpha = .89$ ) were also high. Caregivers rated their child of interest on a 3-point scale (*0-not true, 1-somewhat/sometimes true, 2-very/often true*). Achenbach (1991) recommends using raw scores for research purposes; accordingly ratings were averaged for each scale and used for analyses.

*Sources of Knowledge.* Caregiver report of child disclosure and parental solicitation were assessed using the ten relevant items from Stattin and Kerr's (2000) 24-item Parental Monitoring and Knowledge questionnaire at baseline and 1-year follow-up. Although the limitation exists that parents might not be completely aware of their child's behaviors, this questionnaire has been found to be both a valid and reliable measure of parental knowledge (Kerr & Stattin, 2000). Caregiver's reported on child disclosure by answering questions on the 5-item child disclosure subscale. Items consisted of questions aimed at gauging the amount of information their child spontaneously discloses to the parent regarding their activities and associations (e.g. 'does your child hide a lot from you about what they are doing during nights and weekends?'). Internal consistencies for child disclosure in the current sample were low to moderate (baseline  $\alpha = .65$ , follow-up  $\alpha = .66$ ). Likewise, the parental solicitation 5-item subscale consists of items regarding the amount of active parental questioning of their child's behaviors and activities (e.g. 'during the past month, how often have you started a conversation with your child about their free time?'). Internal consistencies for parental solicitation in the current sample were moderate (baseline  $\alpha = .68$ , follow-up  $\alpha = .74$ ). Caregivers responded to all items using a 5-point scale (*1-never to 5-always*). Although previous research indicated that all three sources of knowledge were positively correlated (solicitation, control, disclosure), child disclosure and parental

solicitation were found to be the most highly interrelated (Stattin & Kerr, 2000). Further, due to limitations in data collection, only solicitation and disclosure are included in these analyses.

Subscales were averaged and used for analyses.

#### Data Analytic Plan

The current study utilized SAS 9.1 statistical software in order to address the proposed hypotheses within time, longitudinally, and bi-directionally. First, descriptive statistics, including means, standard deviations, and correlations of study variables were examined. Secondly, multiple regression models were estimated in order to examine the relations between sources of knowledge and DBD symptoms within time and across time. First, parental sources of knowledge were examined as predictors of DBD symptom clusters. Note that there are 3 diagnostic categories (ADHD, CD, and ODD) that were examined, and as such 3 within time models and 3 across time models (see Fig. 1a) were estimated. Prior levels of groups of disruptive behavior symptoms were controlled for in longitudinal analyses in order to determine whether the sources of knowledge predicted change in symptoms over time.

DBD symptoms were then examined as predictors of parental sources of knowledge. In these analyses, 2 within time models (solicitation and disclosure) and 2 across time models (see Fig. 1b) were estimated. Similarly, prior levels of child disclosure and parental solicitation were controlled for in order to determine whether the variables of interest interacted to predict change over time.

Finally, age, gender and race were considered as potential covariates in the models as previous research has found age, gender, and racial differences in DBD symptoms and parenting behavior (see: O'Reilly, 2005; Robin, 1998; Gershoff, 2002; Larzelere, 2000) .

### *Descriptive Statistics*

For correlations, means and standard deviations of observed study variables please refer to Table 1. As can be seen child disclosure was moderately to highly stable and solicitation was moderately stable over 1-year. Child disclosure at baseline was positively correlated with parental solicitation at both time points and, as expected, was negatively correlated with ODD and CD symptom clusters at both time points. Child disclosure at follow-up was positively related to solicitation at follow-up, and negatively correlated with ADHD at follow-up and ODD and CD at both time points. Parental solicitation at follow-up was negatively correlated with ODD at follow-up. Analyses suggested that symptom clusters remained highly stable over time. Further, symptom clusters were moderately to highly related at both time points. Race was negatively related to child disclosure and parental solicitation at baseline, and as expected age was positively related to ADHD, ODD, and CD symptoms clusters at follow-up. Gender was unrelated to all observed variables, and thus, was no longer considered as a covariate in subsequent analyses. Ultimately, race and age were the only covariates entered in each model.

### *Regression Analyses*

*Sources of Knowledge Predicting DBD Symptoms Within Time.* At baseline, when ADHD symptoms were regressed on sources of knowledge (Table 2), analyses suggested that neither child disclosure nor parental solicitation were associated with ADHD symptoms. However, when regressed on symptoms of ODD at baseline, child disclosure was negatively associated with ODD symptoms, such that high levels of disclosure predicted low levels of baseline ODD symptoms (Table 2). Parental solicitation at baseline was unrelated to ODD symptoms at baseline. Similar to ODD symptoms, child disclosure was negatively associated with CD symptoms at baseline, such that high levels of disclosure were associated with low levels of



symptoms (Table 2). Parental solicitation at baseline was positively associated with CD symptoms. That is, high levels of solicitation were predictive of subsequently high levels of CD symptoms.

*Sources of Knowledge Predicting DBD Symptoms Across Time.* When examining the prediction of symptoms longitudinally (Table 2), analyses indicated that when accounting for the variance associated with prior levels of ADHD symptoms, disclosure and solicitation were unrelated to ADHD symptoms across time. Likewise, when accounting for the variance associated with prior levels of ODD symptoms, disclosure and solicitation were unrelated to symptoms of ODD across time (Table 2). Finally, when accounting for the variance associated with prior levels of CD symptoms, disclosure and solicitation were not associated with CD symptoms across time (Table 2).

*DBD Symptoms Predicting Sources of Knowledge Within Time.* At baseline, when disclosure was regressed on DBD symptoms (Table 3), analyses indicated that neither ADHD nor CD symptoms were related to child disclosure. There was however, a marginally statistically significant negative trend for the relation between ODD symptoms and child disclosure, such that high levels of ODD symptoms were associated with low levels of child disclosure (Table 3).

When solicitation was regressed on DBD symptoms at baseline, analyses indicated that ADHD and CD symptoms were unrelated to parental solicitation (Table 3). A marginally statistically significant negative trend was found for the relation between ODD symptoms and solicitation, such that high levels of ODD symptoms were associated with low levels of solicitation (Table 3).

*DBD Symptoms Predicting Sources of Knowledge Across Time.* When examining the association between sources of knowledge longitudinally (Table 3), analyses indicated that when

controlling for prior levels of child disclosure, ADHD and CD symptoms were unrelated to disclosure (Table 3). However, ODD symptoms were negatively associated with child disclosure across time, such that high levels of ODD symptoms were predictive of low levels of child disclosure across time (Table 3). When accounting for the variance associated with prior levels of solicitation, ADHD symptoms, ODD symptoms and CD symptoms (Table 3) were unrelated to parental solicitation

### Discussion

The overarching goal of this study was to investigate the mutually influential nature of DBD symptom clusters and parental sources of knowledge. Specifically, this study sought to determine whether voluntary child disclosure of information or parental solicitation of children's whereabouts and behavior served to increase or decrease the presence of DBD symptom behavior. Likewise, this study examined whether specific clusters of DBD symptom behavior served to increase or decrease incidence of disclosure or solicitation. This investigation advances the current literature by pioneering the examination of the impact of sources of knowledge on specific sets of disruptive symptom clusters and by exploring how these child behavioral symptoms might serve to influence parental sources of knowledge. Overall, it was discovered that specific DBD symptoms were differentially influenced by solicitation and disclosure and vice versa. Findings are discussed in turn below.

#### *Sources of Knowledge Predicting DBD Symptoms.*

Because children demonstrating ODD and CD symptom specific behavior may have more to hide, it was hypothesized that low levels of child disclosure of information would be associated with high levels of ODD and CD symptoms. Findings within time supported this hypothesis by revealing that children were less likely to engage in voluntary disclosure of their

activities and whereabouts when levels of ODD and CD specific symptoms were elevated. Again, in order to continue engagement in particular activities and/or maintain particular peer associations and avoid correction, children with oppositional symptoms or conduct related symptoms might limit the extent to which they voluntarily disclose. By tempering the amount of disclosure, children with CD and ODD symptoms are able to ‘control’ or ‘protect’ to a certain extent their continued engagement in symptom specific behavior (Duke, 1996; O’Reilly, 2005). These findings are consistent with the literature that has found high levels of child disclosure to be the strongest source of knowledge associated with adolescent externalizing norm-breaking behaviors (Stattin & Kerr, 2000).

It was also hypothesized that disclosure would be unrelated to the ADHD symptom cluster. Both within- and across-time findings supported this notion. A diagnosis of ADHD includes symptoms of hyperactivity and impulsivity (Duke, 1996), and the impulsive nature of these children’s symptoms (APA, 2000) may prompt them to spontaneously disclose information regardless of the subject matter and/or consequences (Barkley, 1998). Children with ADHD symptoms might also be more likely than other children to forget to mention activities and behaviors in which they have engaged regardless of their importance or content due to characteristic ADHD symptoms of forgetfulness and distractibility (APA, 2000).

Secondarily, although solicitation was not found to be associated with ADHD or ODD symptoms as hypothesized, analyses indicated that high parental solicitation was associated with increases, not decreases in CD symptom specific behavior at baseline consistent with prediction. The current findings point to the possibility that despite the developmental appropriateness of parental solicitation, children demonstrating symptoms of CD may indeed be reacting rebelliously in attempts to lessen the degree to which parents solicit commensurate with previous

findings in adolescents (Stattin & Kerr, 2000). Engagement in CD symptom specific behavior suggests that these children already have minimal supervision and/or parental intervention and as such, will behave in any manner necessary to protect their agendas. This relation is consistent with the literature that has found parental solicitation to be associated with increases in engagement in norm breaking behavior in adolescents (Stattin & Kerr, 2000; Kerr and Stattin, 2000).

It is possible that parental solicitation was unrelated to ADHD symptoms because, again these behaviors are less easily hidden and parents may not feel compelled to explicitly gather additional information for the purpose of keeping these children on track. Furthermore, because ADHD symptoms have such a strong biological component (Swanson & Castellanos, 2002), it is possible that parenting effects do not impact symptoms as strongly. The reason why solicitation was not associated with the ODD symptom cluster as predicted is less clear. When considering the effect found with CD symptoms and the similarities between the symptom clusters (American Psychological Association, 2000; Duke, 1996; O'Reilly, 2005), it is a reasonable expectation that children with ODD symptoms might also rebel against parental solicitation of their behaviors due to threats of correction. However, it is also possible that children with symptoms of ODD are not particularly bothered one way or the other if parents solicit, because their behaviors do not require the same 'protection' of minimal supervision and/or parental intervention as do the behaviors of children with CD symptoms. That is, ODD symptom children do not perceive that their behaviors (i.e., being touchy, blaming others, arguing) will have to change. Alternatively, it may simply be that child disclosure is more influential on ODD symptoms than parental solicitation. Additional research is needed before conclusions can be drawn.

DBD symptom clusters of behavior were highly stable across time, as evidenced by correlations between baseline and follow-up symptom behavior (see Table 1). Thus, it may be that neither disclosure nor solicitation was associated with symptoms of ADHD, ODD, or CD when controlling for prior levels of symptoms due to the stability of child symptoms.

*DBD Symptoms Predicting Sources of Knowledge.*

The hypothesis that high levels of ODD and CD symptom cluster behavior would be associated with low levels of child disclosure was partially supported, in that ODD symptoms were associated with low levels of child disclosure within as well as across time. However, note that this association was only marginally statistically significant within time. The CD symptom cluster was unrelated to child disclosure. The prediction that the ADHD symptom cluster would be unrelated to child disclosure due to the impulsivity associated with these behaviors was also supported. When considering the desire for control of the parent-child relationship and the need to enforce and maintain their own standards of behavior (Duke, 1996; O'Reilly, 2005), it makes sense why children with symptoms of ODD would use their ability to withhold information from their parents (i.e., not disclosing) as a function of their symptom behavior. Disclosing less information to the parent is perhaps a way in which a child with ODD symptoms feels that they are able to gain the upper hand in their struggle against the caregiver. Because the symptoms of CD are less driven by the hostile parent-child relationship characteristic of ODD symptoms (O'Reilly, 2005) these children might not see the utility in withholding disclosure to manipulate the relationship. Furthermore, research on callous and unemotional traits as they are related to children with CD (e.g., Barry, Frick, DeShazo, McCoy, Ellis, & Loney, 2000; Pardini & Fite, in press) indicates that these children are easily able to engage in their destructive, aggressive, and delinquent behaviors because they are less inclined to feel remorse or guilt surrounding their

actions. It is possible that CD was unrelated to child disclosure because these children are comfortable with telling their parents about their activities and associations because they are not concerned with and/or unaffected by the consequences. Likewise, children with symptoms of CD may in fact disclose to their parents, but simply and skillfully lie (Duke, 1996) about their behaviors and thus symptoms would be less likely to predict disclosure.

The hypothesis that high levels of ADHD would be associated with high levels of parental solicitation due to parental attempts to increase opportunities for correction (Barkley, 1998; Barkley, 2006) was unsupported by the baseline and longitudinal findings. Again, with symptoms of ADHD parents may feel as though the behaviors speak for themselves and they do not have to ask. Although marginally associated with parental solicitation at baseline, symptoms of ODD were also unrelated to solicitation longitudinally, providing minimal support for the hypothesis that greater ODD symptoms would be related to low levels of parental solicitation (i.e., parental attempts to avoid negative interactions; i.e., rationale in: Bell, 1977; Bell & Chapman, 1986). Symptoms of CD were also unrelated to parental solicitation in contrast with prediction, and this could have occurred due to parental perception that the child is going to behave aversely regardless of whether they ask the child about their behaviors (Duke, 1996). Children with symptoms of DBD might also engage in lying behaviors (Duke, 1996; O'Reilly, 2005; Barkley, 2006), and perhaps parents realize this and are less inclined to risk negative interactions for information that is likely to be falsified.

Further explanation exists in the fact that these relations are subject to the missing element of parental control. Perhaps it is the case that specific DBD symptom behavior was unrelated to disclosure and solicitation because parents take preventative measures and control what their child is doing and with whom they are making associations. Although this possibility

was unable to be explored in the current study, an understanding of how the preventative measure of parental control might bi-directionally influence child behavior would aid in interpretation of current and future findings.

#### *Limitations and Future Directions*

There are limitations that are of note for the current study. First, in addition to a small sample size, there were racial differences between individuals who participated in both waves of data and those who did not and thus results may potentially limit the generalizability of the current findings. Efforts should be made to include a more representative sample of minority participants in order to increase the possibility of generalizing results from the current study as well as from the future explorations suggested below. Likewise, disclosure and solicitation were found to be lower at baseline for families that did not participate in the follow-up and this difference could have contributed to a decreased ability to find effects longitudinally. Finally, symptomatology is often lower in community-recruited samples in general, and thus focusing on an at-risk sample of children might have increased the extent to which the hypothesized associations were supported.

Furthermore, although previous studies have found that parent report of their own solicitation behavior as well as their child's willing disclosure of information were highly correlated with child report of the same and predictive of child behavior (Stattin & Kerr, 2000), it is possible that parents are not entirely accurate in their perception of child disclosure of information. Likewise, using only parent reported measures to gauge both child DBD symptom behavior and the sources of knowledge introduced the possibility of shared method variance. In order to address this issue and potential parental inaccuracy in measurement of 'monitoring', future studies should re-examine the findings of the current study using multiple informants for

sources of knowledge as well as for DBD symptom clusters including parents, teachers, and children. Moreover, one item related to the both the ADHD and CD DSM-Oriented subscales had to be either replaced or omitted, thus potentially reducing the degree to which these scales are accurate in predicting said symptoms. It should be noted however, that these scales remained highly internally consistent and were related to other constructs in the expected direction.

Parental control was not examined currently and future studies should explore this source of knowledge given its potential impact in the interpretation of results surrounding disclosure and solicitation as they relate to DBD symptom specific behavior. Finally, the low to moderate internal consistencies associated with measures of child disclosure and parental solicitation might have limited the extent to which associations were able to be determined because the measurement reliability of the sources of knowledge were not as robust as possible.

Despite these limitations, this study most notably demonstrates the importance of understanding the differential impact that DBD symptomatology has on parenting and vice versa. Findings indicate that caregivers may need to take into account how child behavior is impacting how they react, particularly to symptoms of ODD. Moreover, taking into account the association between CD symptom behavior and parental solicitation, intervention methods might teach parents how to engage in symptom specific and developmentally appropriate parenting strategies that will be the most beneficial for both the child and the parent. Finally, the current study provides a direction for the development of future studies. For example, an exploration of how parental sources of knowledge interact to predict child DBD symptoms may help to further understand the impact of these sources of knowledge on child behavior. Likewise, a better understanding of how sources of knowledge and child behavior are reciprocally related across developmental stages would be fruitful in designing age appropriate interventions. For example,



because disclosure has consistently been associated with rule breaking behavior, interventions, which foster open communication between parents and children and encourage the development of strategies to appropriately handle information reflecting problem behavior earlier in the parent-child relationship, might serve to improve a child's willingness to disclose to their parents despite the information that might come forward.

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Table 1. Means, Correlations, and Standard Deviations of Observed Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Disclos T1	-											
2. Disclos T2	.52 <sup>c</sup>	-										
3. Solicit T1	.46 <sup>c</sup>	.09	-									
4. Solicit T2	.47 <sup>b</sup>	.61 <sup>c</sup>	.28 <sup>a</sup>	-								
5. ADHD T1	-.12	-.24	-.06	-.10	-							
6. ADHD T2	-.10	-.41 <sup>a</sup>	-.06	-.22	.80 <sup>c</sup>	-						
7. ODD T1	-.29 <sup>a</sup>	-.49 <sup>c</sup>	-.05	-.25	.66 <sup>c</sup>	.55 <sup>c</sup>	-					
8. ODD T2	-.39 <sup>a</sup>	-.56 <sup>c</sup>	-.16	-.27 <sup>a</sup>	.59 <sup>c</sup>	.75 <sup>c</sup>	.68 <sup>c</sup>	-				
9. CD T1	-.27 <sup>a</sup>	-.42 <sup>a</sup>	-.05	-.15	.61 <sup>c</sup>	.48 <sup>c</sup>	.77 <sup>c</sup>	.59 <sup>c</sup>	-			
10. CD T2	-.27 <sup>a</sup>	-.47 <sup>a</sup>	-.01	-.12	.63 <sup>c</sup>	.75 <sup>c</sup>	.69 <sup>c</sup>	.85 <sup>c</sup>	.79 <sup>c</sup>	-		
11. Age	-.13	-.23	-.20	.15	.10	.28 <sup>a</sup>	.08	.29 <sup>a</sup>	.12	.35 <sup>a</sup>	-	
12. Race	-.22 <sup>a</sup>	-.30 <sup>a</sup>	-.05	-.41 <sup>a</sup>	.21	.08	.11	.19	.19	.14	-.07	-
<i>M</i>	4.52	4.34	4.30	4.20	1.67	1.41	1.62	1.41	1.17	1.16	10.44	-
<i>SD</i>	.45	.63	.49	.63	.55	.51	.53	.51	.23	.27	1.14	-

Note: <sup>a</sup> $p < .05$ , <sup>b</sup> $p \leq .001$ , <sup>c</sup> $p < .0001$ ; Race coded as 1 = Caucasian and 2 = Minority. Abbreviations are identified as follows: Disclos = Child Disclosure, Solicit = Parental Solicitation, ADHD = ADHD symptom cluster, ODD = ODD symptom cluster, CD = CD symptom cluster, T1 = Time 1 (baseline) and T2 = Time 2 (follow-up).

Table 2. Unstandardized Betas and Standard Errors for Within Time and Across Time DBD Symptoms Regressed on Sources of Knowledge

	Within Time		Across Time	
	B	SE	B	SE
Outcome: ADHD Symptoms				
Disclosure	-.17	.15	-.07	.13
Solicitation	.17	.13	.02	.11
Age	.06	.05	.02	.04
Race	.23	.14	-.02	.13
Outcome: ODD Symptoms				
Disclosure	-.38**	.14	-.20	.15
Solicitation	.11	.13	.08	.13
Age	.02	.05	.07	.05
Race	.06	.13	.12	.14
Outcome: CD Symptoms				
Disclosure	-.18**	.06	.03	.07
Solicitation	.11*	.05	.01	.06
Age	.03	.02	.05	.02
Race	.07	.05	.06	.06

Note: \*  $p \leq .05$ , \*\*  $p < .01$

Table 3. Unstandardized Betas and Standard Errors for Within Time and Across Time Sources of Knowledge regressed on DBD symptoms

	Within Time		Across Time	
	B	SE	B	SE
Outcome: Disclosure				
ADHD	.16	.11	.09	.19
ODD	-.25†	.14	-.47*	.22
CD	-.22	.31	.02	.45
Age	-.05	.04	-.07	.06
Race	-.21	.11	-.26	.20
Outcome: Solicitation				
ADHD	.14	.13	.01	.21
ODD	-.29†	.16	-.28	.27
CD	.51	.36	.09	.50
Age	.12*	.14	.11	.07
Race	-.11	.12	-.58	.21

Note: \*  $p < .05$ , †  $p < .08$



Figure 1a

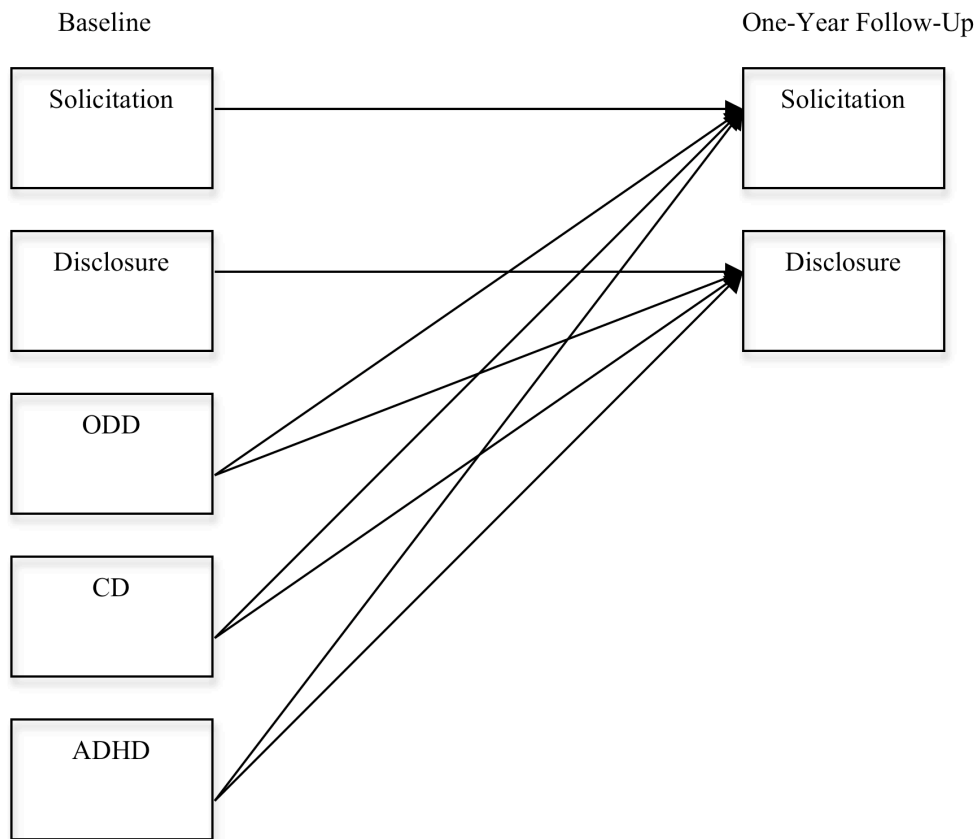


Figure 1a. Parental Sources of Knowledge Regressed on DBDs

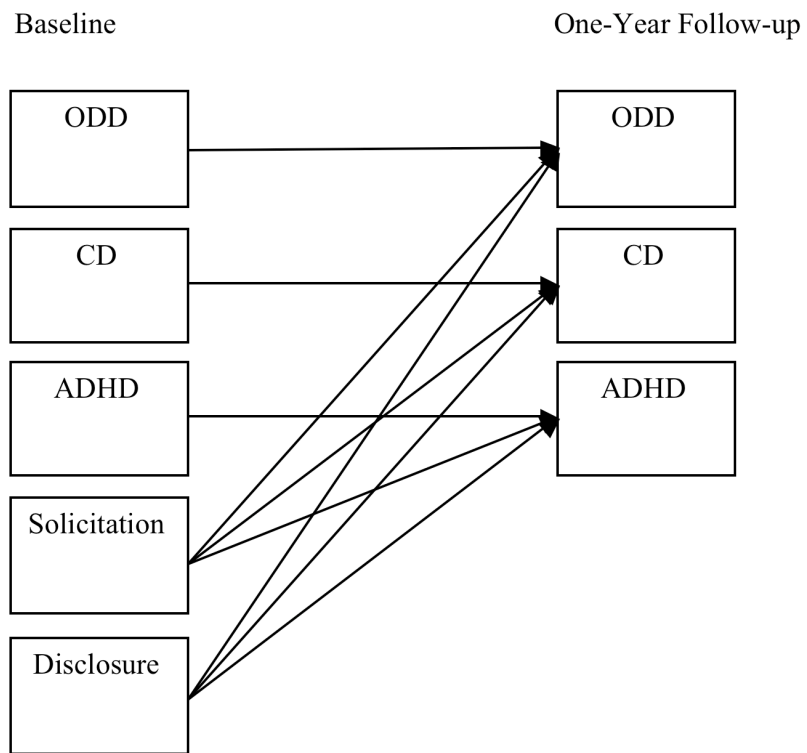
*Figure 1b*

Figure 1b. DBDs Regressed on Parental Sources of Knowledge

## Vita

I received my B.S. in May of 2009 from Georgia State University, Magna Cum Laude and with the Advanced Research Honors distinction. Currently, my primary research interests surround parenting and child behaviors, specifically as they relate to child externalizing behavior and child experience of anxiety, depression, and rejection. Furthermore, I have secondary interests in diagnostics and assessment regarding child developmental delays and disorders.