

**TEMPERAMENTAL AND CONTEXTUAL CORRELATES OF OPPOSITIONAL  
DEFIANT DISORDER SYMPTOM DIMENSIONS**

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## ABSTRACT

Oppositional defiant disorder (ODD) typically has been studied as a single dimensional construct but findings suggest that it may be better conceptualized as a disorder of multiple dimensions that reflect qualitative differences amongst symptoms. Although two- and three-factor models have been identified, emerging studies suggest that a two-dimensional model distinguishing emotional and behavioral symptom dimensions may best characterize the disorder. Emotional and behavioral symptom dimensions have demonstrated unique associations with internalizing and externalizing symptoms and disorders, respectively, but correlates in other domains known to confer risk for ODD (e.g., child and contextual factors) have yet to be explored. Temperament and parenting are among many such factors robustly linked to ODD, but their associations with emotional and behavioral symptom dimensions specifically remain unclear. To address these gaps in the literature, the present study explored temperament (e.g., mood quality, approach) and parenting behaviors (e.g., acceptance, psychological control, and inconsistent discipline) as correlates of emotional and behavioral dimensions and considered whether parenting behaviors moderate the relation between temperament and ODD symptom dimensions. Participants included 775 youth (72% male, 76% Caucasian) and their biological parents. Temperament and parenting behaviors were assessed when youth were 10-12 years old (Time 1), and ODD symptoms were assessed when youth were 14-16 years old (Time 2). Regression analyses examined the main effects of temperament and parenting, as well as whether parenting behaviors moderate the relation between temperament and emotional and behavioral ODD symptom dimensions. Results indicated a significant main effect of parental acceptance in the prediction of both the emotional and behavioral symptom dimensions. Furthermore, parental psychological control factors emerged as moderators of the relation between temperamental

approach and ODD behavioral symptoms; specifically, youth higher in approach exhibited fewer behavioral symptoms in the context of lower parental psychological control. The identification of risk processes associated with ODD symptom dimensions may help to elucidate etiological models and inform interventions that can target those factors most strongly related to each dimension.

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# CHAPTER 1

## INTRODUCTION

Oppositional defiant disorder (ODD) refers to a pattern of behavior marked by angry/irritable mood, argumentativeness/defiance, and/or vindictiveness, and diagnostic criteria require the presence of four of eight symptoms for at least six months that cause impairment (APA, 2013). Typically developing in childhood, ODD is one of the most common referrals for youth mental health treatment (Nock et al., 2007), and youth with ODD are at increased risk for interpersonal problems, poor school performance and dropout, substance use, and additional psychological disorders across developmental periods (e.g., adolescence and adulthood; Kretschmer et al., 2014; Odgers et al., 2008). Accordingly, efforts aimed towards identifying youth at risk for ODD and developing effective interventions are imperative in preventing these negative correlates and sequelae. Ultimately, the success of these efforts relies upon our understanding of the disorder (e.g., conceptualization, correlates that maintain or exacerbate risk and problematic functioning).

Although ODD typically has been conceptualized as a single dimensional construct, findings suggest that ODD may be more complex than initially operationalized. In addition to heterogeneity in clinical presentation, ODD often is comorbid with and/or predictive of a range of symptoms and disorders, including conduct disorder (CD), attention-deficit/hyperactivity disorder (ADHD), depression, and anxiety disorders (Burke et al., 2005). These distinctions have led researchers to consider that ODD may be better conceptualized as a disorder of multiple dimensions that reflect qualitative differences amongst symptoms. These differences are reflected in a proposed three-dimensional model of ODD distinguishing “irritable,” “headstrong,” and “hurtful” symptoms (Stringaris & Goodman, 2009), which garnered empirical

support and ultimately underpinned changes to the organization of ODD symptoms in the *DSM-5* (Drabick et al., 2015). However, in the *DSM-5*, ODD symptoms are categorized as “angry/irritable mood,” “argumentative/ defiant behavior,” and “vindictiveness.” The angry/irritable mood symptoms include “often loses temper,” “is often touchy or easily annoyed,” and “is often angry and resentful.” Argumentative/defiant behavior symptoms are “often argues with authority figures or, for children and adolescents, with adults;” “often actively defies or refuses to comply with requests from authority figures or with rules;” “often deliberately annoys others;” and “often blames others for his or her mistakes or misbehavior.” Finally, vindictiveness is indexed solely by “has been spiteful or vindictive at least twice within the past six months.” Although subsequent studies have garnered support for this particular approach to characterizing ODD (Krieger et al., 2013; Whelan et al., 2013), additional multi-dimensional models have been identified. Other researchers have identified dimensions characterized by “antagonistic behavior” (e.g., annoys others, blames others); “negative affect” (e.g., touchy/easily annoyed, spiteful, angry/resentful); and “oppositional behavior” (e.g., loses temper, argues with adults, defies rules; Burke, Hipwell, & Loeber, 2010), which were confirmed in later work among a sample of Spanish preschoolers (Ezpeleta et al., 2012). A third model identified “irritable” (e.g., sudden changes in mood; hot temper; stubborn, sullen, or irritable), “headstrong” (e.g., argues and disobeys at home and at school), and “hurtful” (e.g., mean to others, teases) dimensions among a sample of Swiss adolescents (Aebi et al., 2010).

Other studies have yielded two-dimensional models of ODD, which generally capture the emotional (i.e., angry/irritable mood) and behavioral (e.g., argumentative/defiant behavior) components identified in three-dimensional models. Burke (2005) identified dimensions of “oppositional behavior” and “negative affect” among a male sample; the oppositional behavior

dimension included “often loses temper,” “argues with adults or authority figures,” and “defies rules or refuses to comply with requests,” and the negative affect dimension included “is touchy or easily annoyed,” “is often angry,” and vindictive or spiteful behavior. Of note, two ODD symptoms, “blames others” and “deliberately annoys others,” did not load onto either factor in this model. In another study, exploratory factor analysis confirmed the presence of “irritable” and “headstrong/ spiteful” dimensions (Rowe et al., 2010). Symptom loadings were highly similar to prior models incorporating all ODD symptoms (e.g., Stringaris & Goodman, 2009), with the exception of “headstrong” and “hurtful” symptoms subsumed under one factor. In a final two-factor model, an “irritability” dimension included “is easily annoyed by others,” “is angry and resentful,” and “is cranky or irritable;” and a “defiance” dimension included “is defiant or talks back to people,” “argues a lot with others,” and “blames others for their own mistakes” from adolescence to young adulthood (Leadbeater & Homel, 2015).

It is noted that differences in multi-factor models of ODD dimensions appear to depend upon the researchers’ methodological approach to identifying dimensions (e.g., *a priori*, factor analysis, measures; Drabick & Gadow, 2012). As a result, symptom loadings across dimensions differ across models, and findings are mixed as to which model best captures the dimensional structure of ODD (Ezpeleta et al., 2012; Krieger et al., 2013); however, the extant literature suggests that a two-dimensional model may best characterize ODD (Burke et al., 2014; Herzhoff & Tackett, 2016; Lavigne et al., 2015). Research exploring correlates of multi-dimensional models of ODD may help to identify variables associated with these dimensions, increasing our understanding of the distinct and shared correlates of ODD dimensions and facilitating external validation of these models. Given changes to ODD in the *DSM-5*, such research is timely and

may inform our understanding of the etiology, course, and outcomes associated with dimensions of the disorder, which ultimately may have implications for interventions efforts.

Despite the mixed literature regarding optimal ways to conceptualize multi-dimensional models of ODD, there is compelling evidence demonstrating consistencies among correlates of ODD dimensions, especially regarding two-factor models. In general, studies indicate that dimensions reflecting an emotional component of ODD (i.e., angry/irritable mood) show more robust associations with internalizing symptoms and disorders, and behavioral ODD symptoms (i.e., those reflecting argumentative/ defiant behavior) are more strongly related to externalizing symptoms and disorders. Studies examining correlates of both two- and three-dimensional models have shown unique predictions from the emotional dimensions to anxiety disorders (e.g., generalized anxiety, social anxiety, separation anxiety, specific phobia) and depression and from the behavioral dimensions to conduct disorder and ADHD (Aebi et al., 2010; Burke et al., 2010; Ezpeleta et al., 2012; Stringaris & Goodman, 2009). In another study, more specific associations were found between the behavioral dimension and substance use in a two-factor model (Rowe et al., 2010). When considered independently of the behavioral and emotional dimensions, the hurtful dimension has shown associations with CD symptoms, though these links appear to be qualitatively different from those found in relation to behavioral dimensions. In one study, although the hurtful and headstrong (i.e., behavioral) dimensions both showed relations with CD, the hurtful dimension was particularly associated with ratings of callousness and the headstrong dimension was more strongly linked to status violations (e.g., staying out late, truancy, running away; Stringaris & Goodman, 2009). Finally, dimensions identified in both two- and three-dimensional models of ODD have demonstrated developmental continuity and predictive ability, providing further support for a multi-dimensional characterization of ODD (Whelan et al., 2013).

To date, research considering correlates of ODD dimensions has been limited largely to co-occurring psychological symptoms and disorders. Few studies have explored correlates in other domains known to confer risk for ODD (e.g., child and contextual factors), leaving it unclear whether such factors demonstrate unique relations with emotional and behavioral symptom dimensions. One child-specific factor that has been robustly linked to ODD is temperament. Most researchers agree that temperament represents individual dispositions that appear early in life, demonstrate consistency over time and across situations, and are strongly influenced by biological factors (Shiner et al., 2012), and decades of research support a consensus that temperament is multidimensional in nature (De Pauw & Mervielde, 2010). Although many dimensional models of temperament have been proposed (Buss & Plomin, 1975; Goldsmith & Campos, 1982; Thomas & Chess, 1977), factor analyses confirm that across development, temperament may be best captured by three dimensions reflecting differences in reactivity and self-regulation: negative affect, effortful control, and surgency (Rothbart & Bates, 2006).

Several studies demonstrate associations between temperament and ODD, in accordance with a vulnerability model of temperament which posits that certain temperaments increase risk for psychopathology (Tackett, 2006). Although the majority of research in this area indicates that youth with temperaments that are characterized as difficult (e.g., high arousal, low adaptability, high withdrawal; Thomas & Chess, 1977) are at higher risk for ODD, CD, and/or externalizing behavior problems more generally (Frick & Morris, 2004), more specific findings show that ODD is associated with constructs reflecting higher levels of negative mood quality (e.g., high negative affect, frustration, dysphoria; Dougherty et al., 2011; Oldehinkel et al., 2007). Some studies also suggest that higher levels of approach (e.g., surgency, positive reactivity to novelty)

may confer risk for externalizing problems in early childhood (Degnan et al., 2011; Stifter et al., 2008). Nonetheless, questions remain regarding whether certain temperamental features are more strongly related to emotional or behavioral ODD dimensions than others. Though few, current findings show that negative affect was more strongly associated with emotional symptom dimensions than were other temperamental features (Ezpeleta et al., 2012). Findings regarding temperamental precursors of behavioral dimensions are quite mixed, showing associations with various dimensions, like surgency (Zastrow et al., 2016), effortful control (Ezpeleta et al., 2012), and activity level (Stringaris, Maughan, & Goodman, 2010).

Although there are a variety of contextual factors that influence risk for ODD as a single dimension, one of the most well-studied and proximal to youth behavior is parenting. The extant literature in this area is vast and findings are robust that poor or negative parenting practices confer risk for ODD across development. Parenting factors implicated in risk for ODD and externalizing symptomatology more generally include acceptance, psychological control, and quality of discipline (Burke, Loeber, & Birmaher, 2002; Drabick et al., 2006). Studies show that lower levels of parental acceptance (e.g., warmth, emotional support) are linked to higher levels of ODD and externalizing problems (Kostic et al., 2014; Rey et al., 1990; Stormshak et al., 2000). Generally, psychological control has demonstrated more robust links with internalizing disorders (e.g., anxiety, depression) across development (Barber, Olsen, & Shagle, 1994; Petit et al., 2001; Plunkett et al., 2007), but much work has shown associations with conduct and/or externalizing problems (e.g. aggression, delinquency) as well (Donenberg & Weisz, 1998; Janssens et al., 2015; Mills & Rubin, 1998; Stone et al., 2013). Finally, ODD symptoms have been linked to inconsistent enforcement of rules and consequences, as well as a laxer approach to behavioral control (e.g., low monitoring; Barber & Harmon, 2002; Gershoff, 2002; Stormshak et

al., 2000). Despite robust findings in the literature, other research indicates that the nature and/or strength of the influence of contextual factors may vary with different subtypes of behavioral problems (Baker et al., 2008; Burt, 2009), suggesting that parenting factors may be differentially associated with emotional and behavioral ODD dimensions. Findings from one study revealed that an emotional symptom dimension was more strongly related to family factors (e.g., parent emotion regulation, marital quality) than was a behavioral dimension (Tang et al., 2017), but associations with specific parenting behaviors generally have yet to be explored empirically.

Although the literature demonstrates that risk for ODD may be conferred through the impact of individual factors (i.e., temperament or parenting factors), no single factor or domain accounts for the majority of the variance in the disorder, suggesting that ODD is likely the product of multiple processes. Current etiological and risk models of ODD rooted within the developmental psychopathology framework also emphasize the role of interactional and transactional relations among risk factors over time and have facilitated the inclusion of integrative approaches to understanding psychopathology (Cicchetti, 1993). In accordance with this approach, it is posited that child and contextual factors may interact to predict psychopathology, such that some environments may differentially affect youth with certain attributes (Rabinowitz & Drabick, 2017). As it pertains to ODD, specific parenting behaviors may promote or attenuate risk for symptoms when considered with certain temperamental features. Research in this area has been influenced primarily by the diathesis-stress model, which posits that some youth are more susceptible to the adverse effects of an environmental stressor due to certain temperamental, physiological, or genetic “vulnerabilities” (Belsky & Pluess, 2009; Zuckerman, 1999). This model is supported by findings showing that youth with certain temperaments demonstrate exacerbated ODD symptoms and/or externalizing problems in poor

parenting contexts (Bates et al., 1998; Lengua et al., 2000; Morris et al., 2002). However, it remains unknown whether these interactive processes differ in the prediction of emotional and behavioral ODD symptoms and very few studies to date have explored this domain. In a notable exception evaluating treatment outcomes, youth with “emotionally-dysregulated” ODD (i.e., angry/irritable mood symptoms and vindictiveness) evidenced a greater reduction in conduct problems than youth with “headstrong” ODD (i.e., argumentative/defiant behavior symptoms) following completion of a parenting intervention (Scott & O’Connor, 2012). Interestingly, the researchers noted that parents of youth with the emotionally-dysregulated type did not change more than the parents of youth with the headstrong type in response to the intervention, but rather the emotionally-dysregulated children were more responsive to subsequent changes in parenting practices (e.g., increases in warmth and praise, decreases in criticism/harshness) in their environments.

In summary, recent empirical support for two- and three-dimension models of ODD has led researchers to consider the dimensional structure of ODD (Burke et al., 2014; Herzhoff & Tackett, 2016; Lavigne et al., 2015). Research has shown that, generally, the emotional dimensions are more strongly associated with internalizing symptoms whereas the behavioral dimensions are more strongly associated with externalizing symptoms; nevertheless, correlates of two-dimensional models have not been identified in other domains known to confer risk for ODD. Child and contextual factors robustly linked to ODD include temperament and parenting, but the processes (e.g., main/direct effects, interactional) through which they confer risk for emotional and behavioral ODD symptoms specifically remain unclear. Research exploring these domains is wanting but incipient studies have shown associations between emotional symptom dimensions and temperaments characterized by higher negative mood quality. However, mixed

results have been found in studies of behavioral symptom dimensions and temperament, and virtually no studies have explored parenting practices as predictors of symptom dimensions. As a result, risk models predicting emotional and behavioral ODD symptom dimensions are lacking and may involve processes distinct from those proposed in models considering ODD as a unitary construct. The identification of such processes, which may involve differences in how child-specific and contextual factors exacerbate or attenuate symptoms, may help to elucidate etiological models for emotional and behavioral ODD symptoms and improve outcomes for youth with ODD by tailoring interventions to target those factors most strongly related to each dimension.

### **The Current Study: A Conceptual Model of Temperamental and Contextual Correlates of Oppositional Defiant Disorder Dimensions**

Given the novelty of research characterizing ODD as a multi-dimensional disorder, studies examining correlates of emotional and behavioral symptom dimensions are few and substantial gaps in the literature remain. Based on the extant literature regarding dimensional conceptualizations of ODD and *DSM-5* changes, it was proposed a priori that an emotional symptom dimension comprises three items (e.g. often loses temper, often touchy/easily annoyed, often angry/resentful), and a behavioral symptom dimension comprises five items (e.g. often argues with authority figures, often defies/refuses to comply with requests, often annoys others, often blames others for mistakes, has been spiteful/vindictive). Borrowing heavily from etiological and risk models of ODD rooted in a developmental psychopathology framework, it additionally was proposed that these symptom dimensions may result from distinct risk processes involving child temperament, parenting behaviors, and interactions between temperament and parenting behaviors. First, it is likely that youths with temperaments characterized by higher

negative mood quality are prone to experiencing angry and irritable moods more frequently than youth who display lower negative mood quality, increasing risk for emotional ODD symptoms. In the parenting realm, caregivers who are less accepting and/or engage in higher levels of rejection in their interactions and who use psychological control strategies more frequently may place their children at higher risk for emotional ODD symptoms. Parents who are less accepting may be more likely to react negatively to their child's emotions, modeling maladaptive emotional displays (e.g., emotional outbursts), which youth may adopt in managing their own frustrations and anger. Additionally, parents who utilize psychological control strategies more frequently (e.g., in an attempt to exert authority over very defiant children with whom other behavioral control strategies are less effective) may be hostile in their interactions with their children, arousing angry and irritable moods more often. In the absence of adequate emotion socialization from caregivers, youth also may lack skills necessary for modulating emotional arousal; in turn, angry and irritable moods may persist, increasing vulnerability to emotional outbursts. Finally, higher negative mood quality may heighten susceptibility to environmental influences, which may in turn exacerbate risk for emotional symptoms in the context of poor parenting practices.

In contrast, higher levels of approach may be a stronger predictor of behavioral ODD symptoms. Higher levels of approach may index lower levels of fearfulness, which are associated with lower sensitivity to punishment and distress cues in others and reduced susceptibility or responsiveness to environmental influences (Frick & Morris, 2004). Accordingly, youth higher in approach may be less responsive to these types of cues, and thus, more likely to engage in defiant/argumentative behavior with others. Furthermore, behavioral symptoms may be expected to persist among youth higher in approach, even in adequate

parenting contexts. Alternatively, the persistence of behavioral symptoms may evoke poorer parenting practices that may in turn reinforce symptoms through escalating coercive interchanges. For example, parents may enforce punishment inconsistently in the context of such exchanges (e.g., as a strategy to avoid or end an argument); as such, youth learn that punishment may be avoided at times, which may lead to increased argumentativeness, defiance, and other behavioral ODD symptoms. Given that risk models predicting emotional and behavioral ODD symptoms are lacking, the present study may be among the first to explore temperament and parenting behaviors as correlates of ODD symptom dimensions and will test this model in hopes of facilitating support for integrative risk models of emotional and behavioral ODD symptom dimensions. Generally, it is proposed that temperament and parenting features will be differentially associated with emotional and behavioral symptom dimensions. The specific aims and hypotheses of the current study are detailed below.

**Aim 1: Examine temperamental features as predictors of emotional and behavioral symptom dimensions.**

The first aim involves examining temperamental features as predictors of emotional and behavioral symptom dimensions. It is hypothesized that higher levels of negative mood quality will significantly predict the emotional symptom dimension, and higher levels of approach will significantly predict the behavioral symptom dimension.

**Aim 2: Examine parenting behaviors as predictors of emotional and behavioral symptom dimensions.**

The second aim is to examine parenting behaviors as predictors of emotional and behavioral symptom dimensions. Lower levels of parental acceptance and higher levels of psychological control are both expected to significantly predict the emotional symptom

dimension. It is expected that higher levels of inconsistent and lax discipline will predict the behavioral dimension.

**Aim 3: Explore whether certain parenting factors moderate relations between temperament and emotional and behavioral symptom dimensions.**

The final aim is to explore whether parenting factors moderate the relation between youth temperament and emotional and behavioral symptom dimensions. We specifically hypothesize that in the contexts of lower parental acceptance and higher psychological control, higher levels of negative mood quality will be associated with higher emotional ODD symptoms than in the context of higher parental acceptance and lower psychological control, respectively. It also is expected that regardless of the parenting context, higher temperamental approach will be associated with higher levels of behavioral symptoms.

## CHAPTER 2

### METHOD

#### Participants

Participants included a sample of youth who were involved in a longitudinal study investigating risk factors associated with substance use disorders (SUD), which was conducted at the Center for Education and Drug Abuse Research (CEDAR) at the University of Pittsburgh. Eligible participants included father with (56%) or without (44%) a lifetime history of SUD or other psychiatric disorder who were the biological father of a child aged 10-12 years. Baseline assessments were conducted when youth were 10-12 years old, and follow-up assessments were conducted over 20 years. The present study utilized data collected at baseline (Time 1;  $N = 775$ ,  $M = 10.95$  years  $\pm 0.88$ , 71% male, 76% White) and when youth were 14-16 years old (Time 2;  $N = 631$ ,  $M = 15.50$  years  $\pm 0.56$  years, 72% male; 76% White). Families were recruited through substance dependence and psychiatric treatment programs, social service agencies, and newspaper, television, and radio advertisements. Additional details regarding recruitment sources and procedures, as well as inclusionary and exclusionary criteria, are described in detail elsewhere (Tarter & Vanyukov, 2001). It is noted that the sample contains a significantly larger portion of male than female participants, as recruitment of female participants did not begin until four years after the study commenced.

#### Procedure

Participants were provided a description of the study and were informed that their privacy was protected by a Certificate of Confidentiality from the National Institute on Drug Abuse (NIDA). Researchers obtained written informed consent from parents and assent from children prior to study enrollment. At Time 1, caregivers reported on youth temperament, and youth

reported on their own temperament and experienced parenting behaviors. At Time 2, mothers completed a rating scale that assessed ODD symptoms. Families were financially compensated for their participation. All study procedures were approved by the University of Pittsburgh Institutional Review Board.

## **Measures**

**Youth temperament.** Parents and youth reported on temperament at Time 1 using the Dimensions of Temperament Survey – Revised (DOTS-R; Windle & Lerner, 1986), a 54-item measure assessing ten temperamental facets. The current study considered temperamental approach and mood quality, which were assessed using the Approach/Withdrawal ( $\alpha = .70$ ) and Mood Quality ( $\alpha = .87$ ) subscales. Each subscale was comprised of seven items rated on a scale from 1 (*Usually False*) to 4 (*Usually True*). Regarding the Mood Quality subscale, lower scores indicated higher levels of negative mood quality. On the Approach/Withdrawal subscale, higher scores indicated higher levels of approach and lower scores indicated higher levels of withdrawal. Sample items from the Approach/Withdrawal subscale include “I move towards new situations,” and “It usually takes me no time at all to get used to new people.” Sample items from the Mood Quality subscale include “I laugh and smile at a lot of things” and “My mood is generally cheerful.” Parent- and youth- reported temperament were considered separately in all analyses. Studies have shown that the DOTS-R is an adequately reliable and valid measure of youth temperament (Carson et al., 1989; Rabinowitz et al., 2016, 2017; Windle, 1992).

**Parenting behaviors.** Youths reported on their perceptions of their mothers’ and fathers’ parenting behaviors at Time 1 using the Child’s Report of Parental Behavior Inventory (CRPBI; Schaefer, 1965). The 162-item measure is comprised of three broad parenting factors that each include two subscales: acceptance/ rejection (*Acceptance* and *Child Centeredness* subscales),

psychological autonomy/ psychological control (*Control through Guilt* and *Instilling Persistent Anxiety* subscales), and firm control/ lax control (*Lax Discipline* and *Non-enforcement of Rules* subscales). Each subscale included items rated on a scale from 1 (*Very True*) to 3 (*Not at All True*). Within the acceptance/ rejection factor, lower scores indicated higher levels of acceptance. Sample items include “My mother/father seems to see my good points rather than my faults” (*Acceptance* subscale, 16 items; mothers:  $\alpha = .90$ , fathers:  $\alpha = .91$ ) and “My mother/father likes to talk to me and be with me much of the time” (*Child Centeredness* subscale, eight items; mothers:  $\alpha = .75$ , fathers:  $\alpha = .79$ ). Subscales within the psychological autonomy/ psychological control factor each included eight items, and lower scores indicated higher levels of psychological control. Sample items include “My mother/father says I don't appreciate all s/he has done for me when I don't do as told” (*Control through Guilt*; mothers:  $\alpha = .77$ , fathers:  $\alpha = .77$ ) and “My mother/father thinks that any bad behavior is very serious and will affect my life when I grow up” (*Instilling Persistent Anxiety* subscale; mothers:  $\alpha = .76$ , fathers:  $\alpha = .77$ ). There were eight items within each subscale of the firm control/ lax control parenting factor, and lower scores indicated higher levels of lax discipline. Sample items include “My mother/father lets me get away with a lot of things” (*Lax Discipline* subscale; mothers:  $\alpha = .54$ , fathers:  $\alpha = .56$ ) and “My mother/father lets me off easy when I do something wrong” (*Non-enforcement of Rules* subscale; mothers:  $\alpha = .61$ , fathers:  $\alpha = .64$ ). The present study combined scores for mother and father parenting behaviors for each subscale because of high correlations between mother- and father-report of dimensions. Studies have indicated that the CRPBI is a valid and reliable measure, and particularly demonstrates good internal consistency (Rabinowitz et al., 2016; Safford et al., 2007; Schludermann & Schludermann, 1970).

**Emotional and behavioral ODD symptom dimensions.** At Time 2, mothers completed the Disruptive Behavior Disorders Scale (DBD; Pelham, Gnagy, Greenslade, & Milich, 1992), a 36-item measure which assesses disruptive behavior consistent with symptoms of ODD, ADHD, and Conduct Disorder. The present study included eight items which directly correspond to ODD symptoms in the *DSM-5*. The emotional symptom dimension was indexed by three items ( $\alpha = .86$ ) characterizing angry/irritable mood, and the behavioral symptom dimension was indexed by five items ( $\alpha = .84$ ) characterizing argumentativeness/defiance. The frequency of symptoms was rated on a scale from 0 (*Not at all*) to 3 (*Very much*), with higher scores indicating higher symptom severity. The validity and reliability (e.g., internal consistency) of the DBD has been validated across diverse populations (Pelham et al., 1992).

### **Statistical Analyses**

In accordance with previous work (Rowe et al., 2010), principal components analysis was used to determine whether a two-factor model inclusive of all ODD symptoms included in the *DSM-5* best fit the data. To account for changes from the *DSM-III-R* to *DSM-5*, the ODD symptom related to swearing or using obscene language was omitted from analyses. Thus, the emotional symptom items included “often loses temper,” “is often touchy or easily annoyed by others” and “is often angry and resentful.” The behavioral symptom items included “often argues with adults,” “often actively defies or refuses adult requests,” “often deliberately does things that annoy other people,” “often blames other for his or her own mistakes,” and “is often spiteful or vindictive.” Given expected correlations among items, principal components analysis with Promax rotation was performed on these eight ODD symptoms.

Descriptive statistics and bivariate correlations for all study variables were conducted in SPSS Version 25. Prior to conducting the primary analyses, all variables were assessed for

normality (e.g., skewness, kurtosis) and the predictor variables (e.g., temperament, parenting behaviors) were z-scored ( $M = 0$ ,  $SD = 1$ ) in an effort to reduce multicollinearity (Holmbeck, 2002). Participants with scores on predictor variables that were greater than or equal to three standard deviations from the mean were considered outliers and excluded. Control variables included child age, sex, and paternal psychiatric status. Sex was coded “0” for males and “1” for females. Paternal diagnostic status was coded “0” for fathers without a lifetime history of psychiatric disorder and “1” for fathers with a lifetime history of psychiatric or substance use disorders. Primary analyses were conducted using MPlus Version 8.1 (Muthén & Muthén, 1998-2018). Missing data were addressed in MPlus using Full Information Maximum Likelihood (FIML) estimation, which uses all available data to estimate model parameters but does not impute values. This approach allows for use of participants with missing data in model estimation and generates less error in parameter estimates and standard errors relative to other missing data strategies (Graham, 2009; Little & Rubin, 2002).

**Aim 1: Examine temperamental features as predictors of emotional and behavioral symptom dimensions.**

The main effects of temperamental mood quality and approach as predictors of the emotional symptom dimension and the behavioral symptom dimension were tested using multiple regression analyses. Each regression included child age, sex, paternal diagnostic status, mood quality, and approach as predictors. Separate analyses were conducted for parent- and youth- report of temperament, resulting in four regression equations (two each for each ODD symptom dimension).

**Aim 2: Examine parenting behaviors as predictors of emotional and behavioral symptom dimensions.**

Multiple regression analysis was used to explore the main effects of parenting behaviors as predictors of the emotional symptom dimension and the behavioral symptom dimension. Given multicollinearity between the individual subscales that comprised each parenting factor, subscale scores were combined, and composite scores were used in these analyses. Thus, each regression included child age, sex, paternal diagnostic status, and three parenting factors as predictors.

**Aim 3: Explore whether specific parenting behaviors moderate relations between temperament and the emotional and behavioral symptom dimensions.**

The final aim also was tested with multiple regression analyses. Although multicollinearity was detected between the subscales comprising each parenting factor, individual subscales were explored in separate regression analyses in order to examine potentially differential prediction from each specific parenting variable. A total of 12 two-way interaction terms were created from the z-scored temperament and individual parenting variables and tested in separate regressions predicting the emotional symptom dimension and the behavioral symptoms dimension. Each regression included child age, sex, paternal diagnostic status, one temperament variable (i.e., mood quality, approach), one parenting variable (i.e., acceptance, child centeredness, psychological control, instilling persistent anxiety, lax discipline, and non-enforcement of rules), and the parenting  $\times$  temperament interaction term. A total of 24 regressions were conducted altogether.

Post-hoc probing of significant moderational effects was conducted in a manner consistent with procedures outlined by Holmbeck (2002). First, a conditional moderator variable was created from the z-scored variables to reflect high (+1 *SD*) and low (-1 *SD*) levels of parenting behaviors, and new interaction terms including the conditional moderators (i.e., 'high'

or ‘low’ parenting factors) and temperament were created. In separate post-hoc regressions predicting the emotional and behavioral symptom dimensions, the conditional moderator (i.e., high/low parenting behaviors), temperament, and the conditional cross-product term were entered as predictors. From these analyses, unstandardized betas (slopes) and a regression equation for youth reporting high and low levels of the parenting factor were derived.

A power analysis was conducted to determine the sample size necessary to test temperament and parenting behaviors as predictors of emotional and behavioral ODD symptom dimensions. Aim 1 requires a total of five predictors (i.e., age, sex, paternal diagnostic status, two temperament variables) and Aim 2 requires a total of six predictors (i.e., age, sex, paternal diagnostic status, three parenting composite scores). Using Aim 2, which has a higher number of predictors, sufficient power ( $.80$ ;  $\alpha = .05$ ) for a moderate effect size ( $f^2 = .15$ ) is attained with a sample size of 103; for a small effect size ( $f^2 = .02$ ), sufficient power is attained with a sample size of 725; and for a large effect size ( $f^2 = .35$ ), sufficient power is attained with a sample size of 49 (Faul et al., 2009). With six predictors and  $N = 775$ , the power achieved is 0.98 even with a small effect size. Accordingly, the sample presented in the current study is deemed to be adequate, even in the case of small effect sizes. Nevertheless, given the number of analyses, we used a Bonferroni-corrected  $p$  value in determining the significance of predictors within each regression equation. Thus, for Aim 1, a Bonferroni-corrected  $p$  of .01 was used to assess significance; for Aim 2, a Bonferroni-corrected  $p$  of .025 was utilized. Regarding Aim 3, moderational effects in the social sciences are notoriously difficult to identify and generally account for a small portion of the variance in outcomes (Fairchild & MacKinnon, 2009); moreover, typical strategies for determining necessary power (e.g., G\*Power) are appropriate for predictors that involve main effects but not interactions. Thus, consideration of prior work is

necessary to determine whether analyses are sufficiently powered. Previous work in this dataset has tested similar moderational models involving contextual features as moderators of the temperament-externalizing problems relation; given that there was adequate power to detect significant effects (Rabinowitz et al., 2016, 2017), these previous findings suggest that the present sample size was appropriate for the proposed moderational analyses.

## CHAPTER 3

### RESULTS

#### Descriptive Statistics

The results of the principal components analysis with Promax rotation indicated that only one factor had an eigenvalue greater than 1 (4.19), accounting for 59.87% of the variance. Given evidence supporting a multidimensional model for ODD and the goals of the current project, I extracted two factors (Burke et al., 2014; Herzhoff & Tackett, 2016; Lavigne et al., 2015). The first factor contained six ODD symptoms, which included all emotional symptoms and three behavioral symptoms (e.g., “often deliberately does things that annoy other people,” “often blames other for his or her own mistakes,” and “is often spiteful or vindictive”). The second factor was comprised of just two behavioral symptoms: “often argues with adults” and “often actively defies or refuses adult requests.” Factor loadings for all items ranged from .53 to .98. Cross-loadings were low (absolute values ranged from .03-.26) but the factors were highly correlated ( $r = .68$ ), suggesting that a one-factor model would best fit the data.

Nevertheless, given the goals of the current project, I operationalized symptom dimensions *a priori*, based on the grouping of ODD symptoms in the DSM-5. The internal consistency for these dimensions was good (.86 for emotional symptoms and .84 for behavioral symptoms) and thus these dimensions were used in subsequent analyses. This approach is consistent with research indicating that strategies for operationalizing ODD dimensions inform and naturally influence the potential results, and the *DSM-5* model was thus used with the intention of providing data that can contribute to the research literature potentially validating this more recent approach (e.g., Drabick & Gadow, 2012).

Bivariate correlations, means, standard deviations, and *ns* for the study variables are presented in Table 1. Small positive correlations were found between mother- and youth-reported temperament variables, mood quality (both mother- and youth-report) and control through guilt, youth-reported mood quality and instilling persistent anxiety, youth-reported approach/ withdrawal and lax discipline, and youth-reported mood quality and lax discipline. Non-enforcement of rules was positively correlated with child centeredness, control through guilt, and instilling persistent anxiety; acceptance and child centeredness both were positively correlated with the emotional and behavioral ODD symptom dimensions. Moderate positive correlations were found between lax discipline and non-enforcement of rules and between mood quality and approach/withdrawal, within raters. Finally, large positive correlations were exhibited between child centeredness and acceptance, control through guilt and instilling persistent anxiety, and the emotional and behavioral ODD symptom dimensions.

Small negative correlations were found between: youth-reported approach/withdrawal and acceptance, mother-reported mood quality and acceptance, mood quality (both youth- and mother-reported) and child centeredness, acceptance and instilling persistent anxiety, and lax discipline and child centeredness. Similarly, mother-reported mood quality was negatively correlated with both the emotional and behavioral ODD symptom dimensions, and instilling persistent anxiety was negatively correlated with the behavioral ODD symptom dimension. Moderate negative correlations were found between acceptance and youth-reported mood quality and between lax discipline and acceptance. Overall, correlations among study variables were consistent with expectations with the exception of a positive correlation between non-enforcement of rules and child centeredness; however, the magnitude of this correlation is small.

**Table 1**  
*Bivariate Correlations, Means, Standard Deviations, and ns of Study Variables*

<i>Variable</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Approach/Withdrawal – Youth Report	-											
2. Mood Quality – Youth Report	.34**	-										
3. Approach/Withdrawal – Mother Report	.21**	.08*	-									
4. Mood Quality – Mother Report	.16**	.21**	.34**	-								
5. Acceptance	-.14**	-.31**	-.02	-.15**	-							
6. Child Centeredness	-.09*	-.25**	.01	-.12**	.73**	-						
7. Control through Guilt	-.08	.19**	-.03	.10*	-.03	.08*	-					
8. Instilling Persistent Anxiety	-.01	.23**	-.02	.09*	-.12**	.08	.69**	-				
9. Lax Discipline	.11**	.11**	-.01	-.003	-.33**	-.24**	-.06	-.05	-			
10. Non-enforcement of Rules	-.05	.02	-.04	.02	.08*	.19**	.19**	.16**	.46**	-		
11. ODD Emotional Symptoms	-.04	-.10*	-.08	-.23**	.22**	.22**	-.06	-.06	-.01	.01	-	
12. ODD Behavioral Symptoms	.003	-.07	-.03	-.20**	.21**	.13**	-.07	-.13**	-.06	-.06	.80**	-
<i>M</i>	19.52	23.73	21.14	25.43	45.15	25.22	35.98	37.26	40.02	35.43	1.92	2.89
<i>SD</i>	3.44	3.51	3.58	2.92	10.79	5.50	6.79	6.72	4.30	4.82	2.07	2.91
<i>n</i>	697	697	729	729	645	645	645	645	645	645	564	560

\*  $p < .05$ , \*\*  $p < .01$ .

### Primary Analyses

Regarding control variables, father diagnostic status emerged as a significant predictor of emotional and behavioral ODD symptoms across all regression analyses. Specifically, youth with fathers with a lifetime history of psychiatric disorder exhibited higher levels of emotional and behavioral symptoms than youth with fathers without a lifetime history of psychiatric disorder. Sex also was a significant predictor of the emotional and behavioral symptom dimensions across most regression analyses, such that males exhibited higher levels of emotional and behavioral ODD symptoms than girls. Age did not significantly predict either symptom

dimension.

*Aim 1: Examine temperamental features as predictors of emotional and behavioral symptom dimensions.*

Regarding the emotional symptom dimension, analyses revealed a significant main effect for mother-reported mood quality ( $\beta = -0.20, p < .001$ ), such that higher negative mood quality predicted higher levels of emotional symptoms. Youth-reported mood quality and both mother- and youth-reported approach/withdrawal were not significant predictors of the emotional symptom dimension. Overall, the model had a small effect size. Results are summarized in Table 2.

Table 2  
*Multiple regression analyses predicting ODD emotional symptoms from temperament*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported temperament</b>				0.04	0.04
Age	-0.01	0.10	-0.003		
Sex	-0.41	0.19	-0.09*		
Father Diagnostic Status	0.58	0.17	0.14**		
Mood Quality	-0.21	0.13	-0.08		
Approach/ Withdrawal	0.003	0.10	0.001		
<b>Mother-reported temperament</b>				0.07	0.08
Age	-0.05	0.09	-0.02		
Sex	-0.38	0.19	-0.08*		
Father Diagnostic Status	0.47	0.17	0.11**		
Mood Quality	-0.45	0.10	-0.20***		
Approach/ Withdrawal	-0.03	0.09	-0.01		

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

Similarly, analyses revealed a significant main effect solely for mother-reported mood quality ( $\beta = -0.19, p < .001$ ) on the behavioral symptom dimension, with higher negative mood quality predicting higher levels of behavioral symptoms. Youth-reported mood quality and both mother- and youth-reported approach/withdrawal were not significant predictors of the

behavioral symptom dimension. The model had a small effect size. Results are summarized in Table 3.

Table 3  
Multiple regression analyses predicting ODD behavioral symptoms from temperament

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>R</i> <sup>2</sup>	<i>f</i> <sup>2</sup>
<b>Youth-reported temperament</b>				0.04	0.04
Age	-0.04	0.13	-0.01		
Sex	-0.68	0.27	-0.11*		
Father Diagnostic Status	0.90	0.24	0.15***		
Mood Quality	-0.24	0.18	-0.07		
Approach/ Withdrawal	0.10	0.14	0.03		
<b>Mother-reported temperament</b>				0.07	0.07
Age	-0.08	0.13	-0.02		
Sex	-0.64	0.26	-0.10*		
Father Diagnostic Status	0.76	0.24	0.13**		
Mood Quality	-0.59	0.14	-0.19***		
Approach/ Withdrawal	0.10	0.13	0.03		

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

*Aim 2: Examine parenting behaviors as predictors of emotional and behavioral symptom dimensions.*

The acceptance/rejection parenting factor emerged as a significant predictor of the emotional symptom dimension ( $\beta = 0.24, p < .001$ ). Specifically, higher levels of parental acceptance (i.e., lower scores on the *Acceptance* and *Child Centeredness* subscales) predicted lower levels of emotional symptoms. The Psychological Autonomy/Psychological Control and Firm Control/Lax Control parenting factors were not significant predictors of the emotional symptom dimension. The model had a small effect size. Results are summarized in Table 4.

Table 4

*Multiple regression analyses predicting ODD emotional symptoms from parenting behaviors*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
				0.09	0.10
Age	-0.03	0.09	-0.01		
Sex	-0.34	0.19	-0.07		
Father Diagnostic Status	0.50	0.17	0.12**		
Acceptance/ Rejection	0.29	0.06	0.24***		
Psychological Autonomy/ Psychological Control	-0.05	0.05	-0.04		
Firm Control/ Lax Control	0.03	0.06	0.02		

\*\*  $p < .01$ , \*\*\*  $p < .001$ .

Regarding the behavioral symptom dimension, analyses also revealed a significant main effect of the acceptance/ rejection parenting factor ( $\beta = 0.17$ ,  $p < .001$ ) such that higher levels of parental acceptance (i.e., lower scores on the *Acceptance* and *Child Centeredness* subscales) predicted lower levels of emotional symptoms. There were no significant main effects associated with the Psychological Autonomy/Psychological Control and Firm Control/Lax Control parenting factors. There was a small effect size. Model results are summarized in Table 5.

Table 5

*Multiple regression analyses predicting ODD behavioral symptoms from parenting behaviors*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
				0.07	0.08
Age	-0.04	0.13	-0.01		
Sex	-0.59	0.27	-0.09*		
Father Diagnostic Status	0.75	0.24	0.13**		
Acceptance/ Rejection	0.29	0.08	0.17***		
Psychological Autonomy/ Psychological Control	-0.11	0.07	-0.07		
Firm Control/ Lax Control	-0.05	0.08	-0.03		

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

*Aim 3: Explore whether certain parenting factors moderate relations between temperament and emotional and behavioral symptom dimensions.*

Across the individual parenting subscales, analyses revealed that the parenting behaviors comprising the Psychological Autonomy/Psychological Control factor moderated the relation between approach/withdrawal and the behavioral symptoms dimension. There was a significant effect for the control through guilt  $\times$  mother-reported approach/withdrawal interaction term ( $\beta = -0.10, p < .05$ ) in the prediction of behavioral symptoms, which is presented in Table 6. Post-hoc probing revealed that the slope for high control through guilt was significantly different from zero ( $B = -0.40, p = 0.034$ ). The slope for low control through guilt was not significant ( $B = 0.16, p = 0.388$ ). Examination of Figure 1 indicates that youth higher in approach exhibited attenuated behavioral symptoms in a parenting context marked by lower levels of control through guilt (i.e., high scores on the *Control Through Guilt* subscale) and higher levels of symptoms in the context of higher parental control through guilt (i.e., low scores on the *Control Through Guilt* subscale). The level of behavioral symptoms exhibited by youth lower in approach was similar regardless of the level of parental control through guilt.

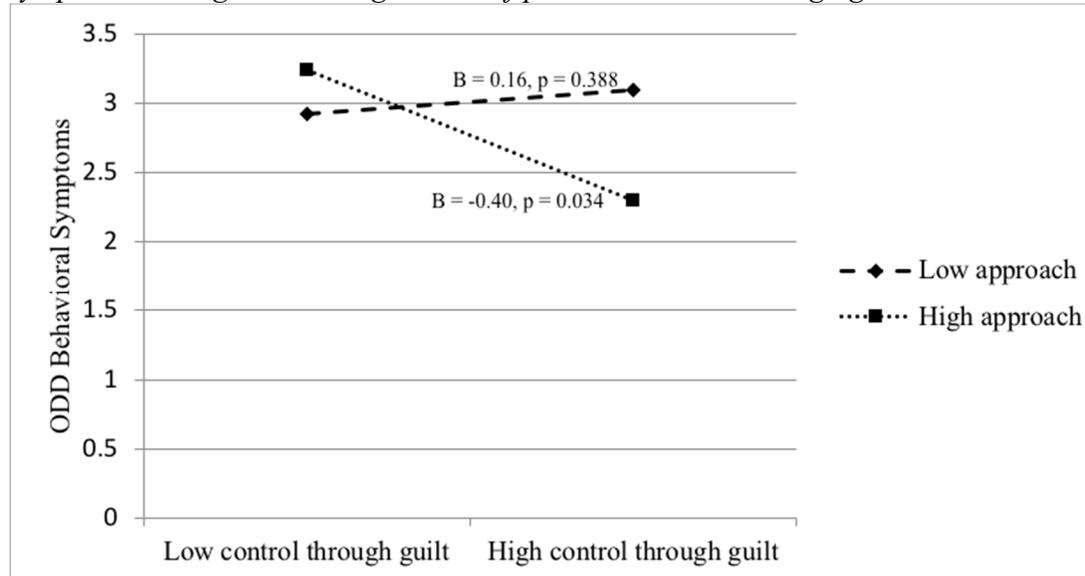
Table 6

Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and control through guilt

Variable	B	SE B	$\beta$	R <sup>2</sup>	f <sup>2</sup>
<b>Youth-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.03	0.14	-0.01		
Sex	-0.72	0.27	-0.11**		
Father Diagnostic Status	0.89	0.25	0.15***		
Control Through Guilt	-0.07	0.14	-0.02		
Approach/ Withdrawal	0.04	0.13	0.01		
Control Through Guilt × Approach/Withdrawal	0.04	0.13	0.01		
<b>Mother-reported approach/ withdrawal</b>				0.05	0.05
Age	0.01	0.14	0.002		
Sex	-0.74	0.27	-0.11**		
Father Diagnostic Status	0.88	0.25	0.15***		
Control Through Guilt	-0.06	0.14	-0.02		
Approach/ Withdrawal	-0.07	0.13	-0.02		
Control Through Guilt × Approach/Withdrawal	-0.29	0.13	-0.10*		

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

Figure 1. Relation between mother-reported approach withdrawal and ODD behavioral symptoms among low and high levels of parental control through guilt



The instilling persistent anxiety  $\times$  mother-reported approach/withdrawal interaction term ( $\beta = -0.10, p < .05$ ) significantly predicted behavioral symptoms, which is presented in Table 7. Similarly, post-hoc analyses showed that the slope for high instilling persistent anxiety ( $B = -0.41, p = 0.029$ ) was significantly different from zero, whereas the slope for low instilling persistent anxiety ( $B = 0.25, p = 0.221$ ) was not. Figure 2 indicates that among youth higher in approach, behavioral symptoms were reduced in a parenting context marked by lower levels of instilling persistent anxiety (i.e., high scores on the *Instilling Persistent Anxiety* subscale) and increased in the context of higher parental instilling persistent anxiety (i.e., low scores on the *Instilling Persistent Anxiety* subscale). Among youth lower in approach, levels of behavioral symptoms were comparable regardless of levels of parents' instilling persistent anxiety.

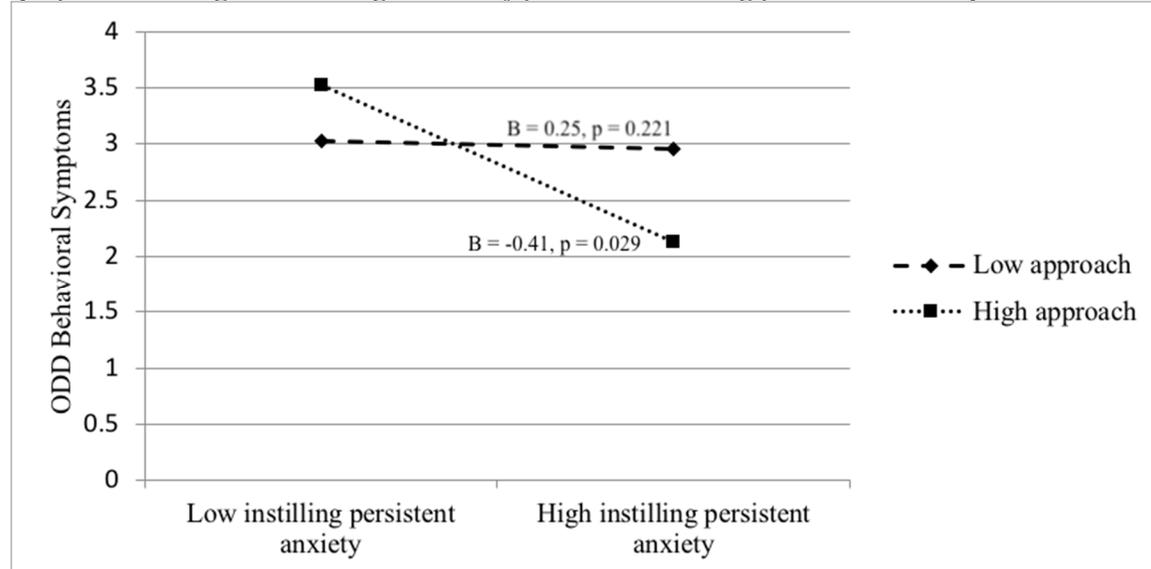
Table 7

*Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and instilling persistent anxiety*

<i>Variable</i>	B	SE B	$\beta$	R <sup>2</sup>	<i>f</i> <sup>2</sup>
<b>Youth-reported approach/ withdrawal</b>				0.05	0.05
Age	-0.03	0.13	-0.01		
Sex	-0.64	0.27	-0.10*		
Father Diagnostic Status	0.85	0.24	0.15***		
Instilling Persistent Anxiety	-0.28	0.14	-0.09*		
Approach/ Withdrawal	0.05	0.13	0.02		
Instilling Persistent Anxiety	0.08	0.13	0.03		
Anxiety × Approach/Withdrawal				0.05	0.06
<b>Mother-reported approach/ withdrawal</b>					
Age	0.01	0.13	0.004		
Sex	-0.66	0.27	-0.10*		
Father Diagnostic Status	0.79	0.24	0.14**		
Instilling Persistent Anxiety	-0.25	0.14	-0.09		
Approach/ Withdrawal	-0.04	0.13	-0.02		
Instilling Persistent Anxiety	-0.31	0.15	-0.10*		
Anxiety × Approach/Withdrawal					

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

Figure 2. Relation between mother-reported approach/ withdrawal and ODD behavioral symptoms among low and high levels of parental instilling persistent anxiety



No other temperament  $\times$  parenting interaction terms were significant predictors of either the emotional or behavioral symptom dimension. These results are presented in Tables 8-29 in the Appendix.

## CHAPTER 4

### DISCUSSION

Researchers typically have studied ODD as a single dimensional construct, but recent findings suggest that ODD may be better characterized as a disorder of multiple dimensions (Rowe et al., 2009; Stringaris & Goodman, 2009). This change, reflected in the *DSM-5*, derives from studies that have identified unique correlates of ODD emotional and behavioral symptom dimensions. Although the emotional and behavioral symptom dimensions have demonstrated associations with internalizing and externalizing disorders, respectively (Aebi et al., 2010; Burke et al., 2010; Ezpeleta et al., 2012; Stringaris & Goodman, 2009), further support for a multi-factor model of ODD lies in the identification of distinct correlates within other domains. The results of the present study indicate that the emotional versus behavioral ODD symptoms may be associated with distinct child temperamental features and parenting behaviors, lending some support to a multi-dimensional conceptualization of ODD. Specifically, children with higher levels of temperamental approach reportedly exhibited lower levels of behavioral ODD symptoms in adolescence when their parenting contexts were characterized by lower levels of parental psychological control (e.g., control through guilt, instilling persistent anxiety). The findings also identified temperamental mood quality and parental acceptance as shared correlates of the emotional and behavioral symptom dimensions. Specifically, higher levels of negative mood quality and lower levels of parental acceptance predicted higher levels of both emotional and behavioral symptoms. Findings related to each specific aim are presented below.

**Aim 1: Examine temperament features as predictors of emotional and behavioral symptom dimensions**

Associations found between mood quality and the emotional symptom dimension are consistent with past work showing that temperamental features capturing higher levels of negative mood quality (e.g. negative affectivity) are more strongly associated with emotional symptom dimensions than are other temperamental features (Ezpeleta et al., 2012). Relatedly, another study found that emotionality (e.g., cries easily, gets upset easily) at 38 months was the strongest predictor of ODD with internalizing disorders in early childhood (Stringaris, Maughan, & Goodman, 2009). Youth with higher negative mood quality may be prone to angry and irritable moods more frequently than youth with lower negative mood quality, placing them at higher risk for ODD emotional symptoms. These youth also may face similar challenges with other negative emotions (e.g., fear, sadness), exacerbating risk for future internalizing symptoms as well. However, mood quality also predicted ODD behavioral symptoms in the present study, inconsistent with the hypothesis that approach would demonstrate stronger prediction to the behavioral dimension than mood quality. Although empirical findings in this area are mixed, we expected our results to align with studies that have identified associations between high levels of surgency (e.g., low shyness) and behavioral symptom dimensions (Ezpeleta et al., 2012; Zastrow et al., 2016). Nonetheless, this finding is supportive of a study identifying shared correlates between emotional and behavioral symptom dimensions at the individual level, particularly child emotion regulation (Tang et al., 2017). It should be noted that relations between mood quality and emotional and behavioral symptom dimensions were found only for parent-reported temperament, which may be an artifact of the use of both parent-report of temperament and ODD symptoms (i.e., mono-method and/or mono-rater effects).

**Aim 2: Examine parenting behaviors as predictors of emotional and behavioral symptom dimensions**

Parental acceptance also emerged as a significant predictor of both the emotional and behavioral symptom dimensions. These findings are highly consistent with past work showing that lower levels of parental acceptance are linked to higher levels of ODD and externalizing problems (Kostic et al., 2014; Stormshak et al., 2000), as well as other work identifying shared correlates between emotional and behavioral symptom dimensions within the parent-child relationship (Tang et al., 2017). Nonetheless, our findings failed to identify any distinct correlates of either symptom dimension within the parenting domain, as parental psychological control and discipline quality did not significantly predict emotional or behavioral symptoms as expected. Psychological control has demonstrated links to externalizing behavior in some studies (Janssens et al., 2015; Stone et al., 2013), but research generally has shown a significantly stronger association between psychological control and internalizing disorders (Barber, Olsen, & Shagle, 1994; Pettit et al., 2001; Plunkett et al., 2007), which may explain our lack of findings. The lack of association between discipline quality and ODD symptoms was highly surprising, given the abundance of research establishing this relationship (Gershoff, 2002; Stormshak et al., 2000). Nevertheless, the internal consistency of the *Lax Discipline* ( $\alpha = .54 - .56$ ) and *Non-enforcement of Rules* ( $\alpha = .61$  to  $.64$ ) subscales within this sample suggest that these subscales were less psychometrically sound than desired, which may have influenced results. Another possible explanation for this result is the use of different informants for parenting behaviors (i.e., youth-report) and ODD symptom dimensions (i.e., parent-report). Research has shown that children and their parents sometimes differ in their perceptions of parenting behaviors and that these discrepancies can have differential prediction to child outcomes (Cottrell et al., 2003; Gaylord et al., 2003). Thus, a different result may have emerged had we incorporated use of parents' perceptions on their own parenting behaviors as well.

### **Aim 3: Explore whether specific parenting behaviors moderate relations between temperament and the emotional and behavioral symptom dimensions**

The finding that parental psychological control moderates the relation between temperament approach and ODD behavioral symptoms aligns with extant research highlighting the role of interactional processes between temperament and parenting behaviors in the development of ODD symptoms. Past studies have shown that certain temperamental features may exacerbate risk for ODD symptoms and/or externalizing problems in poor parenting contexts. For example, maternal hostile parenting was associated with increased externalizing problems among children high in irritable distress temperament but not among children low in irritable distress (Morris et al., 2002). Other research has shown that temperamental features also may increase sensitivity to positive parenting environments. One study found that children with difficult temperaments had significantly reduced levels of externalizing problems in the context of higher maternal sensitivity and greater opportunity for productivity (e.g., parental active teaching of skills/concepts, availability of toys and learning materials in the home) than did children with easy or moderate temperaments (Bradley & Corwyn, 2008). Research examining the role of similar interactional processes as they relate to ODD symptom dimensions is scarce, but the results of one such study suggest that children with emotional and behavioral ODD symptoms may differ in sensitivity to their parenting environments. Scott and O'Connor (2012) found a greater reduction in conduct problems among youth with “emotionally-dysregulated” ODD (i.e., angry/irritable mood and vindictiveness) than among youth with “headstrong” ODD (i.e., argumentative/defiant behavior) following completion of a parenting intervention. Adding to this literature, the present findings suggest that youth higher in temperamental approach may be more sensitive to parenting environments that are psychologically controlling than youth

lower in approach, placing them at increased risk for argumentative and defiant behavior specifically.

### **Strengths, Limitations, and Future Directions**

The present study has several strengths. First, this study is one of very few to explore child-specific and contextual correlates of ODD emotional and behavioral symptom dimensions. Given the novelty of the delineation of ODD symptom dimensions, this study adds to a growing body of research that ultimately may lend support for a multi-dimensional model of ODD, elucidate risk factors related to symptom dimensions, and identify areas for intervention. This study also utilized a large sample spanning multiple developmental periods, which allowed for the identification of prospective associations among study variables. Another strength involves the use of multiple informants' report of behavior, a standard practice in evidence-based assessment (Hunsley & Mash, 2007).

The present study also has some limitations. First, the sole use of rating scales to assess behavior may not fully capture the constructs of interest. Although use of rating scales has several advantages, the measurement of constructs may be under- or over-estimated depending on the rater due to several factors (e.g., social desirability). For example, participants may exaggerate their ratings on traits that may be perceived as positive; similarly, they may understate ratings on traits that may be perceived as negative. Next, the internal consistency of the parental discipline subscales (*Lax Discipline*,  $\alpha = .54 - .56$ ; *Non-enforcement of Rules*,  $\alpha = .61$  to  $.64$ ) may have impacted results, potentially masking important associations with outcome variables. Another limitation involves the generalizability of the results. The sample used in the present study mostly is comprised of White males, and youth are at higher risk for psychopathology given that the majority of fathers involved in the study had a lifetime history of

a psychiatric disorder. Finally, the variance accounted for in the regression equations, though not a point of focus for the analyses, was generally small. To address these limitations, it is important that future studies use additional assessment strategies (e.g., behavioral observation, diagnostic interview) to minimize potential mono-method biases, use alternative rating scales to measure constructs of interests (e.g. parenting behaviors), and utilize a sample that is more balanced in terms of sex, race/ethnicity, and other demographic features. Additionally, future studies should consider exploration of other temperamental features and parenting behaviors, as well as other child-specific (e.g., executive functioning) and contextual factors (e.g., family environment, peer processes) as correlates of ODD symptom dimensions. Furthermore, correlates should be explored across other developmental periods, as evidence for ODD symptom dimensions has been identified from early childhood through young adulthood. Finally, it is important to consider the researchers' strategy for operationalizing ODD symptoms dimensions, which may influence which factors emerge as correlates (Drabick and Gadow, 2012). Future research should compare findings using different approaches to better understand the effects of using different approaches (e.g., factor analysis, a priori divisions) for identifying dimensions.

### **Conclusions and Clinical Implications**

The present study adds to a growing body of literature in support of a multi-dimensional structure of ODD. Parental acceptance and temperamental mood quality emerged as shared correlates of ODD emotional and behavioral symptom dimensions, suggesting that there may be some overlap in the factors involved in the development of emotional and behavioral symptoms. However, there also was some specificity in the processes associated with behavioral symptoms. Specifically, youth higher in temperamental approach were found to exhibit lower levels of

behavioral symptoms in parenting contexts marked by lower levels of psychological control than were youth lower in approach.

The findings may inform clinical work in this area in several ways. First, the assessment of temperament and parenting practices may help to identify youth at risk for emotional or behavioral ODD symptoms, which may facilitate referrals for intervention. Accordingly, interventions should target risk areas most closely related to each symptom dimension. For example, interventions may be tailored to include additional modules aimed at bolstering specific parenting practices and targeting behavioral difficulties that manifest as a result of the child's temperament. The present study suggests that youth with higher levels of negative mood quality and parents who exhibit low levels of acceptance may benefit from targeted intervention during middle childhood to prevent the development of emotional and behavioral symptoms in adolescence. Next, the consideration of interactional effects between temperament and parenting factors may assist not only in identifying which youth may be at highest risk for emotional or behavioral ODD symptoms, but also which youth may derive differential benefit from targeted interventions. For example, the present study suggests that youth who are higher in approach may benefit from parenting interventions focusing on the promotion of psychological autonomy. Finally, extant research implies that a reduction in emotional and behavioral symptoms should decrease the likelihood of developing future internalizing and externalizing disorders, respectively. Thus, interventions targeting mood quality and parental acceptance may have broader effects in improving youth symptoms, whereas those targeting parental psychological control may prevent the development of ADHD and CD particularly among youth higher in approach. Interestingly, there is some evidence for differential treatment response between youth with emotional and behavioral symptoms (Kolko & Pardini, 2010; Ollendick et al., 2018),

though the mechanisms behind these changes remain unclear. Additionally, because emotional and behavioral ODD symptoms can co-occur among youth, future research will be necessary to examine whether modifications (e.g., additions or omissions of particular content or sessions) to existing interventions could differentially address behaviors associated with these ODD dimensions.

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## APPENDIX

### ADDITIONAL ANALYSES

Results summarizing associations among mood quality, parenting behaviors, and the emotional and behavioral symptom dimensions are presented in Tables 8-19. Associations among approach/withdrawal, parenting behaviors, and the emotional symptom dimension are presented in Tables 20-25. Results depicting associations among approach/withdrawal, parental acceptance, child centeredness, lax discipline, non-enforcement of rules, and the behavioral symptom dimension are presented in Tables 26-29.

Table 8  
*Multiple regression analyses predicting ODD emotional symptoms from mood quality and acceptance*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.08	0.09
Age	-0.04	0.09	-0.02		
Sex	-0.37	0.19	-0.08		
Father Diagnostic Status	0.51	0.17	0.12**		
Acceptance	0.49	0.11	0.21***		
Mood Quality	-0.03	0.12	-0.01		
Acceptance $\times$ Mood Quality	-0.01	0.14	-0.01		
<b>Mother-reported mood quality</b>				0.11	0.12
Age	-0.07	0.09	-0.03		
Sex	-0.32	0.19	-0.07		
Father Diagnostic Status	0.43	0.17	0.10*		
Acceptance	0.43	0.10	0.19***		
Mood Quality	-0.38	0.10	-0.17***		
Acceptance $\times$ Mood Quality	-0.11	0.11	-0.05		

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

Table 9

*Multiple regression analyses predicting ODD emotional symptoms from mood quality and child centeredness*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>					
Age	-0.03	0.09	-0.01	0.09	0.09
Sex	-0.39	0.19	-0.08*		
Father Diagnostic Status	0.52	0.17	0.13**		
Child Centeredness	0.48	0.10	0.22***		
Mood Quality	-0.08	0.12	-0.03		
Child Centeredness × Mood Quality	0.16	0.13	0.06		
<b>Mother-reported mood quality</b>					
Age	-0.06	0.09	-0.03		
Sex	-0.35	0.18	-0.08		
Father Diagnostic Status	0.43	0.17	0.10**		
Child Centeredness	0.44	0.10	0.10***		
Mood Quality	-0.41	0.09	-0.18***		
Child Centeredness × Mood Quality	0.01	0.10	0.01		

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

Table 10

*Multiple regression analyses predicting ODD emotional symptoms from mood quality and control through guilt*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>					
Age	-0.01	0.10	-0.002	0.04	0.04
Sex	-0.40	0.10	-0.09*		
Father Diagnostic Status	0.58	0.17	0.14**		
Control Through Guilt	-0.03	0.10	-0.02		
Mood Quality	-0.20	0.12	-0.08		
Control through Guilt × Mood Quality	0.03	0.13	0.01		
<b>Mother-reported mood quality</b>					
				0.07	0.08
Age	-0.06	0.10	-0.02		
Sex	-0.39	0.19	-0.09*		
Father Diagnostic Status	0.47	0.17	0.11**		
Control Through Guilt	-0.02	0.10	-0.01		
Mood Quality	-0.44	0.10	-0.10***		
Control through Guilt × Mood Quality	0.09	0.11	0.04		

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

Table 11

*Multiple regression analyses predicting ODD emotional symptoms mood quality and instilling persistent anxiety*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>					
Age	-0.004	0.10	-0.002	0.04	0.04
Sex	-0.39	0.20	-0.09*		
Father Diagnostic Status	0.58	0.17	0.14**		
Instilling Persistent Anxiety	-0.02	0.10	-0.01		
Mood Quality	-0.21	0.12	-0.08		
Instilling Persistent Anxiety $\times$ Mood Quality	-0.05	0.13	-0.02		
<b>Mother-reported mood quality</b>				0.08	0.08
Age	-0.03	0.09	-0.01		
Sex	-0.35	0.19	-0.08		
Father Diagnostic Status	0.46	0.17	0.11**		
Instilling Persistent Anxiety	0.01	0.10	0.004		
Mood Quality	-0.47	0.10	-0.21***		
Instilling Persistent Anxiety $\times$ Mood Quality	-0.14	0.11	-0.06		

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

Table 12

*Multiple regression analyses predicting ODD emotional symptoms from mood quality and lax discipline*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>					
Age	-0.01	0.10	-0.003	0.04	0.04
Sex	-0.41	0.19	-0.09*		
Father Diagnostic Status	0.59	0.17	0.14**		
Lax Discipline	-0.01	0.10	-0.003		
Mood Quality	-0.21	0.12	-0.08		
Lax Discipline $\times$ Mood Quality	0.03	0.13	0.01		
<b>Mother-reported mood quality</b>				0.07	0.08
Age	-0.05	0.09	-0.02		
Sex	-0.38	0.19	-0.08*		
Father Diagnostic Status	0.46	0.17	0.11**		
Lax Discipline	-0.02	0.10	-0.01		
Mood Quality	-0.45	0.10	-0.20***		
Lax Discipline $\times$ Mood Quality	-0.09	0.11	-0.04		

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

Table 13

*Multiple regression analyses predicting ODD emotional symptoms mood quality and non-enforcement of rules*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>					
Age	0.01	0.10	0.003	0.05	0.05
Sex	-0.39	0.19	-0.09*		
Father Diagnostic Status	0.57	0.17	0.14**		
Non-enforcement of Rules	0.02	0.10	0.01		
Mood Quality	-0.23	0.12	-0.09		
Non-enforcement of Rules × Mood Quality	0.20	0.13	0.07		
				0.08	0.08
<b>Mother-reported mood quality</b>					
Age	-0.05	0.09	-0.02		
Sex	-0.37	0.19	-0.08*		
Father Diagnostic Status	0.48	0.17	0.11**		
Non-enforcement of Rules	0.05	0.09	0.02		
Mood Quality	-0.47	0.09	-0.21***		
Non-enforcement of Rules × Mood Quality	-0.12	0.10	-0.05		

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

Table 14

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and acceptance*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>R<sup>2</sup></i>	<i>f<sup>2</sup></i>
<b>Youth-reported mood quality</b>				0.08	0.09
Age	-0.07	0.13	-0.02		
Sex	-0.66	0.27	-0.10*		
Father Diagnostic Status	0.79	0.24	0.13**		
Acceptance	0.64	0.15	0.20***		
Mood Quality	0.04	0.17	0.01		
Acceptance × Mood Quality	-0.11	0.20	-0.03		
<b>Mother-reported mood quality</b>				0.10	0.11
Age	-0.11	0.13	-0.03		
Sex	-0.59	0.26	-0.09*		
Father Diagnostic Status	0.70	0.24	0.12**		
Acceptance	0.57	0.15	0.18***		
Mood Quality	-0.44	0.14	-0.14**		
Acceptance × Mood Quality	-0.23	0.16	-0.07		

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

Table 15

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and child centeredness*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.06	0.06
Age	-0.05	0.13	-0.02		
Sex	-0.69	0.27	-0.11*		
Father Diagnostic Status	0.84	0.24	0.14***		
Child Centeredness	0.36	0.15	0.12*		
Mood Quality	-0.09	0.17	-0.03		
Child Centeredness $\times$ Mood Quality	0.16	0.19	0.04		
<b>Mother-reported mood quality</b>				0.08	0.09
Age	-0.09	0.13	-0.03		
Sex	-0.65	0.26	-0.10*		
Father Diagnostic Status	0.74	0.24	0.13**		
Child Centeredness	0.32	0.15	0.10*		
Mood Quality	-0.51	0.14	-0.16***		
Child Centeredness $\times$ Mood Quality	-0.17	0.16	-0.05		

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

Table 16

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and control through guilt*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.04	0.04
Age	-0.03	0.13	-0.01		
Sex	-0.69	0.28	-0.11*		
Father Diagnostic Status	0.87	0.24	0.15***		
Control Through Guilt	-0.05	0.14	-0.02		
Mood Quality	-0.18	0.17	-0.05		
Control through Guilt × Mood Quality	0.03	0.18	0.01		
<b>Mother-reported mood quality</b>				0.07	0.07
Age	-0.09	0.13	-0.03		
Sex	-0.67	0.27	-0.10*		
Father Diagnostic Status	0.74	0.24	0.13**		
Control Through Guilt	-0.02	0.14	-0.01		
Mood Quality	-0.53	0.14	-0.17***		
Control through Guilt × Mood Quality	0.10	0.15	0.03		

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

Table 17

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and instilling persistent anxiety*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.05	0.05
Age	-0.02	0.13	-0.01		
Sex	-0.61	0.27	-0.19*		
Father Diagnostic Status	0.84	0.24	0.14**		
Instilling Persistent Anxiety	-0.26	0.14	-0.09		
Mood Quality	-0.13	0.17	-0.03		
Instilling Persistent Anxiety × Mood Quality	-0.04	0.18	-0.01		
<b>Mother-reported mood quality</b>				0.08	0.08
Age	-0.05	0.13	-0.02		
Sex	-0.54	0.27	-0.08*		
Father Diagnostic Status	0.69	0.24	0.12**		
Instilling Persistent Anxiety	-0.20	0.14	-0.07		
Mood Quality	-0.56	0.14	-0.18***		
Instilling Persistent Anxiety × Mood Quality	-0.18	0.16	-0.06		

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

Table 18

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and lax discipline*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.04	0.04
Age	-0.03	0.13	-0.01		
Sex	-0.71	0.27	-0.11**		
Father Diagnostic Status	0.88	0.24	0.15***		
Lax Discipline	-0.04	0.14	-0.01		
Mood Quality	-0.18	0.17	-0.05		
Lax Discipline $\times$ Mood Quality	-0.01	0.19	-0.003		
<b>Mother-reported mood quality</b>				0.07	0.07
Age	-0.08	0.13	-0.03		
Sex	-0.66	0.26	-0.10*		
Father Diagnostic Status	0.73	0.24	0.13**		
Lax Discipline	-0.07	0.14	-0.02		
Mood Quality	-0.56	0.14	-0.18***		
Lax Discipline $\times$ Mood Quality	-0.01	0.16	-0.002		

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

Table 19

*Multiple regression analyses predicting ODD behavioral symptoms from mood quality and non-enforcement of rules*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported mood quality</b>				0.05	0.05
Age	-0.01	0.13	-0.002		
Sex	-0.69	0.27	-0.11*		
Father Diagnostic Status	0.85	0.24	0.15***		
Non-enforcement of Rules	-0.18	0.13	-0.06		
Mood Quality	-0.20	0.17	-0.06		
Non-enforcement of Rules × Mood Quality	0.24	0.18	0.06		
<b>Mother-reported mood quality</b>				0.07	0.08
Age	-0.08	0.13	-0.03		
Sex	-0.66	0.26	-0.10*		
Father Diagnostic Status	0.73	0.24	0.12**		
Non-enforcement of Rules	-0.14	0.13	-0.05		
Mood Quality	-0.57	0.14	-0.18***		
Non-enforcement of Rules × Mood Quality	-0.13	0.14	-0.04		

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

Table 20

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and acceptance*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.08	0.08
Age	-0.04	0.09	-0.02		
Sex	-0.37	0.19	-0.08*		
Father Diagnostic Status	0.51	0.17	0.12**		
Acceptance	0.48	0.10	0.21***		
Approach/ Withdrawal	0.02	0.09	0.01		
Acceptance × Approach/Withdrawal	0.06	0.11	0.02		
<b>Mother-reported approach/ withdrawal</b>				0.09	0.09
Age	-0.05	0.09	-0.02		
Sex	-0.40	0.19	-0.09*		
Father Diagnostic Status	0.48	0.17	0.12**		
Acceptance	0.49	0.10	0.22***		
Approach/ Withdrawal	-0.17	0.09	-0.08		
Acceptance × Approach/Withdrawal	-0.17	0.11	-0.07		

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

Table 21

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and child centeredness*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.08	0.09
Age	-0.03	0.09	-0.01		
Sex	-0.43	0.19	-0.09*		
Father Diagnostic Status	0.54	0.17	0.13**		
Child Centeredness	0.47	0.10	0.21***		
Approach/ Withdrawal	0.01	0.09	0.003		
Child Centeredness × Approach/Withdrawal	0.13	0.11	0.06		
<b>Mother-reported approach/ withdrawal</b>				0.09	0.09
Age	-0.04	0.09	-0.02		
Sex	-0.44	0.19	-0.10*		
Father Diagnostic Status	0.50	0.17	0.12**		
Child Centeredness	0.50	0.10	0.23***		
Approach/ Withdrawal	-0.16	0.09	-0.07		
Child Centeredness × Approach/Withdrawal	-0.11	0.11	-0.04		

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

Table 22

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and control through guilt*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.03	0.03
Age	-0.01	0.10	-0.003		
Sex	-0.46	0.19	-0.10*		
Father Diagnostic Status	0.57	0.18	0.14**		
Control Through Guilt	-0.05	0.10	-0.03		
Approach/ Withdrawal	-0.06	0.09	-0.03		
Control Through Guilt $\times$ Approach/Withdrawal	0.04	0.10	0.02		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	0.002	0.10	0.001		
Sex	-0.45	0.19	-0.10*		
Father Diagnostic Status	0.56	0.17	0.13**		
Control Through Guilt	-0.05	0.10	-0.02		
Approach/ Withdrawal	-0.16	0.09	-0.08		
Control Through Guilt $\times$ Approach/Withdrawal	-0.15	0.10	-0.07		

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

Table 23

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and instilling persistent anxiety*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>R<sup>2</sup></i>	<i>f<sup>2</sup></i>
<b>Youth-reported approach/ withdrawal</b>				0.03	0.03
Age	-0.001	0.10	0.00		
Sex	-0.44	0.20	-0.10*		
Father Diagnostic Status	0.57	0.17	0.14**		
Instilling Persistent Anxiety	-0.05	0.10	-0.02		
Approach/ Withdrawal	-0.06	0.09	-0.03		
Instilling Persistent Anxiety × Approach/Withdrawal	-0.04	0.10	-0.02		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.003	0.10	-0.001		
Sex	-0.45	0.19	-0.10*		
Father Diagnostic Status	0.54	0.17	0.13**		
Instilling Persistent Anxiety	-0.04	0.10	-0.02		
Approach/ Withdrawal	-0.15	0.09	-0.07		
Instilling Persistent Anxiety × Approach/Withdrawal	-0.14	0.11	-0.06		

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

Table 24

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and lax discipline*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.03	0.03
Age	-0.004	0.10	-0.002		
Sex	-0.46	0.19	-0.10*		
Father Diagnostic Status	0.58	0.17	0.14**		
Lax Discipline	-0.003	0.10	-0.002		
Approach/ Withdrawal	-0.05	0.09	-0.02		
Lax Discipline $\times$ Approach/Withdrawal	-0.08	0.10	-0.03		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.02	0.10	-0.01		
Sex	-0.47	0.19	-0.10*		
Father Diagnostic Status	0.57	0.17	0.14**		
Lax Discipline	-0.03	0.10	-0.01		
Approach/ Withdrawal	-0.16	0.09	-0.08		
Lax Discipline $\times$ Approach/Withdrawal	0.06	0.11	0.03		

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

Table 25

*Multiple regression analyses predicting ODD emotional symptoms from approach/ withdrawal and non-enforcement of rules*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>R<sup>2</sup></i>	<i>f<sup>2</sup></i>
<b>Youth-reported approach/ withdrawal</b>				0.03	0.03
Age	-0.01	0.10	-0.004		
Sex	-0.46	0.19	-0.10*		
Father Diagnostic Status	0.58	0.17	0.14**		
Non-enforcement of Rules	0.03	0.10	0.01		
Approach/ Withdrawal	-0.06	0.09	-0.03		
Non-enforcement of Rules × Approach/Withdrawal	0.02	0.10	0.01		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.03	0.10	-0.01		
Sex	-0.46	0.19	-0.10*		
Father Diagnostic Status	0.56	0.17	0.13**		
Non-enforcement of Rules	0.03	0.09	0.01		
Approach/ Withdrawal	-0.16	0.09	-0.07		
Non-enforcement of Rules × Approach/Withdrawal	0.07	0.11	0.03		

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

Table 26

*Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and acceptance*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.08	0.08
Age	-0.08	0.13	-0.02		
Sex	-0.62	0.27	-0.10*		
Father Diagnostic Status	0.81	0.24	0.14**		
Acceptance	0.63	0.15	0.20***		
Approach/ Withdrawal	0.13	0.13	0.04		
Acceptance × Approach/Withdrawal	0.06	0.16	0.02		
<b>Mother-reported approach/ withdrawal</b>				0.08	0.09
Age	-0.07	0.13	-0.02		
Sex	-0.66	0.26	-0.10*		
Father Diagnostic Status	0.78	0.24	0.13**		
Acceptance	0.63	0.14	0.20***		
Approach/ Withdrawal	-0.07	0.13	-0.03		
Acceptance × Approach/Withdrawal	-0.16	0.16	-0.05		

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

Table 27

*Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and child centeredness*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.05	0.06
Age	-0.05	0.13	-0.02		
Sex	-0.72	0.27	-0.11**		
Father Diagnostic Status	0.87	0.24	0.15***		
Child Centeredness	0.36	0.15	0.12*		
Approach/ Withdrawal	0.09	0.13	0.03		
Child Centeredness $\times$ Approach/Withdrawal	0.12	0.15	0.04		
<b>Mother-reported approach/ withdrawal</b>				0.06	0.06
Age	-0.05	0.13	-0.02		
Sex	-0.74	0.27	-0.12**		
Father Diagnostic Status	0.84	0.24	0.14***		
Child Centeredness	0.40	0.15	0.13**		
Approach/ Withdrawal	-0.07	0.13	-0.02		
Child Centeredness $\times$ Approach/Withdrawal	-0.15	0.16	-0.04		

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

Table 28

*Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and lax discipline*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.03	0.13	-0.01		
Sex	-0.74	0.27	-0.12**		
Father Diagnostic Status	0.89	0.24	0.15***		
Lax Discipline	-0.05	0.14	-0.02		
Approach/ Withdrawal	0.05	0.13	0.02		
Lax Discipline $\times$ Approach/Withdrawal	-0.05	0.15	-0.02		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.04	0.13	-0.01		
Sex	-0.77	0.27	-0.12**		
Father Diagnostic Status	0.88	0.25	0.15***		
Lax Discipline	-0.06	0.14	-0.02		
Approach/ Withdrawal	-0.07	0.13	-0.02		
Lax Discipline $\times$ Approach/Withdrawal	0.09	0.15	0.03		

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

Table 29

*Multiple regression analyses predicting ODD behavioral symptoms from approach/ withdrawal and non-enforcement of rules*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$f^2$
<b>Youth-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.04	0.13	-0.01		
Sex	-0.75	0.27	-0.12**		
Father Diagnostic Status	0.87	0.24	0.15***		
Non-enforcement of Rules	-0.17	0.13	-0.06		
Approach/ Withdrawal	0.03	0.13	0.01		
Non-enforcement of Rules × Approach/Withdrawal	0.07	0.14	0.02		
<b>Mother-reported approach/ withdrawal</b>				0.04	0.04
Age	-0.04	0.13	-0.01		
Sex	-0.76	0.27	-0.12**		
Father Diagnostic Status	0.85	0.24	0.15***		
Non-enforcement of Rules	-0.16	0.13	-0.06		
Approach/ Withdrawal	-0.07	0.13	-0.02		
Non-enforcement of Rules × Approach/Withdrawal	0.04	0.15	0.01		

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