



## Research paper

## Prevalence and correlates of maladaptive guilt in middle childhood

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## ABSTRACT

**Background:** Maladaptive guilt can develop by age three and is associated with severe affective psychopathology in adolescents and adults. Yet, little is known about its prevalence prior to adolescence, or which children are at greatest risk of developing this symptom. This study examined the prevalence and correlates of maladaptive guilt in middle childhood.

**Methods:** This study examined a large community sample of 9- to 10-year-old children ( $N = 4485$ ) from the Adolescent Brain and Cognitive Development (ABCD) study. Maladaptive guilt was assessed through the Kiddie Schedule for Affective Disorders and Schizophrenia for DSM-5. Parental rejection, family conflict, and parental depression were assessed via questionnaires.

**Results:** In depressed children, a 1-month prevalence of maladaptive guilt of 18.4% and a lifetime prevalence of 30.8% was found. Lifetime rates ranged from 1.8 to 4.1% in children with other psychiatric disorders. Cross-sectionally, maladaptive guilt was associated with lower family income-to-needs, greater family conflict, a history of maternal depression, and greater parental rejection. These findings held when controlling for children's depressive severity, indicating that these associations are specific to maladaptive guilt.

**Limitations:** Maladaptive guilt was assessed through one item, though many studies of maladaptive guilt measure the symptom in this manner.

**Conclusions:** Findings suggest that it may be beneficial for clinicians to assess for maladaptive guilt beyond the context of assessment for depression, particularly with children of low socioeconomic status and children of depressed mothers, whom this study suggests are at higher risk. Negative family climates and parenting might also be important targets of preventative interventions.

## 1. Introduction

A central challenge to understanding Major Depressive Disorder (MDD) is its highly heterogeneous presentation (Zimmerman et al., 2015), which has led to an increased emphasis on symptom-level analyses. The utility of symptom-level analyses is supported by evidence that individual depressive symptoms in adults vary widely in terms of their associated impairment and comorbidity (Fried and Nesse, 2014) and are associated with distinct heritability estimates (Jang et al., 2004) and risk-factors (Fried et al., 2014; Lux and Kendler, 2010). Maladaptive guilt (i.e., guilt that is excessive or inappropriate; American Psychiatric Association, 2013) is a depressive symptom that has received particularly little attention in childhood, despite evidence that it is central to childhood depression (Luby et al., 2009b) and is associated with severe psychopathology such as

suicidality and psychotic symptoms in adolescence and adulthood (Fang et al., 2018; Ohayon and Schatzberg, 2002; Patton et al., 2000). Examining risk factors associated with this symptom prior to adolescence has implications for identifying children at greatest risk and informing preventative interventions. The purpose of this study was to examine the prevalence and correlates of maladaptive guilt in a large population-based sample of school-aged children.

Guilt is triggered by a transgression and involves an affective component—feeling empathy toward the victim—and a cognitive component—an awareness of fault for the transgression (Zahn-Waxler and Kochanska, 1990). A wealth of naturalistic and observational studies have demonstrated that the ability to experience guilt emerges during the second year of life (e.g., Kochanska et al., 2002; Zahn-Waxler et al., 1979). Developmentalists argue that moderate guilt feelings that occur immediately after a transgression are adaptive,

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particularly in childhood (Tilghman-Osborne et al., 2010); indeed, they have been found to motivate reparative prosocial behaviors that alleviate a transgressor's guilty feelings (Cryder et al., 2012; Donohue and Tully, 2019). In contrast, maladaptive guilt is a destructive guilt variant that essentially involves dysfunction in either the affective or cognitive component of guilt—it is affectively *excessive*, involving pathological empathy, or cognitively *inappropriate*, involving misattributions of fault for events or ruminating over minor interpersonal transgressions (Zahn-Waxler and Van Hulle, 2011). For example, a child exhibiting maladaptive guilt might feel guilty for the rest of the week after accidentally tripping a classmate, or hear her parents fighting and assume it is her fault. In contrast to adaptive guilt, which is short-lived, maladaptive guilt also tends to persist well beyond the wrongdoing, and over time may become “free-floating,” or unattached to specific transgressions altogether (Kim et al., 2011).

Studies have documented that maladaptive guilt can emerge as early as age three (Luby et al., 2009a). Maladaptive guilt is thought to contribute to depression through exacerbating internalizing emotions (e.g., sadness, anxiety), damaging relationships, and increasing general tendencies toward negative cognitive errors (Zahn-Waxler and Van Hulle, 2011). Although little is known about its developmental course, one study found that the relation between maladaptive guilt and depression was stronger with older age among 7- to 16-year-olds (Tilghman-Osborne et al., 2012). In another study, preschool-onset maladaptive guilt predicted smaller anterior insula volumes during middle childhood, which predicted subsequent MDD recurrence (Belden et al., 2015). Thus, maladaptive guilt is a salient feature of childhood depression associated with longitudinal course and neural effects.

In adolescence and adulthood, maladaptive guilt is a serious depressive symptom associated with other forms of psychopathology. Maladaptive guilt is a marker of severe depression in adolescents and adults; in a study of depressed adolescents, maladaptive guilt increased in frequency with increased depression severity (Patton et al., 2000). Maladaptive guilt is also associated with suicidality and psychosis. Among depressed adults, individuals with maladaptive guilt were more likely to have suicidal thoughts and prior suicide attempts than those without this symptom (Bi et al., 2012; Fang et al., 2018). Maladaptive guilt was also associated with a high rate of hallucinations (9.7%) in a population-based study of 15- to 100-year-olds (Ohayon and Schatzberg, 2002).

In depressed populations, three epidemiological studies have yielded prevalence estimates of maladaptive guilt of 50.77% in Turkish 10- to 20-year-olds (Toros et al., 2004), 58.6% in Indian 6- to 13-year-olds (Sarkar et al., 2012), and 91.4% in Danish 8- to 10-year-olds (Wesselhoeft et al., 2016). Smaller studies of depressed youth have yielded estimates of 54.74% in American 12- to 20-year-olds (Bennett et al., 2005) and 54.8% in Mexican 13- to 15 year-olds (Sánchez-García et al., 2014). Only the study by Bennett et al., (2005) reported rates of maladaptive guilt in adolescents with other psychiatric disorders (2.7% in boys and 11.8% in girls). Thus, the prevalence of maladaptive guilt has been assessed almost exclusively in clinical samples of depressed youth. The current study is the first to examine the prevalence of maladaptive guilt using a population-based, community sample which affords the ability to estimate the prevalence of this symptom in healthy children and youth with a range of psychiatric disorders. These estimates are critical, as they may help illuminate whether maladaptive guilt arises in non-psychiatrically ill children and children with disorders other than depression. The fact that current prevalence estimates range widely may reflect the fact that existing studies have used samples that group pre-adolescents with adolescents, despite well-documented increases in depressive symptoms, including guilt, in adolescence (Kouros and Garber, 2014). Thus, the current study examines a narrow, 2-year age range of children to estimate the prevalence of maladaptive guilt with increased precision during middle childhood, the developmental period prior to increased rates of

depression in adolescence (Thapar et al., 2012).

Identifying demographic and environmental correlates of maladaptive guilt in middle childhood may help pinpoint which children are at greatest risk as well as environmental factors that are potentially modifiable through intervention. One study found that maladaptive guilt was significantly more common in adolescent girls than boys (Toros et al., 2004) which may reflect disproportionate societal pressure for females to be empathetic. However, it is unclear whether this gender difference is present prior to increased rates of depression among girls in adolescence (Kouros and Garber, 2014). Further, no study has examined whether rates of maladaptive guilt differ by other demographic factors, such as race and socioeconomic status (SES).

Theorists have suggested that children's guilt has the potential to become maladaptive when children are exposed to chronically negative environments, specifically in the context of family conflict and parental depression (Tone and Tully, 2014; Zahn-Waxler and Van Hulle, 2011). In these contexts, maladaptive guilt is thought to develop through mechanisms such as children's empathic overinvolvement in their parents' emotions that prompt “costly” prosocial behaviors (e.g., parentification) and children's misattributions of self-blame for the negative family climate (Zahn-Waxler and Van Hulle, 2011). Studies have not examined the relation between conflict and maladaptive guilt, specifically. In one study, 11- to 12-year-old children exposed to greater marital conflict experienced greater inappropriate guilt over the conflict (Grych et al., 2003), which may generalize to greater maladaptive guilt in multiple other contexts.

Similarly, few studies have tested the hypothesis that parental depression is associated with children's maladaptive guilt. Zahn-Waxler and Kochanska (1990) found that 5- to 9-year-old children guilt of depressed mothers produced narratives on a story completion task that included intense, distorted, and unresolved guilt themes. Although a meta-analysis found that mother's compared to father's depression was more strongly related to children's internalizing problems (Connell and Goodman, 2002), one study found that father's but not mother's depression predicted children's greater maladaptive guilt (Parisette-Sparks et al., 2017). Depressed parents more frequently use negative parenting practices such as guilt induction in which parents place disproportionate blame on their children, which may partially explain associations between parental depression and maladaptive guilt (Rakow et al., 2009).

Theorists also posit that specific negative parenting practices such as rejection contribute to the development of maladaptive guilt (Muris and Meesters, 2014). Children may misattribute personal responsibility for being rejected, and if rejection co-occurs with these parents spending less time with their children, it may contribute to children failing to learn critical reparative prosocial skills to regulate guilt feelings. In one study, greater parental rejection was associated with adolescents' greater maladaptive guilt on a questionnaire (Meesters et al., 2017). Studies have not examined how early in development parental rejection is associated with maladaptive guilt.

In sum, little is known about the prevalence of maladaptive guilt or which children are at greatest risk in general population samples. The aims of this study were to examine the prevalence and correlates of clinically significant maladaptive guilt in middle childhood using a diagnostic interview administered cross-sectionally at multiple national sites. Due to a dearth of extant literature, we did not have a priori hypotheses about the prevalence or demographic correlates of maladaptive guilt in this non-clinical sample. We hypothesized that greater family conflict, a history of parental depression, and greater parental rejection would be associated with maladaptive guilt in children.

## 2. Methods

### 2.1. Participants

This study examined 4524 children and their parent from the

**Table 1**  
Characteristics of included versus excluded participants.

Variable	Mean (SD) or Frequency Observed range	Included (N = 4485)	Excluded (n = 39)	$\chi^2$ or t value <sup>a</sup>	P value
1. Age (Months)	107–132	120.02 (7.34)	120.44 (6.86)	–0.35	0.72
2. Sex (%Female)		47.4%	64.1%	4.31	0.04
3. Income-to-needs	0.07–16.50	4.72 (2.89)	5.08 (2.95)	–0.69	0.49
4. Race (%White)		71.4%	74.4%	F.E.	0.79
5. Ethnicity (% Hispanic/Latinx)		19.9%	17.9%	0.09	0.76
6. Parent Respondent (%Biological Mother)		85.1%	79.5%	F.E.	0.15
7. Depression Severity	0–19	1.23 (1.98)	0.69 (1.84)	1.68	0.09
8. Parental Rejection	1–3	1.22 (0.30)	1.19 (0.30)	–0.35	0.73
9. Family Conflict (child-report)	0–9	1.97 (1.92)	1.92 (1.80)	0.15	0.88
10. Family Conflict (parent-report)	0–9	2.49 (1.89)	2.67 (1.66)	0.59	0.56
11. Depression History in Biological Mother (%Present)		42.0%	23.8%	2.82	0.09
12. Depression History in Biological Father (%Present)		25.9%	33.3%	0.59	0.44

<sup>a</sup> Independent samples t-tests were used to compare continuous variables across groups,  $\chi^2$  tests were used to compare categorical/binary variables across groups, and Fisher's Exact Tests (F.E.) were used when there were small expected cell counts.

Adolescent Brain and Cognitive Development (ABCD) study (<https://abcdstudy.org>), a study tracking 11,874, 9-to 10-year-old children recruited from 20 sites across the United States. A list of sites and exclusionary criteria are described in the Supplemental Material, online. Probability sampling of U.S. schools was used to recruit participants; recruitment details have been previously described (Garavan et al., 2018). Data were accessed from the National Institutes of Mental Health Data Archive from June 1, 2016 through August 31, 2017. The ABCD repository changes over time; data in this study came from DOI 10.15154/1412097.

Children who did not have reports of the presence or absence of maladaptive guilt from at least one respondent (child or parent) were excluded, yielding a final sample of  $N = 4485$ . Characteristics of included versus excluded participants are detailed in Table 1. Excluded children were more likely to be female; there were no other significant differences. Parents reported children's race as: 71.4% White, 11.6% Multiracial, 10.4% Black, 4.4% Other, and 2.2% Asian. Children completed all questionnaires about the “parent respondent,” or the caregiver who completed the study's parent-report questionnaires. Institutional review board approval was obtained for each site and all parents and children provided informed consent and assent, respectively.

## 2.2. Measures

### 2.2.1. Psychiatric diagnoses and severity

Children's psychiatric diagnoses were assessed using the self-administered computerized Kiddie Schedule for Affective Disorders and Schizophrenia for DSM-5 (KSADS-5; Kobak et al., 2013), a validated diagnostic instrument that uses developmentally appropriate questions to assess DSM-5 criteria for psychiatric disorders. Parents completed modules assessing whether children met diagnostic criteria for depressive disorders, anxiety disorders, OCD, ADHD, ODD, and CD. Children also completed modules assessing depressive and anxiety disorders, see Supplemental Material for details. Children met criteria for a disorder if they met criteria by either parent or child report. Children's current (i.e., past month) and lifetime diagnoses were examined. Children's non-comorbid diagnoses were also examined (i.e., a child with non-comorbid OCD did not have any other disorder).

Children's dimensional depression severity was measured using the DSM5 Depressive Problems subscale of the Child Behavior Checklist (CBCL; Achenbach, 2009), a parent-report measure of depressive symptoms. Parents rated each item on a 3-point scale ranging from *not true* (0) to *very true/often true* (2). Raw scores were used.

### 2.2.2. Maladaptive guilt

Many studies of maladaptive guilt in childhood, including epidemiological studies, have measured whether or not children met criteria

for this symptom by examining one item in a diagnostic interview (e.g., Belden et al., 2015; Sarkar et al., 2012). Following this literature, maladaptive guilt was assessed through an item in the KSADS-5 depression module that asked, “In the past two weeks, how often have you felt guilty about something you said, did, or thought?” Although one-item measurement has limitations, one benefit of this measure is that unlike existing questionnaires that lack clinical cut-offs, and thus sensitivity to determine whether maladaptive guilt is clinically significant, clinical interviews clearly indicate whether or not children met criteria for this symptom. Children met criteria for clinically significant maladaptive guilt if they endorsed experiencing guilt nearly every day (i.e., at least 5 days per week). We examined whether children met criteria based on parent-report or child-report separately in analyses, as some studies have found particularly poor parent-child agreement for covert symptoms, including maladaptive guilt, compared to more behaviorally apparent symptoms (Bennett et al., 1997). Current and lifetime maladaptive guilt were assessed.

### 2.2.3. Family conflict

Family conflict was measured using the Conflict subscale from the Family Environment Scale (Moos and Moos, 1994) which assesses the amount of openly expressed conflict among family members. Both children and parents separately answered whether 9 statements about family conflict are true (1) or false (0) about their family.

### 2.2.4. Parental depression

Parental depression was measured using a version of the Family History Assessment Module Screener (Rice et al., 1995). Parents reported on the presence/absence of disorders in biological relatives of the child. The current study examines history of depression in the child's biological mother and father.

### 2.2.5. Parental rejection

Parental rejection was measured using the Acceptance versus Rejection subscale of the Child Report of Behavior Inventory (Schludermann and Schludermann, 1988), which assesses children's perceptions of caregiver warmth, acceptance, and responsiveness. The 5 items with the highest factor loadings from the original, 10-item subscale were used in the ABCD. Items are rated on a 3-point scale and were reverse coded such that greater scores indicate more rejection in this study.

## 2.3. Data analytic plan

Prevalence estimates were obtained by examining percentages of children that met criteria for maladaptive guilt. All other analyses were conducted using Generalized Estimating Equations (GEE) in SAS,

version 9.4 (SAS Institute, Inc.) that controlled for the impact of the nested variable (i.e., family membership, as more than one child from a family could have participated). First, to identify demographic variables that were uniquely associated with maladaptive guilt, children's gender, race, age, and income-to-needs were examined as predictors of child-reported maladaptive guilt in a single GEE analysis. Second, to identify aspects of the family environment that were uniquely associated with maladaptive guilt, child-reported family conflict, maternal depression, and paternal depression were examined as predictors of child-reported maladaptive guilt in a single GEE analysis. This analysis also controlled for all demographic variables as well as children's depressive severity, to determine whether any significant results were specific to guilt rather than more generally related to depression. This analysis was then repeated with parent-reported family conflict replacing child-reported conflict. Finally, to examine parental rejection as a specific negative parenting practice, rejection was examined as a predictor of child-reported maladaptive guilt in a GEE analysis that also controlled for all demographic variables, and children's depression severity. These same four models were also conducted examining parent-reported guilt as the outcome variable. All analyses examining correlates of maladaptive guilt examined lifetime reports of having met criteria for the symptom. All *p*-values were FDR corrected to account for multiple comparisons. Characteristics of subjects included in each analysis are displayed in Tables SI and II, online.

### 3. Results

#### 3.1. Preliminary analyses

Correlations among variables are presented in Table SIII, online. Children's parental rejection ratings differed by type of parent respondent,  $F(4, 4475) = 8.971, p < 0.001$ . Children reported more rejection from biological fathers ( $M = 1.29; SD = 0.36$ ) than mothers ( $M = 1.20; SD = 0.29$ ). Thus, type of parent respondent was also included as a covariate in the analysis examining relations between parental rejection and maladaptive guilt.

#### 3.2. Prevalence

Of the 241 children who had lifetime maladaptive guilt as endorsed by either reporter, both parent and child endorsed maladaptive guilt for only 10 children (4.1%). Table 2 displays current prevalence rates of maladaptive guilt which were 0.6% in the overall sample, 0.2% in healthy children, and 18.4% in currently depressed children. Prevalence rates of maladaptive guilt in children with other psychiatric disorders ranged from 1.3% in children with OCD to 2.1% in children with anxiety. Overall, more children (0.5%) reported current maladaptive guilt than parents (0.1%).

Table 3 displays lifetime prevalence rates of maladaptive guilt. The lifetime prevalence was 5.3% in the overall sample, 1.2% in healthy children, and 30.8% in children with a lifetime depression history. Prevalence rates of maladaptive guilt in children with other lifetime diagnoses ranged from 8.4% in children with an anxiety disorder to

**Table 2**  
Prevalence of current maladaptive guilt by current psychiatric diagnosis.

	Parent-report	Child-report	Either-report
Overall sample	0.1% (5/4449)	0.5% (22/4471)	0.6% (27/4485)
Healthy	0% (0/3352)	0.2% (6/3374)	0.2% (6/3382)
Diagnoses			
Depression	6.7% (5/75)	12.0% (9/75)	18.4% (14/76)
Anxiety	0.7% (3/433)	1.4% (6/431)	2.1% (9/433)
OCD	0.7% (2/306)	0.7% (2/304)	1.3% (4/306)
ADHD	0.7% (3/457)	1.1% (5/459)	1.7% (8/460)
ODD/CD	1.3% (4/314)	0.6% (2/312)	1.9% (6/314)

**Table 3**  
Lifetime prevalence of maladaptive guilt by lifetime psychiatric diagnosis.

	Parent-report	Child-report	Either-report
Overall sample	2.8% (125/4454)	2.8% (126/4471)	5.4% (241/4485)
Healthy	0.3% (6/2235)	1.0% (22/2257)	1.2% (28/2262)
Diagnoses			
Depression	18.1% (84/465)	14.6% (68/467)	30.8% (144/468)
Anxiety	5.6% (76/1354)	3.3% (45/1348)	8.4% (114/1355)
OCD	10.9% (41/377)	4.0% (15/374)	14.6% (55/377)
ADHD	6.7% (63/945)	4.5% (42/940)	10.5% (99/945)
ODD/CD	7.3% (49/668)	3.5% (23/665)	10.5% (70/668)
Non-comorbid Diagnoses			
Depression	10.4% (16/154)	17.8% (28/157)	26.8% (42/157)
Anxiety	1.1% (7/632)	1.0% (6/631)	2.1% (13/633)
OCD	0% (0/80)	3.8% (3/80)	3.8% (3/80)
ADHD	1.6% (4/246)	2.8% (7/246)	4.1% (10/246)
ODD/CD	0% (0/111)	1.8% (2/110)	1.8% (2/111)

14.6% in children with OCD. We then examined prevalence of maladaptive guilt in groups of children with non-comorbid diagnoses. The lifetime prevalence rate of maladaptive guilt was again highest in children with depression at 26.8%. When accounting for co-morbidity, prevalence rates for other psychiatric disorders were much lower and ranged from 1.8% in ODD/CD to 4.1% in ADHD. Overall, parents and children reported lifetime maladaptive guilt at an equal rate (each at 2.8%).

#### 3.3. Correlates

##### 3.3.1. Demographic correlates

Results of analyses examining unique demographic predictors of maladaptive guilt are presented in Table 4. A 1-point decrease in income-to-needs ratio was uniquely and significantly associated with 1.11 times greater odds of meeting criteria for child-reported maladaptive guilt and 1.11 times greater odds of meeting criteria for parent-reported maladaptive guilt. No other demographic variables uniquely predicted odds of meeting criteria for maladaptive guilt.

##### 3.3.2. Negative family environments

Results of analyses examining unique negative family environmental predictors of maladaptive guilt are presented in Tables 5 and 6. A 1-point increase in child-reported family conflict was uniquely and significantly associated with 1.34 times higher odds of meeting criteria for child-reported maladaptive guilt, even when accounting for child depression severity, but did not significantly predict parent-reported maladaptive guilt. In contrast, parent-reported family conflict did not significantly predict parent- or child-reported maladaptive guilt. Maternal depression was uniquely and significantly associated with children's maladaptive guilt in four separate models. In the models that included child-reported family conflict as a predictor (Table 5), having a mother with a depression history was associated with 1.84 times higher odds of meeting criteria for child-reported maladaptive guilt, and 2.65 times higher odds of meeting criteria for parent-reported maladaptive guilt, even when accounting for child depression severity. In the models that included parent-reported family conflict as a predictor (Table 6), maternal depression also significantly predicted both child- and parent-reported maladaptive guilt. In contrast, having a father with a depression history did not significantly predict maladaptive guilt in any model.

##### 3.3.3. Parental rejection

Results of analyses examining parental rejection as a negative parenting predictor of maladaptive guilt are presented in Table 7. A 1-point increase in child-reported parental rejection was significantly associated with 2.22 times higher odds of meeting criteria for child-reported maladaptive guilt, even when accounting for child depression severity,

**Table 4**  
Generalized estimating equation model of child- and parent-reported maladaptive guilt by demographic variables.

	Estimate	SE	OR	95% CI	Z	p	FDR p
<b>DV: Child-Reported Maladaptive Guilt</b>							
Female gender	0.1096	0.1850	1.12	(0.78, 1.60)	0.59	0.5536	0.7612
Caucasian race	-0.3332	0.5191	0.72	(0.26, 1.98)	-0.64	0.5209	0.7612
Age	-0.0025	0.0129	1.00	(0.97, 1.02)	-0.19	0.8475	0.9104
Income-to-needs ratio	-0.1002	0.0349	0.90	(0.84, 0.97)	-2.88	<b>0.0040</b>	<b>0.0147</b>
<b>DV: Parent-Reported Maladaptive Guilt</b>							
Female gender	-0.2206	0.2013	0.80	(0.54, 1.19)	-1.10	0.2732	0.4649
Caucasian race	0.2038	0.4457	1.23	(0.51, 2.94)	0.46	0.6474	0.7121
Age	0.0220	0.0137	1.02	(1.00, 1.05)	1.60	0.1092	0.2402
Income-to-needs ratio	-0.1039	0.0404	0.90	(0.83, 0.98)	-2.57	<b>0.0101</b>	<b>0.0370</b>

but did not significantly predict parent-reported maladaptive guilt.

**4. Discussion**

Despite evidence that children can experience maladaptive guilt which is associated with severe affective psychopathology later in life, the literature on maladaptive guilt during childhood in community samples is scant. This study was the first population-based investigation of maladaptive guilt in middle childhood. Utilizing the ABCD sample afforded a unique opportunity to examine a significant subgroup of children who met criteria for a relatively low-base rate depressive symptom. We found evidence for a 1-month prevalence of maladaptive guilt of 0.6% in the sample and 18.4% in currently depressed children. We also found that maladaptive guilt was associated with lower family income-to-needs, greater family conflict, mother's depression history, and greater parental rejection. These findings held when controlling for children's depressive severity, demonstrating that these associations are specific to maladaptive guilt over and above depression.

In contrast to previous studies which have almost exclusively examined maladaptive guilt in depressed samples, the population-based ABCD sample was ideally suited to provide novel information on rates of maladaptive guilt in healthy children and youth with other psychiatric diagnoses. Lifetime rates of maladaptive guilt were 1.2% in healthy children and ranged from 1.8-to 4.1% in children with non-comorbid disorders other than depression. These rates suggest that non-depressed children experience this symptom and that important information may be missed when studies examine maladaptive guilt in depressed samples alone. Moreover, in contrast to previous studies that estimated the prevalence of maladaptive guilt in depressed children using samples with wide age ranges, our study pinpointed precise prevalence estimates in a narrow age range of 9-to 10-year-old children.

**Table 5**  
Generalized estimating equation model of child- and parent-reported maladaptive guilt by child-reported family conflict and parental depression.

	Estimate	SE	OR	95% CI	Z	p	FDR p
<b>DV: Child-Reported Maladaptive Guilt</b>							
Family conflict—child reported	0.3272	0.0620	1.39	(1.23, 1.57)	5.28	< 0.0001	0.0011
Maternal depression	0.7057	0.2691	2.03	(1.20, 1.57)	2.62	<b>0.0087</b>	<b>0.0191</b>
Paternal depression	0.0412	0.2916	1.04	(0.59, 1.85)	0.14	0.8877	0.9104
Female gender	0.1610	0.2648	1.17	(0.70, 1.97)	0.61	0.5433	
Caucasian race	-0.7085	0.9261	0.49	(0.08, 3.02)	-0.77	0.4442	
Age	0.0119	0.0193	1.01	(0.97, 1.05)	0.61	0.5390	
Income-to-needs ratio	-0.0146	0.0484	0.99	(0.90, 1.08)	-0.30	0.7636	
Depression severity	0.0536	0.0504	1.06	(0.96, 1.16)	1.06	0.2874	
<b>DV: Parent-Reported Maladaptive Guilt</b>							
Family conflict—child reported	-0.0012	0.0574	1.39	(0.89, 1.12)	-0.02	0.9829	0.9829
Maternal depression	1.0334	0.2814	2.03	(1.62, 4.88)	3.67	<b>0.0002</b>	<b>0.0011</b>
Paternal depression	0.2666	0.2783	1.04	(0.76, 2.25)	0.96	0.3381	0.4649
Female gender	0.0096	0.2582	1.17	(0.61, 1.67)	0.04	0.9703	
Caucasian race	-0.4031	0.8277	0.49	(0.13, 3.38)	-0.49	0.6262	
Age	0.0310	0.0172	1.01	(1.00, 1.07)	1.80	0.0713	
Income-to-needs ratio	-0.0319	0.0517	0.99	(0.88, 1.07)	-0.62	0.5368	
Depression severity	0.3322	0.0381	1.06	(1.29, 1.50)	8.71	< 0.0001	

**Table 6**

Generalized estimating equation model of child- and parent-reported maladaptive guilt by parent-reported family conflict, maternal depression, paternal depression, and demographic variables.

	Estimate	SE	OR	95% CI	Z	p	FDR p
<b>DV: Child-Reported Maladaptive Guilt</b>							
Family conflict—parent-reported	−0.1094	0.0819	0.90	(0.76, 1.05)	−1.34	0.1818	0.3333
Maternal depression	0.7113	0.2703	2.04	(1.20, 3.46)	2.63	<b>0.0085</b>	<b>0.0194</b>
Paternal depression	−0.0338	0.3004	0.97	(0.54, 1.74)	−0.11	0.9104	0.9104
Female gender	0.1644	0.2597	1.18	(0.71, 1.96)	0.63	0.5266	
Caucasian race	−0.8321	0.9736	0.44	(0.06, 2.93)	−0.85	0.3928	
Age	0.0058	0.0187	1.01	(0.97, 1.04)	0.31	0.7556	
Income-to-needs ratio	−0.0749	0.0462	0.93	(0.85, 1.02)	−1.62	0.1053	
Depression severity	0.0978	0.0504	1.10	(1.00, 1.22)	1.94	0.0522	
<b>DV: Parent-Reported Maladaptive Guilt</b>							
Family conflict—parent-reported	−0.1173	0.0691	0.89	(0.78, 1.02)	−1.70	0.0899	0.2404
Maternal depression	1.0989	0.2747	3.00	(1.75, 5.14)	4.00	<b>&lt;0.0001</b>	<b>0.0011</b>
Paternal depression	0.2774	0.2766	1.32	(0.77, 2.27)	1.00	0.3158	0.4649
Female gender	−0.0020	0.2570	1.00	(0.60, 1.65)	−0.01	0.9938	
Caucasian race	−0.4076	0.7937	0.67	(0.14, 3.15)	−0.51	0.6076	
Age	0.0325	0.0173	1.03	(1.00, 1.07)	1.88	0.0600	
Income-to-needs ratio	−0.0420	0.0525	0.96	(0.87, 1.06)	−0.80	0.4234	
Depression severity	0.3464	0.0405	1.41	(1.31, 1.53)	8.56	<b>&lt;0.0001</b>	

guilt. Moreover, compared to children of well mothers, children of mothers with a depression history were more likely to have maladaptive guilt, again even when accounting for child depression. Mother's depression history was associated with both parent- and child-reported maladaptive guilt, suggesting that this finding does not simply reflect negatively-biased reporting by depressed mothers. Our findings provide empirical support for theories that guilt can become maladaptive in the context of chronically negative family environments (Tone and Tully, 2014). Depressed mothers, who may experience maladaptive guilt as part of their depression, may model excessive guilt for their children. Children of depressed mothers may also feel personally responsible for alleviating their mother's depression, and maladaptive guilt may arise from these failed prosocial attempts (Zahn-Waxler and Van Hulle, 2011).

Further, children who reported being more rejected by their parent were more likely to meet criteria for maladaptive guilt. This finding replicates a previous study that found that adolescents' greater self-reported parental rejection was related to their greater self-reported maladaptive guilt (Meesters et al., 2017) and newly demonstrates that parental rejection is also associated with children's maladaptive guilt earlier in development. Children who are rejected by a parent may blame themselves for this rejection; for instance, they may believe they are being rejected because of their mistakes or failures (Muris and Meesters, 2014). Parents who reject their children may also spend less

time with them, and maladaptive guilt may develop due to lack of proper guilt socialization by parents. For example, these children may disproportionately miss opportunities to learn to differentiate situations in which guilt is appropriate versus misplaced, and acquire reparative prosocial skills that help regulate guilt affect (Donohue and Tully, 2019; Zahn-Waxler and Kochanska, 1990).

Our finding of poor parent-child agreement on maladaptive guilt is consistent with previous literature documenting that parent and child report begin to diverge in early adolescence (Grills and Ollendick, 2002; Rothen et al., 2009), as well as studies finding particularly poor mother-daughter agreement on covert compared to overt depressive symptoms, including maladaptive guilt (Bennett et al., 1997). The lifetime prevalence rate reported by parents and children was nearly identical, yet children reported more current maladaptive guilt than did their parents. Guilt is a highly internal cognitive and emotional experience, and though this data does not suggest that parents are generally unaware of the presence of this covert symptom, it may be that case that they become aware of the symptom later than children themselves, once the symptom has behaviorally manifested and/or children have put words to these complex experiences in order to discuss them with parents. Interestingly, child-reported maladaptive guilt was much more frequently predicted by the examined environmental factors than parent-reported maladaptive guilt. This result is consistent with findings that children's self-reported depression symptoms have predictive utility

**Table 7**

Generalized estimating equation model of child- and parent-reported maladaptive guilt by parental rejection.

	Estimate	SE	OR	95% CI	Z	p	FDR p
<b>DV: Child-Reported Maladaptive Guilt</b>							
Parental rejection	0.7914	0.2394	2.22	(1.39, 3.57)	3.31	<b>0.0009</b>	<b>0.0049</b>
Bio mom respondent <sup>a</sup>	−0.1276	0.2492	0.88	(0.54, 1.43)	−0.51	0.6087	
Female gender	0.1928	0.1874	1.21	(0.84, 1.75)	1.03	0.3036	
Caucasian race	−0.3035	0.5211	0.74	(0.27, 2.05)	−0.58	0.5603	
Age	−0.0021	0.0131	1.00	(0.97, 1.02)	−0.16	0.8716	
Income-to-needs ratio	−0.0884	0.0353	0.92	(0.85, 0.98)	3.04	0.0023	
Depression severity	0.0986	0.0324	1.10	(1.04, 1.18)	3.04	0.0023	
<b>DV: Parent-Reported Maladaptive Guilt</b>							
Parental rejection	0.1488	0.2776	1.16	(0.68, 2.00)	0.54	0.5921	0.7124
Bio mom respondent	0.1191	0.2962	1.13	(0.63, 2.01)	0.40	0.6875	
Female gender	0.0131	0.2184	1.01	(0.66, 1.55)	0.06	0.9521	
Caucasian race	0.2969	0.4645	1.35	(0.54, 3.34)	0.64	0.5227	
Age	0.0233	0.0140	1.02	(1.00, 1.05)	1.67	0.0956	
Income-to-needs ratio	−0.0488	0.0424	0.95	(0.88, 1.03)	−1.15	0.2503	
Depression severity	0.3539	0.0330	1.42	(1.34, 1.52)	10.71	<b>&lt;0.0001</b>	

<sup>a</sup> Parent respondent was the child's biological mother.

above and beyond parent-report during this developmental period (Rothen et al., 2009) and suggests that child-reported maladaptive guilt may be more meaningful during middle childhood.

Our findings have important clinical implications. Although most common to depression, substantial lifetime rates of maladaptive guilt were found in healthy children and children with other psychiatric disorders. Given associations between maladaptive guilt and severe psychopathology, it may be beneficial for clinicians to ask children about maladaptive guilt beyond the context of assessment for depression. It may be particularly important for clinicians to monitor maladaptive guilt in children of low SES, whom our findings suggest are at greater risk of developing this symptom. Further, although parent-child interaction therapies have long targeted children's externalizing problems, it is becoming increasingly clear that these interventions are also effective for children's depression (Luby et al., 2018). Our findings that maladaptive guilt is predicted by parenting and the family climate suggest that parenting should be a target of interventions aimed at preventing or ameliorating maladaptive guilt.

#### 4.1. Limitations

A primary limitation was the cross-sectional nature of this study, which precludes conclusions about how maladaptive guilt develops; future studies should examine the correlates identified in this study over multiple timepoints to examine whether they are also associated with the development of maladaptive guilt over time. We also examined relations between concurrent correlates and a *lifetime* history of maladaptive guilt, although we examined aspects of the child's environment that have been found to be relatively stable throughout childhood such as SES and parenting practices (e.g., Shaffer, Lindhiem, Kolko & Trentacosta, 2013) or chronic, such as depression in mothers (e.g., Brennan et al., 2000). Following other studies, our measure of maladaptive guilt was assessed using one item on a diagnostic interview (Belden et al., 2015; Sarkar et al., 2012). Although one item measures have limitations, virtually all dimensional guilt questionnaires validated for use in children assess adaptive guilt, and questionnaires are limited in that they lack cut-off points by which to judge whether guilt is clinically significant (Tilghman-Osborne et al., 2010). Relatedly, some analyses utilized very unbalanced cell sizes (for example, many fewer children met criteria for maladaptive guilt than children that did not) which could have limited our ability to detect some effects. Finally, only the family conflict subscale of the Family Environment Scale was collected in the ABCD study; future studies might examine how other subscales, such as the family's moral emphasis, relate to children's guilt feelings.

#### 4.2. Conclusions

This study was the first large scale investigation of the prevalence and correlates of maladaptive guilt in middle childhood in a community sample. We found that the prevalence of this symptom was highest in children with a depression diagnosis, but that children with other diagnoses experience maladaptive guilt at significant rates. We also identified demographic and environmental correlates of meeting criteria for maladaptive guilt, including low SES, greater parental conflict, maternal depression history, and greater parental rejection. These correlates have implications for how maladaptive guilt develops, and provide novel information about which children are at greatest risk, which can inform preventative interventions.

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This report reflects the views of the authors and may not reflect the opinions or views of the NIH or the ABCD consortium investigators. ABCD consortium investigators designed and implemented the study and/or provided data but did not necessarily participate in analysis or writing of this report.

#### Additional contributions

We thank the families participating in the ABCD study.

#### Limitations

A primary limitation was the cross-sectional nature of this study, which precludes conclusions about how maladaptive guilt develops. Maladaptive guilt was assessed through one item, though many studies of maladaptive guilt measure the symptom in this manner. Finally, some analyses utilized very unbalanced cell sizes (for example, many fewer children met criteria for maladaptive guilt than children that did not) which may have limited our ability to detect some effects.

#### CRediT authorship contribution statement

**Meghan Rose Donohue:** Conceptualization, Data curation, Formal analysis, Methodology, Writing - original draft, Writing - review & editing, Resources, Project administration. **Rebecca Tillman:** Data curation, Formal analysis, Methodology, Resources, Project administration. **Michael T. Perino:** Data curation, Formal analysis, Methodology, Writing - review & editing, Resources, Project administration. **Diana J. Whalen:** Formal analysis, Methodology, Writing - review & editing, Project administration. **Joan Luby:** Formal analysis, Methodology, Writing - review & editing, Resources, Project administration, Supervision. **Deanna M. Barch:** Data curation, Formal analysis, Methodology, Writing - review & editing, Funding acquisition, Project administration, Supervision.

#### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jad.2019.11.075](https://doi.org/10.1016/j.jad.2019.11.075).

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