

Disregard for rules: the early development and predictors of a specific dimension of disruptive behavior disorders

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Background: Disregard for rules, an important dimension of oppositional defiant and conduct disorders, is frequent during early childhood, but the development of its chronic form has not been studied during this key socialization period. This study aimed to describe the developmental trajectories of disregard for rules during early childhood and identify prenatal and postnatal predictors for a high trajectory. **Methods:** Participants were involved in a longitudinal study of a birth cohort followed yearly from 5 to 74 months of age ($N = 1,942$). Prenatal and postnatal predictors were measured by parental report at the beginning of the study, and parents reported child disregard for rules at five time points from 29 to 74 months of age. **Results:** Four groups of children followed distinct and stable trajectories of mother-rated disregard for rules: Very Low (approximately 9.1%), Low (56.9%), Moderate (29.7%) and Chronic (4.3%). As expected, male sex was a significant predictor of the chronic trajectory (OR = 1.76, CI = 1.09–2.83). Mothers' history of antisocial behavior (OR = 1.72, CI = 1.02–2.91), and postnatal depressive symptoms experienced by the mother (OR = 1.71, CI = 1.03–2.84) and the father (OR = 2.02, CI = 1.10–3.71) were also important independent predictors. However, contrary to expectations, children's difficult temperament and parenting at 5 months did not predict chronic disregard for rules beyond other risk factors. **Conclusions:** High disregard for rules is fairly stable during early childhood and is associated with risk factors identifiable before and shortly after birth which may be used for targeted prevention. **Keywords:** Oppositional defiant disorder, disruptive behavior disorders, developmental trajectories, risk factors, child development, early childhood.

Among community or primary care samples of children aged 2 to 5 years, it is estimated that 4% to 8% would meet DSM diagnostic criteria for oppositional defiant disorder (ODD) and up to 4% would meet criteria for conduct disorder (Egger & Angold, 2006). These early disruptive behavior disorders (DBD) are associated with significant impairment (Keenan & Wakschlag, 2000) and are a source of considerable parental concern (Stallard, 1993). Central to the DBD, and to adult antisocial personality disorder and psychopathy, is repeated rule breaking that appears uncurbed by the experience of guilt or the fear of punishment, a pattern we label *disregard for rules*. Early childhood is particularly relevant to disregard for rules, because this period is marked by significant development of behavioral control, language, and self-evaluative skills, which progressively equip children to actively resist their parents' rules, as well as to comply with and internalize these rules (Kaler & Kopp, 1990; Kochanska, Coy, & Murray, 2001; Kuczynski & Kochanska, 1990; Stipek, Gralinski, & Kopp, 1990). Because disregard for rules is fundamental to disruptive and antisocial behavior, and highly relevant in early childhood, knowledge about its early developmental course and

risk factors is essential to guide preventive interventions.

Yet, this knowledge is currently limited because most studies of young children have combined several DBD symptoms and only a few have followed children longitudinally. In a sample of boys from low-income families, a small group (6.7%) was found to follow a high trajectory of mixed DBD symptoms (disregard for rules, temper tantrums, aggression) from ages 2 to 10 years (Shaw, Lacourse, & Nagin, 2005). These boys had younger mothers and, between 18 and 24 months of age, were more likely to exhibit a fearless temperament and be exposed to maternal depressive symptoms and maternal rejection, compared to boys following the lowest trajectory. In a study of DBD symptoms from 18 to 30 months of age, the best 18-month predictors were the child's difficult temperament and physical health problems, maternal depressive-anxious symptoms and low social support (Mathiesen & Sanson, 2000). One study focusing specifically on noncompliance found that difficult temperament and maternal restrictive control in the first two years predicted persistent noncompliance observed at age 4 (Pettit & Bates, 1989). These results suggest that young motherhood, maternal personality and maternal distress, poor parenting, and a difficult or fearless

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temperament, would be important predictors for children's disregard for rules. However, since only one study assessed the child's disruptive symptoms more than once or twice, it is unclear whether an enduring problem was identified. Further, in all of these studies, risk factors were rarely assessed prior to the child's first birthday, providing limited information for early prevention.

In order to fill these gaps, this study aimed to (1) document the developmental trajectories of disregard for rules in a representative sample of children using parental reports at five time points from 29 to 74 months of age, and (2) identify the most important prenatal and early postnatal risk factors for a high trajectory, in order to inform preventive interventions.

Methods

Participants and procedure

Participants were involved in the Québec Longitudinal Study of Child Development (QLSCD) (Jetté & Des Groseillers, 2000). The QLSCD sample is representative of children born in 1997–1998 in the province of Quebec, Canada, excluding children living on Cree or Inuit territories, in Indian reserves, and in northern Quebec. It was drawn from the Quebec Birth Registry, using a stratified procedure based on living area and birth rate. Families were included if the pregnancy lasted between 24 and 42 weeks and the mother could speak French or English. Selected families that could be located ($N = 2,675$) were approached by mail and by phone. Of those, 83.1% accepted to participate in the first assessment and 2,120 families were included for follow-up.¹ Parental written informed consent was obtained at each assessment.

Assessment times were scheduled according to child age for the first four assessments, and in the spring of the next three years prior to school entry. From times 1 through 7, children averaged 4.5 months of age ($SD = .55$ months; $N = 2,120$), 16.6 months ($SD = .56$; $N = 2,045$), 28.5 months ($SD = .54$; $N = 1,997$), 40.6 months ($SD = .58$; $N = 1,950$), 49.5 months ($SD = 3.12$, $N = 1,944$), 61.4 months ($SD = 3.12$, $N = 1,759$) and 73.8 months ($SD = 3.05$, $N = 1,492$). Measures were obtained through computerized home interviews with the mother and self-administered parent and teacher questionnaires.

The sample of this study was composed of children with no more than two missing data points on mother-rated disregard for rules between 29 and 74 months ($N = 1,942$; 50.3% male). To maintain sample representativeness, we applied the longitudinal weights provided in the QLSCD that take into account attrition up to the 29-month assessment. When the children were 5 months of age, 8.5% of families were headed by a single parent, 31.4% reported an income lower than

30,000 CAD and 28.1% higher than 60,000 CAD, 19.1% of mothers and 20.2% of fathers had not completed high school, while 25.5% of mothers and 24.6% of fathers held a university degree.

Measures

Child disregard for rules. Child disregard for rules was reported by mothers and fathers between 29 and 74 months, and by kindergarten teachers at 74 months. The three items used to measure disregard for rules were selected from Achenbach's Child Behavior Checklist for preschoolers (Achenbach & Rescorla, 2000) to reflect persistent and active noncompliance that is uncurbed by neither internal nor external controls. Respondents were asked how many times (0 = never or rarely; 1 = sometimes; 2 = often) the child: was defiant or refused to comply with adults' requests or rules; didn't seem to feel guilty after misbehaving; and punishment didn't change his/her behavior (Thibault, Jetté, Desrosiers, & Gingras, 2003). These three items were summed (0–6 scale), allowing one missing value. At 29 months, only the first two questions were asked to fathers. Cronbach's alphas for parent ratings were low at each age (.54, .60, .63, .64, .62 for mother ratings; .39, .57, .62, .61, .57 for father ratings), but this was mainly due to the small number of items in the scale. Inter-item correlations (ranging between .23 and .46) were within the recommended range of .15 to .50 and clustered around the mean inter-item correlations (ranging from .28 to .37) (Clark & Watson, 1995). Most importantly, since the unit of analysis was the trajectory of disregard for rules (using all five time points), the reliability of a composite score made of all five scales was .86 for mother ratings and .83 for father ratings (Murphy & Davidshofer, 2005). Cronbach's alpha for teacher ratings was .79.

Risk factors. All risk factors were assessed when the child was 5 months of age, except for maternal history of depression, assessed at 29 months. To facilitate interpretation of odds ratios, all risk factors were dichotomized, a score of 1 indicating that the risk factor was present and 0 indicating it was absent. For continuous scales, higher scores indicated higher risk, and unless specified below, a score of 1 was assigned for scores at or above the 75th percentile. Items for each measure are provided in the electronic appendix.

1. Parental risk factors and prenatal environment. Risk factors characterizing parental history and the prenatal environment were maternal and paternal history of depression, maternal and paternal history of antisocial behavior, the mother's age when first pregnant (1 = younger than 20 years), low maternal education (1 = no high school degree), insufficient income (1 = below Statistics Canada's low income cut-off), and mother's cigarette smoking while pregnant with the target child (1 = at least 1 cigarette a day).

Maternal and paternal history of depression were measured with the QLSCD Parental Depression Questionnaire (Roy et al., 2005). Consistent with DSM-IV criteria, parents who reported a depressive mood most of the time for a period of at least two weeks prior to the

¹ Oversampling of 103 families was undertaken at the beginning of the study to account for a specific environmental disaster that affected one geographical region. These 103 families were not included in the longitudinal study.

target child's birth, and at least four of seven additional DSM-IV Criterion A symptoms, were assigned a score of 1.

Parental history of antisocial behavior was measured with 9 items for mothers (Cronbach's $\alpha = .50$) and 8 items for fathers (Cronbach's $\alpha = .61$), assessing engagement in conduct problem behaviors during adolescence and adulthood, based on the NIMH-Diagnostic Interview Schedule (Helzer & Robins, 1988) and the DSM-IV criteria for conduct disorder and antisocial personality disorder (Zoccolillo, 2000). Scores were summed allowing two missing values.

2. Child difficult temperament. Child difficult temperament was assessed by both parents with seven items from the Infant Characteristics Questionnaire (ICQ; Bates, Freeland, & Lounsbury, 1979) rated on a 7-point scale. Mother and father total ratings (Cronbach's alphas = .77, .79, respectively, $r = .60$) were z -standardized within parent gender, and then averaged allowing one missing value.

3. Parental postnatal depressive symptoms. Maternal and paternal depressive symptoms were assessed using a 12-item abbreviated version of the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Parents were asked how often in the previous week they experienced symptoms of depression, on a 4-point scale. Items were averaged allowing four missing values (Cronbach's $\alpha = .78$ for mothers and .73 for fathers).

4. Parenting. Positive mother-child interactions were measured with five items from the Parent Practices Scale on a 5-point scale (Strayhorn & Weidman, 1988). Items were averaged, allowing one missing value (Cronbach's $\alpha = .55$).

Hostile-reactive maternal and paternal behavior were assessed with seven items from the Parental Cognitions and Conduct Toward the Infant Scale, on an 11-point scale (Boivin et al., 2005). Items were averaged, allowing two missing values (Cronbach's $\alpha = .66$ for mothers and .74 for fathers).

Statistical analyses

All analyses were weighed to account for attrition up to the first measure of disregard for rules. For trajectory analyses, we used a semi-parametric, group-based approach (with the Proc Traj procedure in SAS) (Jones, 2004), which distinguishes groups of individuals based on the shape of their trajectory over time (Nagin, 1999). It estimates the proportion of participants in each trajectory group and a probability for each participant to belong to each group. To maximize sample size, trajectories of child disregard for rules were based on mother reports. To assess concordance with father ratings, we conducted a joint trajectory analysis and examined the probability of membership in the highest father-rated trajectory given membership in the highest mother-rated trajectory. We also compared mother-rated trajectory groups on teacher-rated scores at 74 months with an ANOVA.

To test predictors of a high trajectory, we used a hierarchical logistic regression analysis, after assigning

children to trajectory groups according to the highest posterior probability of membership. To account for missing data among predictors, we conducted multiple imputation by chained equation (MICE; Van Buuren & Oudshoorn, 2007). Missing values were imputed 100 times using all available information on these predictors, the trajectory group and two predictors of missing data (single parent status and paternal education level). Hierarchical logistic regression analyses of these 100 data sets were pooled using MICE.

Risk factors were entered sequentially into the regression to test specific hypotheses and best inform prediction efforts. Sex differences were tested first, followed by factors characterizing the parents' history and the prenatal environment (maternal and paternal histories of depression and antisocial behavior, teenage pregnancy, maternal education, insufficient income and maternal smoking during pregnancy). Then, the child's difficult temperament at 5 months was tested as an early indicator of disruptive behavior, followed by maternal and paternal postpartum depressive symptoms. Parenting practices at 5 months (mother's positive interactions and both parents' hostile-reactive behavior) were entered last, to test if they could account for previous parental risk factors (Spieker, Larson, Lewis, Keller, & Gilchrist, 1999).

Results

Child disregard for rules

Mother-rated disregard for rules (on a 0–6 scale) averaged 2.16 (SD = 1.38), 2.32 (SD = 1.29), 2.15 (SD = 1.28), 2.11 (SD = 1.28) and 1.98 (SD = 1.25) at each successive assessment time from 29 to 74 months. Agreement between mother and father ratings was modest at 29 months, $r = .23$, but ranged from $r = .37$ to $r = .46$ at later assessments (all $ps < .001$). Stability was modest between 29 and 41 months, $r = .39$ for mother ratings and .34 for father ratings, but increased later, with rs ranging from .53 to .58 for later mother ratings, and from .50 to .55 for later father ratings (all $ps < .001$).

Developmental trajectories of mother-rated disregard for rules and convergence with father and teacher ratings

Models (censored normal) with two to eight trajectory groups of mother-rated disregard for rules were estimated. The Bayesian Information Criterion (BIC; Jones, Nagin, & Roeder, 2001) improved as the number of groups increased. However, with four groups and more, a small, high stable group was consistently found, and adding groups resulted in splitting lower level groups. Therefore, the four-group solution was retained.

Figure 1 presents the final model. The 95% confidence intervals around trajectories did not overlap. The Very Low group (estimated at 9.1% of the sample) followed a linear, decreasing trajectory that lay

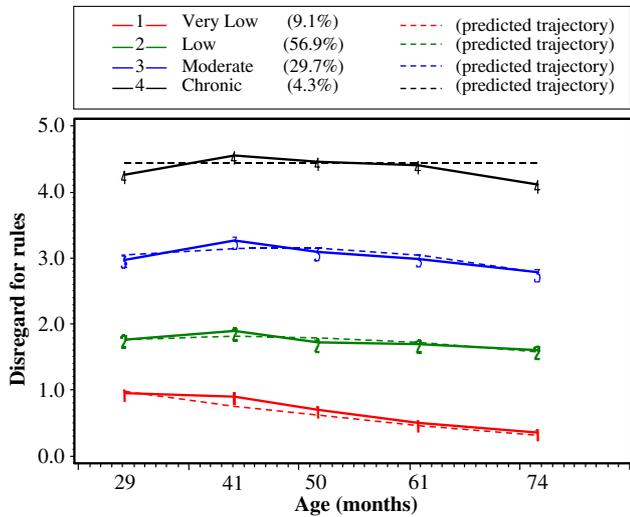


Figure 1 Trajectories of children’s disregard for rules (0–6 scale), assessed by mothers, between 29 and 74 months of age ($N = 1,942$)

lower than one SD below the mean on disregard for rules. The Low group comprised most of the sample (56.9%) and followed a quadratic trajectory slightly below the mean. The Moderate group (29.7%) followed a slightly quadratic trajectory close to one SD above the mean. Finally, the highest group (Chronic; 4.3%) followed a constant trajectory almost two SD above the mean.

To assess the concurrent and predictive validity of trajectories based on mother ratings, we assessed their convergence with trajectories based on father ratings and with teacher ratings in kindergarten. Three stable trajectories were obtained with father ratings ($n = 1,570$, allowing two missing data points from 29 through 74 months), including a high, chronic group (11.3% of the children; data not

shown). Children who followed the mother-rated Chronic trajectory were highly likely (79.9%) to fall on the highest father-rated trajectory.

Mother-rated trajectory groups also differed according to their kindergarten teachers ($F(3, 925) = 25.96, p < .001$). All groups differed significantly from each other ($p < .01$ in Games–Howell pairwise comparisons) except the Very Low and Low groups.

Early risk factors for the Chronic trajectory

Table 1 shows the number of children in each trajectory group affected by each risk factor, with chi-square tests. For the multivariate analysis, we used multiple imputation, as explained in the methods, to minimize bias and loss of statistical power from missing data. Table 2 presents the results of the hierarchical logistic regression analysis comparing children on the Chronic trajectory ($n = 76$) to the other children ($n = 1,866$). Results showed that boys were more likely to follow the Chronic trajectory than girls. The only significant independent parental or prenatal risk factor was maternal history of antisocial behavior. Child difficult temperament did not significantly add to the prediction, but both maternal and paternal depressive symptoms 5 months postpartum did. When parenting practices were entered, maternal antisocial history and depressive symptoms at 5 months became marginally significant, but the decrease in odds ratio was small. Parenting practices did not contribute to the prediction over and above other risk factors.

In follow-up analyses, we examined how the risk of following the Chronic trajectory increased with the accumulation of these four significant risk factors.

Table 1 Number (%) of children^a presenting each risk factor, for each trajectory group, and χ^2 tests of group differences ($df = 3$)

Risk factor	Total <i>N</i>	Very Low <i>n</i> = 152	Low <i>n</i> = 1,157	Moderate <i>n</i> = 557	Chronic <i>n</i> = 76	Group difference test	
						χ^2	<i>p</i>
Male child	1,942	70 (42.4%)	557 (49.6%)	297 (51.9%)	53 (63.9%)	10.99	.01
Maternal history of depression	1,910	31 (19.1%)	219 (19.8%)	148 (26.4%)	29 (35.4%)	18.47	.00
Paternal history of depression	1,531	17 (13.0%)	134 (14.8%)	58 (13.3%)	12 (19.4%)	1.99	.58
Maternal antisocial behavior	1,864	25 (15.8%)	263 (24.4%)	177 (32.2%)	38 (48.7%)	39.89	.00
Paternal antisocial behavior	1,683	19 (13.2%)	249 (25.5%)	140 (28.4%)	25 (35.2%)	17.04	.00
Mother first pregnant before 20	1,890	32 (19.5%)	193 (17.7%)	128 (22.9%)	31 (39.2%)	24.44	.00
Mother no high school degree	1,942	40 (24.1%)	198 (17.6%)	107 (18.7%)	28 (34.1%)	16.20	.00
Insufficient income	1,914	44 (27.3%)	270 (24.5%)	148 (26.1%)	34 (42.0%)	12.28	.01
Mother smoked during pregnancy	1,933	31 (18.8%)	259 (23.2%)	164 (28.9%)	33 (39.8%)	19.56	.00
Child’s difficult temperament	1,941	32 (19.4%)	288 (25.7%)	146 (25.6%)	21 (25.3%)	3.12	.37
Maternal depressive symptoms	1,936	47 (28.7%)	260 (23.2%)	175 (30.8%)	38 (45.8%)	27.58	.00
Paternal depressive symptoms	1,627	29 (20.6%)	228 (24.1%)	135 (28.3%)	25 (39.7%)	11.37	.01
Lack of positive mother-child interactions	1,939	44 (26.5%)	213 (19.0%)	135 (23.7%)	21 (25.3%)	8.89	.03
Hostile-reactive maternal behavior	1,872	29 (17.8%)	265 (24.6%)	177 (31.9%)	28 (35.4%)	19.88	.00
Hostile-reactive paternal behavior	1,624	30 (21.6%)	234 (24.8%)	137 (28.5%)	21 (33.9%)	5.71	.13

^aFigures are weighted and rounded.

Table 2 Hierarchical logistic regression of prenatal and early postnatal risk factors for membership in the Chronic trajectory group ($n = 76$) relative to all three lower groups ($n = 1,866$)

Risk factors	Model 1	Model 2	Model 3	Model 4	Model 5
	OR (95% CI) ^a	OR (95% CI) ^b			
Model 1: Male child					
Male child	1.76 (1.09–2.83)*	1.81 (1.12–2.95)*	1.81 (1.12–2.95)*	1.82 (1.12–2.98)*	1.80 (1.10–2.95)*
Model 2: Paternal risk factors and prenatal environment					
Maternal history of depression		1.53 (.91–2.57)	1.53 (.91–2.57)	1.30 (.76–2.21)	1.27 (.74–2.17)
Paternal history of depression		1.09 (.53–2.26)	1.09 (.53–2.26)	.88 (.42–1.88)	.88 (.41–1.89)
Maternal antisocial behavior		1.72 (1.02–2.91)*	1.72 (1.01–2.90)*	1.65 (.96–2.82)*	1.60 (.93–2.75) [†]
Paternal antisocial behavior		1.41 (.83–2.39)	1.42 (.83–2.41)	1.41 (.82–2.42)	1.38 (.80–2.38)
Mother first pregnant before 20		1.60 (.90–2.86)	1.60 (.90–2.87)	1.65 (.92–2.97)	1.73 (.95–3.13)
Mother no high school degree		1.38 (.78–2.45)	1.38 (.78–2.45)	1.37 (.77–2.44)	1.39 (.78–2.47)
Insufficient income		1.35 (.79–2.30)	1.34 (.79–2.30)	1.16 (.67–2.01)	1.15 (.66–2.02)
Mother smoked during pregnancy		1.48 (.89–2.45)	1.47 (.89–2.44)	1.51 (.91–2.52)	1.53 (.92–2.55)
Model 3: Child difficult temperament at 5 months					
Child's difficult temperament			1.05 (.62–1.80)	.98 (.57–1.69)	.88 (.50–1.53)
Model 4: Parental depressive symptoms at 5 months					
Maternal depressive symptoms				1.71 (1.03–2.84)*	1.63 (.97–2.73) [†]
Paternal depressive symptoms				2.02 (1.10–3.71)*	1.90 (1.03–3.51)*
Model 5: Parenting at 5 months					
Lack of positive mother-child interactions					1.10 (.63–1.94)
Hostile-reactive maternal behavior					1.31 (.76–2.27)
Hostile-reactive paternal behavior					1.47 (.80–2.69)

^aOR = Odds ratio; CI: Confidence interval. [†] $p < .10$, * $p < .05$.

^bOR = Odds ratios adjusted for all variables in the model.

Table 3 Number of children presenting 0 to 4 of the significant risk factors (male sex, maternal antisocial behavior, maternal and paternal postnatal depressive symptoms) and their average probability of following the Chronic trajectory

Number of risk factors present	Number of children ^a	Average probability of membership in the Chronic trajectory
0	425	.024
1	789	.028
2	482	.048
3	210	.097
4	37	.205

^aFigures are weighted and rounded.

Table 3 presents the frequency of children with 0, 1, 2, 3 or 4 of these risk factors and their average probability of membership in the Chronic trajectory. Odds ratios for following the Chronic trajectory were 1.36 (95% CI = .57–3.23) with any one risk factor compared to none, 2.14 (CI = 1.09–4.21) with two risk factors compared to one or none, 4.24 (CI = 2.30–7.84) with three risk factors compared to fewer, and 6.22 (CI = 2.17–17.78) with all four risk factors compared to fewer.

Discussion

We identified a small group of children (4.3%) presenting chronic disregard for rules throughout early childhood. These results extend previous findings of a small group of children exhibiting chronic DBD symptoms (Bongers, Koot, van der Ende, & Verhulst,

2004; Nagin & Tremblay, 1999; Shaw et al., 2005), by demonstrating that chronic behavior problems specifically related to children's response to rules can be reliably assessed with mother ratings during early childhood in a population-based sample, and are associated with very early risk factors that could guide prevention efforts.

The finding of four, fairly parallel trajectories indicates that young children maintain relatively stable individual differences in disregard for rules. This stability implies the action of causal factors that remain constant over time or that produce early and enduring effects on the parent-child relationship. It could also reflect processes that maintain the child's behavior, encouraging children who more readily respect rules and feeding into the difficulties of those who do not (e.g., coercive family cycles) (Patterson, 1982).

Among prenatal and early postnatal risk factors, four significantly predicted children's engaging in a chronic trajectory, above others: the child being male, maternal antisocial behavior, and maternal and paternal depressive symptoms 5 months postpartum. The higher risk for boys is consistent with findings on the early trajectories of hyperactivity and physical aggression (Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Romano, Tremblay, Farhat, & Côté, 2006), and confirms that, from early childhood, boys are more vulnerable to chronic DBD symptoms.

The significant role for maternal antisocial history is coherent with the well-documented intergenerational transmission of disruptive and antisocial

behavior, and may involve both genetic and environmental mechanisms (Hicks, Krueger, Iacono, McGue, & Patrick, 2004; Smith & Farrington, 2004; Verona & Sachs-Ericsson, 2005). Maternal depressive symptoms contributed to the prediction independently from either parent's antisocial history, supporting previous results indicating that this relationship with child DBD cannot be entirely explained by depressed mothers' comorbid antisocial behavior or by their tendency to bear children with antisocial men (Kim-Cohen, Moffitt, Taylor, Pawlby, & Caspi, 2005; Marmorstein, Malone, & Iacono, 2004). Our study adds to previous work by showing that both mothers' and fathers' depressive symptoms shortly after birth contribute to predicting DBD symptoms independently from each other and from parental antisocial behavior (Ramchandani, Stein, et al., 2008).

Parental postnatal, but not prenatal, depressive symptoms, predicted chronic disregard for rules, suggesting an early environmental effect on the child's socialization (Kim-Cohen et al., 2005; Ramchandani, O'Connor, et al., 2008). Our results did not provide evidence that early parenting accounted for this relationship, as none of the parenting variables measured five months after birth was predictive beyond other risk factors. However, other studies have found a mediating role for parenting when measured later in the child's development (Spieker et al., 1999). It is possible that parental depression may impede the parent-child relationship in a way that only becomes evident in later parental conduct.

Child difficult temperament at 5 months of age was not a good predictor of disregard for rules. Temperament undergoes progressive change throughout infancy and becomes more stable around 24 months (Lemery & Goldsmith, 1999), thus difficult temperament may become a better predictor later on (Mathiesen & Sanson, 2000; Pettit & Bates, 1989). Other temperamental constructs typically measured in toddlerhood, such as fearlessness, behavioral undercontrol, sensation-seeking, and behavioral disinhibition, have been shown to predict disruptive or antisocial behavior (Calkins, Bandon, Williford, & Keane, 2007; Caspi, 2000; Raine, Reynolds, Venables, Mednick, & Farrington, 1998; Shaw et al., 2005).

Our findings suggest that preventive efforts should target pregnant mothers with a history of antisocial behavior and, shortly after birth, assess parental depressive symptoms to narrow down the target population. As some of these risk factors are also found among predictors of aggression (Côté et al., 2007; Tremblay et al., 2004) and hyperactivity (Romano et al., 2006), it is likely that they would be useful in preventing DBD in general. Children who cumulated risk factors were at increased risk of following a Chronic disregard for rules trajectory, suggesting that using these factors in combination would be most effective in targeted preventive efforts,

and could offset the limited usefulness of risk factors taken individually (Sameroff, 1998).

There are two limitations. First, as mentioned previously, it is likely that the significant predictors are not specific to disregard for rules. Nevertheless, the identification of a persistent pattern of specific disruptive behaviors in early childhood is a significant contribution. Second, the focus on very early risk factors limits this study's contribution to understanding developmental processes beyond infancy (e.g., the role of temperament and parenting). However, given our main goal of informing early prevention, this was the most useful approach.

Conclusion

This study showed that a small number of children follow a trajectory of chronic disregard for rules. Boys, and children with a maternal history of antisocial behavior, and paternal or maternal postnatal depressive symptoms, are more likely to follow this persistent pattern of DBD symptoms, especially if they cumulate these risk factors.

Supporting information

Additional supporting information may be found in the online version of this article:

Appendix S1 List of items for each risk factor measure (Word document)

Please note: Wiley-Blackwell are not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.

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Key points

- Mixed DBD symptoms affect a small number of young children.
- Trajectories of disregard for rules are stable throughout early childhood.
- 4.3% of a representative sample of young children followed a chronic trajectory.
- Risk factors for a chronic trajectory may be assessed prenatally or shortly after birth.
- The most important independent predictors are being male, having a maternal history of antisocial behavior, and maternal or paternal depressive symptoms five months postpartum.

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