Research on Child and Adolescent Psychopathology (2022) 50:1289–1298
https://doi.org/10.1007/s10802-022-00924-2

Where Should Psychopathic Traits Be Placed in a Diagnostic Framework? Evidence for a Grandiose-Manipulative Specifier for ODD

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Accepted: 4 April 2022 / Published online: 14 April 2022

Abstract

Youth exhibiting psychopathic traits are at increased risk for a more severe, persisting, and treatment-resistant course of antisocial behavior. To reflect this diagnostically, the specifier *with limited prosocial emotions* (LPE) was added to the criteria for conduct disorder (CD). Yet, psychopathic traits often show an earlier onset than CD symptoms and LPE may exclude important dimensions of psychopathy. This study examines grandiose-manipulative (GM) traits both dimensionally and as a diagnostic specifier for behavioral disorders.Data come from a clinic sample of 177 boys aged 7–12 followed up annually through age 17. Annual parent reports of children's GM, and symptoms of CD, oppositional defiant disorder (ODD), and attention-deficit/hyperactivity disorder (ADHD) were tested, controlling for other psychopathology and demographics. A categorical GM specifier for ODD or ADHD was also tested as a predictor of CD or ODD diagnosis.GM and ODD were significantly predictive of increases in CD. Reciprocal associations were observed between GM and ODD symptoms. The GM specifier was most commonly associated with ODD (91.9%), compared to CD (44.1%) or ADHD (67.1%), and was significantly predictive of future CD when applied to ODD. GM as a specifier for ADHD enhanced the prediction from ADHD to ODD, but not to CD. Including GM as a specifier for disorders beyond CD improves the prediction of future behavioral disorders, distinguishing youth with ODD at risk for CD, and youth with ADHD at risk for ODD. Failing to do so may miss a substantial portion of elevated GM.

Keywords Grandiose-manipulative features · Conduct disorder · Oppositional defiant disorder · Limited prosocial emotions · DSM-5 · Attention-deficit/hyperactivity disorder

Where Should Psychopathic Traits be Placed in a Diagnostic Framework?

The introduction of limited prosocial emotions (LPE) as a specifier for conduct disorder (CD) in the DSM-5 (American Psychiatric Association [APA], 2013) was justified by the evidence that callous and unemotional features (CU) distinguish a subgroup of children at risk for more severe and persistent antisocial behavior (Frick et al., 2014a, 2014b). LPE includes characteristics of lacking remorse or guilt, being callous or lacking empathy, being unconcerned about performance, or having a shallow or deficient affect. It is empirically well-established and clear that distinguishing those with CD + CU from those with CD alone is clinically useful. What is not clear is whether representing psychopathic traits using LPE, or limiting the inclusion of such traits as a diagnostic specifier only for CD, most fully reflects the clinical and prognostic meaning of psychopathic traits in childhood and adolescence.

Evidence suggests that psychopathy is multidimensional, including dimensions of CU, grandiose-manipulative (GM), and daring-impulsive (DI) traits (e.g., Salekin, 2017). Salekin (2016) described concerns that LPE may be too limited and too consistent with an assumption that there is a singular phenotypic core of psychopathic traits, and expressed concern that LPE may overlap too substantially with CD behaviors (Salekin, 2016). This three-factor structure (CU, GM and DI) of psychopathy has been demonstrated using the Youth Psychopathic Traits Inventory (Andershed et al., 2002), and has been supported in a large behavioral genetics analysis (Larsson et al., 2006). The Proposed Specifiers for Conduct Disorder (PCSD; López-Romero et al., 2019) was developed to measure the three-factor model, along with an antisocial behavioral dimension. The validity and factor structure of

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the PSCD has been demonstrated in Chinese adolescents (Luo et al., 2021), and in community and forensic samples of Portuguese youth (Ribeiro de Silva et al., 2021). It may be that the LPE specifier is insufficiently reflective of a multifaceted model of psychopathic traits. Accounting for other dimensions in addition to CU, in the context of conduct problems, may clarify the prediction to future conduct problems (Andershed et al., 2018).

In addition to concerns about whether LPE reflects aspects of psychopathy beyond CU traits, the restriction of LPE to be a specifier *only* for CD is also not consistent with the entirety of the evidence. In a comprehensive review of the literature, Frick and colleagues (2014a) identified 269 studies of CU features. Those studies typically tested constructs of "conduct problems" not necessarily restricted to or defined by CD, and included studies that examined oppositional defiant disorder (ODD) and CD together as a single construct (e.g., Finger et al., 2012; Frick et al., 2003; Viding et al., 2008). Very few of those studies provided evidence to test for any distinct relationship between CU and ODD. One study that did test CD and ODD separately in regards to CU (Kumsta et al., 2012) examined a sample of adopted children in the UK. In that study, CU was not associated with CD. However, parent-reported CU as a category was significantly associated with a diagnosis of ODD. In particular, two dimensions of parent-reported CU features (*callous* and *uncaring*) were significantly associated with an ODD diagnosis, while the CU dimension of *unemotional* was not (Kumsta et al., 2012). Thus, the available evidence is supportive of the relevance of aspects of CU in regards to antisocial behavior in general, but has not sufficiently demonstrated that it is specifically limited to CD.

Relatedly, Frick and colleagues (Frick et al., 2014b) noted that "evidence that elevated levels of CU features designate impaired individuals with distinct patterns of emotional responding, even in the absence of CD or significant conduct problems" (p 41; see also Rowe et al., 2010 and Seijas et al., 2018). Frick has elsewhere cautioned against focusing on CU as solely part of the criteria for CD (Frick et al., 2014a), citing evidence that it may be associated with processes involved in the normative development of conscience, and suggesting that it may precede the development of serious conduct problems. How psychopathic traits may be related to ODD, particularly as differentiated from CD, has simply not been given adequate evaluation in the literature. This key methodological concern makes it very difficult to conclude that the manifestation of CU, GM, or DI is in any way specific to CD. In contrast to the DSM-5, the ICD-11 includes LPE as a specification for both CD and ODD (World Health Organization [WHO], 2019).

Psychopathic Traits and Developmental Pathways of Disruptive Behavior

A broader view of psychopathic traits and behavioral disorders may help to clarify developmental pathways outside of, or in advance of the onset of CD (Frick & Myers, 2017; Frick et al., 2014a, 2014b). In a small normative sample, preschoolers with ODD + CU showed lower levels of interpersonal distress and recovery that those with ODD alone, which the authors interpreted as suggestive of pathways to conduct problems (Willoughby et al., 2011). Additionally, CU has been shown to predict ODD (Ezpeleta et al., 2015; Hawes et al., 2013), although other studies have found contradictory evidence. CU/LPE measured in first grade did not predict ODD in fourth grade in a sample of Spanish elementary students, whereas ODD in first grade was predictive of CU/LPE in fourth grade (Servera et al., 2019). CU was also not predictive of future ODD, CD or ADHD in a US community sample of boys (Pardini & Fite, 2010).Finally, in a clinic sample of German boys with a mean age of 10.75, the combined presence of ADHD and elevated CU was associated with significantly blunted cortisol reactivity and higher rates of delinquency compared to ADHD alone (Stadler et al., 2011). Thus, although the evidence is somewhat mixed, CU may indicate a risk for future ODD and may indicate elevated levels of antisocial risk factors for youth with ADHD.

GM and Behavioral Disorders It may be that dimensions of psychopathy in addition to CU are required to adequately describe the relationship between psychopathy and the behavioral disorders, McKenzie and Lee (2015) found that items reflecting an interpersonal dimension of psychopathy from the Antisocial Process Screening Device (Frick & Hare, 2001), was associated with both ODD and CD, whereas CU items from that same measure was not related to either. Additionally, Colins and colleagues (2014) found that an interpersonal dimension of psychopathy was correlated with both ODD and CD.

Each of the dimensions of GM, DI and CU have been shown to be cross-sectionally associated with ODD in multiple samples (Lopez-Romero et al., 2019; Ribiero da Silva et al., 2021). Notably, the associations between GM, DI and CU were strong with the behavioral dimensions of ODD and not with the chronic irritability dimension of ODD (Ribiero da Silva et al., 2021). This is intriguing since the behavioral dimensions of ODD and not chronic irritability are particularly predictive of later CD (e.g., Burke et al., 2010a).

Salekin (2017) has argued for separate specifiers for CD with each of the dimensions of the three-factor model of psychopathy; it may be that this is true of other behavioral disorders as well.

In summary, the dimensions of psychopathy convey important diagnostic and prognostic information regarding the stability and severity of antisocial behavior. They are often conceptually linked to severe conduct problems in a manner consistent with the DSM-5's introduction of an LPE specifier for CD. However, the evidence also shows that the existing literature very seldom differentiates ODD and CD in examining CU, and that a multifaceted model of psychopathy may better describe developmental relationships involving psychopathy and behavioral disorders. As a result, the current model's limitation of LPE as a specifier only for CD may obscure important clinical, prognostic, and developmental information.

The Current Study

The present study uses an ad-hoc measure that has previously been referred to as interpersonal callousness (IC; Burke et al., 2007). The item content for this measure is substantially reflective of GM traits (see Measures and Constructs). In order to enhance the clarity of these results in the context of the broader literature, we will refer to this construct here as GM. The analyses make use of repeated annual measures to test the following hypotheses: 1) As continuous measures, both GM scores and ODD symptom count will predict increases in future CD symptom counts over current CD levels; 2) ODD and GM will interact in predicting CD, with a steeper slope for GM predicting CD symptoms when ODD is absent; 3) Temporal asymmetry will be present, such that a) CD is not predictive of future ODD or GM, over the autoregressive effect of each outcome, and b) GM is predictive of ODD, but ODD is not predictive of GM; 4) the joint presence of categorical ODD and categorical GM will be associated with the strongest prediction of future CD in comparison to cases that are absent for either. Finally, a similar subtyping scheme of GM in the context of ADHD will be tested, with the hypothesis that subtyping ADHD with GM will not enhance the prediction to outcomes of ODD or CD.

Methods

Participants and Procedure

Participants were 177 boys referred from clinic placements. At baseline, all participants were between the ages of 7 and 12. Participants were excluded if they were not living with at least one biological parent, had a history of intellectual disability or psychosis, had received inpatient psychiatric treatment within the last six months, or were receiving any psychotropic medication that could not be discontinued for 2 days prior to baseline. Annual follow ups were conducted through age 17. Informed consent was obtained for all participants. The study was approved by the University of Pittsburgh Institutional Review Board. See Loeber et al. (2000b) for details regarding the study. Retention rates ranged from a high of 100% in year 2 to 87.1% in year 10, with an average across all years of 93.4%.

Participants were predominately White (70%), with 28.8% identifying as Black or African American and 1.1% identifying as multiracial. Socioeconomic status (Hollingshead, 1975) was represented using a 5-point scale as follows: 1 (*unskilled*), 2 (*semiskilled*), 3 (*skilled*), 4 (*minor professional*), and 5 (*professional*). The median value was 3. Roughly one quarter were in each of the semiskilled or minor professional categories, and 13% were in each of the unskilled or professional categories. Full scale IQ, as measured by the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974), averaged 100.3 (sd = 15.87) with a minimum of 69 and a maximum of 151.

Measures and Constructs

Child Psychopathology The Diagnostic Interview Schedule for Children (DISC; Costello et al., 1987) was administered to parents annually. ODD, CD, and ADHD symptom counts were summed at each wave. An anxiety disorder symptom count construct was created by combining the symptom counts from separation anxiety disorder and overanxious disorder into a single composite. A composite depression symptom count variable reflected the count of ten unique symptoms of depression from major depressive disorder and dysthymic disorder.

Grandiose-Manipulative Traits Parents completed an extended version of the Child Behavior Checklist (Achenbach & Edelbrock, 1983), which included 88 items regarding delinquent and covert antisocial behaviors (Loeber et al., 1998). Parental responses to the items of ''acts sneakily,'' ''manipulates others,'' ''is a smooth talker,'' ''lacks guilt,'' ''exaggerates,'' ''cannot trust what he says,'' ''denies wrongdoing,'' and ''does not keep promises'' were summed to create a continuous GM score. It should be noted that this construct has been previously referred to as interpersonal callousness (IC),and has been described in prior studies using this data set (Burke et al., 2007; Burke et al., 2010b). Its development and psychometric properties are described in more detail elsewhere (Obradović et al., 2007; Pardini et al., 2006). Across the 10 waves of the present data set, the reliability alpha for the construct ranged from 0.87 to 0.93. At baseline, the mean GM score was 6.58 (sd = 4.39) with a minimum of 0 and a maximum of 18.

Diagnostic Categorizations Symptom counts were dichotomized based on criteria from the DSM-5 (APA, 2013). It should be noted that these dichotomous categories do not take into consideration the presence or absence of impairments and are not the result of any diagnostic evaluation or clinician judgment. In order to consider GM as a specifier in a diagnostic context, scores were dichotomized so that scores greater than one standard deviation above the mean were coded as "1," and all other scores were coded as "0." To test GM as a diagnostic specifier for ODD (ODD ± GM), a four-category construct was created, where "0" marked the absence of both dichotomous ODD and dichotomous GM, "1" marked the presence of both ODD and GM, "2" marked ODD without GM, and "3" marked GM without ODD. A similar construct was created to reflect GM as a diagnostic specifier for ADHD (ADHD ± GM), with respective coding in accord with that indicated for ODD ± GM.

Data Analysis

Generalized linear regression models included ten waves of data and were clustered by participant to account for repeated observations over time. The specification of the mean distribution and the link function varied based on the dependent variable (DV) and on testing for overdispersion in count outcomes; negative binomial models were used for symptom count and GM score outcomes and logistic models were used for dichotomous diagnostic approximations. Exponentiated estimates with robust standard errors from these models are presented – either the odds ratio (*OR*) for dichotomous outcomes or the incidence rate ratio (*IRR*) for count outcomes. To evaluate prediction over time, the DV in each model represented the value of the outcome at time T + 1 relative to the predictors at time T. The value of the DV at time T was also included in each model in order to determine whether the predictors explained anything about the outcome over and above the autoregressive effect of the outcome itself.

In order to evaluate the relationship among these factors, symptom counts and continuous scores were tested first to capture dimensional associations between constructs. Then, to test the possible implications for a revised diagnostic framework, CD as a dichotomous outcome was tested with GM as a specifier for diagnoses of ODD and ADHD.

To address potential concerns arising from multiple comparisons we used the false discovery rate (FDR) procedure (Benjamini & Hochburg, 1995). Additionally, each regression model was evaluated for concerns regarding multicollinearity by examining the variance inflation factor (VIF), with a criterion level of VIF > 4 for any individual predictor being used to identify possible problems. No VIF exceeded this criterion level in any model.

Results

Dimensional Sequencing

Predicting CD Symptoms Both the total GM score ($IRR = 1.07$, $SE = 0.01$, $p < 0.001$) and the number of ODD symptoms ($IRR = 1.08$, $SE = 0.03$, $p = 0.004$) were predictive of CD symptom count in the following year, over and above the autoregressive effect for CD symptoms ($IRR = 1.24$, $SE = 0.04$, $p < 0.001$). The model also controlled for symptom counts of ADHD, depression, and anxiety concurrent with GM score and ODD symptoms, as well as an index of socioeconomic status and age (see Table 1). To test for moderation effects between GM score and ODD symptoms, an interaction term was added to the regression model. The interaction term was significant, $IRR = 0.99$, $SE = 0.004$, $p = 0.002$, 95% CI [0.98, 0.99]. Further investigation of the interaction revealed that in the case of high GM, increasing ODD symptoms were not associated with change in the predicted CD symptoms, whereas in the context of low GM, increasing ODD symptoms were associated with increasing CD symptoms in the following year.

Predicting ODD Symptoms To evaluate whether or not any temporal precedence could be identified between symptoms of ODD, GM, and CD, two further regression models, predicting to outcomes at time T + 1 of either ODD symptoms or GM score, were conducted. These models also accounted for the same set of other covariates as in the model predicting to CD symptoms. In the case of the prediction of ODD symptoms, CD symptoms were not predictive ($IRR = 0.97$, $SE = 0.02$, $p = 0.09$, 95% CI [0.93, 1.00]) whereas GM score was, $IRR = 1.03$, $SE = 0.01$, $p < 0.001$, 95% CI [1.02, 1.05]. Although the prediction from ADHD to ODD symptoms in this model would be conventionally considered statistically significant, $IRR = 1.02$, $SE = 0.01$, $p = 0.02$, 95% CI [1.00, 1.05], it did not surpass the correction for FDR and is thus not identified here as such.

Predicting GM Score In a model predicting to GM score at time T + 1, similar results were obtained. Again, CD symptoms were not predictive of GM score the following year, $IRR = 0.99$, $SE = 0.02$, $p = 0.69$, 95% CI [0.95, 1.04]. However, ODD symptoms ($IRR = 1.07$, $SE = 0.01$, $p < 0.001$, 95% CI [1.04, 1.10]) and ADHD symptoms ($IRR = 1.03$, $SE = 0.01$, $p = 0.001$, 95% CI [1.02, 1.05]) were predictive, as was the autoregressive effect for GM score.

Table 1 Negative Binomial Regressions Predicting CD Symptoms from ODD & GM

	IRR	Robust Std. Err	*z*	*p*	95% CI	
CD symptoms (T + 1)						
CD symptoms (T)	1.244	0.043	6.33	< 0.001	1.162	1.330
ODD symptoms (T)	1.078	0.028	2.91	0.004	1.025	1.134
GM score (T)	1.067	0.015	4.75	< 0.001	1.039	1.096
ADHD symptoms (T)	1.032	0.017	1.86	0.062	0.998	1.066
DEP symptoms (T)	1.033	0.024	0.93	0.351	0.976	1.070
ANX symptoms (T)	0.988	0.020	-1.11	0.265	0.938	1.018
Age	1.027	0.018	1.46	0.145	0.991	1.063
SES	0.855	0.035	-3.78	< 0.001	0.788	0.928
constant	0.262	0.084	-4.18	< 0.001	0.140	0.491
	b	Robust Std. Err	*z*	*p*	95% CI	
CD symptoms (T + 1)						
CD symptoms (T)	0.216	0.033	6.50	< 0.001	0.151	0.281
ODDxGM (T)	-0.013	0.004	-3.20	0.002	-0.023	-0.005
ODD symptoms (T)	0.078	0.025	3.07	0.002	0.028	0.127
GM score (T)	0.141	0.029	4.83	< 0.001	0.084	0.199
ADHD symptoms (T)	0.027	0.016	1.64	0.101	-0.005	0.059
DEP symptoms (T)	0.025	0.023	1.07	0.282	-0.021	0.071
ANX symptoms (T)	-0.023	0.020	-1.13	0.257	-0.062	0.017
Age	0.031	0.018	1.72	0.086	-0.004	0.066
SES	-0.158	0.040	-3.92	< 0.001	-0.238	-0.079
constant	-0.942	0.325	-2.90	0.004	-1.579	-0.305

IRR incidence response ratio, *b* unstandardized regression coefficient, *CI* confidence interval, *T* time, *CD* conduct disorder, *ODD* oppositional defiant disorder, *GM* grandiose-manipulative features, *ADHD* attention-deficit/hyperactivity disorder, *DEP* depression, *ANX* anxiety, *SES* Hollingshead Four Factor Index of socioeconomic status, *ODDxGM* ODD and GM interaction term

GM as a Diagnostic Specifier

Next, a set of analyses was conducted to evaluate categorical constructs in order to evaluate relationships among constructs approximating a diagnostic approach. It should be noted that the terms GM, ODD, and CD used below reflect dichotomizations as described in the Methods section, and are distinct from the continuous scores and symptom counts used in the preceding analyses.

Prevalence Out of 1,305 total observations across all waves, dichotomous GM was present in 222 (17.0%). These observations came from 81 participants (45%) who were coded as present for the GM specifier during at least one assessment over the 10 waves of data. Although this person-level prevalence of GM over all waves is consistent with that reported in other clinical samples (e.g., 42%; Kolko & Pardini, 2010), the range of prevalence rates within waves (14% to 25%) is a more appropriate comparison with cross-sectional estimates, and would suggest that the prevalence in this sample was lower than the cross-sectional prevalence reported by Kolko and Pardini (2010). On the other hand, the cross-sectional prevalence rates in these data are more consistent with other studies that have characterized high GM by implementing sample-specific percentile cut points, such as 20% (Kumsta et al., 2012) or 25% (Ezpeleta et al., 2015). As shown in Table 2, when considering the overall concurrent comorbidity of ODD and CD given the presence of dichotomous GM,

Table 2 Comorbidity Patterns in Observations when GM Specifier is Present

		Conduct Disorder		
		Absent	Present	Total
Oppositional Defiant Disorder	Absent	15 (6.8%)	3 (1.4%)	18 (8.1%)
	Present	109 (49.1%)	95 (42.8%)	204 (91.9%)
	Total	124 (55.9%)	98 (44.1%)	222 (100.0%)
		ADHD		
		Absent	Present	Total
Oppositional Defiant Disorder	Absent	8 (3.6%)	10 (4.5%)	18 (8.1%)
	Present	65 (29.3%)	139 (62.6%)	204 (91.9%)
	Total	73 (32.9%)	149 (67.1%)	222 (100.0%)

GM specifier present if GM score is 1 standard deviation above mean. ADHD = Attention Deficit Hyperactivity Disorder

GM was present with ODD 91.9% of the time, whereas it was present with CD only 44.1% of the time. Finally, there were 15 instances (6.7%) in which GM was present without either ODD or CD.

Predicting CD from ODD ± GM Specifier A logistic regression model was conducted, predicting future CD diagnosis (time T + 1) from the ODD ± GM subtype specifier construct at time T, controlling for concurrent diagnosis of CD, SES, age, and symptoms of ADHD, depression, and anxiety. When using the group with neither ODD nor GM as the reference category, only ODD with GM was significant in the prediction of later CD (Table 3). Additionally, the odds of CD in the following year for those with ODD with GM were significantly higher ($OR = 2.67$, $SE = 0.80$, $p = 0.001$, 95% CI [1.48, 4.80]) than those with ODD without GM. The contrast between GM without ODD and ODD without GM found that the two did not differ in their prediction of future CD, $OR = 0.47$, $SE = 0.43$, $p = 0.41$, 95% CI [0.08, 2.76].

Predicting CD from ADHD ± GM Specifier A logistic regression model was conducted, predicting future CD diagnosis (time T + 1) from the ADHD ± GM subtype specifier construct at time T, controlling for concurrent diagnosis of CD, SES, age, and symptoms of ODD, depression, and anxiety. In contrast to the reference group (neither ADHD nor GM), ADHD with GM was not significantly predictive of future CD ($OR = 2.08$, $SE = 0.82$, $p = 0.06$, 95% CI [0.96, 4.52]), nor was ADHD without GM, $OR = 0.77$, $SE = 0.27$, $p = 0.45$, 95% CI [0.38, 1.53]. However, GM without ADHD was significantly predictive of CD, $OR = 3.03$, $SE = 1.10$, $p = 0.002$, 95% CI [1.49, 6.19].

Predicting ODD from ADHD ± GM Specifier A logistic regression model was used to predict to ODD at Time T + 1, controlling for concurrent diagnosis of ODD, SES, age, and symptoms of CD, depression, and anxiety. In this case, for those exhibiting ADHD with GM, the odds of ODD in the following year were significantly higher in contrast to those with neither ($OR = 3.52$, $SE = 1.28$, $p = 0.001$, 95% CI [1.73, 7.18]) and those exhibiting ADHD without GM ($OR = 2.45$, $SE = 0.87$, $p = 0.01$, 95% CI [1.22, 4.89]). Contrasts between ADHD with GM and GM without ADHD were not significant ($OR = 1.73$, $SE = 0.61$, $p = 0.12$, 95%CI [0.86, 3.49]. The odds of ODD for those with GM without ADHD compared to those with neither were significantly higher ($OR = 2.49$, $SE = 0.89$, $p = 0.01$, 95% CI [1.23,5.03]).

Post Hoc Tests of an Alternative Cut-Score for GM Specifier Because the proportion of the GM specifier occurring without ODD was low (18 observations, or 1.4%), it seemed possible that dichotomizing GM at one standard deviation above the mean might have been too restrictive. Thus, in a post hoc analysis, we tested whether dichotomizing GM at a less extreme value (i.e., one-half standard deviation, rather than one full standard deviation, above the mean) resulted in differences in any outcomes. This increased the total number of observations that were present for the GM specifier overall from 222 (17.0%) to 381 (29.2%), and person-level prevalence over all waves was increased from n = 81 (45%) to n = 110 (62%). The cross-sectional, within-wave prevalence range of this alternative GM specifier scoring (referred to hereafter as GM^A) was also increased (25% to 32%). As anticipated, this also increased the number of observations where the specifier was present without ODD from 18 using

Table 3 Logistic Regressions Predicting CD Diagnosis from ODD ± GM

	OR	Robust Std. Err	*z*	*p*	95% CI	
CD Diagnosis (T + 1)						
CD Diagnosis (T)	3.475	1.159	3.73	< 0.001	1.808	6.682
ODD and GM (T)	4.415	2.145	3.06	0.002	1.704	11.441
ODD only (T)	1.654	0.667	1.25	0.212	0.750	3.645
GM only (T)	3.487	3.445	1.26	0.206	0.503	24.178
ADHD symptoms (T)	1.025	0.046	0.54	0.587	0.938	1.119
DEP symptoms (T)	1.073	0.055	1.38	0.168	0.971	1.185
ANX symptoms (T)	1.033	0.046	0.74	0.458	0.948	1.127
Age	1.057	0.047	1.26	0.209	0.969	1.154
SES	0.983	0.008	-2.00	0.045	0.967	1.000
constant	0.023	0.019	-4.62	< 0.001	0.005	0.115

Reference group = neither ODD nor GM is present, *OR* odds ratio, *CI* confidence interval, *T* time, *CD* conduct disorder, *ODD* oppositional defiant disorder diagnosis, *GM* grandiose-manipulative features specifier is present, GM specifier present if GM score is 1 standard deviation above mean, *ADHD* attention-deficit/hyperactivity disorder, *DEP* depression, *ANX* anxiety, *SES* Hollingshead Four Factor Index of socioeconomic status

the GM scoring to 48 (3.7%) using the GM^A scoring. In regards to ODD and CD comorbidity in the presence of GM, cutting the distribution at a less severe point increased the overall proportion of ODD with GM^A, rather than CD with GM^A.

In predicting CD, as with the more severe GM categorization, the joint presence of dichotomous ODD with GM^A was significantly predictive of future CD ($OR = 3.98$, $SE = 1.57$, $p < 0.001$, 95% CI [1.84, 8.60]) again in contrast to cases in which both ODD and GM^A were absent. However, in this alternative framework, GM^A without ODD was now significantly predictive of future CD ($OR = 3.43$, $SE = 1.84$, $p = 0.02$, 95% CI [1.20, 9.80]) relative to the joint absence of both. Yet, the contrast between GM^A without ODD and ODD without GM^A remained non-significant, $OR = 0.45$, $SE = 0.27$, $p = 0.18$, 95% CI [0.14, 1.44]. As a specifier for ADHD predicting CD, a test using the less severe categorization of GM traits (i.e., ADHD ± GM^A) did not result in any meaningful differences from the test using the more severe categorization of GM.

In predicting ODD from ADHD, a test using the less severe categorization of GM traits (i.e., ADHD ± GM^A) did not result in substantial differences compared to the test using the more severe categorization of GM, with the exception that the difference between those with ADHD + GM compared to those with ADHD without CD was marginal ($p = 0.053$) rather than significant.

Discussion

These results are inconsistent with limiting LPE as a diagnostic specifier only for CD. Consistent with the study hypotheses, GM was predictive of CD. Also as anticipated, temporal asymmetry was evident, in that CD did not predict increases in GM. This result suggests a potential developmental role for GM relative to CD and in regards to nosology, highlights the value of broadening the characterization and application of LPE as a specifier.

Further, these results suggest that GM was more likely to manifest in the context of ODD than CD, regardless of whether a more or less severe cut-point for GM was used. Thus, if elevated GM does represent an important aspect of psychopathy in a diagnostic context, the present data suggest that limiting it only as a specifier for CD would have missed between 56 and 67% of occasions in which elevated GM was present. On the other hand, including it as a specifier for either ODD or CD would capture 89% to 93% of the instances in which elevated GM was present in these data. Moreover, allowing GM to be a specifier for ADHD in addition to ODD and CD would end up capturing between 97 and 99% of instances of elevated GM in these data.

Both the temporal asymmetry and the dramatic difference in co-occurrence of GM with ODD relative to CD are more consistent with psychopathic traits being developmentally precedent to CD rather than being a feature that distinguishes some cases of CD from others. Contrary to our hypotheses, there was no temporal asymmetry between dimensional ODD and GM; either was predictive of future increases in the other. Both ODD symptoms and GM score predicted increasing CD symptoms, and the interaction between the two was significant in predicting CD. However, contrary to our hypotheses, it appeared that GM rather than ODD played a more prominent role in predicting CD. In the presence of high GM scores, changes in levels of ODD made little difference in the prediction of CD, whereas increases in ODD symptoms predicted increasing CD only when GM scores were low.

Similar implications are evident in the examination of subtyping schemes. The prediction of CD was enhanced with a specifier of ODD with GM. Those with ODD and GM showed significantly greater odds for CD in the following year than those with ODD alone. Having ODD without GM was not significantly different from having neither condition in regards to the odds of CD in the following year. While having GM without ODD was not significantly more predictive of future CD than either ODD without GM or neither condition when a more severe cut-point was employed, that was not true with a less extreme cut-point. In that case, having GM without ODD was associated with greater odds of CD relative to having neither condition, but remained equivalent to having ODD without GM.

In regards to a GM specifier for ADHD, our hypotheses were partially supported. Subtyping ADHD with GM found that only those with GM without ADHD had greater odds of future CD, even when a less severe categorization of GM was used. This is consistent with a non-significant main effect for ADHD in the prediction of future CD as well. On the other hand, our hypothesis regarding subtyping ADHD using GM when predicting to ODD was refuted. Those with ADHD and GM had significantly higher odds of ODD in the following year compared to ADHD without GM and having neither. This suggests that developmental pathways between the behavioral disorders may be clarified by allowing a specifier of LPE to be applied for ADHD, ODD, and CD. More specifically, GM may play an important role in identifying which youth with ADHD are more likely to develop ODD, and which youth with ODD are more likely to develop CD. The lack of prediction to CD from ODD without GM was somewhat surprising and may have important implications for developmental models of disruptive behavior disorders. However, it may help support prior findings that suggested that about one-third of those with ODD developed CD (e.g., Loeber et al., 2000a).

The IC construct used to measure GM here was an ad-hoc proxy for psychopathic traits (Obradovic et al., 2007), created from a set of items that were developed to more generally measure antisocial behavior (Loeber et al., 1998). Although there is evidence for its good psychometric properties (Pardini et al., 2006) and for it showing external validity in relation to theoretically linked constructs (Burke et al., 2007), it was not constructed with fidelity to one of the established dimensions of CU, GM, or DI. With that said, the items it includes largely correspond to items that others have shown to represent GM (e.g., Salekin, 2017) with perhaps the lone exception of "lacks guilt," which may more typically be regarded as an indicator of CU. To the extent that the GM construct here serves as a reasonable proxy for psychopathic traits, the present results imply that the inclusion of psychopathic traits should be expanded to serve as a specifier of ODD and CD, in the manner that the ICD-11 has represented it, if not to disruptive behavior disorders more generally. The results also are consistent with the argument advanced by Salekin (2016) that the ICD-11 and DSM-5 should distinctly represent the dimensions of CU, GM, and DI as specifiers for ODD and CD. To help clarify this, studies with measures of the three dimensions of psychopathy along with measures of ODD, CD, and ADHD should aim to replicate and extend the present findings. It would be very useful to determine if one or more psychopathy dimensions has greater association and predictive utility as a specifier for ODD, CD, or ADHD.

Limitations

Including psychopathic traits as a specifier for ADHD, ODD, and CD may be seen as less parsimonious than simply considering psychopathy as a separate diagnostic category. If codified in that fashion, these results would suggest that it would be commonly, if not unfailingly, comorbid with other behavioral disorders. However, these results are not sufficient as a test for such an independent diagnostic category. That said, in this clinical sample there were exceedingly few occasions in which GM was present without either ADHD, ODD, or CD, and in particular, ODD was by far the most commonly comorbid with GM.

The fact that all participants were boys referred from outpatient clinics would suggest a bias towards the presence of diagnostic categories, especially the behavioral disorders. As noted previously, the proxies used for diagnoses did not include a metric of clinical impairment and thus may not reflect true clinical diagnoses. Certainly, variation in the degree of overlap between these three categories and psychopathic traits should also be tested in other samples, including community samples and those with a greater proportion of girls. However, it should also be noted that over the 10 waves of data, fluctuation in the presence of all psychopathology was present, such that approximately 30% of all observations in the data set were absent for all of categorical ODD, CD, ADHD, and GM. Thus, although there was a bias towards behavioral psychopathology at baseline, its manifestation was not static from that point.

Conclusion

In conclusion, it would seem that including a specifier of GM for diagnoses of both ODD and ADHD, in addition to the well-established specification for CD, would be an improvement over the current DSM-5 framework. These results also are suggestive, but not especially conclusive, about the possibility that GM by itself may convey important prognostic information, even when constructed to reflect a more modest level of severity (e.g., one-half standard deviation above the mean). Future studies would be needed to more fully evaluate how best to define a stand-alone diagnosis of psychopathy.

Key Points

- Grandiose-manipulative (GM) features identify youth at risk for more severe and persistent future antisocial psychopathology.
- The DSM-5 currently represents psychopathic features only as a specifier (i.e., "limited prosocial emotions," or LPE) for the diagnosis of conduct disorder (CD).
- These results found that GM features occured more in the context of oppositional defiant disorder (ODD) and were predictive of both ODD and CD.
- Allowing an LPE specifier for ODD and attention-deficit/hyperactivity disorder would help identify a greater proportion of youth, earlier in development, who are at-risk for persistent and severe antisocial behavior.

Funding Data for this study were supported with a grant (MH42529) to Dr. Rolf Loeber and Dr. Benjamin B. Lahey from the National Institute of Mental Health. The authors have no conflicts of interest to report.

Data Availability The data from the Developmental Trends Study is not publicly available.

Code Availability Not applicable.

Compliance with Ethical Standards

Ethics Approval This project was approved by the Institutional Review Board of the University of Pittsburgh.

Consent to Participate Parents provided informed consent regarding their own and their children's participation in the study; children provided assent.

Conflicts of Interest The authors have no conflicts of interest or competing interests to report.

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