Journal of Abnormal Psychology
2002, Vol. 111, No. 4, 659–664

0021-843X/02/$5.00 DOI: 10.1037//0021-843X.111.4.659

SHORT REPORTS

# Understanding the Relations Among Gender, Disinhibition, and Disruptive Behavior in Adolescents

Cynthia M. Hartung
University of Denver

Richard Milich, Donald R. Lynam, and Catherine A. Martin
University of Kentucky



This study examined whether disinhibition shows similar relations with attention-deficit/hyperactivity disorder (ADHD) and conduct disorder (CD) symptomatology among male and female adolescents. The mixed-incentive or punishment condition of Newman's go/no-go task was administered to 172 adolescents. As expected, ADHD symptoms in boys and girls were predictive of disinhibition (i.e., commission errors) in the mixed-incentive but not punishment condition. Also consistent with expectations, CD symptoms in boys were predictive of disinhibition in the mixed-incentive but not punishment condition. In contrast, CD symptoms in girls were not predictive of disinhibition in either condition. These findings are discussed in terms of implications for understanding sex differences in the etiology of ADHD and CD.

Conduct disorder (CD) and attention-deficit/hyperactivity disorder (ADHD) are two of the most commonly diagnosed behavioral disorders of childhood. Moreover, it has been extensively documented that these disruptive behavior disorders (DBD) are more common in boys than in girls. Evidence suggesting that the manifestations of these disorders might differ as a function of sex is beginning to emerge. We believe that these sex differences in manifestation are due to sex differences in the relation between disinhibition and DBD symptoms. The present study explores this hypothesis.

## Sex and the Disruptive Behavior Disorders

Several studies have documented sex differences in the correlates of CD. In addition to Crick's (1996) work on relational aggression in girls, Keenan, Loeber, and Green (1999) reported that girls with CD were at higher risk for comorbid internalizing conditions, co-occurring substance abuse, and sexual promiscuity than boys. Of even greater relevance for the present study, Moffitt, Caspi, Rutter, and Silva (2001) reported that the relations between constraint—an index of self-control—and antisocial behavior were stronger for males than females at age 18. Theoretical work also suggests sex differences in the correlates of CD. In her developmental taxonomy of antisocial behavior, Moffitt (1993) distinguished between antisocial behavior (which begins early as a result of individual differences in self-control and subsequent failed socialization) and adolescent-onset antisocial behavior (which begins later in response to changes in the social environment). An important point is that early-onset offending is a predominantly male phenomenon, whereas adolescent offending is equally distributed across the sexes.

In the case of ADHD, the nature and extent of sex differences in its correlates are less clear. Although most of the research on sex differences and ADHD has focused on mean level differences across the groups in symptom profiles (Arnold, 1996; Gaub & Carlson, 1997), a few studies have examined sex differences in the relation of ADHD to other variables. The fact that girls are relatively more likely to be diagnosed with the predominantly inattentive subtype suggests that ADHD in girls is less characterized by hyperactivity–impulsivity (Milich, Balentine, & Lynam, 2001). In addition, Moss and Lynch (2001) found that ADHD predicted substance use among boys but not girls. In contrast to the case for CD, we are unaware of a theory that expects differences in the correlates of ADHD as a function of sex.

## Problems in Disinhibition

The previous review suggests that sex may moderate the relations between DBD symptoms—especially CD symptoms—

Cynthia M. Hartung, Department of Psychology, University of Denver; Richard Milich and Donald R. Lynam, Department of Psychology, University of Kentucky; Catherine A. Martin, Department of Psychiatry, University of Kentucky.

This article resulted from Cynthia M. Hartung's doctoral dissertation project at the University of Kentucky and was supported by Dissertation Grant R03 MH-54859-01 from the National Institute of Mental Health (NIMH) to Cynthia M. Hartung. We appreciate the contributions of Cristi Hundley, Justin Kyriannis, John Yozwiak, Lily Arasaratnam, John Ireland, Jaye Kemp, Caryn Letcher, Kelly McGraw, Heather Turpin, and Michelle Watson. In addition, we thank Steve DeMers, Elizabeth Lorch, Joseph Newman, Michael Nietzel, Herbert Quay, Douglas Scambler, and Thomas Widiger for their valuable comments on drafts of this article. We also thank the parents and adolescents who participated in the project.

Correspondence concerning this article should be addressed to Cynthia M. Hartung, who is now at the Department of Psychology, Oklahoma State University, 215 North Murray, Stillwater, Oklahoma 74078. E-mail: cmhart@okstate.edu

and markers of disinhibition (i.e., aggression, constraint, hyperactivity–impulsivity, and substance use). The current study more specifically tests this hypothesis by using a laboratory measure designed to specifically assess disinhibition (i.e., the go/no-go task). The mixed-incentive condition of this task, according to Nigg's (2000) taxonomy of disinhibition, is a widely used and well-validated measure of motivational disinhibition. Nigg defined *motivational inhibition* as occurring when a behavior is suppressed in order to obtain an immediate incentive or to avoid fear or punishment. Thus, motivational inhibition involves explicit incentives or motivational contingencies such as those used in the go/no-go task. Several studies have used this task to examine disinhibition among delinquent and/or antisocial males. These studies consistently find that psychopathy, in combination with delinquency and/or antisocial behavior, is associated with significantly more commission errors in a mixed-incentive condition (i.e., reward and punishment) but not in reward-alone (Newman, Widom, & Nathan, 1985) or punishment-alone (Newman & Kosson, 1986) conditions. Differences in disinhibition across conditions are understood to reflect differential activation of the behavioral activation and inhibition systems, which tends to be problematic for individuals with disinhibitory psychopathology (Newman & Wallace, 1993).

Although CD, as defined in the *Diagnostic and Statistical Manual of Mental Disorders* (4th edition; *DSM–IV;* American Psychiatric Association, 1994), and psychopathy are not isomorphic, both involve a lack of concern for societal norms and rules. Therefore, CD may also be characterized by problems with disinhibition in situations involving mixed incentives. Consistent with this hypothesis, a number of studies using variations of a response perseveration task, such as the door-opening task, have shown that children and adolescents (ages 8 to 18) with ADHD, CD, or psychopathy have difficulty with disinhibition in mixed-incentive situations (e.g., Daugherty & Quay, 1991; O'Brien & Frick, 1996; Shapiro, Quay, Hogan, & Schwartz, 1988). Three of these studies included girls, but sex differences were either not examined (O'Brien & Frick, 1996; Shapiro et al., 1988) or not identified (Daugherty & Quay, 1991).

Additional studies have used Newman's go/no-go task to examine disinhibition in ADHD and/or CD. For example, Milich, Hartung, Martin, and Haigler (1994) used the mixed-incentive and reward conditions of the go/no-go task in a between-subjects design with boys and girls (ages 13 to 21). For boys in the mixed-incentive condition, symptoms of ADHD but not CD were significantly and positively correlated with commission errors. For girls in the mixed-incentive condition, the results were in the same direction but only marginally significant. For boys and girls in the reward condition, neither ADHD nor CD symptoms were significantly correlated with commission errors. Thus, similar to the performance of men with psychopathy (Newman & Kosson, 1986), Milich et al. (1994) found ADHD symptoms in boys to be predictive of disinhibition in the mixed-incentive condition.

Milich et al. (1994) is one of the few studies to examine sex differences on the go/no-go task as they relate to CD and ADHD. Although the results for girls with ADHD were in the same direction as the results for boys with ADHD, they were only marginally significant, possibly resulting from the relatively small number of girls in the study. The current study was designed to expand on the results of Milich et al. by examining sex differences in the relations between motivational disinhibition, as operationalized by the go/no-go task, and ADHD and CD symptomatology in adolescence. The results from this study should shed further light on both how and why sex differences in the expression of DBD may occur.

## Method

Participants were 172 adolescents of ages 13 to 18 ($M = 15.21$, $SD = 1.37$). Forty-seven percent were girls and 90% were Caucasian. Eighty-three adolescents (48%) were clinic-referred and 89 adolescents (52%) were nonreferred. Clinic-referred adolescents were recruited from outpatient psychiatry and psychology clinics ($n = 53$), a residential treatment center for girls with behavior problems ($n = 6$), a parent support group for ADHD ($n = 15$), and previous research studies ($n = 9$). Nonreferred adolescents were recruited through a newspaper announcement. A parent of each adolescent also participated, including 142 mothers (83%), 28 fathers (16%), and 2 grandparents (1%). Parents averaged 15.38 years of education ($SD = 2.32$). Potential participants taking psychotropic medications that could not be eliminated from the system by suspending administration for 1 day were excluded from the study. Participants taking stimulant medications (e.g., methylphenidate) were included but did not take medication on the day of participation.

As part of a larger study, two laboratory tasks were administered in a counterbalanced order. Newman's go/no-go task is the focus of this report. Following a break, cognitive measures and a diagnostic interview were administered to the adolescents. The diagnostic interview was also administered to the parents. The examiner who administered the laboratory tasks and cognitive measures was blind to the adolescents' diagnostic status.

An interview version of the *DSM-IV* Disruptive Behavior Disorder checklist (DBD; Pelham, Gnagy, Greenslade, & Milich, 1992), which includes criteria for ADHD and CD, was given to parents and adolescents. To measure reliability, interviews were audiotaped and 20% were recoded by another interviewer. Intercoder reliability coefficients were all large ($r$s $> .80$, $p$s $< .001$). A symptom was considered present if endorsed by either the parent or the adolescent. Correlations between symptom counts resulting from parent and adolescent reports were as follows: .36 for CD ($p < .001$), .14 for hyperactivity–impulsivity ($p < .05$), and .50 for inattention ($p < .001$). ADHD symptoms were divided into *DSM-IV* inattention and hyperactivity–impulsivity dimensions; the correlation between these two dimensions was large ($r = .64$, $p < .001$), whereas the correlations between inattention and CD ($r = .40$, $p < .001$) and between hyperactivity–impulsivity and CD ($r = .39$, $p < .001$) were moderate. The magnitude of these correlations was comparable across girls and boys. Internal consistencies in the current sample were as follows: $\alpha = .92$ for inattention, $\alpha = .81$ for hyperactivity–impulsivity, and $\alpha = .73$ for CD. With regard to levels of symptomatology, boys showed significantly higher levels of inattention ($M$s $= 4.21$ vs. 2.68), $t(170) = 2.61$, $p < .05$; hyperactivity–impulsivity ($M$s $= 2.36$ vs. 1.46), $t(170) = 2.76$, $p < .05$; and CD ($M$s $= 1.35$ vs. 0.74), $t(170) = 2.61$, $p < .05$, than girls.

Twenty-nine percent of girls ($n = 23$) and 50% of boys ($n = 46$) met *DSM–IV* criteria for one or both disorders (i.e., ADHD or CD). For girls who met criteria, 74% ($n = 17$) had ADHD only, 17% ($n = 4$) had CD only, and 9% ($n = 2$) had both disorders. For boys who met criteria, 57% ($n = 26$) had ADHD only, 15% ($n = 7$) had CD only, and 28% ($n = 13$) had both disorders.

Depending on adolescent age, Block Design and Vocabulary subtests from either the *Wechsler Intelligence Scale for Children* (3rd edition; *WISC–III*; Wechsler, 1991) or the *Wechsler Adult Intelligence Scale* (revised; *WAIS–R*; Wechsler, 1981) were administered to estimate IQ. In the current sample, this combination was reliable ($r = .89$). Participants with estimated full scale IQ scores less than 70 were excluded from further analyses ($n = 3$). *Woodcock–Johnson Psycho-Educational Battery* (revised; *WJ–R*; Woodcock & Johnson, 1990) reading subtests (i.e., Letter–

Word Identification and Passage Comprehension) were also administered to measure reading achievement. This subtest combination was reliable ($r = .89$).

Stimuli for the go/no-go task consisted of 8 two-digit numbers. For half of the participants, 4 numbers were arbitrarily designated as positive stimuli and the other 4 were designated as negative stimuli. For the other participants, this assignment was reversed. Numbers were presented individually on a computer in 10 blocks. Order within blocks was randomly determined but constant for all participants. The task was to learn, by trial and error, to respond to the positive stimuli (by pressing the identified response button) but not the negative stimuli. Stimuli were presented for 2.5 s or until a response was made; there was a 1-s latency between stimuli presentation.

Participants were randomly assigned to one of two conditions that differed only in reinforcement schedules. In the mixed-incentive condition, participants started with $2.50, earned 25 cents for responding to positive stimuli (i.e., hit), and lost 25 cents for responding to negative stimuli (i.e., commission error). There were no consequences for withholding from responding (i.e., omission error or correct rejection). In the punishment condition, participants started with $12.50 and lost 25 cents for responding to negative stimuli (i.e., commission error) or failing to respond to positive stimuli (i.e., omission error). There were no consequences for correct responses (i.e., hit or correct rejection).

## Results

To identify any necessary covariates, relations between participant variables (i.e., age, estimated full scale IQ, reading ability, referral status, and parent's level of education) and dependent variables were examined. IQ, reading, parental education, and age were correlated with commission errors ($p < .05$), but only IQ was correlated with omission errors ($p < .05$). All of these relations were negative. There were no effects for referral status. Therefore, age, IQ, reading, and parental education were included as covariates in the following analyses.

To examine the relations between errors and DBD symptoms across sex and condition, two hierarchical regression analyses were conducted. For each type of error (i.e., commission and omission), a four-step analysis was conducted. Participant age, parental education, IQ, and reading ability were entered at Step 1 as covariates. At Step 2, we entered sex, condition, and symptoms of inattention, hyperactivity–impulsivity, and CD. At Step 3, the 7 two-way interactions involving condition and sex were entered, allowing an examination of the consistency of the relations between DBD symptoms and errors across sex and condition. Finally, 3 three-way interactions involving sex, condition, and DBD symptoms were entered at the final step. Procedures described by Aiken and West (1991) were used to understand the nature of any observed interactions.

Results for commission errors are presented in Table 1. Two of the covariates—IQ and reading ability—were significantly negatively related to the number of errors. At Step 2, only condition was significantly related to errors; the relation was such that participants made, on average, more commission errors in the punishment condition than in the mixed-incentive condition. None of the two-way interactions were significant at Step 3. At Step 4, there was a significant three-way interaction involving condition, sex, and CD symptoms. The nature of this interaction, in terms of two-way interactions, was such that the Sex $\times$ CD interaction was significant in the mixed-incentive, $t(80) = -2.38$, $p < .05$, but not punishment, $t(70) = 1.49$, *ns*, condition. This is most easily observed by examining the effect of CD on errors of commission as a function of sex and condition (see Figure 1). In the mixed-incentive condition, CD symptoms were positively related to errors among the boys ($\beta = .44$, $p < .05$) but not among the girls ($\beta = -.17$, *ns*); in the punishment condition, CD symptoms were unrelated to commission errors for the boys ($\beta = -.07$, *ns*) or girls ($\beta = .26$, *ns*).[1]

For omission errors, only one of the covariates, IQ, was significantly related to number of errors ($p < .05$). At Step 2, none of the variables was significantly related to errors. At Step 3, there was a significant Condition $\times$ CD interaction ($p < .05$) such that CD symptoms tended to be negatively related to omission errors in the mixed-incentive ($\beta = -.19$, *ns*) but positively related to errors in the punishment ($\beta = .16$, *ns*) condition. At Step 4, there were no significant three-way interactions.

## Discussion

In the current study, mixed-incentive and punishment versions of Newman's go/no-go task were used to compare manifestations of motivational disinhibition across male and female adolescents. Two major findings are discussed: (a) ADHD symptoms in both girls and boys were predictive of disinhibition in the mixed-incentive but not the punishment condition. (b) CD symptoms in boys, but not in girls, were predictive of disinhibition in the mixed-incentive but not the punishment condition. In addition, there were no significant effects of sex or DBD symptoms for omission errors.

With regard to the first finding, ADHD symptoms in boys and girls were situationally predictive of disinhibition, as were CD symptoms in boys in the current study and psychopathy in men in Newman and Kosson's (1986) study. The current findings are also consistent with Milich et al. (1994), in which ADHD symptoms in boys, and to a lesser degree in girls, were related to disinhibition in the mixed-incentive but not the reward condition. Thus, in both of our studies, ADHD symptoms among boys and girls were predictive of disinhibition. Furthermore, this is one of the few studies to use a theoretically driven, empirically validated behavioral measure of impulsivity (i.e., the go/no-go task; Nigg, 2000) in comparing boys and girls with ADHD.

With regard to the second finding, CD symptoms in boys were predictive of disinhibition in the mixed-incentive but not the punishment condition. In contrast, CD symptoms in girls were not predictive of disinhibition in either condition. Given that disinhibition is thought to be an important component of CD, this null finding for girls in the mixed-incentive condition is quite surprising. We explore three explanations.

[1] The regression analysis shown in Table 1 was also run first with referral status included as a possible moderator variable, and second without the residential girls and the participants recruited through the parent support group. In the first reanalysis, the main effect of referral status was not significant. In addition, of 13 possible interactions involving referral status, only 1 was significant (Condition $\times$ Referral $\times$ Hyperactivity–Impulsivity). Of particular relevance is that the four-way interaction of Referral $\times$ Condition $\times$ Sex $\times$ CD was not significant, so the three-way interaction of Condition $\times$ Sex $\times$ CD was the same across referral groups. Regarding the second reanalysis, results were unaffected by dropping these participants.

Table 1
*Summary of Hierarchical Regression Analysis for Variables Predicting Commission Errors*

| Step and variable | *B* | *SE* (*B*) | β | $\Delta R^2$ | *F* for $\Delta R^2$ |
|---|---|---|---|---|---|
| Step 1 | | | | | |
| Age | −.70 | .38 | −.13 | | |
| Parent education | −.11 | .25 | −.04 | | |
| Full-scale IQ | −.11* | .04 | −.22 | | |
| Reading | −.09* | .05 | −.18 | .15 | 7.55*** |
| Step 2 | | | | | |
| Age | −.63 | .38 | −.12 | | |
| Parent education | −.14 | .25 | −.05 | | |
| Full-scale IQ | −.13** | .04 | −.25 | | |
| Reading | −.07 | .05 | −.14 | | |
| Sex[a] | .88 | 1.08 | .06 | | |
| Condition[b] | 3.23** | 1.03 | .22 | | |
| Inattention | .11 | .21 | .05 | | |
| Hyper–Impuls | .04 | .31 | .01 | | |
| Conduct disorder (CD) | .39 | .36 | .09 | .06 | 2.61* |
| Step 3 | | | | | |
| Age | −.66 | .39 | −.12 | | |
| Parent education | −.17 | .26 | −.05 | | |
| Full-scale IQ | −.13** | .04 | −.26 | | |
| Reading | −.06 | .05 | −.12 | | |
| Sex | 2.05 | 1.47 | .14 | | |
| Condition | 4.28** | 1.41 | .30 | | |
| Inattention | .11 | .38 | .05 | | |
| Hyper–Impuls | .60 | .52 | .18 | | |
| CD | .88 | .68 | .19 | | |
| Sex × Condition | −2.41 | 2.13 | −.13 | | |
| Sex × Inattention | −.25 | .44 | −.08 | | |
| Sex × Hyper–Impuls | .45 | .67 | .08 | | |
| Sex × CD | −.32 | .77 | −.04 | | |
| Condition × Inattention | .18 | .44 | .06 | | |
| Condition × Hyper–Impuls | −1.21 | .64 | −.28 | | |
| Condition × CD | −.63 | .76 | −.10 | .04 | 1.19 |
| Step 4 | | | | | |
| Age | −.83* | .39 | −.16 | | |
| Parent education | −.23 | .25 | −.08 | | |
| Full-scale IQ | −.11* | .05 | −.23 | | |
| Reading | −.08 | .05 | −.16 | | |
| Sex | 1.80 | 1.46 | .12 | | |
| Condition | 4.24** | 1.40 | .29 | | |
| Inattention | −.21 | .44 | −.10 | | |
| Hyper–Impuls | .38 | .56 | .12 | | |
| Conduct disorder | 2.03* | .79 | .44 | | |
| Sex × Condition | −2.24 | 2.11 | −.12 | | |
| Sex × Inattention | .22 | .57 | .07 | | |
| Sex × Hyper–Impuls | 1.12 | .92 | .20 | | |
| Sex × CD | −2.80* | 1.18 | −.36 | | |
| Condition × Inattention | .49 | .56 | .16 | | |
| Condition × Hyper–Impuls | −.75 | .76 | −.18 | | |
| Condition × CD | −2.32* | .96 | −.38 | | |
| Condition × Sex × Inattention | −.47 | .89 | −.09 | | |
| Condition × Sex × Hyper–Impuls | −1.55 | 1.35 | −.21 | | |
| Condition × Sex × CD | 4.30** | 1.55 | .40 | .04 | 2.81* |

*Note.* *N* = 171. Hyper–Impuls = hyperactivity–impulsivity.
[a] For sex, boys are scored 0. [b] For condition, the mixed-incentive condition is scored 0.
* $p < .05$. ** $p < .01$. *** $p < .001$.

First, *DSM-IV* criteria for CD may be more valid for boys than for girls (e.g., Zoccolillo, 1993). Robins (1991) has argued that the emphasis on overtly aggressive and destructive behavior in diagnostic criteria rather than less conspicuous behaviors (e.g., substance abuse, sexual activity, relational aggression, rule violations) results in a bias against endorsement of CD symptoms in girls. Crick and Grotpeter (1995) have found that girls were more relationally aggressive than boys, whereas boys are more overtly aggressive than girls. If correct, we may have failed to assess the correct construct for girls in our use of the *DSM–IV* criteria. Such an hypothesis is consistent with findings from Werner and Crick (1999), who found that relational aggression in female college students was associated with several disinhibitory-like measures, including sensation seeking and affective instability.

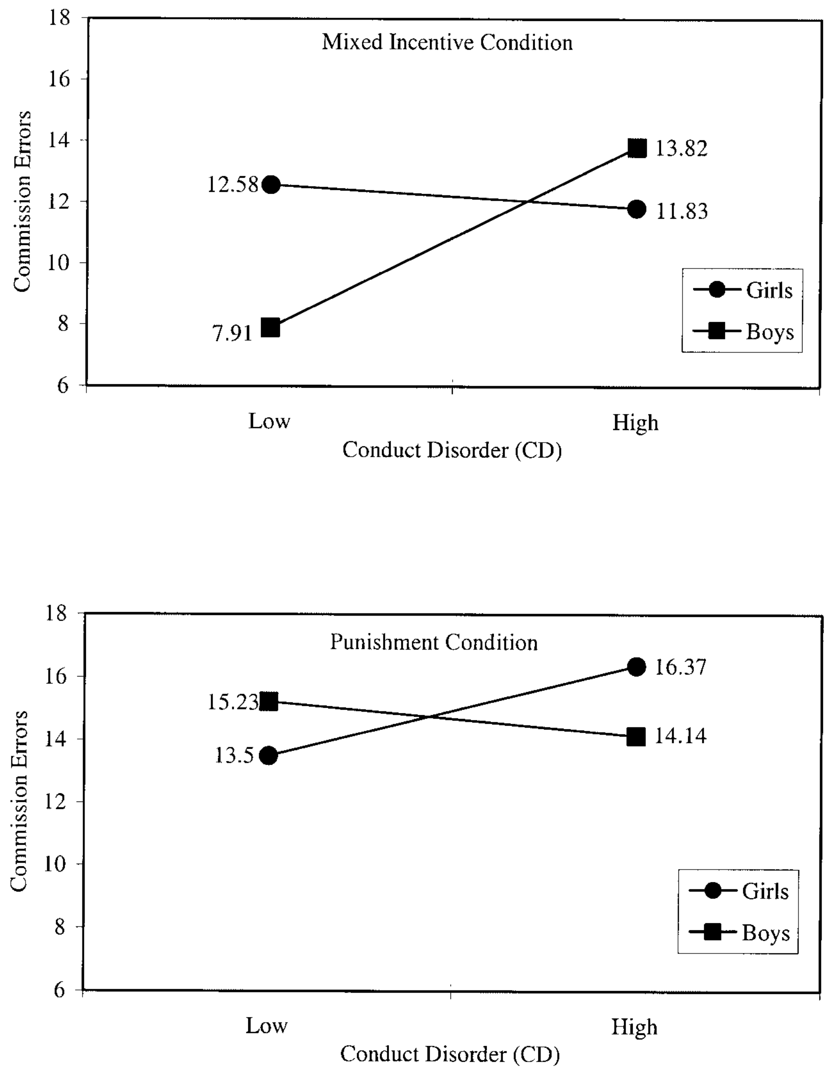


*Figure 1.* Effect of conduct disorder (CD) on commission errors as a function of sex and condition. Regression lines are plotted using values at 1 standard deviation above and below the mean for CD (Cohen & Cohen, 1983).

A related explanation is that the same underlying trait may be expressed as CD in boys and hyperactivity–impulsivity in girls because girls who are disinhibited may be less likely to demonstrate overtly aggressive or destructive behavior than boys who are disinhibited. Stated differently, the same genotype for disinhibition may produce different phenotypes in boys and girls because girls may display disinhibition in less physically violent forms (e.g., relational aggression).

A third possible explanation for the lack of relation between disinhibition and CD in girls relates to Moffitt's (1993) differentiation between early- and late-starting CD. According to Moffitt, girls are more likely to display adolescence-limited CD, which tends to be socially mediated. For example, Caspi, Lynam, Moffitt, and Silva (1993) found that the delinquent behaviors associated with early maturing adolescent females were due to associating with older, delinquent males. In contrast, Moffitt argued that childhood-onset CD, which is more prevalent in males, is associated with impaired functioning, including impulsivity and executive functioning deficits. Thus, it may be the case that antisocial behavior in girls owes more to social processes than it does to disinhibition.

There are several implications of the current findings for future research. This study suggests that researchers should continue to explore sex differences in disinhibition. Both the current study and a previous study by Milich et al. (1994) show differential patterns of disinhibition among boys and girls. The current findings suggest that disinhibition may manifest as hyperactivity–impulsivity in girls and as CD in boys. Future studies of motivational disinhibition should examine whether less violent and overtly aggressive behaviors are predictive of disinhibition on motivational tasks among females. Given concerns about sex differences in referral patterns for ADHD and ascertainment differences across clinic and community samples (Gaub & Carlson, 1997), the current findings need to be replicated in population studies.

Furthermore, the relation between motivational and executive disinhibition (i.e., deficits in executive functioning; see Nigg,

2000) should be explored because both types of disinhibition have been purported to reflect the primary deficit in ADHD. The current study also highlights the importance of examining sex differences when comparing the validity of these two widely recognized theories for understanding DBD. Finally, genetic studies should examine whether disinhibition is differentially heritable across sex and DBD.

## References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Arnold, L. E. (1996). Sex differences in ADHD. *Journal of Abnormal Child Psychology, 24,* 555–569.

Caspi, A., Lynam, D., Moffitt, T. E., & Silva, P. A. (1993). Unraveling girls' delinquency. *Developmental Psychology, 29,* 19–30.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's social adjustment. *Child Development, 67,* 2317–2327.

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66,* 710–722.

Daugherty, T. K., & Quay, H. C. (1991). Response perseveration and delayed responding in childhood behavior disorders. *Journal of Child Psychology and Psychiatry, 32,* 453–461.

Gaub, M., & Carlson, C. L. (1997). Gender differences in ADHD: A meta-analysis and critical review. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 1036–1045.

Keenan, K., Loeber, R., & Green, S. (1999). Conduct disorder in girls. *Clinical Child and Family Psychology Review, 2,* 3–19.

Milich, R., Balentine, A., & Lynam, D. R. (2001). ADHD combined type and inattentive type are distinct and unrelated disorders. *Clinical Psychology: Science and Practice, 8,* 463–488.

Milich, R., Hartung, C. M., Martin, C. A., & Haigler, E. D. (1994). Behavioral disinhibition and underlying processes in adolescents with disruptive behavior disorders. In D. K. Routh (Ed.), *Disruptive behavior disorders in childhood* (pp. 109–138). New York: Plenum.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100,* 674–701.

Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2001). *Sex differences in antisocial behavior.* London: Cambridge University Press.

Moss, H. B., & Lynch, K. G. (2001). Comorbid disruptive behavior disorder symptoms and their relationship to adolescent alcohol use disorders. *Drug and Alcohol Dependence, 64,* 75–83.

Newman, J. P., & Kosson, D. S. (1986). Passive avoidance learning in psychopathic and nonpsychopathic offenders. *Journal of Abnormal Psychology, 95,* 252–256.

Newman, J. P., & Wallace, J. F. (1993). Diverse pathways to deficient self-regulation: Implications for disinhibitory psychopathology in children. *Clinical Psychology Review, 13,* 699–720.

Newman, J. P., Widom, C. S., & Nathan, S. (1985). Passive avoidance in syndromes of disinhibition. *Journal of Personality and Social Psychology, 43,* 1316–1327.

Nigg, J. T. (2000). On inhibition/disinhibition in developmental psychopathology. *Psychology Bulletin, 126,* 220–246.

O'Brien, B. S., & Frick, P. J. (1996). Reward dominance: Associations with anxiety, conduct problems, and psychopathy in children. *Journal of Abnormal Child Psychology, 18,* 451–463.

Pelham, W. E., Gnagy, E., Greenslade, K., & Milich, R. (1992). Teacher ratings of *DSM–III–R* symptoms for the disruptive behavior disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 210–218.

Robins, L. N. (1991). Conduct disorder. *Journal of Child Psychology and Psychiatry, 32,* 193–212.

Shapiro, S. K., Quay, H. C., Hogan, A. E., & Schwartz, K. P. (1988). Response perseveration and delayed responding in undersocialized aggressive conduct disorder. *Journal of Abnormal Child Psychiatry, 97,* 371–373.

Wechsler, D. (1981). *Manual for the Wechsler Adult Intelligence Scale—Revised (WAIS–R).* San Antonio, TX: Psychological Corporation.

Wechsler, D. (1991). *Manual for the Wechsler Intelligence Scale for Children—Third Edition (WISC–III).* San Antonio, TX: Psychological Corporation.

Werner, N. E., & Crick, N. R. (1999). Relational aggression and social-psychological adjustment in a college sample. *Journal of Abnormal Psychology, 108,* 615–623.

Woodcock, R. W., & Johnson, M. B. (1990). *Manual for the Woodcock–Johnson Psycho-Educational Battery—Revised (WJ–R).* Chicago: Riverside.

Zoccolillo, M. (1993). Gender and the development of conduct disorder. *Development and Psychopathology, 5,* 65–78.

Received January 8, 2001
Revision received March 16, 2002
Accepted March 26, 2002 ■