

Separate and Combined Effects of Inattentive-Impulsive-Overactive and Oppositional-Defiant Behaviors on Impairment and Peer Relationships in Elementary School Children



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Abstract

Examined separate and combined effects of inattentive-impulsive-overactive (IO) and oppositional-defiant (OD) behaviors on measures of impairment and peer adjustment. Participants were 1238 children (51.9% boys) in grades 1 or 3 in regular education classrooms. Participants were rated by their homeroom teachers as part of a school-wide behavioral intervention program conducted in 12 low-SES urban schools and 2 suburban schools. Using published norms, children were divided into IO and OD groups and compared on measures of impairment and peer status using a series of 2 (IO: no vs. yes) x 2 (OD: no vs. yes) x 2 (Sex) ANCOVAs, with grade and intervention status as covariates. Results showed: (a) Children with IO-only, OD-only and both IO and OD (IO/OD) had significantly worse impairment and peer adjustment on every measure; (b) children with IO/OD were significantly worse than IO-only and OD-only on nearly every measure; (c) the results were largely consistent across boys and girls, but girls with IO/OD were more rejected and were less likely to have a best friend than were boys with IO/OD. These results indicate that IO and OD have separate and combined effects on children's adjustment.

Background

- Previous research on inattentive-impulsive-overactive (IO) and oppositional defiant (OD) behaviors in children shows they are highly associated with impairment (Adkins, Pelham & Licht, 1989) and peer problems (Pelham & Bender, 1982).
- Although many studies have examined IO and OD separately, relatively little research has examined both separate (IO-only, OD-only) and combined (IO/OD) effects (Waschbusch, 2002).
- Research on IO-only, OD-only, and IO/OD from non-referred samples is especially informative because children with both disorders may be more likely to be referred to treatment (Angold, Costello & Erkanli, 1999).
- It has been hypothesized that girls are less likely to have IO and OD, but that the conditions are more severe when they do (Eme, 1992; Loeber & Keenan, 1984). Little research has examined IO, OD and IO/OD while also taking child's sex into account.

Participants and Methods

- Participants were 1238 children (595 girls, 643 boys) in 1st or 3rd Grade
- All children were in regular education classrooms in 1 of 14 schools
- 12 schools were in urban settings and 2 were in suburban settings
- Participants were rated by teachers at the end of the first year of a school-wide behavioral intervention (the Academic and Behavioral Competencies Program) as part of the Social and Character Development (SACD) research program funded by the Institute for Education Sciences and the Center for Disease Control (Grant # R305L030065)
- Children were divided into those with and without IO and into those with and without OD using the IOWA Rating Scale, using sex-specific published norms (Pelham et al., 1989). The IOWA is a widely used measure of externalizing behavior that was developed empirically differentiate IO and OD behaviors (Loney & Mitich, 1982). It has well established reliability and validity (e.g. Waschbusch & Willoughby, in press).
- Data were analyzed using a series of 2 (IO: No vs. Yes) x 2 (OD: No vs. Yes) x 2 (Gender) ANCOVAs, with grade and intervention status as covariates
- Dependent measures were teacher ratings on the following empirically supported scales:
 - Impairment Rating Scale** (Fabiano et al., 2006). The IRS measures the child's level of impairment on: (a) peer relationships; (b) teacher-student relationship; (c) academics; (d) classroom behavior; (e) self esteem; and (overall adjustment). Scores range from 0 to 6 with higher scores indicating greater impairment. Whether or not the child has a best friend is also evaluated.
 - Dishon measure of peer relationships** (Dishon, 1990). Teachers rate the proportion of children in the classroom who accept, reject, or ignore the child. Scores range from 0 to 5, with higher scores indicating a greater proportion of children accept, reject, or ignore the child.

Results

Prevalence Rates

	N (%) of Boys	N (%) of Girls	N (%) Overall
None	541 (84.1%)	524 (88.1%)	1065 (86.0%)
IO-only	40 (6.2%)	25 (4.2%)	65 (5.3%)
OD-only	28 (4.4%)	30 (5.0%)	58 (4.7%)
IO/OD	34 (5.3%)	16 (2.7%)	50 (4.0%)
Overall	643 (100%)	595 (100%)	1190 (100%)

Summary of p-values from ANCOVAs

	Covariates		Main Effects				Interactions			
	Grade	Intervent	Sex	IO	OD	SxIO	SxOD	IOxOD	SxIOxOD	
Impairment										
Peer Relationships	.983	.002	.385	.000	.000	.066	.342	.005	.694	
Teacher-Student	.769	.008	.009	.000	.000	.295	.784	.000	.146	
Academics	.250	.102	.003	.000	.000	.404	.295	.000	.120	
Classroom Behavior	.218	.003	.152	.000	.000	.902	.643	.000	.714	
Self Esteem	.280	.004	.058	.000	.000	.044	.316	.007	.064	
Overall	.180	.082	.016	.000	.000	.338	.935	.007	.064	
Peer Status										
Accepted by Peers	.626	.189	.446	.000	.000	.091	.254	.887	.065	
Rejected by Peers	.962	.304	.271	.000	.000	.001	.029	.020	.000	
Ignored by Peers	.151	.009	.611	.000	.042	.676	.773	.017	.167	
Best friend?	.136	.005	.124	.005	.104	.003	.262	.223	.024	

Notes: (1) p-values in red font indicate $p < .05$; (2) Best Friend was analyzed using binary logistic regression; (3) Impairment and Best Friend items from the IRS, Peer Status items from the Dishon

Figure 1 – Prototype interaction for: (1) Peer Impair, (2) Teacher-Student Impair, and (3) Class Behavior Impair

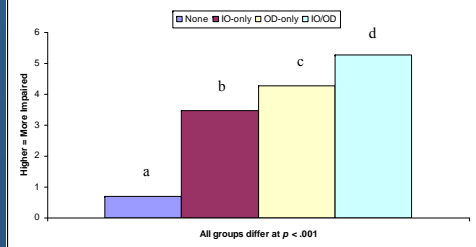


Figure 2 – Prototype Interaction for: (1) Academic Impairment; (2) Self-Esteem Impairment; (3) Overall Impairment

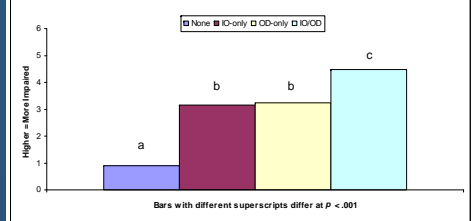


Figure 3 – Peer Rejection as a Function of IO, OD and Sex

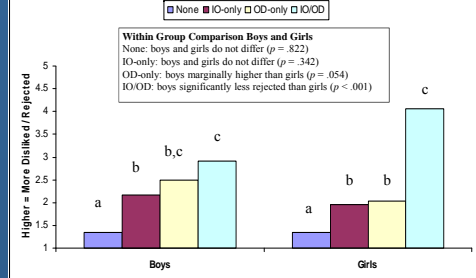


Figure 4 – Ignored by Peers as a Function of IO, OD and Sex

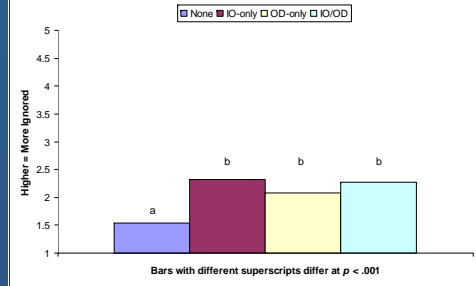
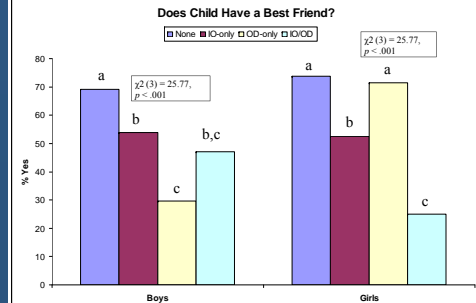


Figure 5 – Rates of Having a Best Friend



Note: Sex x IO x OD significant in logistic regression ($p < .05$). Boys and girls in the IO-only and control groups did not differ in their rates of having a best friend ($p > .10$). Girls with OD-only were more likely to have a best friend than boys with OD-only boys ($p < .01$). Girls with IO/OD were marginally less likely to have a best friend than were boys with IO/OD ($p < .10$).

Effect Sizes – Cohen's D

	IO-only vs. None	OD-only vs. None	IO/OD vs. None	IO-only vs. IO/OD	IO-only vs. IO/OD	OD-only vs. IO/OD
Impairment						
Peer Relationships	1.27	1.72	2.48	0.45	1.21	0.76
Teacher-Student	1.33	1.92	2.40	0.59	1.07	0.48
Academics	1.44	1.28	1.92	-0.16	0.48	0.65
Classroom Behavior	1.46	1.88	2.40	0.42	0.94	0.52
Self Esteem	1.21	1.26	1.91	0.05	0.70	0.66
Overall	1.46	1.57	2.25	0.11	0.78	0.68
Peer Status						
Accepted by Peers	0.72	1.10	1.79	0.38	1.07	0.69
Rejected by Peers	0.72	0.92	2.14	0.20	1.42	1.22
Ignored by Peers	0.75	0.52	0.71	-0.23	-0.04	0.19
Best Friend?	0.43	0.49	0.73	0.05	0.30	0.24
Averages						
Impairment Average	1.36	1.601	2.23	0.24	0.87	0.62
Peer Status Average	0.66	0.76	1.34	0.10	0.69	0.58
Overall Average	1.08	1.26	1.87	0.19	0.794	0.61

Conclusions

- Children with inattentive-impulsive-overactive behaviors only (IO-only), children with oppositional-defiant behavior only (OD-only), and children with both IO and OD (IO/OD) were each significantly more impaired and had significantly worse peer status as compared to children without IO or OD. Effect sizes showed that the differences between the disruptive groups and controls were generally large. This is consistent with hundreds of other studies that demonstrate that IO and OD have a serious negative impact on children's academic and social functioning (Quay & Hogan, 1999).
- Children with both IO and OD were significantly worse than children with IO-only and OD-only on almost every measure. Specifically, IO/OD children were rejected by more peers and were more impaired on measures of teacher relationships, academic performance, classroom behavior, self esteem, and overall adjustment. These differences were medium to large and are consistent with past studies (Hinshaw, 1987; Waschbusch, 2002) in showing that the combination of IO and OD behaviors is an especially impairing combination.
- Few differences emerged between the IO-only and the OD-only groups, and the differences were generally small, suggesting that inattentive-impulsive-overactive behaviors have a similar negative impacts on school and peer functioning as do oppositional-defiant behaviors.
- Results were largely consistent across sex except that girls with IO/OD were more rejected than boys with IO/OD and had somewhat lower rates of having a best friend. When combined with the prevalence rate data, these results suggest that girls are less likely to meet criteria for IO/OD but those who do have significantly worse peer relationships than do boys with IO/OD. These results support the "gender paradox" hypothesis, but the impairment data do not.
- Overall, results clearly demonstrate that IO, OD, and their combination have a serious negative impact on children's school and peer functioning and that it is critical to account for both when examining either.

References

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Abnormal Child Psychology*, 27(3), 571-587.

Adkins, M. S., Pelham, W. E., & Licht, M. H. (1989). The differential validity of teacher ratings of inattention-impulsivity and aggression. *Journal of Abnormal Child Psychology*, 17(3), 225-245.

Dishion, T. J. (1990). The peer context of troublesome child and adolescent behavior. In P. E. Leone (Ed.), *Understanding troubled and troubled youth* (pp. 128-151). Thousand Oaks, CA: Sage.

Eme, R. F. (1992). *Solitude: Emotional affliction in the developmental lives of children: A literature review*. *Journal of Clinical Child Psychology*, 21(6), 344-364.

Fabiano, G. A., Pelham, W. E., Waschbusch, D. A., Granger, S. M., Loney, B. W., Chen, A., et al. (2006). *Manual of attention-deficit/hyperactivity disorder and comorbid conditions*. *Journal of Clinical Child and Adolescent Psychology*, 35(2), 309-350.

Hinshaw, S. P. (1987). On the distinction between attentional deficit/hyperactivity and conduct problem/disorder in child psychopathology. *Psychological Review*, 94(3), 443-460.

Loeber, R., & Keenan, K. (1994). Distinction between conduct disorder and its comorbid conditions: Effects of age and gender. *Clinical Psychology Review*, 14(6), 497-523.

Loney, J. A., Pelham, W. E. (1992). Hyperactivity, inattention, and aggression in clinical practice. In M. Wolchik & D. K. Routh (Eds.), *Advances in developmental and behavioral pediatrics* (Vol. 3, pp. 133-147). Greenwich, CT: JAI.

Pelham, W. E., & Bender, M. J. (1982). Peer relationships in hyperactive children: Description and treatment. In K. Gadow & I. Baker (Eds.), *Advances in learning and behavioral disorders* (Vol. 1, pp. 363-376). Greenwich, CT: JAI.

Pelham, W. E., Fabiano, G. A., & Massetti, G. M. (1999). *Manual of disruptive behavior disorders*. New York: Kluwer Academic/Plenum Publishers.

Quay, H. C., & Hogan, R. (1996). *Handbook of disruptive behavior disorders*. New York: Kluwer Academic/Plenum Publishers.

Waschbusch, D. A. (2002). A meta-analytic comparison of comorbid hyperactive/impulsive/attention problems and conduct problems. *Psychological Bulletin*, 128, 118-136.

Waschbusch, D. A., & Willoughby, M. T. (in press). Parent and teacher ratings on the IOWA Conners Rating Scale. *Journal of Psychological and Behavioral Assessment*.