

# ADHD and DCD comorbidity: The associated problems

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## Introduction

A high level of comorbidity between children with Developmental Coordination Disorder and those with Attention Deficit-Hyperactivity Disorder (ADHD) have long been recognised (Piek et al., 1999). Previous studies have shown that children with ADHD and DCD comorbidity have far worse long term life outcome compared to children with a single condition of ADHD or DCD (Rasmussen & Gillberg, 2000). Thus far, we know that there are many behavioural and emotional difficulties associated with the condition for the child with DCD (Green et al., 2006; Skinner & Piek, 2001) and those with ADHD (Busch et al., 2002; Jensen et al., 1997). However, research into such difficulties experienced by children with comorbid ADHD and DCD is lacking. Therefore, this study examined children with comorbid ADHD and DCD using a DSM-IV criteria based measure to detect any possible clinically significant behavioural and emotional problems. This study also explore the case agreement between parent and teacher in detecting such problems.

## Aims

This aims of the study were to investigate (1) the behavioural and emotional problems experienced by children with comorbid ADHD and DCD using the Connors' Rating Scale-Revised: Long form; (2) the agreement across parents' and teachers' ratings on the behavioural and emotional problems of children with comorbid ADHD and DCD on the Connors'.

## Method

### Participants

A total of 109 participants (82 males; 27 females) with age ranging from 9.8 to 12.7 years old ( $M=11.16$ ;  $SD=0.79$ ) participated in this study. All children were either attending state schools or private schools. Participants were placed into 4 groups: Controls ( $n=41$ ), ADHD ( $n=29$ ), DCD ( $n=17$ ) and comorbid ADHD/DCD ( $n=22$ ), based on the scores from the McCarron Assessment Neuromuscular Development measure and the Australian Disruptive Behaviours Scale. The former measure was used to assess motor ability and the latter measure was to identify ADHD behaviour based on DSM-IV criteria.

### Measures

- Developmental Coordination Disorder Questionnaire (Wilson, Kaplan, Crawford, Campbell, & Dewey, 2000)
- McCarron Assessment of Neuromuscular Development (MAND: McCarron, 1997)
- Australian Disruptive Behaviours Scale (ADBS; Levy et al., 1996)
- Connors' Parental Rating Scale-R: L (CPRS-R:L; Connors, 1997)
- Connors' Teacher Rating Scale-R: L (CTRS-R:L; Connors, 1997)

### Procedure

Ethical approval from Curtin University Ethics Committee was obtained prior to commencement of this study. An invitation to participate in this study was sent out to state and private schools within metropolitan Perth. Informed consent was obtained from interested parents of children from the participating schools. All participating parents were asked to complete the ADBS, DCDQ and the CPRS-R:L. The teachers from the participating schools also completed the CTRS-R:L for the participating child. All child participants were also assessed on the MAND.

## Results

	Control	ADHD	DCD	ADHD/DCD
Age (years)	11.13	11.13	10.95	11.40
MAND - NDI	104.5	103.1	76.5	71.0
ADBS Number of - Inattentive	1.3	7.0	2.3	7.0
- Hyperactive- Impulsive	0.4	4.3	0.7	4.0
DCDQ	71.3	56.2	57.6	54.9

A summary of the mean for age, MAND, DCDQ and ADBS (the number of inattentive and hyperactive-Impulsive symptoms) for the four groups are presented in the table above.

A multivariate analysis of variance was conducted on the parent-rated and the teacher-rated Connors' test variables Anxious-Shy, Perfectionism, Social Problems and Psychosomatic separately.

Results revealed that parents reported statistically significant social problems seen between groups,  $F(1, 3) = 11.93$ ,  $p = .001$ ,  $\eta^2 = .25$ . Planned comparisons shown that both ADHD ( $M= 63.41$ ) and comorbid ADHD/DCD ( $M= 62.68$ ) groups exhibited significantly higher levels of social problems compared to control and DCD groups. These children have few friends, experience low self-esteem and self-confidence, and they also feel emotionally distant from peers. Parents also reported statistically significantly high level of psychosomatic symptoms in children with ADHD,  $F(1, 3) = 2.73$ ,  $p = .047$ ,  $\eta^2 = .073$ .

Statistically significant group difference for social problems was also reported by teachers,  $F(1, 3) = 3.87$ ,  $p = .013$ ,  $\eta^2 = .14$ . Planned comparisons revealed that only the comorbid ADHD/DCD group was exhibiting significantly higher level of social problems compared to all other groups. Levels of social problems among ADHD, DCD and control groups were similar. No significant group differences were found for the variables Anxious-Shy and Perfectionism in the parent and teacher ratings.

## Conclusions

The above findings show that social difficulties are experienced by both children with ADHD and those with comorbid ADHD/DCD. However, the results suggest that social difficulties are more readily apparent in children with comorbid ADHD/DCD compared to children with a single condition of ADHD. This supports previous studies that children with comorbid ADHD/DCD do experience far worse life outcomes and they are observable by both parents and teachers.

## References

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