The Effects of Perceived Social Support and Self-Worth on Depressive Symptomatology in Children with and without Developmental Coordination Disorder (DCD)

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Abstract

Harter's (1987) model of the relationship between self worth and depression was utilised in the present study as a basis for investigating the unique impact that self-perceptions of competency and perceived social support have on the level of self worth and depressive symptomatology perceived by school-age children with and without Developmental Coordination Disorder (DCD: American Psychiatric Association, 1994). Forty girls and forty two boys, assigned to matched pairs, were assessed on their level of motor coordination using the McCarron Assessment of Neuromuscular Development (MAND) (McCarron, 1997), their level of perceived social support using the Social Support Scale for Children (SSSC) (Harter, 1985a), the nature of their self-perceptions, including self-worth, by the Self-Perception Profile for Children (SPPC) (Harter, 1985b), and their perceived level of depressive symptomatology using the Children's Depression Inventory (CDI) (Kovacs, 1992). The findings of the research indicate that children with DCD perceived higher levels of depressive symptomatology when compared to children without motor coordination problems. The implications of these findings are discussed with particular emphasis placed on possible factors that could be incorporated into early intervention strategies aimed at preventing depressive symptomatology from occurring in young children with DCD.

Introduction

Children with Developmental Coordination Disorder (DCD) find it difficult to acquire and develop daily living skills that help them to function and adapt in a variety of environments (Cermak, Gubbay, & Larkin, 2002). The pervasiveness and severity of the problems associated with DCD varies for each individual child and may include gross and or fine motor problems, speech problems, and difficulties with eating and dressing (Cratty, 1994). Although the motor coordination problems in themselves are a serious issue in need of attention, what parents may not be aware of is the range of psychosocial problems that can be associated with motor coordination problems and the extent to which these can negatively affect their child's social, emotional and cognitive development.

For children, spending time with friends and participating competently in sports is an important part of growing up, especially in Western cultures (Henderson & Sugden, 1992; Skinner & Piek, 2001). This creates a stressful situation for children with motor coordination problems, who find it difficult to participate competently in sports (Sugden & Wright, 1998) and as a result are often ridiculed, criticised or rejected by their peers (Kalverboer, De Vires, & Van Dellen, 1990). Consequently, children with motor coordination problems such as Developmental Coordination Disorder (DCD: DSM-IV, 1994) experience a number of social and emotional problems, including social isolation, poorer social skills, lower self-esteem, poorer self-concepts (Losse et al., 1991), and anxiety (Skinner & Piek, 2001) in addition to their motor problems. Given the profound effects the motor coordination problems inherent to DCD have on a child's physical abilities, self-perceptions, and social and emotional functioning, it is plausible that they may also be susceptible to depression.

To analyse this issue, Harter's (1987) model of the relationship between self worth and affect (see Figure 1) was utilised. Harter (1987) postulates that an individual's self-worth is associated with depressed affect and is influenced by two factors, namely the level of perceived social support from significant others and the nature of the competence/ importance discrepancy on specified domains (scholastic competence, athletic competence, social acceptance, physical appearance, behavioural conduct) deemed to be important by the individual. Therefore, the greater the amount of perceived social support and the smaller the discrepancy between an individual's competence in a domain and the importance they place on being competent in that domain, the higher their level of self-worth (Harter, 1987). This model was employed in the present study as a basis to investigate the unique impact of specified contributors of self worth, namely self-perceptions of competency and perceived social support, on the level of self worth and depressive symptomatology perceived by children with and without DCD.

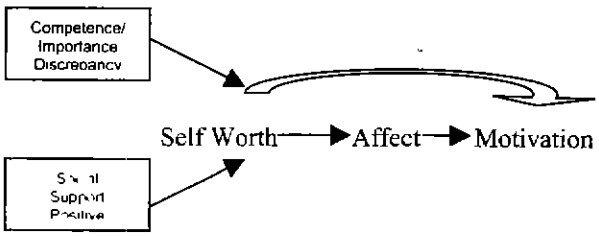

Figure 1: Model of self-worth as a mediator of affect and motivation (Taken from Harter, 1987. p. 223).

Depression is one possible emotional outcome that may be associated with DCD that has received little research attention to date. In particular, whether there is a link between DCD and depression, and if so, what the possible contributing factors influencing depressive symptomatology associated with DCD are. Given the serious impact depression can have on a child's life, it is important to determine whether a relationship between DCD and depression exists, and if so what preventative measures can be taken to avert this outcome.

Method

The current research compared the level of depressive symptomatology perceived by children with and without motor coordination problems. In addition, the two groups were compared on their level of perceived social support and the nature of their self-perceptions including self-worth.

Participants

One hundred and sixty five participants were recruited from five local primary schools from various socio-economic areas. From this larger sample, two groups of children aged between 7 and 11 years were identified, one with DCD ranging from mild to severe (20 girls and 22 boys) and a control group matched on age and sex.

Measures

The McCarron Assessment of Neuromuscular Development (MAND) The McCarron Assessment of Neuromuscular Development (MAND: McCarron, 1997) is a standardised measure, which assesses the full spectrum of both gross and fine motor abilities in young children through to adults. The total score for the ten motor skill tasks is converted to a scaled score termed the 'Neuromuscular Development Index' (NDI), with a mean of 100 and a standard deviation of 15. An NDI score below 55 indicates a severe disability, a score of 55 to 70 indicates a moderate disability, and a score between 70 and 85 indicates a mild disability (McCarron, 1997). The MAND has been found to be a sensitive and valid measure of identifying motor impairment in children (Tan, Parker, & Larkin, 2001).

The Wechsler Intelligence Scale for Children III (WISC-III)

Two subtests (Vocabulary and Similarities) from the Verbal ability subscale of the Wechsler Intelligence Scale for Children–III (WISC-III: Wechsler, 1991) were utilised in this study both as a screening device for intellectual disability as well as to assess the verbal IQ of participants, enabling researchers to ensure that children in the 'DCD' group and the 'Control' group do not differ on this measure.

The Children's Depression Inventory (CDI)

The Children's Depression Inventory (CDI: Kovacs, 1992) consists of 27 multiple-choice items examining the severity of a number of depressive symptoms including, anhedonia, dysphoria, sleep and eating disturbances, social conduct, and suicidal ideation in children aged from 7-17 years. The CDI has been found to have high internal consistency ($r = .86$) with reliability coefficients ranging from $r = .71$ to $r = .89$, based on the normative sample (Kovacs, 1992).

The Social Support Scale for Children (SSSC)

The Social Support Scale for Children (SSSC: Harter, 1985a) is designed to assess the perceived social support children aged from 8 to 13 years experience in the form of positive regard from four key sources: parents, class mates, teachers and close friends. Reliability scores have ranged from $r = .72$ to $r = .82$, and validity has been demonstrated through the correlations between the four subscales and the 'Global Self worth' subscale included in Harter's Self-Perception Profile for Children (Harter, 1985b).

The Self Perception Profile for Children (SPPC)

The Self Perception Profile for Children (SPPC: Harter, 1985b) assesses how children aged from 8 to 13 years rate themselves across five domains: Scholastic Competence, Athletic Competence, Social Acceptance, Physical Appearance, Behavioural Conduct, with the inclusion of a separate subscale measuring Global Self-worth. Cronbach's Alphas for the five domains ranged from $r = .71$ to $r = .82$ with the 'Global Self-worth' scale found to have a reliability of $r = .78$ (Harter, 1985b).

Procedure

Five schools in the Perth Metropolitan area of WA agreed to participate in the study. A total of 526 participant information packages were distributed to students in grades 3 to 5 to be conveyed to their parents. The original sample involved in the study comprised of

165 participants derived from a 34.6% response rate from parents.

Testing occurred in two stages at the child's school. During the first stage of testing, which took approximately one hour, participants completed the MAND, SSSC and the SPPC. Children assigned to either the Control or DCD group, based on their MAND score, were then required to complete a second stage of testing, during which the subscales of the WISC-III (Wechsler, 1991) and the CDI were individually administered. If results from any of the measures were cause for concern, the participant's parents were promptly informed in writing by the researchers with relevant information and appropriate support sources provided.

Results

A related samples one-tailed t-test was conducted and a statistically significant effect was found for depression (t (41) = 3.69, p = .001), indicating that the DCD group perceived higher levels of depressive symptomatology (M=50.45, SD=9.72) when compared to the control group (M=43.93, SD=6.89) as depicted in figure 2 below.

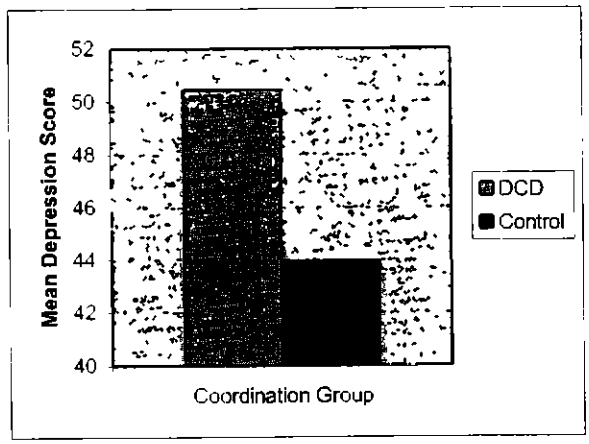

Figure 2: Mean depression scores for DCD and control groups.

Path analysis was used to examine the applicability Harter's (1987) model of the relationship between the predictors of self-worth (perceived social support and perceived competencies), self-worth and depression, where self-worth acts as a mediator. Groups were examined with separate path analyses, and age, gender and verbal IQ were not included as covariates as these variables were not significantly correlated with self-worth. The pearson correlations of the covariate and exogenous variables with self-worth and depression employed in this analysis are presented in Table 1 and Table 2 respectively.

Table 1: Pearson correlations of covariate and exogenous variables with self-worth.

Exogenous Variables	Self-worth			
	DCD		Control	
	r	p	r	p
Age	.033	.835	.029	.858
Gender	.050	.753	.116	.466
Verbal IQ	-.080	.616	-.131	.410
Parent Support	.326	.035	.538	.000
Classmate Support	.594	.000	.423	.005
Teacher Support	.249	.112	.228	.147
Friend Support	.328	.034	.445	.003
Scholastic Competence	.537	.000	.016	.920
Social Acceptance	.548	.000	.547	.000
Athletic Competence	.619	.000	.370	.016
Physical Appearance	.626	.000	.786	.000
Behavioural Conduct	.462	.002	.388	.011
Self-Worth	1.00	NA	1.00	NA

Table 2: Pearson correlations of covariate and exogenous variables with depression.

Exogenous Variables	Depression			
	DCD		Control	
	r	p	r	p
Age	-.189	.232	-.236	.133
Gender	.055	.730	-.143	.366
Verbal IQ	-.108	.494	.152	.338
Parent Support	-.230	.143	-.183	.247
Classmate Support	-.417	.006	-.481	.001
Teacher Support	-.319	.040	-.088	.579
Friend Support	-.215	.172	-.302	.052
Scholastic Competence	-.487	.001	-.104	.514
Social Acceptance	-.313	.043	-.491	.001
Athletic Competence	-.514	.000	-.382	.012
Physical Appearance	-.355	.021	-.598	.000
Behavioural Conduct	.480	.001	-.317	.041
Self-Worth	-.573	.000	-.555	.000

For the DCD group, the path linking self-worth and depression (β = -.22, p = .31) was found to be non significant, indicating that self-worth does not act as a mediator for depression. Physical appearance (β = .33, p = .01) and behavioural conduct (β = .26, p = .03) were the only two variables found to have a direct effect on self-worth. Physical appearance accounted for 6.76% (sr (33) = .26), while behavioural conduct accounted for 5.29% (sr (33) = .23) of the unique variance of self-worth. Athletic competence (β = -.37, p = .04) was the

only variable found to have a direct effect on depression for the DCD group, and accounted for 6.76% (*sr* (33) = -.26) of the unique variance of depression.

For the control group, the path linking self-worth and depression (β = -.190, p = .41) was also found to be non significant, indicating that for the control group, self-worth does not act as a mediator for depression. Physical appearance (β = .68, p = .00) and classmate support (β = -.40, p = .02) were the only two variables found to have a direct effect on self-worth. Physical appearance accounted for 14.44% (*sr* (34) = .38) of the unique variance of self-worth, while classmate support accounted for 5.29% (*sr* (34) = -.23) of the unique variance of self-worth. None of the exogenous variables were found to have a direct effect on Depression for the Control group.

Discussion

The aim of the current study was to establish possible causal and preventative factors of depression associated with DCD. Children with DCD were found to have significantly higher levels of depressive symptomatology, when compared to children without motor coordination problems. The motor problems that children with DCD experience as well as the associated problems they are susceptible to (i.e. social isolation, lower self-esteem, etc.), predispose them to many of the risk factors for depression, particularly as previous research has identified that children with DCD are at greater risk of anxiety problems (Skinner & Piek, 2001).

The nine predictors (four social support sources and five self-perceptions) of self-worth were examined to determine which contribute to the self-worth of children from both groups. Perceived physical appearance was a significant predictor of self-worth for both groups. Harter's (1987) theory of self-worth postulates that for young children, physical appearance is the most predictive factor of a child's level of self-worth. Piek et al. (2000) found that physical appearance was the primary predictor of self-worth for children without motor coordination problems, while scholastic competence followed by physical appearance were the most important predictors of self-worth for children with DCD. Skinner and Piek (2001) found that physical appearance was the most significant predictor of self-worth for children without motor problems, although found no significant predictors of self-worth for children with DCD. For the DCD group, behavioural conduct was also a significant predictor of self-worth, while for the control group classmate support was the only other significant predictor of self-worth.

The hypothesis predicting that Harter's (1987) model of the relationship between the predictors of self-worth, self-worth and depression, with self-worth acting as a mediator was not supported. The results indicate that self-worth did not act as a mediator for depression for either the DCD group or the Control group. None of the predictors had a direct effect on depression for the control group, although for the DCD group, athletic competence was found to have a direct effect on depression. It would not seem a surprising outcome given the motor problems associated with DCD. However, it does emphasise the importance placed on motor ability and therefore demonstrates the need to develop and implement early intervention programs aimed at preventing depressive symptomatology from occurring in young children with DCD. Given that depressive symptomatology was evident in this sample comprising of children as young as seven years and eight months, remedial motor skills training may be required to improve the motor coordination of children with DCD before the child enters school if the physical, emotional, and social problems associated with DCD are to be averted. This form of intervention may only be appropriate for young children with DCD as the predictors that have the greatest impact on self-worth and depression for older children and adolescents with DCD may vary (Skinner & Piek, 2001).

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