Parent Reports of Disability among 13-Year Olds with DSM-III Disorders

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Abstract—This study examined "physical" and "psychological" dimensions of disability associated with different DSM-III disorders in a large sample of 13-year old adolescents. The measure of disability was based upon the World Health Organization (1980) classification. We found that adolescents with multiple DSM-III disorders and those with attention deficit and anxiety disorders showed the highest levels of parent perceived disablement; depression and conduct disorder showed the least. In addition, adolescents with any kind of DSM-III disorder showed a rate of parent-reported hospitalization twice that of the remainder of the sample. They also had poorer perceived health, as suggested by lower parent and self health ratings than those without disorder.

Keywords: DSM-III disorder, disability, health

Introduction

Recently, the World Health Organization (WHO) has provided a systematic classification system for impairments, disabilities and handicaps (World Health Organization, 1980). This classification reflects the shift in the burden of illness within the community from acute and often life-threatening illness to more chronic and disabling conditions. The classification represents a framework within which all aspects of an individual's performance in the light of disability can be assessed. There are seven major categories of disability in the WHO *International classification of impairments, disabilities and handicaps* (ICIDH). These categories are behaviour, communication, personal care, locomotion, body disposition, dexterity and situational disability. Within each category are descriptions outlining specific disabilities. For example, the category of locomotor disability includes: walking on flat terrain; walking on rough ground; climbing stairs or ladders; running; getting into/out of a bed or chair; use of transport, lifting and carrying; and other locomotor disabilities.

Sillanpaa (1987) compared groups of children with "minimal brain dysfunction",

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cerebral palsy, epilepsy, asthma, diabetes and heart disease with a control group on measures of disability derived from the ICIDH. It was found that 52% of the children with "minimal brain dysfunction" had one or more disabilities. This figure compared with 67% of those with cerebral palsy, 42% with epilepsy, 39% with asthma, 38% with diabetes and 36% with heart disease. The children with "minimal brain dysfunction" showed more of every type of disability than did the controls, except for situational disability. This research suggests that the framework for classifying disability according to ICIDH may be useful in identifying disabilities associated with different chronic conditions, in particular, psychological conditions.

Previous research has demonstrated an association between physical and psychological disorders. In the Isle of Wight survey, for example, children with physical disorders had a rate of psychiatric disorder over two and a half times that of children with no physical disorder (Rutter, Tizard & Whitmore, 1970). Other studies of chronically ill groups of children have also shown an increased risk of psychiatric disturbance (Breslau, 1985) and impaired emotional adjustment (Steinhausen, 1981) when compared with controls.

The above studies have used the methodology of identifying ill or disabled groups and looking for psychological disorder. An alternative procedure would be to examine disability as a function of different types of psychological disorder. In such an approach the ICIDH may provide a comprehensive procedure for the study of disability associated with such disorder. Langley (1989) has reported the findings of a study of parent-reported disability in a large sample of 13-year old adolescents. These adolescents were enrolled in the Dunedin Multidisciplinary Health and Development Study, a longitudinal research programme investigating their health, development and behaviour. As part of the 13-year assessment of the sample, a study was made of DSM-III disorder and adolescents with different types of disorder were identified (Frost, Moffitt & McGee, 1989). This allowed an opportunity for an examination of parent-reported disability associated with DSM-III disorder.

Method

Sample

The sample consisted of those adolescents enrolled in the Dunedin Multidisciplinary Health and Development Study at age 13. This study has been described by McGee and Silva (1982) and the sample is the same as that studied by Langley (1989). Briefly, the adolescents were part of a cohort born between 1 April 1972 and 31 March 1973 at Queen Mary Hospital, Dunedin. At age 3, the children were followed up and a total of 1139 were living in the Dunedin metropolitan area or Otago province. Of these 1139 children, 1037 were assessed within 1 month of their third birthday; the remainder were either traced too late or their parents refused participation in the study. The sample had been reassessed at two yearly intervals, and at age 13 (1985/1986), 850 remained enrolled in the study.

When the Dunedin sample is compared with the remainder of New Zealand, there is a slight bias towards a greater representation from higher levels of socio-economic status, or SES, and some under-representation of lower SES levels (Elley & Irving, 1972). Furthermore, the Dunedin sample is predominantly European in origin with 2% from Maori or other Polynesian backgrounds compared with 10% for the whole of New Zealand (New Zealand Department of Statistics, 1976).

Measures

    (a) Adolescent self-report of mental health. At the 13-year assessment, the adolescents were interviewed using a shortened version of the Diagnostic Interview Schedule for Children, or DISC-C (Costello,

Edelbrock, Kalas, Kessler & Klaric, 1982). The DISC-C is a highly structured interview developed under the auspices of the National Institute of Mental Health, to assess DSM-III criteria for disorders of childhood and adolescence. Each DISC-C item is scored as 0, 1 or 2 corresponding to ''no'', ''sometimes'', or ''yes''. The full DISC-C was first administered to the sample at age 11, but owing to time constraints on the schedule of testing, we were unable to use the full DISC-C at age 13. As pointed out elsewhere (McGee & Williams, 1988), the majority of those interviewed were essentially ''symptom-free'' so that we considered extensive and repeated questioning counter-productive and not the best use of the available time. Consequently, we eliminated a number of questions at age 13. First, we examined coefficient alpha (a measure of reliability) and item–total correlations for the sets of items used in the diagnosis of each disorder at age 11. We then chose for each diagnostic criterion the DISC-C item with the highest item–total correlation. Effectively, each DSM-III criterion symptom was assessed by only one question on the DISC-C. Second, we used a ''gating'' procedure for depressive disorders so that initial criteria of depressed mood/anhedonia and time criteria for duration of symptoms were to be fulfilled before moving on to the questions for the remaining criteria. Third, conduct disorder was assessed by an extensive self-report delinquency measure (see Moffitt & Silva, 1988). The shortened DISC-C consisted of 110 questions and was part of a broad assessment which included career plans, self-esteem and attachment to school, family and friends. A copy of the assessment protocols is available from the authors.

(b) *Parent and teacher reports of behaviour problems*. At the 13-year assessment, the parents completed the Revised Behaviour Problem Checklist (RBPC) of Quay and Petersen (1987). This questionnaire is scored in term of subscales measuring conduct disorder, socialized agression, attention–immaturity, anxiety–withdrawal, psychotic behaviour and motor excess. In addition, the teachers completed the Rutter Child Scale B (Rutter *et al.*, 1970), and other items measuring inattentive, impulsive and hyperactive behaviours (see McGee, Williams & Silva, 1985).

(c) *Parent report of disability*. Langley (1989) provides full details concerning the disability questionnaire used at the 13-year assessment. Briefly, the questionnaire was divided into seven sections corresponding to the major disability categories of the ICIDH. Each section contained items which closely followed the two-digit disability categories. Each item was responded to as ''no, doesn't apply''—scored 0; ''yes, applies somewhat''—scored 1; and ''yes, certainly applies''—scored 2. This response format followed that of the Rutter scale and RBPC.

Other related information was collected and for this study we examined: (1) whether the parent reported that her son/daughter was dependent on any special devices (e.g. hearing aid), procedure (e.g. special diet), drugs (e.g. asthma drugs) or special help; (2) reported hospitalization during the last 2 years; and (3) parent ratings of the adolescent's general health as ''very good'', ''good'', ''fair'' or ''poor''.

Identification of DSM-III disorder

At the 13-year assessment DISC-C results were available for 735 adolescents (381 boys and 354 girls), who attended the Dunedin unit; those assessed elsewhere in New Zealand did not receive the DISC-C. Frost *et al.* (1989) have reported full details concerning the identification of DSM-III disorder. Briefly, for the internalizing disorders (anxiety and depression), identification was based upon the adolescent self-report meeting full DSM-III criteria, with confirmation of symptoms from the parent or teacher report. The identification of conduct disorder was based upon a report of four or more antisocial behaviours on the self-report delinquency measure with parent or teacher confirmation of antisocial behaviours. Finally, attention deficit disorder (ADD) was identified on the basis of the adolescent having ADD at age 11 (see Anderson, Williams, McGee & Silva, 1987) and confirmation of ADD symptoms by parent or teacher at age 13.

The following six groups were selected on the basis of this procedure: a multiple disorder group of 16 boys and 5 girls (12 of the adolescents had ADD and conduct disorder, some with additional disorders); an ADD group of 15 boys and 2 girls; a conduct disorder group of 12 boys and 7 girls; a depression group of 8 boys and 2 girls; and an anxiety group with 7 boys and 8 girls. These adolescents were compared with the remainder of the sample, 323 boys and 330 girls.

Results

Disability questionnaires were available for 733 of the 735 adolescents who were given the DISC-C. For the initial analysis, the scores were added within each of the seven disability categories. Table 1 shows the association between type of DSM-III disorder and the total disability score on the disability questionnaire. The disability scores have been classified as 0–1, 2–3 and 4 or more. There was a highly significant association between disorder and disability score with χ^2 (10 df) = 122.04, $P < 0.05$. Some 16% of those with no disorder had disability scores in the range of 4 or more; 60% of the 82 adolescents with disorder had scores in this range, nearly a 4-fold increase. *Post hoc* comparisons of each disorder group with the no disorder group (Everitt, 1977) indicated that the multiple disorder, ADD and anxiety groups had significantly more adolescents with scores of 4 or more. The conduct disorder and depressed groups did not differ from the no disorder group.

Table 1. Distribution of disability scores across types of DSM-III disorder[a]

| Disability score | Disorder | | | | | |
	Multiple ($N = 21$)	ADD ($N = 17$)	Conduct ($N = 19$)	Anxiety ($N = 15$)	Depression ($N = 10$)	No disorder ($N = 651$)
0–1	0.14	0.12	0.42	0.27	0.40	0.63
2–3	0.00	0.06	0.37	0.13	0.20	0.21
4 or more	0.86	0.82	0.21	0.60	0.40	0.16

[a]Values shown are proportions.

Langley (1989) has reported several sex differences in individual disabilities, typically with boys having more reported disabilities than girls. Furthermore, in all but the anxiety group, boys outnumbered girls and there was a significant association between sex of adolescent and disorder with χ^2 (5 df) = 17.17, $P < 0.05$. There may be, therefore, a potential confounding owing to sex differences on the measure of disability and in the composition of the groups with disorder. To investigate this issue, we performed a log linear analysis (Fienberg, 1978) to test for interactions between sex of adolescent × presence or absence of DSM-III disorder × level of disability score. The three-way interaction was not significant ($P > 0.05$) suggesting that the association between DSM-III disorder and level of disability was the same for boys and girls.

Next, we wished to examine the association between different types of disability and DSM-III disorder. Langley (1989) reported considerable variation in the distribution of individual disabilities and has suggested that in some instances the responses are so common as to suggest that the reported disabilities may not be outside the range considered normal for a teenager. Given this, we decided to use a more stringent definition of disability as one occurring in 5% or less of the sample. We recoded all responses using this criterion. For example, in the case of "talking and speaking" where 89.9%, 8.6% and 1.5% of the sample scored 0, 1 and 2 respectively, only "2" responses were taken to indicate probable disability. Alternatively, in the case of "toileting" where 98.6%, 1.3% and 0.1% scored 0, 1 and 2, both "1" and "2" responses indicated probable disability. This represents a relatively strict criterion

but seems reasonable given the nature of the parent report. This criterion has been used in all subsequent analyses.

Table 2 shows the proportion of adolescents in each of the six groups with one or more disabilities from each of the seven categories of disability. Because of the presence of low minimum expected frequencies for a χ^2 analysis with all six groups, we combined the five disorder groups ($N = 82$) and compared them with the no disorder group for the disability measures of communication, personal care, behaviour, locomotion, body disposition and dexterity (χ^2 with 1 df). Only the disability categories of communication and behaviour showed overall significant differences. For these two disabilities, we conducted *post hoc* χ^2 tests comparing each disorder and no disorder groups. In both cases, the multiple and ADD disorder groups differed significantly from the no disorder group. Examination of disability groupings within these two disability categories suggested that the disabilities related to reading, writing/spelling (communication) and disabilities in relations, but not awareness (behaviour).

Table 2. Proportion of adolescents with one or more disabilities in each DSM-III disorder group

| Disability | Disorder | | | | | |
	Multiple ($N = 21$)	ADD ($N = 17$)	Conduct ($N = 19$)	Anxiety ($N = 15$)	Depression ($N = 10$)	No disorder ($N = 651$)
Communication	0.52	0.47	0.00	0.20	0.00	0.07
Personal care	0.09	0.18	0.10	0.07	0.00	0.06
Behaviour	0.43	0.41	0.21	0.20	0.30	0.07
Locomotor	0.19	0.12	0.00	0.13	0.10	0.05
Body disposition	0.19	0.18	0.00	0.20	0.10	0.06
Dexterity	0.00	0.12	0.05	0.13	0.00	0.01
Situational	0.43	0.53	0.32	0.40	0.50	0.14
Two or more[a]	0.71	0.76	0.26	0.40	0.30	0.13

[a]Proportion with two or more disabilities.

In the case of situational disabilities, there was a significant association with type of disorder with χ^2 (5 df) = 42.66, $P < 0.05$. *Post hoc* comparisons indicated that the multiple, ADD and depressed groups differed significantly from the no disorder group. One disability item included in the list of situational disabilities concerned "coping with school work"; the other disabilities related to dependence, endurance and environmental disabilities. We re-analysed the results for situational disability omitting the "school" item and found that the results were essentially unchanged.

Table 2 also shows the proportion in each group with two or more disabilities overall and χ^2 (5 df) = 101.52, $P < 0.05$. Only the multiple, ADD and anxiety groups differed significantly from the no disorder group.

To some extent it could be argued that some of the disabilities, particularly in the communication and behaviour categories, are related to the criterion symptoms for the identified DSM-III disorders. That is, disabilities will be higher in certain classes of disorder because the disabilities simply reflect symptomatology defining the disorder. To examine this question we looked at the prevalence of disabilities which appeared uncorrelated to core symptomatology in the six groups. For this analysis we summed

disabilities excluding all communication and behaviour disabilities together with the "coping with schoolwork" item. In the total sample, 11% had two or more disabilities within the remaining five categories of disability. The proportion of adolescents in each group with two or more such disabilities was as follows: 0.09 in the no disorder group; 0.33 in the multiple disorder group; 0.29 in the ADD group; 0.26 in the conduct disorder group; 0.33 in the anxiety group; and 0.20 in the depressed group with χ^2 (5 df) = 31.22, $P < 0.05$. These results suggest a higher prevalence of a general range of disabilities associated with DSM-III disorder. The prevalences of individual disabilities was too low for any item-by-item analysis. However, inspection of subcategories within each disability grouping suggested that no one particular disability appeared to be associated with any specific disorder. Rather, each disorder was associated with an increased risk of having two or more disabilities.

Table 3 shows the proportion in each group who were dependent on special procedures. The overall χ^2 was significant with χ^2 (5 df) = 18.03, $P < 0.05$. *Post hoc* comparisons indicated that the anxiety disorder group differed significantly from the no disorder group in terms of dependency. Six of the 15 adolescents in the anxiety group were reported to be dependent: for five of them this was related to treatment for asthma, eczema and respiratory problems; the sixth was on a special sugar-free diet for allergies. The 0.40 of the anxiety group being treated for respiratory/allergy problems contrasted with 0.07 being so treated among those with other DSM-III disorders and 0.07 in the no disorder group.

Table 3. Proportion with reported dependence on special procedures, hospitalization and health ratings across types of disorder

| Measure | Disorder | | | | | |
	Multiple ($N = 21$)	ADD ($N = 17$)	Conduct ($N = 19$)	Anxiety ($N = 15$)	Depression ($N = 10$)	No disorder ($N = 651$)[a]
Special dependence	0.10	0.00	0.11	0.40	0.20	0.09
Hospitalization	0.14	0.18	0.05	0.20	0.30	0.07
Health ratings						
"very good"	0.50	0.59	0.61	0.50	0.60	0.79

[a]Numbers vary slightly owing to several missing values in the groups.

Table 3 also shows the results for reported hospitalizations and health ratings. In the case of hospitalizations, the overall rate of hospitalization in the five DSM-III disorder groups was significantly higher than in the no disorder group, 0.16 vs 0.07 with χ^2 (1 df) = 7.37, $P < 0.05$. However, no particular disorder group appeared to be associated with more hospitalizations. Few adolescents received "poor" or "fair" health ratings from the parent: five of the 79 with disorder were rated as having "fair" health compared with nine in the no disorder group. In Table 3 the results are shown as the proportion with "very good" ratings, in each group, χ^2 (5 df) = 22.66, $P < 0.05$. Only the multiple disorder group differed significantly from the no disorder group by *post hoc* criteria. We also examined the adolescents' self-ratings of their health. Of those with DSM-III disorder, 12 of 80 with available ratings (0.15) reported "poor" or "not too good" health compared with 0.02 of the no disorder group, χ^2 (1 df) = 37.10, $P < 0.05$.

Discussion

The ICIDH classification of disabilities provides a framework for examining dimensions of disablement associated with mental disorder. The findings of the present study suggest the usefulness of applying this classification to the study of DSM-III disorders. Adolescents with multiple disorders, ADD and anxiety disorders showed significantly higher levels of disability than those with no disorder, on both a total disability score (Table 1) and in the prevalence of two or more likely disabilities (Table 2). Both the conduct disorder and depressed groups did not differ from the no disorder group on these two indices of disablement. The findings with respect to conduct disorder may appear surprising in view of the high levels of disablement often hypothesized as being associated with the disorder [see Moffitt (1988) for a review]. However, 16 of the 21 adolescents in the multiple disorder group had conduct disorder in combination with one or more disorders. These results suggest that conduct disorder in isolation is not associated with marked disability.

The multiple disorder and ADD groups also showed marked overlap: two-thirds of the former group were identified as showing ADD in combination with other disorder(s). This may partly explain the similarity in findings in the two groups. Both showed significantly higher levels of communication and behaviour disability, relating to reading, writing and spelling disabilities as well as relations or social disabilities. Other research from the Dunedin unit has similarly found a strong association between literacy skills and ADD (McGee & Share, 1988). The multiple disorder and ADD groups also showed higher levels of situational disabilities, reflecting both difficulty coping with school work as well as more general endurance and environmental disabilities. Sillanpaa (1987) has also reported high levels of disability in children identified as showing ''minimal brain dysfunction'', a term used to describe children with inattentive, impulsive and hyperactive behaviours.

The present study used a relatively strict criterion to identify disability in terms of a 5% or fewer prevalence in the sample. This, in turn, did not allow us to examine the prevalence of individual ICIDH disabilities across different types of disorder. However, when we examined those disabilities less likely to be confounded with diagnostic criteria for disorder, adolescents with DSM-III disorders were over three times as likely to have two or more disabilities than those with no disorder. There did not seem to be a specific pattern of disabilities associated with any one disorder. Rather, the DSM-III disorders were associated with a higher risk of any one of a range of disabilities.

Those adolescents with anxiety disorders showed both high levels of disability and a relatively high proportion of them were dependent upon treatments for respiratory problems, although the overall number of adolescents in the group was relatively small. There is some evidence for an association between severe childhood asthma and emotional disturbance (Mrazek, 1986). Our results suggest that these adolescents may represent a subgroup of those with respiratory/allergic conditions, who may also require special help because of their anxiety.

DSM-III proposes a classificatory system based upon a ''multiaxial'' evaluation of the individual. Generally, however, research into childhood and adolescent psychopathology has focused upon Axes I and II, that is, the description of clinical syndromes and developmental disorders. More rarely has research investigated

associated physical conditions and levels of adaptive functioning. As a group, those adolescents with DSM-III disorders at age 13 were reported as having a hospitalization rate about twice that of the remainder of the sample. In addition, both parents and adolescents rated their overall health as "less healthy" than those with no disorder. Furthermore, specific disorder groups showed high levels of disablement in everyday activities. Our results suggest that the study of disability associated with different types of disorder may provide useful information in any treatment plan. The results also point to the usefulness of the ICIDH classification in the study of adolescent psychopathology. However, more research needs to be aimed at developing and refining measures of disability based upon the ICIDH. For example, self-report of disability would provide a more complete view of the relationship between psychological disorder and disability in adolescence. Furthermore, future research may determine whether disabilities represent risk factors for mental health disorders or vice versa.

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