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Classification of Adolescents who Take Overdoses

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Summary: A simple method of classifying adolescent self-poisoners into three sub-groups on the basis of the duration of their problems and the presence or absence of behavioural disturbance is described. The three groups differed markedly in terms of factors concerning their families, especially their relationships with their parents, and in their medical and psychiatric histories, the nature of their overdoses and the problems they were facing at the time. The treatment offered to members of the three groups also differed. The method of classification may offer a useful means of distinguishing between subjects in terms of outcome, including subsequent adjustment and repeat attempts.

The reasons why deliberate self-poisoning in young people is causing considerable concern have been discussed elsewhere (Hawton *et al*, 1982). For those working in services which provide care for such adolescents it is clear that they form a very heterogeneous group. Like adults they differ widely according to their backgrounds, problems, the nature of their overdoses and in terms of their outcome. If it were possible to classify adolescent self-poisoners into sub-groups with clinical and prognostic significance it could greatly assist assessment and treatment. In addition, such a typology would also provide a useful basis for further research.

Previous efforts to develop typologies of both adults and adolescents who attempt suicide (Bancroft *et al*, 1977; Henderson *et al*, 1977; Choquet *et al*, 1980) have tended to generate sub-groups by statistical techniques such as cluster analysis or multidimensional scaling procedures. The problem with classifications of this kind is that the sub-groups tend to consist of such complex constellations of factors that, despite their theoretical usefulness, they are of little clinical value.

Here the development of a simple method of classification of adolescent self-poisoners is reported based on clinical and research experience. The classification is examined in respect of the patients' backgrounds, overdoses, problems preceding the overdose, treatment and subsequent adjustment.

Method

The identification and investigation of a consecutive sample of 50 adolescents admitted to a general hospital following deliberate self-poisoning has been described elsewhere (Hawton *et al*, 1982). The sample consisted of two groups: 25 aged under 16 years and 25 aged 16–18 years.

Each adolescent was first assessed by a member of the clinical psychiatric service. Immediately after this assessment a member of the research team carried out an initial research interview. During the interview the patient's score on the Beck Scale of Suicidal Intent was recorded (Beck *et al*, 1974). Subsequent treatment was organized by the clinical service, independently of the research team's findings. One month later the research interviewer carried out a follow-up interview and made ratings of outcome including a global rating. A full follow-up assessment was obtained for all 50 subjects. During the year after the initial overdose any further attempts resulting in re-referral to the general hospital were identified.

Development of method of classification

In order to develop a method of classification which would be useful in clinical practice, it was clearly necessary to make it simple and base it on the differentiation between individuals rather than specific symptoms or personal characteristics (Kreitman, 1977). Several different methods of classification were investigated during the course of the study. A major difficulty encountered at this stage lay in the problem of how to classify patients with psychiatric disorders. Such adolescents invariably faced other serious problems, In addition, the diagnosis of psychiatric disorder in adolescents is known to be unreliable, the position of personality disorders being particularly unclear. It was therefore decided that the presence or absence of psychiatric disorder was not a useful basis for classification.

The method of classification which was developed is

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simple yet comprehensive. It contains three sub-groups, which are defined by the duration of the patient's problems and the presence or absence of behavioural disturbance:

Group I: Acute—problems identified at the time of the overdose had persisted for less than one month; no behavioural disturbance.

Group II: Chronic—problems identified at the time of the overdose had persisted for one month or more; no behavioural disturbance.

Group III: Chronic with behaviour disturbance—problems identified at the time of the overdose had persisted for one month or more; recent behavioural disturbance (e.g. repeated truanting, stealing, drug taking, heavy drinking, fighting, in trouble with the police).

This classification system was finalized before any of the analyses concerning outcome data were carried out. The adolescents were classified only on the basis of information *available at the time of the initial assessments* concerning the duration of their problems and whether they had shown any behavioural disturbance. Information concerning their family backgrounds, precipitants for the overdoses, the nature of the overdoses, subsequent treatment and outcome were not taken into account in allocating subjects to the three categories. Three members of the research team (K.H., J.O. and M.O.) independently classified all 50 cases. They were in total agreement as to the allocation of 36 (72 per cent) cases. The remaining 14 subjects were finally classified after discussion and negotiation.

Three case vignettes are provided in the Appendix to illustrate each category.

Further examination and validation of the classification

In order to assess the usefulness and validity of this method of classification the three groups were first compared on several variables including: details of background; upbringing and family relationships; number and type of problems at the time of the overdose; and seriousness of the overdose in terms of suicidal intent. It was expected that this comparison would reveal differences between the three groups since the data on which some subjects were classified may indirectly have been influenced by some of these variables. The predictive value of the classification was investigated by examining it in relation to the treatment provided, and the outcome of the three groups in terms of the overall adjustment at follow-up and further attempts. It was predicted that Group I would have a better outcome than Group II, which, in turn, would have a better outcome than Group III.

The reasons for omitting a control group in this study have been discussed elsewhere (Hawton *et al*, 1982). However, a suitable study of a general sample of adolescents is available (Porteus, 1979), and the sub-groups of adolescent self-poisoners are compared with data from that study wherever possible.

Results

Classification of the 50 adolescents

The two age groups, under 16 years and 16–18 years, were evenly represented in all three categories, except that Group I included rather more younger subjects (Table I). Just over half the adolescents were classified in Group II. The five males were all in Groups II or III.

The adolescents' families

Upbringing: Comparison of the three groups showed differences in upbringing after the age of 11. For example, almost all of those in Groups I and II had lived with one or both of their parents during this period compared with only half of those in Group III. The adolescents in Group III were particularly likely to have lived in more than one environment since the age of 11 (e.g. with foster parents and with relatives other than their parents). None of those in Group I had ever been in care, compared with a few in Group II and one third of those in Group III. A third of those in Group III were in care at the time of the overdose.

Adolescents in Group III tended to come from larger families (mean no. children $= 5.33 \pm 2.61$) than those in either Group I (mean no. $= 3.90 \pm 2.02$; $t = 1.42$, NS) or Group II (mean $= 3.18 \pm 1.98$; $t = 2.86$, $P < 0.01$).

Family psychiatric history: The proportion of adolescents for whom at least one other family member (parent or sibling) had received psychiatric treatment was small in Groups I and II, but amounted to one half in Group III.

The relationship between the adolescents and their families: As Table I shows, communication between the adolescents and their fathers in all three groups was almost universally reported as being poor (i.e. never able to discuss problems). Subjects in Group III particularly appeared to have problems with their fathers. Half of those in this group who were in contact with their fathers reported that the relationship was always difficult, and many had rows more than once a week. In addition, just under half of this group had no contact at all with their fathers. The most outstanding finding concerning the relationship with mothers was that nearly all Group III reported poor communication.

When reported alienation from parents in the three groups was compared with the findings of Porteus's (1979) study of 13–15-year-olds in the general popu-

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TABLE I
Classification of the adolescents into the three groups according to age group and sex and parental relationships

		Group I	Group II	Group III
Age group	Sex	Acute	Chronic	Chronic with behaviour disturbance
Under 16 years	F	7	11	4
	M	0	2	1
16–18 years	F	3	14	6
	M	0	1	1
Total (n = 50)		10 (20%)	28 (56%)	12 (24%)
		Relationship with father		
Difficult		1	8	4
Rows > 1/week		1	4	5
Poor communication		7	16	6
		Relationship with mother		
Difficult		2	7	4
Rows > 1/week		1	10	2
Poor communication		2	10	7

lation, adolescents in Group I appeared to be similar, in most respects, to adolescents in general, whereas those in the other two groups had far more disrupted relationships with their parents. In this general population study, rows at least once a week with fathers were reported by 10 per cent, and with mothers by 17 per cent (cf., Table I). 'Communication difficulties with parents' were reported by 9.5 per cent. More of Group I appeared to have poor communication with their fathers than adolescents in general, but the proportion having difficulty talking to their mothers was of the same order. The findings for Group II and III were clearly very different from those of the general population for all these factors.

Physical and psychiatric history

Previously it was reported that these adolescents had a high rate of general hospital admissions (Hawton *et al*, 1982). This was entirely due to subjects from Groups II and III in which 21 per cent and 25 per cent respectively had been admitted to hospital. In addition, 42 per cent of those in Group III had a current physical disorder (not necessarily amounting to a problem) compared with 20 per cent in Group I and 29 per cent in Group II.

None of the adolescents in Group I had ever seen a psychiatrist, whereas 14 per cent of Group II and 67 per cent of Group III had done so. No previous suicide attempts resulting in hospital referral had been made by subjects in Group I, compared with 7 per cent of those in Group II and 33 per cent of those in Group III.

The overdoses

Most adolescents in Group III reported that the overdose was impulsive, in that it had been premeditated for less than an hour (Table II). Nevertheless, compared with Groups I and II, a greater proportion in this group said that they had wanted to die at the time of the overdose. The mean Beck Suicidal Intent Scale score (Beck *et al*, 1974) was significantly higher in Group III than in Group I ($t = 2.901$, $P < 0.02$). The overdoses of the adolescents in Group II had less often followed a precipitant (usually a row) than those in the other two groups ($\chi^2 = 4.121$, $P < 0.05$).

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TABLE II
Characteristics of the overdoses

	Group I	Group II	Group III
	Acute (n = 10)	Chronic (n = 28)	Chronic with behavioural disturbance (n = 12)
Contemplated overdose for less than one hour	7	17	9
Followed a clear precipitant	9	14	9
Wanted to die	1	9	7
Beck Suicidal Intent Scale score: Mean (SD)	5.1 (±4.5)	8.6 (±5.3)	9.6 (±2.1)
Will repeat	0	5	5

None of the adolescents in Group I said that they thought they might repeat their attempts, in contrast to several in both the other two groups.

Problems facing the adolescents at the time of their overdoses

Several differences between the groups in terms of current problems were apparent. Psychiatric problems (usually involving symptoms of depression or personality problems) were confined to Groups II and III. Over half of Group II and almost all of Group III were having difficulties with either school or work. Unlike those in the other two groups, the adolescents in Group I were not experiencing problems of social isolation. Although over half the patients in Group I had current problems in their relationship with parents, this was even more common in Group II and III. As expected from the method of classification, problems with alcohol and drugs were almost totally confined to Group III. Problems with boyfriends or girlfriends, and problems of current physical health, were evenly distributed throughout the groups.

Adolescents in Group III had a greater mean number of problems per subject than Group II ($t = 2.81$, $P < 0.01$), while those in Group II had a greater number than those in Group I ($t = 2.31$, $P < 0.05$).

When problems involving relationships with parents, siblings, boy/girl friends and rows with peers were grouped together as 'problems in current relationships', they constituted a greater *proportion* of the total number of problems for adolescents in Group I (65 per cent) than those in Group II (44 per cent) or Group III (35 per cent). Adolescents in Groups II and III did not have *fewer* of such problems but they constituted a lower proportion of the total. Problems for many of those in Group I were almost entirely confined to difficulties with current relationships.

Treatment

There were differences in treatment offered to the three groups (Table III). Many more of the adolescents in Group II were offered out-patient or domiciliary treatment by the clinical assessors compared to those in the other groups, whereas a far higher proportion of Group I were returned to the care of the general practitioner. Group III contained more subjects who were referred for psychiatric hospital care or to social services.

Outcome

Findings at the one month follow-up differed considerably between the three groups (Table IV). The proportion of patients who believed the overdose had helped alleviate their problems was highest in Group I and lowest in Group III. Objective assessment of overall adjustment followed the same pattern. Surprisingly, 50 per cent of those in Group III had changed address at follow-up, compared with 14 per cent in Group II and none in Group I.

Comparison of the three groups one year after the initial overdose revealed a striking difference in the proportions who engaged in further self-poisoning or self-injury (Table IV). In Group III, half repeated within a year, and a further girl repeated within 13 months. The repetition rate in Group III was significantly greater than in the other two groups combined ($\chi^2 = 13.289$, $P < 0.001$).

Discussion

A method of classification of adolescent self-poisoners has been described which is based on

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TABLE III

Treatment arranged for the adolescents in the three groups

Treatment	Group I Acute (n = 10)	Group II Chronic (n = 28)	Group III Chronic with behavioural disturbance (n = 12)
Counselling by clinical assessor	2	14	2
Return to the care of general practitioner	7	7	1
Social Services	0	2	3
Child Guidance	0	4	0
Psychiatric hospital:			
in-patient care	0	0	3
out-patient care	0	0	1
Patient refused treatment	1	1	2

TABLE IV

Outcome for the three groups of adolescents

Outcome	Group I Acute (n = 10)	Group II Chronic (n = 28)	Group III Chronic with behavioural disturbance (n = 12)
After one month			
Patient reported that overdose led to improvement in problems	6	15	4
Research interviewer rated overall adjustment 'improved'	9	21	3
After one year			
Repeat attempts	1	0	6

information obtained at the time of presentation to hospital. The classification is simple, consisting of three categories, which differ only in the duration of the patient's problems and the presence or absence of behavioural disturbance. Despite its simplicity it appears to offer a practical, clinically useful method of distinguishing groups which differ in upbringing, family background and, more significantly, prognosis. Clearly the classification now requires validation on another sample, preferably involving larger numbers than in the present study.

Further investigation with larger numbers of subjects may also lead to refinements in the classification: for example, it is not known how an adolescent with acute problems *and* disturbance of behaviour might best be categorized, since there was no such case in this series. In addition, inclusion of information from other sources, such as the parents, may lead to other improvements.

It is interesting that the sub-groups were also distinguished in terms of the nature of the overdoses. Thus, compared with the other groups, subjects in

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Group III typically took impulsive overdoses, but more often expressed a desire to die, and scored higher on the objective measure of suicidal intent provided by the Beck Suicidal Intent Scale. This suggests that these subjects are likely to resort to self-poisoning with little fore-thought yet serious intent. In view of these characteristics, this group may contain those most at risk of subsequent suicide.

The absence of boys from Group I suggests that suicidal behaviour in young males only results from persistent problems. In some girls, by contrast, acute transient problems appear sufficient to precipitate self-poisoning.

Although members of the clinical service arranged treatment without being aware of the classification system, the sub-groups differed in terms of help offered to them. Only a small minority of the acute group were assessed as needing treatment, and for these a few sessions of out-patient counselling were judged appropriate. The other two groups were more likely to be offered help, and treatment tended to be extended over a longer period. Follow-up findings in these groups suggest that treatment was necessary. Although it may have been fairly effective for Group II in resolving problems or preventing repetition, this was not so in Group III.

Comparison of Group I with a general sample of adolescents suggests that this group does not markedly differ from normal teenagers, whereas the other two groups clearly do. This raises the important question of why the adolescents in Group I resorted to self-poisoning at a time of stress. The behaviour did not appear to have been learned vicariously, since three-quarters denied having acquaintances who had done the same thing. Further investigation is required to answer this important question. The possible role of the media in this respect needs to be explored.

The system of classification described here bears only limited similarity to that of Choquet *et al* (1980). Using cluster analysis, they generated four clusters of adolescents 'Types I–IV'. Type I is most like our Group III, being characterized by 'unfavourable socio-familial factors'. This type contained more boys, more psychiatric problems and had a high rate of further attempts. Type II appears to differ little from Type I. Type III adolescents had only mildly disrupted upbringing, took the overdose in response to emotional and health problems and were unlikely to repeat. This type has a few factors in common with our Group II, but otherwise the latter does not closely resemble any of the four types. On the other hand, Type IV adolescents are very similar to those in our Group I, in that they are mostly girls, with relatively normal backgrounds.

The characteristics which differentiated the three groups in our classification are similar to those that Rutter *et al* (1976) found distinguished between psychiatrically disordered and normal adolescents. They included: living apart from natural parents, evidence of alienation from parents (including communication difficulties and rows), having been in care and parental marital discord and separation.

Our method of classification has produced three groups, each of which appears to be homogeneous and which differ markedly from each other. The adolescents in Group I appear to be relatively normal, with transient problems which resolve rapidly. They have problems in their relationships with important individuals, rather than with the family as a whole, institutions or society. These problems seem to consist of acute conflict in the setting of otherwise reasonably adequate relationships.

Group II also had problems in relationships, but they tended to be with family or friends as a whole rather than with isolated individuals. Their relationships appear to be characterized by chronic alienation or separation, rather than acute conflict. Although they claim to have friends, they often appear lonely and isolated. Many seem sad, although not suffering from a depressive illness in any formal sense.

The subjects in Group III describe problems with institutions or society in general, such as truancy, conflict with social services, etc. They had few, if any, close personal relationships, but did not express this as a problem. In this group it seems likely that self-poisoning is part of a range of behavioural disturbance which includes stealing, fighting, habitual drunkenness, etc. Problems remained largely unchanged at follow-up and the repetition rate was high. The outlook for this group seems poor. Many appeared to be well on the way to developing major personality disturbances and might be at risk of successful suicide.

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References

Bancroft, J., Skrimshire, A., Casson, J., Harvard-Watts, O. & Reynolds, F. (1977) People who deliberately poison or injure themselves: their problems and their contacts with helping agencies. *Psychological Medicine*, 7, 289–303.

https://doi.org/10.1192/bjp.140.2.124 Published online by Cambridge University Press

BECK, A. T., SCHUYLER, D. & HERMAN, I. (1974) Development of suicidal intent scales. In *The Prediction of Suicide* (eds. A. T. Beck, H. L. P. Resnick and D. S. Lettieri). New York: Charles Press.

CHOQUET, M., FACY, F. & DAVIDSON, F. (1980) Suicide and attempted suicide among adolescents in France. In *The Suicide Syndrome* (eds. R. Farmer and S. Hirsch). London: Croom Helm.

HAWTON, K., O'GRADY, J., OSBORN, M. & COLE, D. (1982) Adolescents who take overdoses: their characteristics, problems and contacts with helping agencies. (Submitted for publication). *British Journal of Psychiatry*, **140**, 118–23.

HENDERSON, A. S., HARTIGAN, J., DAVIDSON, J., LANCE, G. N., DUNCAN-JONES, P., KOLLER, K. M., RITCHIE, K., MCAULEY, H., WILLIAMS, C. L. & SLAGHUIS, W. (1977) A typology of parasuicide. *British Journal of Psychiatry*, **131**, 631–41.

KREITMAN, N. (1977) *Parasuicide*. London: John Wiley.

PORTEUS, M. A. (1979) A survey of the problems of normal 15 year olds. *Journal of Adolescence*, **2**, 307–23.

RUTTER, M., GRAHAM, P., CHADWICK, O. F. D. & YULE, W. (1976) Adolescent turmoil: fact or fiction? *Journal of Child Psychology and Psychiatry*, **17**, 33–56.

Appendix

Cases illustrating the three groups

Group I: Acute problems

S.E., a 17-year-old shop assistant, lived with her mother, brother and a sister, her parents having separated when she was 12-years-old. She generally enjoyed a good relationship with the family but had a row with her mother the night before her overdose. The following evening she rowed with her boyfriend after they had been drinking (which was unusual for her). On getting home she took an impulsive overdose of her mother's Distalgesic tablets. Her mother was in the next room.

The reasons she gave for her overdose were: to escape for a while from an impossible situation; to make people understand how desperate she was feeling; to try to influence some particular person or get them to change their mind; to find out whether someone really loved her or not; and to show how much she loved someone.

She said she had not wanted to die and regretted taking the overdose. Her Beck Suicidal Intent Scale score was only 2.

It was thought she had problems concerning her boyfriend and also with her finances. After the clinical assessment she was returned to the care of her general practitioner but given open access to telephone the clinical assessor if she got into further difficulties.

At follow-up she appeared cheerful. Her relationship with her boyfriend had returned to normal but she still had some minor financial problems. Her overall adjustment was rated as 'improved'.

Group II: Chronic problems

M.C., a 14-year-old schoolgirl, lived in a small village where she felt isolated from her friends. She found her parents narrow-minded and was unable to discuss any of her problems with them. In addition her younger brother annoyed her. At school she got on badly with several teachers and found the work difficult. She had a boyfriend but thought the relationship was insecure. They had recently started having sexual intercourse and she felt guilty about it. Following a row with her boyfriend she went home and took an overdose of paracetamol in her bedroom. Subsequently she told her parents what she had done.

When seen by the research interviewer she said she had felt angry and lonely when she took the overdose and gave the following reasons for it: to get relief from an intolerable state of mind; to escape from an impossible situation; and to make people understand how desperate she was feeling.

She also said she had wanted to die. Her Beck Suicidal Intent Scale score was 12.

After discharge from hospital she was seen in her own home on three occasions by the therapist who had assessed her, and found the therapist's confidential, non-judgemental attitude helpful.

At the follow-up assessment, which was during her school holiday, she reported that her parents were trying to understand her but she still could not communicate with them. The problems with her boyfriend had improved particularly since they had stopped having intercourse. She still had a difficult relationship with her brother and was feeling just as isolated as she had before her overdose. Her overall adjustment was rated 'unchanged'.

Group III: Chronic problems with behaviour disturbance

N.H., a 16-year-old girl and the third eldest of four children, came from a very disturbed background in which her father had been violent to all the members of the family. At the time of her overdose he was in a secure unit of a Special Hospital as a result of a violent offence. Although she had a reasonable relationship with her mother, from the age of 13 she began to truant from school and run away from home. As a result she lived in several foster homes, children's homes and hostels. Her behaviour at school had been described as uncontrollable and she was therefore allowed to leave early.

She had engaged in self-cutting on several occasions and self-poisoning once in the past. Her overdose of aspirin tablets appeared to result from her dislike of the hostel where she was currently living under a Care Order and her wish to be allowed home.

The reason she gave for the overdose was: to show how much she loved someone (her mother).

She said she had wanted to die. Her Beck Suicidal Intent Scale score was 13.

The research interviewer thought she had problems with

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her parents, and also that she was insecure and disorganized and prone to impulsive behaviour.

She was returned to the care of Social Services and by the time of the one month follow-up she had, as she wished, been allowed to live at home. However her relationship with an elder sister was very poor and the sister took an overdose as a result. Her overall adjustment was rated 'unchanged' although, in her eyes, the overdose had produced the desired result of her being allowed home. She took a further overdose ten months later.

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