

The Development and Application of Sociometric Techniques for the Identification of Isolated and Rejected Children

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A child's relationships with his peers may have crucial implications for his adjustment and academic achievement. There is indeed a substantial body of literature which points to a close association between inadequate social relationships and indices of maladjustment or disturbance. The nature of this relationship is complex and the precise causal direction is difficult to establish. It is likely, however, that difficulties in interpersonal functioning are often responsible for generating further problems. Hence, it is important, in view of both the potential repercussions of such difficulties and the discomfort and unhappiness that they create, to be alerted to them, so that preventive or interventive measures may be considered. Identification of children with peer difficulties is the first step: the second is to assess the significance of such anomalies. This exercise is an essential preliminary to intervention since it would ensure that the help given, if it is indeed necessary, is appropriate and sensitive. It is important that identification is precise and accurate and the most easily accessible source of information as to peer relationships – teachers' reports – may not, in fact, be sufficiently complete (Phillips and DeVault, 1955). Of the methods available to complement teachers' ratings, sociometric assessments are amongst the most sensitive and widely employed.

The purpose of this paper is threefold: (i) to examine the relevance of sociometric status to general adjustment (ii) to describe the development and administration of companionship choice and guess-who techniques and (iii) to describe the results of employing these to identify school children who are either isolated or rejected. This sociometric exercise formed part of a major study in the identification and management of maladjusted children and children at risk for such disturbance (Kolvin *et al* 1976a).

Sociometric status and adjustment

Sociometric status may be defined as the extent to which an individual in a group obtains positive or negative companionship choices from his peers. Studies of children's standing in the peer group have been numerous, and many of these have sought to establish the re-

lationship of sociometric status with a host of factors, such as leadership, personality characteristics, demographic variables, intelligence and performance, as well as with adjustment (Lindzey and Byrne, 1968).

We concerned ourselves with two aspects of sociometric status: *isolation*, where few, if any, acceptance choices are obtained; and *rejection*, which is a function of the number of negative choices obtained. There is much evidence to show that isolation and rejection are not merely different labels for the extreme end of the one dimension (*e.g.* Sells and Roff, 1967; Moore and Updegraff, 1964). As Hartup (1970) points out, only moderate negative correlations are typically obtained between positive and negative choices. When a child receives a low number of positive choices from the group, this sometimes merely implies indifference: only in some cases is negative evaluation also implied. Furthermore, it should not be assumed that children who are isolated, for example, within a particular grouping are necessarily 'maladjusted', miserable or unhappy. Inferences such as these should be made on the basis of more comprehensive information than that supplied by sociometry alone. One frequently encounters isolated children who are not adversely affected by being relatively friendless: Gronlund (1970) described 'self sufficient' children who deliberately withdrew from interaction with peers, and do not want to seek their attention.

Notwithstanding this caveat, there is a substantial body of evidence showing that unfavourable sociometric status tends to correlate with indices of maladjustment. A number of studies employing scores on the California Test of Personality as adjustment criteria have shown a close relationship between lack of popularity and poor psychological adjustment: this was true of elementary (Bonney, 1944) and secondary school age children (Bauer, 1971; Grossman & Wrighter, 1948; Semler, 1960). Self-reported anxiety – as measured by the Children's Manifest Anxiety Scale – similarly appears to be associated with poor status amongst peers (Horowitz, 1962; McCandless *et al*, 1956; Trent, 1957). The same pattern of relationships is evident when adjustment is judged by teacher ratings (Glidewell & Swallow, 1968; Yellott *et al*, 1969; Chazan, 1963; Ullman, 1952).

Numerous other characteristics indicative of psychological difficulties have been associated with poor sociometric status, such as, for example, presence of psychomatic ailments (Izard, 1959), social immaturity (Shaw, 1952), aggressive behaviour (Hartup *et al*, 1967) and delinquency (Croft and Grygier, 1956).

In addition to these cross-sectional relationships, sociometric indices also have clear predictive utility. Thus, unpopular children are more likely to be disproportionately represented later in life in a community-wide psychiatric register (Cowen *et al*, 1973). Amongst the indicators identified in the Austin Longitudinal Research Project (Currie *et al*, 1974) as precursors of inadequate personal adjustment

some nine years later, rejection by peers in the first grade proved to be one of the most useful. In a four year longitudinal study of 4,000 children, Roff, Sells and Golden (1972) found that except for the lowest socio-economic class, the relationship was highly positive between delinquency and low peer acceptance scores taken four years earlier. Delinquent behaviour has been similarly predicted by Gibson and Hansen (1969), Harper (1965) and Skaberne *et al* (1965). From this brief review, it is apparent that sociometry is capable of yielding information that is rich in implication for children's current and future adjustment.

METHOD

Development of the Sociometric Instrument

(a) *Technique based on choice of companions.* This part of the instrument dealt with children's choices of companion in the class. This enabled those children who were isolated in the class, and those who were rejected to be identified. The questions selected for the companionship choice section tapped three areas: sitting beside, playing with, and doing school work with.

Researchers differ as to preference for employing specific criteria such as the above, which refer to concrete situations, or more general criteria, *e.g.* asking the question, 'who is your best friend?' Moreno (1953) asserts that specific criteria are likely to yield the more reliable and valid data. Others suggest that scores based on a more general criterion are likely to be more stable, because the variability associated with specific situational factors is eliminated (Gronlund, 1955; Harper, 1968). Since there is some evidence of a general factor of acceptability underlying sociometric choices (Frankel, 1946; Bjerstedt, 1956) it may make little difference which method is used. In this current study, it was felt desirable to employ specific criteria in order to make the requirements as clear and as concrete as possible for the young children with whom we were concerned.

While the companionship choice method, in its positive form, allows identification of children who are 'isolated' in a class *i.e.* those who receive the fewest positive choices, it does not indicate which children are actively rejected, since the isolated child and the rejected child are clearly not necessarily one and the same. Accordingly, the negative form of the questions relating to the three areas was also adopted *i.e.* pupils were asked to select children they would not like to sit beside, etc. There has been a tendency in sociometric studies to emphasize positive rather than negative choices, for a number of reasons. Possibly the major reason is the objection that the use of rejection choices will draw undesirable attention to those children who are negatively evaluated and encourage the crystallization of negative feelings towards them. It is also suggested that rejection measures may evoke resistance and resentment on the part of either children or teachers since our culture does not favour

admission of negative feelings (Harper, 1968). We were aware of these possible difficulties and sought to overcome or minimize them by carefully considered introduction of our measures, to the teachers and to the children, as described in a later section. Our decision to use a rejection measure was guided by the clinical impression that those children who were actively rejected were quite different from those who were merely non-recipients of positive choices and by the conviction that concentrating on the latter would result in the loss of much significant information.

It has been found that the reliability of any sociometric measure increases with the number of choices that children are given, on any one criterion, up to five; beyond that number, additional choices do not significantly improve reliability (Newstetter, Feldstein and Newcomb, 1938). In the present study, brevity was considered essential since the sociometric instrument was part of a screening battery. Furthermore, we thought children in the age group with which we were dealing might have some difficulty in making as many as five choices on each criterion. The number of choices required was therefore limited to three for each criterion. The complete companionship choice questionnaire is to be found in APPENDIX 1.

(b) *The 'Guess-who' Technique.* Another method of gathering information about companions is to employ a 'guess who' technique (Hartshorne and May, 1929). In this approach, children are given a list of descriptive characteristics and invited to guess which child in the class best fits the description. We wished to establish some of the characteristics of the children who were isolated or rejected. Ten items were chosen on an exploratory basis (see APPENDIX 2), each being expressed in the form of a statement *e.g.* 'some children like rough games'. Children were requested for each statement to 'guess who is like this in your class'. Only one child was to be chosen here, for each question.

(c) *Piloting the Instrument.* A pilot study was conducted with 99 seven-year-old children in three classes in a primary school. It has been found that stability of sociometric measures is directly related to degree of acquaintanceship: that is, fluctuations in social status are more marked during the early stages of group formation than after the group has become established (*e.g.* Witryol and Thompson, 1953). Accordingly, our pilot study was conducted some three months after the children had come together in the class group: these children would also have a more general acquaintanceship from their earlier schooling.

(d) *Administration.* Parents of all children involved were informed by letter about two weeks before the assessments commenced that their children would be involved in a research programme and were

thus given an opportunity to raise queries, express objections or withdraw children. The sociometric measure was introduced to head teachers and school staff as one of a battery of three screen instruments designed to identify children who were at risk for disturbance, with difficulties in interpersonal relationships being perceived as one facet of this (Bower, 1969).

The scales were administered by school staff, usually form teachers, on a group basis, during a lesson in which the children were assembled in their usual class group. It was often found convenient by the teacher to incorporate it following the morning registration; administration time was about forty minutes. Choices on all criteria were restricted to children within that class. While a child may have a stable affiliation with children from classes other than his own, it was considered a reasonable assumption that a socially adjusted child should be able to form favourable relations with children in his regular class, who comprise a significant group of peers (Shaw, 1954). This restriction also facilitates data handling, and is compatible with other traditional screen measures which are class based, *e.g.* teacher behaviour ratings.

On introducing the sociometric measures to the children, they were told that the same request was being made of many other schools in the North East and that we were interested in seeing how children chose their companions. In an attempt to avoid a situation in which children would respond in a manner they felt 'expected' of them by the teacher, and to encourage uncontaminated preference choices, it was stressed that on questionnaires of this nature, wide differences often occurred in choices. Children often like to do things with certain children but not with others, and some might choose children that the others would not choose. As with all our school research the confidentiality of their choices was emphasized, the children being told that once completed, their forms would be placed in a sealed envelope for collection by a member of the research staff, and would not be discussed with any teachers in the school.

Since problems were encountered with the legibility of some of the children's responses a member of the research staff was always present to help the teacher concerned, giving the children individual help where needed, clarifying responses, and generally ensuring the choices could be deciphered. With all classes, teachers were requested to read out the instructions printed on the forms to avoid ambiguity and misinterpretation. Where difficulty was envisaged by teachers concerning the ability of the children to spell the names of their class mates, they were asked to write class lists on the blackboard. Each teacher was asked to indicate the number of children in the class, and the number of absentees on the day in question. Forms were retained for absentees for completion on their return. No returns were requested for children who were still absent three weeks after the initial administration.

(e) *Results of the Pilot Study.* It was evident from this exercise that some abbreviation of the instrument was necessary. With the companionship choice, we examined the inter-item correlations (TABLE 1) with a view to excluding any item which appeared to yield redundant information. From the correlations within the rejection group, 'not like to play' and 'not like to do school work with' showed the closest relationship. The latter item was excluded since, in its correlation with 'not like to sit beside' it showed a closer relationship than did 'not like to play with' – in effect it was making little independent contribution. The correlations within the acceptance group did not show the same disparities as those within the rejection group, so it made little difference as to which item was excluded. For the sake of similarity 'like to do school work' was dropped.

With the 'Guess-who' section, we sought a compromise between the need for brevity, acceptability to children and teachers and the avoidance of potentially provocative items on the one hand and, on the other, the need to include items that were of proven usefulness in the literature. We therefore dropped six items and introduced one new buffer item. APPENDIX 2 shows the final form of the 'Guess Who'.

(f) *Test-retest Reliability.* The test-retest reliability of choices was assessed by administering the shortened version of the instrument on two occasions, $4\frac{1}{2}$ weeks apart, to a total of 58 seven-year-old children in two primary classes. In the companionship choice section (see TABLE 2) Acceptance and Rejection show greater stability than either of their two contributory items, as would be expected, since they represent a combination of these items. The greater stability of the rejection items suggests that the characteristics that elicit rejection may be more fixed and more resistant to change than those which produce acceptance.

Amongst the guess-who items, the least satisfactory stabilities are yielded by the two items relating to teasing and to the disliking of games and rough games. The roles of 'teaser' and 'teased', and dislike of games of any kind may therefore be relatively transitory. Patterns of teasing may not be well established at this age and the greater stability we have observed for items relating to teasing with a sample of 11–12 year-olds would support this interpretation.

THE MAIN STUDY

Following piloting and modification of the instrument it was administered to 533 children, 278 boys and 255 girls. These children ranged in age from 6 years 10 months to 8 years 6 months, averaging 7 years 10 months. They were in a total of 18 classes in six schools.

Treatment of the data

(a) *Scoring.* Raw scores were obtained for each child on each

criterion by a simple tally of choices obtained. Addition of the number of positive choices on the companionship choice measure gave the raw score on the acceptance dimension; the sum of negative choices obtained constituted the rejection score.

The question of whether corrections were necessary for raw scores to take differences in class size and sex distribution into account was then examined. A correction ready reckoner was developed by one of us (R.G.) similar to that described by Bronfenbrenner (1943). This employs a chance model, identifying persons who receive significantly more or fewer choices than would be expected by chance. Adjustments can be made for variations in class size, so that comparability can be achieved in terms of number of possible choices that can be received. Children were rank ordered on raw scores and corrected scores for isolation and rejection in turn. Correlations in the order of .99 were obtained for the class size analysis and also when boys and girls were combined or separated. For practical purposes, therefore, the correction made very little difference to the scores allocated to the children within the class size range of 24-34 with which we were dealing and in subsequent work, raw scores only were employed.

(b) *Establishing cut-offs.* Our decisions regarding cut-offs on the acceptance and rejection scales had to be educated guesses. We chose cut-offs at the extreme end of the distribution curve which, in practical terms, would lead to the inclusion of about two children who were isolated and two who were rejected in a class of 33 children. This implied adopting the point on each scale that would identify about 6% of the children. From our pilot data, we estimated that one positive choice or no positive choices would yield this percentage and indicate isolation, and fourteen or more negative choices similarly indicates rejection.

(c) *Numbers identified.* From the 533 children who participated in the sociometric exercise, 52 emerged as isolated, and 45 as rejected. This was a higher yield than anticipated on the basis of our pilot study, the isolation cut-off producing 8.4% as opposed to 6.7% and the rejection cut-off producing 8.4% as opposed to 6.7%. There were seven children who were both isolated and rejected, and six of these were boys. In the isolation group, there were 24 boys and 28 girls but a significantly different sex distribution is apparent in the group of rejected children as shown in TABLE 3. There are 31 boys here, as against 14 girls (as a group, these boys also receive *higher* rejection scores than the girls).

The distributions of the acceptance and rejection scores are both positively skewed, the acceptance distribution having a modal value of 3 while the modal value of the rejection distribution is 2. No child

received more than 23 acceptance choices, but the tail of the rejection distribution is much more extended, with one child receiving as many as 36 negative choices. While our cut-offs were selected to identify two isolated and two rejected children in each class, we found considerable variation across classes. In the 18 classes we studied we found a range of 1 to 7 isolates in a class, and 0 to 6 rejectees.

(d) *Correlations of sociometric criteria.* We consider first the inter-item correlations within the companionship choice section (TABLE 4).

The extent of correlation observed between acceptance and rejection ($r = -.25$) while significant for a sample of this size, bears out the supposition that the child scoring low on popularity is not necessarily also rejected. The positive criteria correlate highly with each other, as do their negative counterparts.

TABLE 5 shows the correlations between Acceptance and Rejection on the one hand, and the guess who items on the other.

These correlations indicate some of the characteristics that are associated with acceptance and rejection in the class groupings. The characteristics of liking games, but not rough games, looking smart and not acting like a baby are strongly associated with acceptance, while their reciprocals are associated with rejection. Not surprisingly, given the role of physical appearance in interpersonal attraction, 'not looking smart' has a particularly strong link with rejection. While the child who is teased appears to be rejected, the child who does the teasing receives an even stronger negative evaluation.

The third group of correlations to examine are those within the guess-who items (TABLE 6).

In the items which show a strong association with rejection, liking rough games, teasing, acting like a baby, and not looking smart form an inter-related cluster. It is interesting that at this age, these children clearly perceive teasing and rough games as babyish activities. Liking games is strongly linked with looking smart and not acting like a baby, both of which are also highly related.

Discussion

Our purpose in developing these sociometric techniques was to provide a method of identifying children who had difficulties in their relationships with classmates. The method we have devised seems reasonably reliable and within the range of class size described, it is applicable without conversion of raw scores. It is, furthermore extremely flexible and can readily lend itself to a variety of uses. While we were interested only in scores at the extremes of acceptance and rejection, the whole network of positive and negative choices may be of value. Data such as those presented here could be the springboard for classroom reorganization or intervention designed

to help particular children, or modify their role. Patterns of liking and disliking are important in relation to seating arrangements, and where group activities are being organized, they can be fundamental to the degree of cohesion that is achieved. It is not intended to elaborate here on methods of helping children with interpersonal difficulties (Macmillan and Kolvin, 1976; Walker and Hops, 1972; Gottman *et al*, 1976).

While information derived from 'guess-who' data can yield useful descriptions of the isolated or rejected child, it must be borne in mind that such information tells us only of correlations, not causes. For example, in the case of the child who persistently teases others, does the teasing lead to his rejection, or is it that the child senses his rejection, and resorts to teasing as an inept and inappropriate attempt at interaction, lacking the requisite social skills? However, if we are concerned with helping such children, intervention need not await precise specification of root causes, and tentative hypotheses as to causally significant aspects of behaviour can be based upon 'guess-who' data. In the above situation, for example, we might seek to modify rejected status by directly attempting to control episodes of teasing.

The question of the clinical significance of our designation of children as isolated or rejected is an important one and is discussed in detail elsewhere (Kolvin *et al*, 1976). We have found isolation to be less closely related than rejection to disturbed behaviour, whether rated by either parents or teachers. This confirms the impression that lack of popularity is not necessarily synonymous with poor adjustment. So while the available literature suggests that difficulty with peer relationships may frequently be a concomitant of more general disturbance, this association may be stronger in the case of rejected status. Indeed, if our findings have generality, it may be that the tendency of researchers to shy away from rejection measures has in fact led to an understating of the strength of the relationship.

Consideration of sex-role expectations further complicates interpretation of the significance of isolated and rejected sociometric status. In view of expectations for boys to be assertive and dominant and for girls to display relatively greater inhibition and more passive behaviour, it could be argued that isolation in the case of a boy constitutes a greater inconsistency with expectations than does isolation in a girl. In the context of rejection the situation is reversed. Our observation of a 2 to 1 boy to girl ratio in the group of rejected children suggests that the characteristics or attributes that are associated with rejection could be regarded as more typical of boys than of girls in terms of differential sex-role expectations. It is possible that role inconsistency may reflect greater disturbance so that the most severe problems of adjustment would be found in isolated boys and rejected girls. These questions will be examined in a subsequent paper.

Conclusion

We have in this paper discussed the development and application of a sociometric instrument, and reported some findings. Our method is readily applicable by other workers, with identical or modified content, and the data it is capable of producing are amenable to numerous applications. We sought at all stages of our work in the schools to make the instrument acceptable to children, teachers and parents, and in its final form, we feel an appropriate balance was achieved, between this acceptability on the one hand, and utility of the data on the other.

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Appendix 1: Companionship choice form

NAME.....

YOUR CLASS

Here are some questions about your class. Read them carefully.

These questions are about children you like to do things with. You will like to do things with some children but not with others. But different children like to do things with children you do not choose.

Fill in every space with the name of a child in your class. You can choose any one you wish, even someone who is away from school today. You can put down the same name for more than one question if you would really choose the same person. *Remember*, do not leave any blank spaces and choose only children from YOUR class.

1 (a) Which 3 children would you most like to SIT BESIDE in your class?

1. 2. 3.

(b) Which 3 children would you not like to SIT BESIDE in your class?

1. 2. 3.

2 (a) Which 3 children from your class would you most like to PLAY WITH at playtime?

1. 2. 3.

(b) Which 3 children would you not like to PLAY WITH at playtime?

1. 2. 3.

*3 (a) which 3 children would you most like to do SCHOOL WORK with, in your class?

1. 2. 3.

* (b) Which 3 children would you not like to do SCHOOL WORK with, in your class?

1. 2. 3.

* Omitted following pilot study

Appendix 2: Final 'Guess-who' form

NAME.....

YOUR CLASS

Now we would like you to play a 'Guess-Who' game. You can put down the same name for more than one question. *Remember*, do not leave any blank spaces and choose only children from YOUR class. DO NOT put in your own name, or teacher's name.

1 SOME CHILDREN ARE GOOD AT GAMES

Guess who is LIKE this in your class

Guess who is NOT LIKE this in your class

2 SOME CHILDREN LIKE ROUGH GAMES

Guess who is LIKE this in your class

Guess who is NOT LIKE this in your class

3 SOME CHILDREN TEASE OTHER CHILDREN

Guess who teases most in your class

Guess who is the one everybody teases

4 SOME CHILDREN LIKE TO LOOK SMART

Guess who is LIKE this in your class

Guess who is NOT LIKE this in your class

5 SOME CHILDREN ACT LIKE A BABY

Guess who is LIKE this in your class

Guess who is NOT LIKE this in your class

TABLE 1

Companionship choice: inter-item correlations in pilot study			
<i>Rejection</i>			
1	Not like to sit beside	v	Not like to do school work with 0.48
2	Not like to sit beside	v	Not like to play with 0.36
3	Not like to play with	v	Not like to do school work with 0.71
<i>Acceptance</i>			
1	Like to sit beside	v	Like to play with 0.70
2	Like to sit beside	v	Like to do school work with 0.52
3	Like to play with	v	Like to do school work with 0.59
N = 99. For correlations of .26 and above, $p < .01$			

TABLE 2

Test-retest reliability: companionship choice and guess-who data			
<i>Companionship Choice</i>		<i>Guess Who</i>	
ACCEPTANCE	.64	Games	Like .63
Like to sit beside	.43		Not like .37
Like to play with	.53	Rough games	Like .56
REJECTION	.87		Not like .34
Not like to sit beside	.78	Teases	.31
Not like to play with	.77	Teased	.35
		Look smart	Like .70
			Not like .69
N = 58 For correlations of .26 and above, $p < .05$			
For correlations of .34 and above, $p < .01$			

TABLE 3

Numbers of isolated and rejected children in total sample			
	Boys	Girls	Statistical significance
Isolated	24	28	$z = 0.42$ n.s.
Rejected	31	14	$z = .2.39$ $p < .02$

TABLE 4

Companionship choice: inter-item correlations					
	Like to play with	Acceptance	Not like to sit beside	Not like to play with	Rejection
Like to sit beside	.65	.90	-.20	-.16	-.22
Like to play with		.88	-.22	-.17	-.23
Acceptance			-.23	-.22	-.25
Not like to sit beside				.70	.94
Not like to play with					.88

N = 533 For correlation of .11. $p < .01$

TABLE 5

Correlations between Acceptance and Rejection and Guess-who Items										
	Games		Rough Games		Teases	Teased	Look Smart		Act Baby	
	Like	Not Like	Like	Not Like			Like	Not Like	Like	Not Like
Acceptance	.56	-.11	.07	.36	-.03	.04	.44	-.11	-.02	.46
Rejection	-.10	.51	.44	-.11	.49	.28	-.11	.59	.41	-.12

N = 533 For correlations of .11, $p < .01$

TABLE 6

Guess who: inter item correlations										
	Games		Rough Games		Teases	Teased	Look Smart		Act Baby	
	Like	Not Like	Like	Not Like			Like	Not Like	Like	Not Like
Games	Like	-.07	.14	.39	.07	.04	.58	-.03	-.03	.52
	Not like		.16	.03	.29	.37	-.10	.42	.44	-.10
Rough Games	Like				.65	.07	-.03	.35	.31	.03
	Not like				-.07	.20	.37	-.01	.05	.38
Teases						.18	-.02	.39	.37	-.04
Teased							.11	.23	.35	.02
Look Smart	Like							-.09	-.06	.51
	Not Like								.32	-.06
Act Baby	Like									-.05
	Not like									

N = 533 For correlations of .11. $p < .01$

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