SOCIOMETRIC CHOICE DIFFERENTIATION OVER CRITERIA¹

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The present study represents an attempt to explore the developmental trend in relation to the differentiation of sociometric choices on 3 criteria, best friend (F), lunch companion on an excursion (L), and sports companion (S). Ss were 614 pupils (309 boys and 305 girls) from grades 2 through 8. Analysis was made in terms of differentiation scores obtained among these criteria.

Main findings were as follows: (1) Differentiation scores obtained between F and L, as well as those between F and S, increased significantly up to grade 6, indicating the differentiation of choices given. (2) There was a tendency for differences found between the two kinds of differentiation scores mentioned above to increase among upper-graders.

A considerable number of studies (e.g., Bonney, 1946; Gronlund, 1955; Hackman & Moon, 1951; Smucker, 1949; Wardlow & Greene, 1952) have demonstrated that, in general, sociometric status on one criterion was significantly related to sociometric status on other criteria. In this connection, Bjerstedt (1956) found, in an extensive study with Swedish school children, a slight but interesting tendency toward greater differentiation of sociometric status over criteria among the older children, in that the average correlation coefficient between sociometric status as a "workmate" and as a "friend" for grades three through five was higher than that for grades six through eight. Recently Shiota (1964) made an attempt, with 4th-, 6th-, and 8th-graders, to determine the effect of different types of criteria (general, specific, and concrete) on socio-

metric status, finding that the correlation coefficients between choices received on friendship criterion and those on three other specific criteria decreased in the 8th-graders. A similar decline in the relationship was revealed, too, by the present author (1966) in an investigation with 22 classrooms of pupils from grades 2, 4, 6, and 8. The result showed that the correlation coefficients between sociometric status based on "best friend" and on "lunch companion on an excursion", and those between status on "best friend" and on "sports companion" declined significantly with an increase in grade level.

These findings, together with those by Ausubel et al. (1952) and by Ueda (1963), suggest that there is a tendency on the part of older age groups to discriminate among sociometric criteria. In other words, then, it may safely be said that older pupil's sociometric status on one criterion tends to be more differentiated from his status on another criterion.

In addition, it is generally known, as Gronlund (1959) noted, that the choices given to others vary considerably even though the sociometric status of individuals is fairly constant over different criteria. Since the sociometric status of an individual is based upon the choices given by other

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group members, the differentiation, over criteria, of the sociometric choices given to others will be expected to be highly achieved among older age groups. But, about this phase of choice behavior, surprisingly little has been known, except for a rather extensive series of choice stability studies over a two-week period by Horrocks and his co-workers (1946, 1947, 1949, 1963). Hence, the purpose of the present study was to clarify the developmental trend, if any, of choice differentiation over criteria. It was hypothesized, first, that the differentiation, over criteria, of the sociometric choices given to others would increase as grade level increased.

Secondly, as Gronlund (1959) pointed out after a review of earlier sociometric researches, the tendency of individuals to maintain the same relative sociometric status from one criterion to another is expected to be greatest where general criteria are used and where the choice situations have some psychological similarity. It follows from this that there seems to be some variation in pupil's sociometric choice differentiation due to the criteria employed, and this variation also will show some developmental trend, being somewhat greater among older age groups. This was our second hypothesis to be tested.

METHOD

Subjects. Subjects for this study were 614 pupils (309 boys and 305 girls) from grades 2 through 8 in two schools in Nara; four classrooms of the 2nd- and the 4th-graders, respectively, five classrooms of the 6th-graders, and three classrooms of the 8th-graders. There were approximately equal number of boys and girls in each classroom.

Measure. All subjects were requested to choose the three classmates on each one of the following three criteria, best friend (F), lunch companion on an excursion (L), and sports companion (S). A brief sociometric questionnaire on the criterion F was first administered to each subject, then that on the criterion L, and lastly that on the criterion S, successively on

the same day, early in July, 1965. The index adopted to measure the choice differentiation over criteria was a modified one devised originally by Horrocks and Thompson (1946) to evaluate friendship fluctuations over a two-week period. Two types of choice differentiation scores, tentatively named by the author and very similar to the fluctuation index used in the Horrocks' study, were computed for each individual by employing the following procedure, which was nearly the same as was described in some detail by Skorepa et al. (1963).

Procedure. First, the three classmates chosen by each subject on the criterion L were compared with the three classmates chosen on the criterion F. Where the classmates chosen on L duplicated in personage and rank order the classmates chosen on F, the index of choice differentiation was assumed to be zero. When the classmates chosen on L duplicated in personage but were different in rank order from those chosen on F, an index of choice differentiation was computed by assigning a numerical value of one to each rank-difference by which a classmate on L was separated from the rank he obtained on F. If a subject chose among his three classmates on L boys or girls whom he had not chosen on F, the following numerical values were assigned to these new classmates; 2 for a person not mentioned on F who became the subject's third-best classmate on L, 3 for a person not mentioned on F who became the subject's second-best classmate on L, and 4 for a person not mentioned on F who became the subject's best classmate on L. In this way, choice differentiation scores on the criterion L (L-DS) were computed. Similarly, those on the criterion S (S-DS) were figured out. These two kinds of scores, consequently, ranged from 0 (no differentiation at all over the two criteria concerned) to 9 (the highest possible differentiation over the two criteria concerned).

RESULTS

The mean differentiation scores on the two pairs of criteria (L-DS and S-DS) are shown for each grade and sex in Table 1, together with corresponding *F* values obtained in the analysis of variance based

TABLE 1
Means and *SD*s of the differentiation score between "best friend" and "lunch companion on an excursion" (L-DS), and those between "best friend" and "sports companion" (S-DS)

			Grade				<i>F</i>	<i>df</i>
			2	4	6	8		
L-DS	Boy	Mean	2.986	3.640	4.429	3.937	7.216**	3/305
		<i>SD</i>	1.690	2.096	1.894	2.174		
	Girl	Mean	2.904	3.342	4.310	3.714	13.281**	3/301
		<i>SD</i>	1.754	1.889	1.783	1.655		
	Total	Mean	2.941	3.497	4.371	3.832	16.502**	3/610
		<i>SD</i>	1.725	2.005	1.841	1.950		
S-DS	Boy	Mean	3.058	4.070	5.110	4.857	12.655**	3/305
		<i>SD</i>	1.809	2.500	2.265	2.174		
	Girl	Mean	3.000	3.785	4.954	4.304	16.111**	3/301
		<i>SD</i>	1.729	2.023	1.793	1.954		
	Total	Mean	3.026	3.933	5.034	4.597	28.270**	3/610
		<i>SD</i>	1.766	2.289	2.050	2.092		

** Significant at the 1% level of confidence.

on the data. As seen apparently in Table 1, *F* values both in L-DS and in S-DS proved all highly significant beyond the .01 level of confidence with *df* given there, indicating that those differentiation scores vary among the four grades. Thus, it will be noted that increases in the magnitude of these scores are in the predicted direction with one exception between grade 6 and grade 8.

To examine further the grade differences observed in L-DS, the *t* test was run with boys, girls, and both combined. This revealed that the differences between the following two grades were statistically significant beyond the .01 level of confidence. They were: grade 2 vs. grade 6 ($t=4.559$), grade 2 vs. grade 8 ($t=3.005$), grade 4 vs. grade 6 ($t=2.646$), with $df=305$, for boys; grade 2 vs. grade 6 ($t=5.203$), grade 2 vs. grade 8 ($t=2.660$), grade 4 vs. grade 6 ($t=3.537$), with $df=301$, for girls; and, grade 2 vs. grade 4 ($t=2.621$), grade 2 vs. grade 6 ($t=6.861$), grade 2 vs. grade 8 ($t=3.858$), grade 4 vs. grade 6 ($t=5.267$), with $df=610$, for boys and girls combined. The obtained results indicate that (a) the differences found

between grade 6 and grade 8 are all insignificant, and (b) the difference between grade 2 and grade 4 is significant only for boys and girls combined.

Similar results were also obtained, by the *t* test, in the evaluation of the grade differences found in S-DS, showing that the differences between the following two grades were significant beyond the .01 level. They were: Grade 2 vs. grade 4 ($t=2.798$), grade 2 vs. grade 6 ($t=5.743$), grade 2 vs. grade 8 ($t=4.613$), grade 4 vs. grade 6 ($t=3.178$), with $df=305$, for boys; grade 2 vs. grade 4 ($t=2.655$), grade 2 vs. grade 6 ($t=6.771$), grade 2 vs. grade 8 ($t=4.009$), grade 4 vs. grade 6 ($t=3.999$), with $df=301$, for girls; and, grade 2 vs. grade 4 ($t=4.161$), grade 2 vs. grade 6 ($t=8.640$), grade 2 vs. grade 8 ($t=6.209$), grade 4 vs. grade 6 ($t=4.928$), grade 4 vs. grade 8 ($t=2.972$), with $df=610$, for boys and girls combined. This result is different from the one obtained with L-DS, only in that the difference between grade 2 and grade 4 is consistently significant for the three groups, and that the difference between grade 4 and grade 8 reaches the level of significance only in S-DS data.

TABLE 2
Mean differences between L-DS and S-DS

	Grade				<i>F</i>	<i>df</i>
	2	4	6	8		
Boy	-.0725	-.4302	-.6154	-.9206	1.830	3/305
Girl	-.0964	-.4430	-.7126	-.5893	1.620	3/301
Total	-.0855	-.4364	-.6629	-.7647	3.200*	3/610

* Significant at the 5% level of confidence.

These findings, as a whole, seem to indicate that there are some variations of the developmental trend between L-DS and S-DS, with more marked change in the latter.

Further inspection of Table 1, again, seems to reveal another interesting tendency for S-DS in every grade and sex to be greater than L-DS. This leads us to another examination of the differences found between the two kinds of differentiation indices (L-DS and S-DS), in connection with the grade levels. The mean differences between L-DS and S-DS (L-DS minus S-DS) are given, by grade and sex, in Table 2, with corresponding *F* values obtained in the analysis of variance based on the data.

As is shown in Table 2, the obtained *F* value for boys, and that for girls, respectively, fell short of the statistical significance, but, when boys and girls were combined, the resulting *F* proved to be significant beyond the .05 level of confidence ($F=3.200$, $df=3$ and 610). Examination of the grade differences by the *t* test revealed that the differences between grade 2 and grade 6, and those between grade 2 and grade 8 were both significant beyond the .05 level ($t=2.575$ in the former, and $t=2.733$ in the latter, $df=610$). Those differences observed between grade 2 and grade 4, and those between grade 4 and grade 6, though not significant, were in the predicted direction. Furthermore, *t* test was carried out to assess the significance of differences between L-DS and S-DS in each grade, for boys and girls combined data. The obtained *t* value

in grade 2 failed to be significant ($t=.575$, $df=151$), while those in grades 4, 6, and 8 were 2.356 ($df=164$, $p<.05$), 4.263 ($df=177$, $p<.01$), and 5.102 ($df=118$, $p<.01$), respectively. This indicated that S-DS in grades 4, 6, and 8 were significantly higher than those corresponding L-DS but not in grade 2. These results evidently show that the differentiation with regard to sociometric choices given to others tends to be highly achieved at grades upper than grade 4.

DISCUSSION

The obtained data lent support, in general, to our first hypothesis which predicted that the differentiation, over criteria, of sociometric choices given to others would increase as grade level increased. The results are thus consistent, despite the difference in approach, with earlier findings by Bjerstedt (1956) and by the present author (1966), as far as the developmental trend is concerned. The increasing tendency, with development, both of L-DS and S-DS was rather clear-cut and consistent up to grade 6, which might be interpreted to show another confirmation of the increased selectivity in peer relations and the higher sensitivity to sociometric criteria on the part of older age groups, noted by Ausubel et al. (1952) and Ueda (1963). But, there was no sufficient evidence to say that this tendency continued among upper-graders beyond grade 6. Rather, some indications exist that the two types of differentiation scores tended, seemingly at least, to decrease at grade 8. It seems possible that this de-

crease, though not significant, at grade 8 may be due, partly at least, to the present-day high school classroom atmosphere devoid of fluidity, resulting from the lack of emphasis upon extra-curricular activities with too much emphasis upon the learning tool subjects, and also to the changing social needs satisfied in peer relations as pupils approach adolescence. In view of the finding by Bonney (1943), moreover, homogeneity of classroom members in question might play a part. A comparative study with both homogeneous and heterogeneous samples will cast some further light on this problem. Whether a significant decline in the scores emerges after grade 8 or not, this is another interesting problem worthy of attempting to solve in the future.

With respect to the three sociometric criteria used in this study, some attention should be paid. They were selected chiefly because of the author's finding on status differentiation (1966) that pupil's sociometric status over the three criteria was most highly differentiated with an increase in grade level. Therefore, it seems likely that when other criteria, such as workmate, seating companion, study companion and the like, are employed, a different developmental trend might be found. Further investigation into the more detailed relationship between sociometric choice differentiation and the criteria employed is keenly needed. As to this phase of analysis, one of our findings is very much suggestive.

Our second hypothesis was confirmed, too. Significant differences were found between L-DS and S-DS, with the latter larger, in all the grades but one (grade 2), revealing that the differential process, due to the criteria employed, of sociometric choices given to others was in progress at grades upper than grade 4. This finding that S-DS were significantly larger than L-DS among upper graders may be explained to be due to the fact that choices made on "sports companion" involved

much more specific skills and knowledge than "lunch companion on an excursion". In other words, "best friend" seemed to have much more psychologically in common with "lunch companion" than with "sports companion".

Also, as far as the combined sample was concerned, it is obvious that the difference observed between L-DS and S-DS was significantly higher in grade 6 and in grade 8 than that in grade 2. In addition, all other differences seemed to fall in the predicted direction, suggesting that these differences grew larger as grade level increased. These findings gave another support to the developmental trend of choice differentiation, being in keeping with our first part of data referred to above.

While these results were based upon tentative measures and a restricted sample, it might, tentatively at least, be concluded that they fell, as a whole, in the hypothesized direction; a tendency was found for sociometric choice differentiation over criteria to increase with an increase in grade level, though we failed to demonstrate clearly a consistent and steady increase among 8-th graders. In view of the second part of our findings, however, the differences in the extent to which choice differentiation varied as sociometric criteria changed tended to be significantly greater among them. This fact may be interpreted to suggest that choice differentiation would last longer, but the ultimate confirmation of this trend remains a task for the future.

The last, but not the least, point which deserves another attention is the choice level employed in this study. If five choices or more had been allotted, the degree of choice differentiation over criteria would have varied, considering the result Bjerstedt (1956) obtained in relation to the stability research. Therefore, it would be fruitful to make a more detailed investigation with other choice levels than ours.

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