SOCIOMETRIC INTERACTION AND PERSONAL
AND SOCIAL ADJUSTMENT OF NONTRANSPORTED AND
TRANSPORTED PUPILS IN GRADES IV, V AND VI

C. LLOYD GILL

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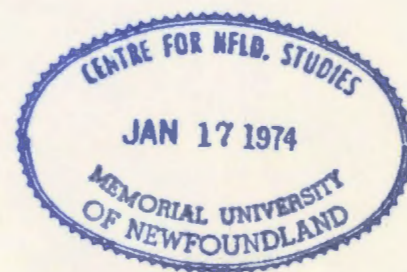MEMORIAL UNIVERSITY OF NEWFOUNDLAND

SOCIOMETRIC INTERACTION AND PERSONAL
AND SOCIAL ADJUSTMENT OF NONTRANSPORTED AND
TRANSPORTED PUPILS IN GRADES IV, V, AND VI

by

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The undersigned certify that they have read, and recommend to the Faculty of Education for acceptance, a thesis entitled "Sociometric Interaction and Personal and Social Adjustment of Nontransported and Transported Pupils in Grades IV, V, and VI" submitted by C. Lloyd Gill in partial fulfilment of the requirements for the Degree of Master of Education.

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ABSTRACT

The present study examined (1) the nature of sociometric choice and rejection patterns, and (2) the differences in adjustment of nontransported and transported pupils who have been brought together in centralized elementary school classrooms. More specifically: 1. An analysis of the sociometric data indicated to what extent nontransported and transported pupils chose friends from within and rejected members from outside their respective groups, and 2. An analysis of the adjustment data provided information on differences in the personal and social adjustment of transported and nontransported pupils.

The sample used in this study consisted of 194 Grade IV, 169 Grade V, and 169 Grade VI pupils in elementary schools in three rural school districts. In the total sample there were 271 nontransported and 261 transported pupils.

Data for the study was obtained from a specially developed sociometric test and from the standardized California Test of Personality (CTP). The criteria of the sociometric test permitted each pupil to name 5 classmates whom he would choose, and 5 classmates he would not choose,

if he were moving to a new classroom. The <u>California Test</u> <u>of Personality</u> provided adjustment data for the following sub-tests: (a) self-reliance, (b) sense of personal worth, (c) feeling of belonging, (d) withdrawing tendencies, (e) social skills, (f) anti-social tendencies, and (g) school relations.

A chi-square analysis of the sociometric choice data was carried out separately for boys and girls. This meant four different groups in each grade: nontransported boys and girls, and transported boys and girls. The results of the analysis indicated that in nearly all of these groups, transported pupils chose transported pupils, and nontransported pupils chose nontransported pupils at frequencies significantly greater than those expected by chance. The only exceptions were Grade IV nontransported and transported boys - these two groups exhibited no biased tendency to choose members within their own nontransported and transported groups.

A chi-square analysis of the sociometric rejection data was also carried out separately for boys and girls. This analysis did not suggest that nontransported and transported pupils were inclined to reject each other to any great extent. More specifically of 24 possible com-binations only the five cases below were statistically significant: 1. Grade IV nontransported boys rejected trans-ported girls; 2. Grade V nontransported boys rejected trans-

ported girls; 3. Grade V transported boys rejected non-transported boys; 4. Grade V nontransported girls rejected transported girls; and 5. Grade VI nontransported girls rejected transported boys. A disquieting factor here is that in four of the five cases, nontransported pupils rejected transported pupils, while the reverse occurred only once. In all the above cases, the significant probability level was $P < .05$.

A two-way analysis of variance of the <u>California Test of Personality</u> scores resulted in only one significant difference between the mean scores of nontransported and transported pupils: in Grade IV the nontransported pupils scored significantly higher than transported pupils on the "feeling of belonging" component. All other CTP components extracted no differences between adjustments of nontransported and transported pupils. Also, division of the sample into (1) groups of high and low sociometric status, and (2) groups of boys and girls did not elicit any significant interactions between (1) the transportation treatment and sociometric status, and (2) the transportation treatment and sex.

In view of the fact that the analysis of sociometric rejection data resulted in relatively few significant cases, the strong within-group choice data should probably not be

viewed with alarm. Also, the lack of significant differences in personal and social adjustment of non-transported and transported pupils suggests no new administrative provisions for the incoming transported pupils.

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CHAPTER I

THE SOCIO-PSYCHOLOGICAL STRUCTURE OF THE ELEMENTARY SCHOOL CLASSROOM

It is the purpose of this opening chapter to provide a brief comment on the social and psychological characteristics of late childhood, and the effects of peer group influence in the social environment of the school situation. Attention shall be given to some of the emotional characteristics, peer group influences, and sex differentiation in the late childhood stage of development. The presentation of pertinent findings in these areas may serve as guidelines in the realization of the purpose of this investigation: to study the nature of the sociometric relationships and the personal and social adjustment of nontransported and transported pupils in centralized elementary schools.

From an educator's point of view, late childhood is the elementary school age. In recent years there has been such strong focus on the problems of adolescents that a discussion of the developmental problems of six to twelve year olds seems subdued by comparison. From an academic point of view, this stage in a child's development is a critical one, because it is the time when he is expected to learn the basics on which his further education will depend. It is at this time also that children learn that there is certain behaviour which makes for smooth interaction with those around them,

and other behaviour which is not readily acceptable by their
peers and elders.

It is likely that some of the strongest forces
modifying a child's behaviour are the formal and informal
nature of the school environment. The formal bureaucratic
character of school rules and regulations is the loom on
which is woven the fabric of informal interactions between
the pupils. This condition led Bany and Johnson to describe
the classroom as a "socio-psychological" environment:

> A class group is a social organization and by its
> nature it is also a psychological grouping. It is a
> social group in that it is formally organized. There
> is a differentiation of role and responsibility regard-
> ing the aims, tasks, and goals of the group.

> Although the aims and tasks and the relationships
> of participating members to each other are set down
> in the formal structuring of the group, additional
> expectancies develop in the interrelationships of
> individuals to one another. The psychological member
> relationships affect morale, work operations and
> member participation in the group. Just as the formal
> organization sets certain boundaries or limits by
> providing a framework in which the members work, so
> does the informal grouping of members set standards
> and expectancies for member behaviour. Because of its
> social and psychological characteristics, a classroom
> group has been referred to as a "socio-psychological"
> structure[1].

Probably the most macroscopic characteristic of
late childhood is the tendency for individuals to seek com-
panionship of the same age and same sex. For this reason

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[1]Mary A. Bany, and Lois V. Johnson, Classroom
Group Behaviour (New York: The Macmillan Book Company, 1964),
p. 39.

psychologists refer to this developmental stage as the "gang" age[1]. So strongly does the child relate to the values and wishes of his peer group that parental admonitions often play a secondary role as a determinant of the child's behaviour[2]. It is the school, more than any other institution, which facilitates the development of the child's behaviour in large groups, and thereby helps determine his social behaviour in later years.

I. EMOTIONAL CHARACTERISTICS OF LATE CHILDHOOD

Before further discussion of the influence of the peer group, it may be worthwhile to consider some of the emotional characteristics which will condition late childhood behaviour within the peer group. These emotions may be categorized into negative behaviour (for example anger, fear) and positive behaviour (for example, joy, affection.)

From a negative viewpoint, anger is the most frequent emotional response affecting a child's interaction with his peers. Goodenough[3], whose sample included late childhood children, found that (a) the immediate causes of

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[1]"Gang", here, has not the same connotation as "teenage gang". (i.e. hoodlums): see, for example, Elizabeth B. Hurlock, _Developmental Psychology_ (Toronto: McGraw Hill Book Company, 1959), p. 282.

[2]Hurlock, _Ibid_., p. 283. The author cites four studies of which the findings validate this statement.

[3]Florence L. Goodenough, _The Development of Anger in Young Children_ (Minneapolis, Minnesota: University of Minn. Press, 1931), cited by Robert I. Watson, _Psychology of the Child_ (New York: John Wiley & Sons, Inc., 1966), p. 479.

anger shifted with increase in age and that the older children showed an increase in problems of social relationships; and (b) developmental changes in expressions of anger showed less and less random behaviour and more and more aggressive behaviour directed toward someone or something. In late childhood, the child no longer regresses to senseless tantrums characteristic of very young children. Instead an outburst of anger involves interaction with specific others in his environment.

Hurlock reports two major categories of anger expressions: impulsive and inhibited[1]. The impulsive category coincides with the findings of Goodenough mentioned above. It takes the form of aggression directed outward against a person or object that has angered the child. Inhibited expressions, as the name suggests, are anger expressions that are kept under control or "bottled up" within the child. This may lead to apathy and withdrawing tendencies on the part of the child. The apathetic child "may feel that resistance is futile....that it is better for him to conceal his anger than to express it and run the risk of punishment or social dis-approval."[2] It appears that even in anger, however undesirable, the child is experiencing a socializing process. Because of the dominating role of the peer group or gang, this social-izing process is often facilitated by the school environment.

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[1]Elizabeth B. Hurlock, Child Development (Toronto: McGraw Hill Book Co., 1956), pp.285, 286.

[2]Hurlock, Child Development, p. 286.

Another common emotional response in late child-
hood is grounded in fears and anxieties.[1] These responses
are different from anger in that they are often concealed.
Hurlock suggests that this is because there are greater
social pressures on the child to conceal fears.

Often, fears and anxiety in late childhood are
caused more by imagination than by reality. The things that
children find important enough to be a cause for worry are
usually those things which are important to their parents or
to members of the peer group. The degree of anxiety increases
with the age of the child. In a study of rural children in
Grades I to VIII, Pratt[2] found that from Grades V to VIII
fears were more numerous than in the previous four grades.
Researchers have shown that school worries, such as failing a
test, being late for school, or being left behind after school,
are more common than out-of-school worries.[3]

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[1]Hurlock, Child Development, pp.278-281. The
author differentiates among fears, anxieties, and worries accord-
ing to the generality or specificity of the stimuli. In the
discussion which follows, the terms are used in a general fashion.

[2]K.C. Pratt, "A study of Fears of Rural Children,"
Journal of Genetic Psychology, 67 (1945), 179-194.

[3]H. Angelino, J. Dobbins, and E.V. Mech, "Trends
in the Fears and Worries of School Children as related to
Socioeconomic Status and Age," Journal of Genetic Psychology,
89 (1956), 263-76.

In their study of 1000 pupils in Grades V and VI, Jersild and his colleagues[1] found four-fifths of them admitted that they sometimes worried about failing a test, more than two-thirds worried about the possibility of having a poor report card, and about two-fifths sometimes or often worried about being hit by rough children.

With respect to pupil interaction in the classroom situation, researchers hypothesized that there would be a relationship between anxiety levels and the degree to which an individual is accepted by his peers (i.e., his sociometric status.) McCandless, et al[2], found this to be the case with 369 pupils in Grades IV, V, and VI -- high anxiety was related to low sociometric status. In a similar study of normal and disturbed children, Davids and Parenti[3] found evidence that children who possess greater amounts of socially desirable characteristics (such as less anxiety and more optimism) were popular children as determined by sociometric choice.

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[1]A.T. Jersild, F.V. Markey, and C.J. Jersild, "Children's Fears, Dreams, Wishes, Daydreams, Likes, Dislikes, Pleasant, and Unpleasant Memories," Child Development Monogram, 1933, No. 12, cited by Watson, Op.Cit., p. 481.

[2]B.R. McCandless, A. Castanada, and D.S. Palermo, "Anxiety in Children and Social Status," Child Development, 27 (1956), 285-91.

[3]A. Davids, and A.N. Parenti, "Personality, Social Choice and Parents Percepts of these Factors in Groups of Disturbed and Normal Children," Sociometry, 12 (1958), 212-24.

The studies mentioned so far in this section suggest that emotional characteristics, such as fear and anxiety, play a very important role in determining the nature of an individual's behaviour in the socio-psychological structure of the elementary school classroom.

More positive emotions which are vitally signif- icant in a pupil's interaction within the classroom are joy (or pleasure, or delight) and affection. It seems axiomatic that the pupil who experiences happy work and play situations will exhibit these positive responses more often than the pupil who experiences an unpleasant environment. In late childhood the exuberance of these positive expressions may diminish somewhat according to the socially approved patterns of the peer group; for example, boys who win at games know it is poor sportsmanship to gloat over their opponents. In such cases joy is manifested by inward pleasure and feelings of well-being.[1]

Affection is a friendly, sympathetic, or helpful reaction directed towards others in the environment.[2] "Within the peer group the child selects as his friends those like him and who show affection for him."[3] This suggests that affection

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[1]A. Gessel, F.L. Ilg, and L.B.Ames, Youth: The Years From Ten to Sixteen (New York: Harper and Row, 1956), pp. 336, 337, 350.

[2]Hurlock, Child Development; p. 296

[3]Hurlock, Child Development; p. 298.

depends more on a two-way interaction than do such emotional
responses as anger and fear. This interaction may be subtle
and covert in late childhood. Boys, especially, may think
it "sissy" to overtly express affection for their peers.
Instead, an individual's affection is demonstrated by a desire
to associate with his peers, and by the intricate behaviour
which comprises the personal interaction between individuals.

The emotional characteristics of the developing
child will affect more than the individual's behaviour in
the informal structure of the classroom; the formal structure
may also be influenced, since the child's success in school
work will be maximized or minimized according to the degree
of emotional tension present.[1]

II. PEER GROUP INFLUENCES

At the outset of this chapter it was intimated
that the behaviour of an individual within a group is governed
by the characteristics of the individual and by the charact-
eristics or standards of the group. In other words, the
socialization of an individual is a process that depends on
two sets of human factors. One set stems from the make-up
of the individual and the other from the make-up of the social-
izing agent. Some consideration has already been given to the

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[1]See, for example, S.B. Sarason, K. Davidson,
F. Lightfall, and R. White, "Classroom observations of High
and Low Anxious Children," Child Development 29 (1958), 287-295.
They report that high anxiety children strive to do good, and
often blame themselves if they fail.

emotional characteristics of late childhood which may affect the interaction of a student with other members of his peer group. Although there are many socializing agents in the child's environment, it is the influence of the peer group which shall receive attention at this point.

As a child grows older, the transition of identification from parents to peer group places crucial significance on the emotional behaviour of the child as discussed above. The crux of the matter is that in most instances the child has no trouble being accepted by his parents, but he now finds that a place in the peer group must be earned.

Ichheiser has a succinct way of stating the problem facing the individual:

> The individual will have to act so that he intentionally or unintentionally expresses himself, and the others will in turn have to be impressed in some way by him.[1]

Taking liberties with Ichheiser "others" and equating it with the peer group, this statement implies that the peer group affects not only those who are well entrenched within its ranks, but also anyone who wishes to communicate with it.

Goffman elaborates on Ichheiser ideas by pointing out that an individual expresses himself through two kinds of activity: "the expression that he gives, and the expression

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[1] Gustabe Ichheiser, "Misunderstandings in Human Relations," Supplement to The American Journal of Sociology, LV (Sept.,1949), pp.6-7, cited in Erving Goffman, The Presentation of Self in Everyday Life, (Garden City, New York: Doubleday and Company, Inc., 1959), p.2.

that he _gives off_."[1] The first involves the words that the
individual uses to convey information to the peer group. This
is communication in its narrowest sense. The second involves
the style and manner in which the communication is made.
Often it happens that what a person does not say speaks more
loudly than the words he utters. It is obvious that the degree
to which the second mode of communication is controlled depends
not only on the sophistication of the individual, but also on
the nature of the group with whom interaction is being attempted.
In light of the above terminology it may be said that peer
group has a great influence on the "expressions given off."
It is important to realize that this second mode of communication
does not have to be accompanied by overt verbal activity.
Actions speak louder than words at all levels of development.

The findings of a study concerning high school
students and reported by Freizen has some relevance here as
an illustration of peer group influence.[2] In response to the
question: "Which of these things would be hardest for you to
take? (a) parent disapproval, (b) teacher disapproval,
(c) breaking with a friend," 46.9% answered "breaking with a
friend," 45.9% answered "parent disapproval," and 7.1%

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[1]Ibid., p. 2.

[2]David Freizen, "Value Climates in the Canadian
High Schools," _The Canadian Administrator_ VI (October, 1966).

responded "teacher disapproval." The findings are mentioned here as a suggestion that there is a more powerful influence than the teacher operating in the classroom.

Gold[1] has made an admirable attempt to crystalize the nature of this influence by eliciting from 152 elementary school students those characteristics they valued most highly in their peers. He succeeded in extracting 17 characteristics or "resources" which he assigned to four main categories: expertness, coerciveness, social-emotional, and associational. Gold's results showed the "social-emotional" resources area to be the most important to the Grade IV, V, and VI children in the sample. More specifically, this category indicated that characteristics valued highly are 1. acts friendly, 2. a good person to do things with, 3. asks you to do things in a nice way, 4. doesn't start fights and doesn't tease, and 5. knows how to act so people will like him. Gold's findings also suggested that the more an individual's behaviour was grounded in these social-emotional characteristics, the more willingly the peer group gave that individual power within the group.

The term 'group norm' is commonly given to describe behaviour that the peer group considers desirable. Norms which evolve from group interaction may be firmly established

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[1]Martin Gold, "Power in the Classroom", Sociometry, XXI (May, 1958), pp. 50-60.

in custom and tradition, or may be superficially grounded in
the latest fads and fashions.

Thibaut and Kelly[1] define a norm as a behaviorial
rule that is accepted, at least to some degree, by members
of the group. If a norm is to be viewed as a rule, then a
prerequisite for its existence is the ability of the group
to exercise sanctions against those whose behaviour deviate
from the norm. These sanctions will take the form of social
processes by which an offender might become isolated from
his peers. The following discussion is more concerned with
such social processes than with the variety of norms that
permeate the elementary school classroom.

The social processes involved are more mercurial
than static. For instance, the group may permit more deviation
from some norms than from others; also, certain members in the
group, especially well-liked members, will be allowed to vary
their behaviour to a greater extent than others who are not
so well entrenched within the group. On the other hand, it
is reasonable to assume than an individual who does not belong
to a particular group may feel no social pressures to bow to
the norms of that group -- unless, of course, he wishes to give
off expressions that enhance his chances of acceptance by the
group.

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[1]John W. Thibaut, and Harold H. Kelly, The Social
Psychology of Groups (New York: John Wiley and Sons Co., 1959)
p. 129. Cited by Bany and Johnson, Classroom Group Behaviour,
p. 121.

The desire to be an integral part of the group often leads an individual into behaviour that is at variance with his judgement. This is especially true for children who tend to be defensive, rigid, and moralistic. Asch[1] showed that such children have a tendency to make what they know to be wrong decisions in order to abide by preset judgements of their peer group.

Such powerful influence exerted by the peer group can be a tremendous force for the well-being of an elementary school class; it can just as easily have a devastating effect on pupil interrelationships. Members who are not accepted by the group may become desocialized to the extent that they are isolated or actively rejected by the group. This can happen as a result of the emotional make-up of the child as discussed previously, or it might be due to the home environment and socio-economic status of the child's family. (In this regard, Dineen and Garry report a study of 171 upper and lower class pupils in Grade I to VI in which the lower class children experienced a sociometric barrier in their interaction with upper class children.[2])

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[1] S.E. Asch, "Effects of Group Pressure upon Modification and Distortion of Judgements," Readings in Social Psychology, ed. E. Maccoby, T. Newcomb, and E.L. Hartley, (New York: Henry Holt and Co., 1958), pp. 174-183. Cited by Bany and Johnsons, Classroom Group Behaviour, p. 125.

[2] M.A. Dineen, and R. Garry, "Effect of Sociometric Seating on Classroom Cleavage," Elementary School Journal 56 (1956), pp. 358-362.

In light of the above study it may be stated
that a classroom group may lead to sub-group deviations in
that one group in the class deviates from the norms estab-
lished by another group within the same classroom. This
deviation may be large or small. The greater the split,
the more will one group disapprove of the other. Also,
individuals in one sub-group who have leanings towards the
norms of another group will come under cross-fire from both
directions.

If one sub-group is in the minority, or has less
prestige than another sub-group, the more powerful sub-group
may have a resocializing effect. Langton[1] showed this to be
so in his study of 1287 lower and upper class students in
Jamaica. He tested homogeneous and heterogeneous class groups.
In the homogeneous classes, comprised of lower (working) class
children, lower class norms were reinforced and maintained.
However, in the heterogeneous class groups, comprised of upper
and lower class students, the working class children appeared
to be resocialized in the direction of the higher class norms.
As peer groups are agents of change as well as maintainers of
the status quo with respect to individuals, in the same manner
they also affect sub-groups of individuals.

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[1]K.P. Langton, "Peer Group and School and the
Political Socialization Process," The American Political Science
Review, 61 (1967) pp. 751-758.

III.   SEX DIFFERENTIATION

Consideration shall now be given to sex differentiation in personal and social behaviour. Some studies in this area shall be briefly mentioned.

Tuddenham[1] reports that independent boys tend to be most popular with their peers, while for girls the reverse is true: most popular girls tend to exhibit dependent behaviour. Related to this, Hurlock[2] points out that boys, as a group, tend to be less well accepted than girls. This is because boys, in general, are more aggressive and impulsive than girls -- therefore their behaviour patterns sometimes tend to antagonize others. This is likely the reason why teachers rate girls as being better adjusted than boys. In fact, Anderson[3] has published a report in which teachers consistently gave nine to seventeen year old girls higher scores on personality and adjustment than they gave boys of the same ages.

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[1]R.D. Tuddenham, "Studies in Reputation: I. Sex and Grade Differences in School Children's Evaluation of Their Peers," cited by H.A. Watkin, et at., Psychological Differentiation Studies of Development (New York: John Wiley and Sons, Inc., 1962), p. 221.

[2]Hurlock, Developmental Psychology, p. 287.

[3]John E. Anderson, "The Long Term Prediction of Children's Adjustment," cited in Raymond G. Kuhlen and George G. Thomson, Psychological Studies of Human Development (New York: Appleton-Century-Crofts, 1963), pp. 559-574.

Powell[1] reports an interesting study of conflict in various adjustment areas of 10 to 30-year olds. The degree of conflict was determined by the reaction time that the subjects needed to respond to critical words. He found that girls exhibited conflict approximately one year earlier than boys in the following adjustment areas: parent-child relationships, emotional tendencies, heteorsexual relations, physical appearances, religion, social acceptability, and even vocational outlook. The different adjustment conflicts occurred for girls at ages eleven and twelve, and for boys at ages twelve and thirteen.

It has already been suggested that the behaviour of an individual in the peer group depends on the emotional characteristics of the individual and the more macroscopic characteristics of the peer group. The studies just reported indicate that the sex of the individual is a powerful under-lying factor contributing to the nature of a child's inter-action with his peers.

IV. SUMMARY

In this chapter an attempt has been made to provide a brief review of psychological writings and research findings with regard to some characteristics of late child-

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[1]Marvin Powell, "Age and Sex Differences in certain Areas of Psychological Adjustment," cited by William J. Meyer (ed.), Readings in the Psychology of Childhood and Adolescence (Toronto: Blaisdell Publishing Company, 1967), pp. 295-303.

hood children. Attention was also given to the interaction of individuals within the peer group. The nature of peer group influence on individual and sub-group behaviour was also stressed. The role of sex-differentian in an individuals interaction with his peers received some attention.

CHAPTER II

THE PROBLEM

This study attempts to investigate the nature of pupil adjustment and pupil interaction in elementary schools in selected schools in the Province of Newfoundland.

I. THE BACKGROUND AND GENERAL STATEMENT OF THE PROBLEM

Centralization of educational facilities started in Newfoundland in the 1950's.[1] This centralization at first affected only the high school students. However, within the last decade, and especially within the last five years, the trend has been towards the transportation of elementary and primary pupils to centralized schools. This has been done on the basis of two closely related assumptions: (1) it is difficult to employ qualified teachers in small schools in more or less isolated communities; and (2) the child will receive a better and more balanced program in a larger school. While it is necessary to transport children to meet these conditions, it is important that some attention be given to the affective dimension in transportation practices.

Usually, centralization of elementary schools is achieved only after several meetings with parents who are not receptive to the idea of sending their young children away

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[1]See Frederick W. Rowe, The Development of Education in Newfoundland (Toronto: The Ryerson Press, 1964), pp.158-162.

from the community. These meetings frequently lead to heated arguments that sometimes end in a stalemate. The arguments may be objective, although not always justifiable, and centered in genuine concern for the adjustment of the children as they are exposed to bus schedules, allegedly inadequate lunch room facilities, and a new school environment in general. More often than not, however, the disputes evolve from community pride and inter-community jealousies. They are sometimes settled in a negative fashion when parents realize that there is a very real danger of not obtaining teachers for one and two room schools in small communities.

Under these circumstances it might be said that children go to the new school with something other than a healthy attitude. The problem may be compounded if the teachers and administrators are unaware or oblivious to the interactions which take place in a school where children are being transported from communities A and B to the school in community C. Problems that normally arise from the integration of groups may be enhanced in the centralized school if the children have developed attitudes relating to inter-community hostilities.

The research presented in this study was undertaken to provide some pertinent information regarding the transportation of elementary school pupils in Newfoundland. At this point two general problems may be identified:

1.   The settling of differences among communities so that parents can accept the transportation of the children and adjust to the need of establishing larger school systems. This issue is in the domain of public relations.

2.   The adjustment of the transported pupils to their new environment. This study focussed on this latter problem. An attempt was made to gain some information on the nature of the social interaction between samples of nontransported and transported children in elementary schools. Also, an investigation was made into the personal and social adjustment of the non-transported and transported pupils to identify any adjustment differences that might exist.

II. DEFINITION OF TERMS

Certain terms which are used repeatedly with special meanings merit definition.

Transported group   -   the transported group includes all the transported pupils of the same sex in the several classes at a particular grade level. At no time will group refer to transported pupils in one class only.

Nontransported group   -   The nontransported group includes all the nontransported pupils of the same sex in the several classes at a particular grade level. At no time will _group_ refer to nontransported pupils in one class only.

In-group choices   -   These are responses on a sociometric test in which the transported pupils choose transported pupils, and nontransported pupils choose nontransported pupils.

Out-group rejections   -   These are responses on a sociometric test in which the transported pupils reject nontransported pupils, and the nontransported pupils reject transported pupils.

Sociometric cleavage   -   Sociometric cleavage is a split in the social interactions of the nontransported and transported groups. The nature of the sociometric cleavage depends on the frequency of in-group choices and out-group rejections. For example, sociometric cleavage becomes quite evident when both in-group choices

		and out-group rejections occur at greater than chance frequencies.
High Sociometric Status Pupils	-	These are pupils who receive more choices than rejections on the sociometric test.
Low Sociometric Status Pupils	-	These are pupils who receive more rejections than choices on the sociometric test.

III. SPECIFIC STATEMENT OF THE PROBLEM

For purposes of this study the general problem has been analysed into two main dimensions: a study of the nature of the social interaction among transported and nontransported pupils, and an investigation of differences in personal and social adjustment of the two pupil groups. These pupils attended elementary schools in rural Newfoundland. It is in rural Newfoundland that transportation of pupils from one community to another is most prevalent. A sample of Grades IV, V, and VI transported and nontransported pupils was chosen from widely separated geographical areas. Areas of transportation concentration were chosen so that there were approximately equal numbers of nontransported and transported pupils in the sample. This study aims at investigating the difference between transported and nontransported pupils in the selected sample of Grade IV, V, and VI pupils,

along the following dimensions:

   1. Peer Acceptance and Rejection in each grade level, as measured by a specifically developed sociometric test.

   2. Personal Adjustment Pattern, as measured by the <u>California Test of Personality</u>.[1] (The CTP gives scores for self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, and nervous symptoms.)

   3. Social Adjustment Pattern, as measured by the <u>California Test of Personality</u>. (The CTP gives scores for social standards, social skills, antisocial tendencies, family relations, school relations and community relations.)

   4. Sociometric Status by Transportation interaction. (This dimension indicates whether or not the transportation treatment interacts differentially with the adjustment scores of high and low sociometric status pupils.[2]

   5. Sex by transportation interaction. (This dimension indicates whether or not the transportation treatment interacts differentially with the adjustment scores of boys and girls.)[2]

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  [1]For detailed description of this instrument, see <u>Infra</u>, pp.54-59.

  [2]The writer hastens to point out that this statistical treatment does not suggest causality between transportation and the adjustment of the pupil.

Using the above dimensions as guidelines, an attempt will be made to resolve the following sub-problems:

1. Do sociometric cleavages exist in the classroom? More specifically: (i) are nontransported and transported students choosing friends <u>within</u> their respective groups to a greater extent than <u>outside</u> their groups? That is, are the in-group choices significantly more frequent than out-group choices? (ii) Are nontransported and transported students rejecting class-mates <u>outside</u> their respective groups to a greater extent than <u>inside</u> their own group? That is, do out-group rejections occur significantly more often than in-group rejections?

2. Are there differences in the personal adjustment patterns of nontransported and transported pupils in Grades IV, V and VI?

3. Are there differences in the social adjustment patterns of nontransported and transported pupils in Grades IV, V, and VI?

4. Does the transportation treatment interact differentially with the CTP scores of high and low sociometric status pupils?

5. Does the transportation treatment interact differentially with the CTP scores of boys and girls?

IV. STATEMENT OF NULL HYPOTHESES

The hypotheses below have two distinct orientations.

The first two deal with the sociometric structure of class-
rooms as a whole; the remaining hypotheses are concerned
with the personal and social adjustment of the students as
measured on the California Test of Personality. The null
hypotheses evolve from the sub-problems outlined immediately
above. On the basis of published research on social inter-
action, the .05 level was chosen as the significance level
of the tests in this investigation.

1. The observed frequencies of in-group
choices of nontransported and transported students will not
differ significantly from the frequencies expected by chance.

2. The observed frequencies of out-group
rejections of nontransported and transported students will not
differ significantly from the frequencies expected by chance.

3. There will be no significant difference in
the personal adjustment scores of nontransported and trans-
ported students as measured by the following California Test
of Personality components: (i) self-reliance, (ii) sense of
personal worth, (iii) feeling of belonging, (iv) withdrawing
tendencies, and (v) total personal adjustment.

4. There will be no significant difference in
the social adjustment scores of nontransported and trans-
ported students as measured by the following California Test
of Personality components: (i) social skills, (ii) anti-
social tendencies, (iii) school relations, and (iv) total

social adjustment.

     5. The <u>California Test of Personality</u> scores will not show evidence of an incremental interaction between the transportation factor and the levels of sociometric acceptance.

     6. The <u>California Test of Personality</u> scores will not show evidence of an incremental interaction between the transportation factor and sex.

<div align="center">V. THE NEED FOR THE STUDY</div>

     The need for some investigation into the transportation of elementary school children was first suggested to the author through personal experiences which evolved from the centralization of school services in Newfoundland. A review of investigations completed by other workers further crystallized this need.

     The studies discussed in Chapter I suggest the ominous implications of social rejection as a young child attempts to interact with his peers.[1] Moreover, Frost[2] has reported several studies which indicate a strong positive relationship between academic achievement and the degree to which a child is happy and well adjusted in his environment.

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    [1]See, for example, the studies of McCandless, <u>Supra.</u>, p. 6, and Dineen & Gary, <u>Supra.</u> p.13.

    [2]B.P. Frost, "Some Considerations of Scholastic Achievement: Emotional and Social Adjustment," <u>Canadian Education and Research Digest</u>, 5 (December, 1965), pp.278-80.

Even though researchers readily point out the difficulty of
determining the _direction of_ causality between peer choice and success in
other fields, the following excerpt suggests the importance
of determining personal and social problems in the classroom:

> .....social psychologists have found that children
> who are maladjusted and rejected by their early
> peer groups often grow up to be poorly adjusted,
> unhappy adults.[1]

The above factors appear to warrant further
study into the possible existence of personal and social
problems of pupils in centralized elementary schools. It is
imperative that school administrators and teachers be aware
of the sociometric structure of the classroom. Undesirable
features may arise if (a) one of the transported-nontransported
groups attempts to interact with the other while being con-
tinually rejected by that group, or (b) both groups contribute
to a sociometric cleavage by mutual rejection. There should
also be an awareness of the nature of the adjustment of the
transported pupils as compared with the adjustment of their
counterparts who live in the school community.

Finally, since the trend in Newfoundland is
towards centralization of school services and the use of bus
transportation at all levels, it is important that data be com-
piled on the various aspects of this new venture in education.

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[1]E. Amidon, and C.B. Hoffman, "Can Teachers Help
the Socially Rejected?" _Elementary School Journal_, 66 (December,
1965), pp.149-54.

It is hoped that the results of this study will contribute in some way to a larger bank of information which may serve as a basis for future transportation policy and practice.

VI. SCOPE AND DELIMITATIONS OF THE STUDY

The scope of the study can best be illustrated by summarizing previous information regarding the sample and hypotheses to be tested.

First, in order to enhance the generality of the results, the rather large sample included more than 500 Grade IV, V, and VI nontransported and transported students from widely separated areas of the province. An attempt was made to study the affective differences between the transported and nontransported pupil groups in the centralized elementary school classroom.

A sociometric test was administered to determine the nature of sociometric acceptance and rejection among the students. Analysis of this data indicated to what extent non-transported and transported boys and girls were separate sub-groups in the classroom.

Student responses on the California Test of Personality furnished evidence on adjustment differentiation of the transported and nontransported groups. In addition to investigating adjustment differentiation between these two groups, effort was made to compare the differences in adjust-

ment of high sociometric status pupils in both groups with the difference in adjustment of low sociometric status pupils in both groups. A similar statistical interaction effect was computed for boys and girls within the two transported-nontransported groups.

In a study of this kind the following may be considered delimiting factors:

1. The sociometric test did not cover a multiplicity of specific activities -- instead, the criterion used was of a relatively general nature.

2. No investigation was made into such aspects of classroom behaviour as discipline and fatigue.

3. No consideration was given to the influence of different distances travelled by transported students.

4. No attempt was made to study the health records or absentee records of the students.

5. No attempt was made to investigate the adjustments made in the home of the transported student, or to obtain the views of parents on the transportation of elementary school students.

6. The statistical analysis treated each grade level as a composite of several classes from different geographical regions. Although the sociometric acceptance and rejection frequency data was computed for each classroom separately, the overall analysis was concerned with the summation of the class-

room results in each grade level. In like manner, the CTP adjustment scores were grouped according to grade level. That is, no investigation was made into differences in class means within grades.

CHAPTER III

RELATED LITERATURE

The review of the literature which follows has
a two-pronged nature. First, a specific discussion of the
relationships between personal-social adjustment of students
and their sociometric status in the classroom will supplement
the more general account presented in Chapter I. Second, a
summary of the research related to the effect of transportation
on student interaction in the classroom will be presented.

I. PERSONAL-SOCIAL ADJUSTMENT AND SOCIOMETRIC STATUS

A large body of research has been completed on
the relationships between social acceptance and the various
measures of student adjustment. There is general agreement
that social acceptance correlates highly with student adjust-
ment, although there are some departures from this generality
depending on the nature of the sample and the measuring instru-
ments used. For example, Oxford[1] reported that for 130 seventh
grade boys and girls in Louisianna, there were significant
relationships between all components of the California Test of
Personality (CTP) and acceptance by peers, except for the com-
ponents related to social adjustment for boys. In the same

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[1] Lake C. Oxford, "A Study of Personal and Social
Adjustment of Seventh Grade Boys and Girls as Influenced by
Physical Size, Athletic Ability, Acceptance by Peers and
Acceptance of Peers," Ed. D. Thesis, University of Maryland,
1958, Dissertation Abstracts, XX (1960), p.3634.

investigation, Oxford found a significant relationship
between acceptance of peers and social adjustment for both
boys and girls. The BFS[1] Manual also specifically mentions
CTP scores as having the ability to differentiate between
high and low sociometric status pupils.

In a study of thirty-nine grade six children,
twenty of whom were of high sociometric status and nineteen
of whom were of low sociometric status, Grossman and Wrighter[2]
identified questions related to such personal adjustment
factors as "nervous symptoms", and "feeling of belonging"
(two components of the CTP) as having the ability to differ-
entiate between the high and low status children. With
respect to the social adjustment factor, Cheong[3] reported
findings more specifically related to the school environment:
in a study of fourth to sixth grade pupils, he found a
correlation factor of .47 $(P < .05)$ between school attitudes
and sociometric status. This indicates that pupils who were

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[1]Merl E. Bonney and Seth A. Fessenden, The Bonney
Fessenden Sociograph (Monterey California: The California Test
Bureau, 1955.)

[2]Beverly Grossman and Joyce Wrighter, "The
Relationship between selection-rejection and Intelligence,
Social Status, and Personality among sixth-grade children",
Sociometry 11 (1948) pp.346-355.

[3]George S.C.Cheong, "Relations Among Experimental
Attitudes and Sociometric Status of fourth-and sixth-grade
pupils", Journal of Teacher Education XVIII (Summer, 1967)
pp.186-91.

more positive in their attitudes toward school appeared to
be more socially accepted by their peers in school than
pupils who were less positive in their school attitude.
Belfield's[1] study of pupils in Junior Schools in England
suggested the universality of such findings. He concluded
that children with high sociometric status tend to exhibit
high social adjustment while children of low sociometric status
have low social adjustment.

Studies concerning specific personality traits
such as fear and anxiety and their effect on sociometric status
have already been reported in the opening chapter of this report.
Researchers McCandless, Davids, Parenti and others found that
high sociometric status children possess more desirable char-
acteristics, such as less fear and anxiety[2].

The consensus of the findings of these and similar
studies has been summarized by Lorber[3]:

1. Children of high social acceptance tend
to possess desirable, positive personality characteristics
while those of low acceptance tend to lack them.

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[1] D.J.Belfield, "The Social Adjustment of Most
Accepted and Least Accepted Children in Junior Schools",
M.ed Thesis, University of Manchester, 1963. Abstract in
British Journal of Educational Psychology (November, 1964)
34:324-327.

[2] Supra, pp.6-7.

[3] Neil M. Lorber, "Inadequate Social Acceptance and
Disruptive Classroom Behaviour," The Journal of Educational
Research, 59 (April, 1966), pp.360-362.

2. Children of high social acceptance tend to actively participate and co-operate socially with a tendency to conform, while those of low social acceptance do not.

3. Children of low social acceptance tend to display undesirable characteristics, such as showing-off, annoying others, restlessness, nervousness, feelings of inferiority and emotional instability.

Although the studies reviewed present no evidence of the direction of the causal relationship between adjustment and sociometric status, the findings outlined above appear to justify the research design used in this present study.[1]

II. PUPIL TRANSPORTATION

Most studies concerning the transportation of pupils have dealt with administrative problems precipitated by the adoption of a transportation program. Briefly, investigators have reported findings on such diverse topics as school bus safety features[2], bus driver education[3], cost factors with respect to board ownership versus private ownership of buses,[3,4,5] and the

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[1]The research design of this investigation permits grouping of the CTP scores according to the sociometric status of the subject. This procedure reduces the error component of the analysis by extracting interaction effects between the main statistical treatments. See research design, pp.65-68.

[2]Seymour Charles, and Annemarie Shelness, "Needed: Safer School Transportation", Education Digest XXXIV (Nov.1968) 36-37.

[3]Wayne Huddleston, "Public School Transportation Practices in Jackson County, Missouri," Ed. D Thesis,Dissertation Abstracts Vol. XXII,(1962) p.2656.Findings: no cost differences.

[4]Max Edward Glenn, "A Comparative Study of Expenditures and State Support for Pupil Transportation for a Indiana Local School District for 1955-56," Dissertation Abstracts, Vol. XXVIII-A (1968) p.3930. Findings: School Board ownership more economical.

[5]O.C.Stewart, Jr., "Factors Related to Cost Deviations in Pupil Transportation Systems in 12 Selected Tennessee School Districts," Dissertation Abstracts XXVI (1966), p.7136. Findings: School Board ownership more economical.

installation of teaching machines in school buses.[1]

A search of the available literature revealed
other investigations concerning the academic and adjustment
consequences of transporting children to a centralized school.
In the majority of cases, however, a significant factor is
that the children being transported were of a different race
or ethnic background from the children who lived in the school
community. This is especially applicable to certain areas
in the United States of America where the school bus has been
used as a tool of integration at the school level. Since it
can hardly be proposed that school transportation in
Newfoundland exhibits these confounding overtones, only a
brief account of the research carried out will be given.

A general overview of bussing for integration
purposes in the United States is presented in an editorial by
W.W. Buckman.[2] The facts as expressed by Buckman support the
thesis that bussing often aggravates integration problems. A
few investigations reported by others tend to challenge this
proposal. For example, Mahan[3] studied subjects in a sample of

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[1]Milton Hoffman, "New Way of Bussing Students,"
Education Digest, XXXIII (May,1968), 29-31.

[2]W.W.Buckman, "Compulsory School Bussing and
Integration," School and Society, 92 (October 17,1964) p.283.

[3]Thomas W.Mahan, "The Bussing of Students for
Equal Opportunities," The Journal of Negro Education, XXXVII
(Summer, 1968), pp.291-300.

elementary and secondary schools in eastern U.S.A., and reported that Negro children were quickly assimilated socially and appeared to hold their own in the area of peer group relationships. There was also no evidence that the quality of academic achievement among white children was depressed by placing educationally disadvantaged children in their class. Buskin[1] substantiated this finding in his study of Negro children being bussed from city to suburb. He found no change in educational standards before and after bussing. Again, with respect to the academic sphere, Teele's[2] recent study in the Boston area showed that black students bussed from ghettos to more racially balanced schools exhibited greater improvement in achievement than did students who were not bussed.

Roberts[3] produced a descriptive account of the transportation of Negroes in Southern U.S.A. In this case many problems were overcome by recruiting mothers of the

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[1]Martin Buskin, "City to Suburb Bussing: What Next for Great Neck?" School Management, 13 (April, 1969) pp. 58-65.

[2]James E. Teele, "The Study of Project: A School Racial Integration Project in Boston, Massachusetts." Research In Education, V (June, 1970), p. 108.

[3]F.M. Roberts, "How One Southern District Integrated Peacefully," School Management, 11 (March, 1967), pp. 103-107.

travelling children to ride on the bus as drivers or "bus counsellors", and to help at the school as teacher aides.

It should be pointed out that, despite the favourable results depicted by these separate cases, the concept of bussing for integration purposes has recently come under strong attack in the U.S.A. The consensus of reports ranging from newspaper editorials to speeches in the House of Representatives is that academic improvement is not a measure of the integration of two groups.[1]

The remainder of this chapter shall be concerned with the transportation of children to schools in communities characterized by racial homogeneity. Most of the work reported deals with the transportation of secondary school students.

In 1939 Lambert[2] completed a study of nontransported and transported students in which he reported the rather

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[1]See, for example, the following issues of U.S. News and World Report:August 18,1969, 72-73: September 29, 1969, 18: October 13,1969, 42-44. It should be pointed out that numerous sociometric studies done in classrooms where students come from different racial backgrounds (but no children were transported) resulted in strong in-group sociometric choices, thereby creating group cleavages in the classroom. Investigations completed by the following researchers are listed in the reference section: Criswell (1937, 1939): Zeleny (1939, 1940); Seeman (1946): Loomis and Pepinsky (1948): Mann (1958): Rowley (1968); Derojaiye (1969).

[2]A.C. Lambert, "Length of School Day for Transported Pupils," American School Board Journal, 99 (September,1939), 45-46. Cited by G.M.Dunlop, R.J.C.Harper and S. Hunka, "The Influence of Transporting Children to Centralized Schools Upon Achievement and Attendance," Educational Administration and Supervision, 44 (July,1958), pp.191-198.

trivial result that transported students experienced an appreciatively longer school day than did nontransported students. In a similar study of students in four high schools in West Virginia, Pauley[1] found that transported pupils experienced a longer school day, took a less active part in school activities, and held fewer positions (such as class president and president of the student council) than did nontransported pupils. Pauley also cited an earlier study completed by Lerch[2], who reported the adverse effect of bus transportation on the school activity program.

Munroe[3] has completed an exhaustive study of adolescent peer group interaction in an Alberta high school where he used a multiplicity of testing instruments. His sample, however, was a very small one in which only two students were transported. One of Munroe's testing instruments, a socio-

[1]B.G. Pauley, Effect of Transportation and Part-time Employment Upon Participation in School Activities, School Offices Held, Acceptability for Leadership, and Grade Point Average Among High School Seniors," Journal of Educational Research, 52 (September,1958), pp.3-9.

[2]A.M.Lerch, "Activity Program of the Out-of-Town Student," School Activities, 27 (April, 1956), pp.245-246. Cited by Pauley, Ibid.

[3]B.C. Munroe, "The Structure and Motivation of the Adolescent Peer Group," Unpublished M.ed Thesis, University of Alberta, 1957.

metric test, showed the transported students to be somewhat
isolated by the rest of the group. It should be cautioned,
however, that this may be an artifact of the small sample
used.

Again at the high school level, Straley[1] studied
the achievement and social adjustment of 604 transported and
nontransported seniors in five schools of West Virginia. His
findings showed no difference between the two groups with
respect to social adjustment. When the groups were matched by
sex and IQ and compared as to academic achievement, there was
a significant difference in favour of nontransported boys only.
The behaviour of the transported students was not affected by
the number of miles travelled, but, as with previous research,
it was found that the nontransported students participated
somewhat more extensively in extra-curricular activities. In
conjunction with this last finding, Morgan and Kurtzman[2] have
reported statistics which exhibit a consistent but weak negative
relationship between participation in school activities and
distance from home. These last two researchers studied 227,079
students in Grades VII to XII. They found that distance travelled

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[1]Henry Goff Straley, "A Comparative Study of the
Academic Achievement and Social Adjustment of Transported and
Nontransported High School Seniors," Dissertation Abstracts,
17 (1957), 1495.

[2]D.L. Morgan, and J.B. Kurtzman, "Relationship of
the Distance from Home to School Upon Participation in School
Activities," School Activities, 40 (March, 1967), pp.12-14.

had little effect on the school activities of the Grade VII
and VIII pupils, a result which they attributed to the fact
that the elementary program incorporated extra-curricular
activities within the regular school day.

In the early 1950's Bonney[1] published a unique
and interesting study in which the subjects were students in
Grades VII to XII attending three high schools, each situated
in different environments. He found that sociometric reject-
ion was more evident when rural children were transported to
a town school than when children of different rural communities
were transported to a school that was situated outside all
communities in a surrounding of its own (that is, there were
no town students.) He suggested that the rejection of the rural
students by the town students was due in part so socioeconomic
and cultural differences.

Just previous to Bonney's report, Loomis and Becker[2]
had completed a similar investigation concerning acceptance
patterns when rural farm, rural nonfarm, and town students were
brought together in the same school. The sample included 191
junior and senior high school students in a Michigan town.
Fifty-one percent of the students lived on farms, six percent
lived in rural nonfarm areas, and forty-three percent were town

[1]M.E. Bonney, "A Sociometric Study of Rural Students
in Three Consolidated High Schools," Educational Administration
and Supervision 37 (April,1951), pp.234-240.

[2]C.P. Loomis and M.G. Becker, "Measuring Rural,
Urban, and Farm and Nonfarm Cleavages in a Rural Consolidated
High School" Sociometry, XI (1948) pp.246-261.

students. The results of the sociometric testing indicated self-preference only in the case of the farm students who sent fewer choices than the expected number of choices to the town students. The town students exhibited no such self-preference for themselves over the farm students. This finding does not concur with Bonney's study mentioned immediately above. Also, no cleavage was evident between nonfarm and farm students, or between nonfarm and town students.

Studies of the transportation of students other than junior and secondary school students occur very rarely in the various literature sources. A report published by Lee[1] in 1957 concerns the transportation of young primary school children in England. He reported evidence to show that transported pupils exhibited a lesser degree of social and emotional adjustment than did their peers. Lee intimated that this may have been due to lack of maternal care during the day.

Apart from Lee's study, there seems to be little information on the implications of transporting primary and elementary school children to centralized schools. The most recent study of the transportation of young children was reported by Hunka[2] in 1958. In a study of the academic achievement of

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[1]T. Lee, "On the Relationship Between the School Journey and Social and Emotional Adjustment of Rural Infant Children," British Journal of Educational Psychology, 27 (June, 1957), pp.101-104.

[2]S.M. Hunka, "The Effects of Bus Transportation on Pupil Achievement," M.Ed.Thesis, University of Alberta, 1958.

transported and nontransported pupils in Grades II, IV, and VI
he found significant results in Grade II only, where non-
transported pupils scored higher than transported pupils.
Hunka's investigation is mentioned here because the work which
follows evolves directly from his recommendations:

....further research is necessary to determine how trans-
portation may be affecting the school adjustment pattern
of pupils at various age and grade levels.[1]

III. SUMMARY

The literature review exhibited a dual nature:
1. a report on the relationships between personal social adjust-
ment and sociometric status, and 2. an account of research in
the area of pupil transportation.

The consensus of research findings is that high
sociometric status correlates substantially with desirable
personality characteristics and positive attitudes towards others.
On the other hand, low sociometric status is indicative of un-
desirable characteristics.

Investigations in the realm of pupil transportation
have focussed on the secondary school level, and especially on
the transportation of Negroes and Whites for integration pur-
poses. In addition to the obvious affects of longer school days,
and lack of extra-curricular participation for the transported
pupils, there was some indication of sociometric cleavage between
transported and nontransported pupils. Also, the study by Lee

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[1] Ibid. p.69

suggested that the adjustment of very young children may be affected by transportation practices. Hunka's research suggested similar results in the academic field and called for further investigation into the adjustment patterns of transported pupils.

CHAPTER IV

DESIGN OF THE STUDY

Chapter II referred briefly to the sample and the instruments used in this study. This chapter will describe: (i) the method of sample selection; (ii) the nature of the sample; (iii) the instruments -- the reliability, validity, and appropriateness of each; (iv) the method of data collection; and (v) the research design and statistical treatment. A detailed account of the statistical results will be given in Chapter V.

I. METHOD OF SAMPLE SELECTION

To select the sample, the area of transportation concentration had to be determined. This information came from two sources: the Provincial Department of Education and the District Superintendents. Letters were forwarded to the principals of schools in which approximately half of the school population arrived by bus. Two factors determined the final selection of schools: (1) the schools were to have approximately half of the student population transported from surrounding communities, and (2) schools were to be chosen from widely separated regions to increase the representativeness of the sample. Altogether seven schools were chosen -- four on the East Coast, one on the North-East Coast and one on the West Coast of Newfoundland. All principals complied with the request

to administer a sociometric test and the <u>California Test of Personality</u> to Grade IV, V, and VI students in their schools. The entire correspondence carried out is given in Appendix A.

II. THE SAMPLE

The sample was comprised of Grades IV, V, and VI pupils attending elementary schools in rural Newfoundland. To enhance the geographical representativeness of the sample, testing was carried out in three widely separated school districts. For purposes of this investigation the testing areas shall be referred to as Districts A, B, and C. Districts A, B, and C are located respectively in Western, North-eastern and Eastern Newfoundland.

A more specific account of the nature of the sample is provided in Table I. The table gives the number of schools tested in each district, and an explicit break-down of the sample with respect to the male-female and nontransported-transported factors.

The sample was drawn mainly from five schools: one school in each of Districts A and B, and three schools from District C. The subjects tested in the pilot study came from a school in District C. Table I gives a break-down of the numbers of nontransported and transported boys and girls in each grade. Approximately one-half (258) of the total sample attended schools in District C. The bulk of the remaining subjects (191) were tested in District A, while District B contributed 83 subjects for a total sample of 532.

TABLE I

THE NUMBERS OF NONTRANSPORTED AND TRANSPORTED BOYS AND GIRLS IN GRADES IV, V, VI

Dis-trict	Schools tested		Nontransported Grade IV	V	VI	Totals	Transported Grade IV	V	VI	Totals	Grand Totals
A	1.	Boys:	13	19	13	45	13	15	12	40	85
		Girls·	15	16	23	54	22	12	18	52	106
			28	35	36	99	35	27	30	92	191
B	1.	Boys:	6	17	6	29	7	5	2	14	43
		Girls:	7	6	10	23	5	4	8	17	40
			13	23	16	52	12	9	10	31	83
	1.	Boys:	11	2	6	19	8	6	8	22	41
		Girls:	3	3	6	12	11	8	9	28	40
			14	5	12	31	19	14	17	50	81
	2.	Boys:	4	9	5	18	4	6	6	16	34
		Girls:	5	6	1	12	10	6	9	25	37
			9	15	6	30	14	12	15	41	71
C	3.	Boys:	12	4	4	20	3	5	10	18	38
		Girls:	6	12	11	29	7	8	2	17	46
			18	16	15	59	10	13	12	35	84
	4.**	Boys:	3			3	7			7	10
		Girls:	7			7	5			5	12
			10			10	12			12	22
Totals:		Boys:	49	51	34	134	42	37	38	117	251
		Girls:	43	43	51	137	60	38	46	144	281
Grand Totals:			92	94	85	271	102	75	84	261	532

** Pilot study -- Grade IV only.

Table II provides further information regarding
the number of communities served by each school, the
number of years the pupils have been transported, and the
approximate mileage travelled by the transported pupils.

It will be observed that, except in two cases,
the centralized school serves four or more communities.
The majority of the pupils travelled moderate distances --
5 miles or less. Also, all the transported pupils have
attended the central school for at least two years.[1] In
the case of schools 1 and 2 in District C, the transported
pupils have received all their education in the central
school. A portion of the pupils in school 4 in District C
and in the District A school have also spent their entire
school life in the central school.

Except for two or three instances, all commun-
ities concerned have a population below 500. In several
communities the population is below the 200 mark. In this
sense it may be said that the investigation is concerned
with rural areas in Newfoundland. This information, together
with the data of Table II, is not used in the design of this
study, but is presented here to elucidate the nature of the
sample.

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[1]Testing was carried out in May and June of 1970.
Therefore, the school year 1969-70 was counted as one year's
attendance.

TABLE II

THE NUMBER OF COMMUNITIES SERVED BY EACH SCHOOL,
THE NUMBER OF YEARS CHILDREN HAVE BEEN TRANSPORTED,
AND THE APPROXIMATE DISTANCES TRAVELLED

Dis-trict	School Number	Number of Communities Served	Years of Transportation in Grade:			Approx-imate Mileage
			IV	V	VI	
A	1	5	2--6	2--6	2--6	2--12
B	1	3	2	2	2	8
C	1	5	4	5	6	3--4
	2	6	4	5	6	2--4
	3	2	3	4	5	1--2
	4 **	4	2--4			3--5

** Pilot Study -- Grade IV only.

III.   THE TESTING INSTRUMENTS

Two instruments were used to collect the data required: (1) a sociometric test was employed to determine the nature of the choice and rejection patterns of non-transported and transported students, and (2) the California Test of Personality was used to provide scores depicting the personal and social adjustment of individual students. Each of these testing techniques is discussed in turn below.

The Sociometric Test

There are basically two kinds of social measurement: (a) questionnaires[1] or rating scales which measure interpersonal relationships, attitudes, and feelings; and (b) the sociometric test which requires students to respond to a number of questions called the criteria of the test.[2] Sample criteria are "whom would you like to sit next to you in class?" and "whom would you like to play with at recess time?" The subjects select their choices from among their classmates in response to these criteria. In some cases, as in this investigation, the researcher wishes to determine which children in the class are being rejected.

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[1]Typical examples of such questionnaires are the Ohio Social Acceptance Scale, the Syracuse Scale of Social Relations, and the Social Roles Test. For discussion of these techniques, see M.E. Bonney and R.S. Hampleman, Personal-Social Evaluation Techniques (Washington: The Center for Applied Research in Education, Inc., 1962), pp.60-66.

[2]For an exhaustive account of sociometry and sociometric techniques, see J.L. Moreno, Who Shall Survive? (Beacon, N.Y.: Beacon House, Inc.,1953.)

The information provided by a sociometric test permits some insight into the nature of interpersonal relationships within a group. The choice and rejection data indicates to the researcher members who are well accepted, and others who are not so well accepted, by the group. Sociometric choice data also permits identification of small sub-groups if small numbers within the larger group show a strong tendency to choose each other in the sociometric responses. In a similar manner, sociometric rejection data will further indicate the existence of sociometric cleavage between sub-groups within a larger group.

The sociometric test used in this study was a relatively simple one consisting of two criteria - one of a positive and one of a negative nature. The criteria were:

1. If you were to move to a new classroom and could take only five classmates with you, which five would you choose?

2. If the whole class were to move to a new classroom, but had to leave five classmates behind, which five would you leave behind?

Each subject responded privately and silently under the writer's supervision on a prepared list of his class-mates. X's were placed next to the five names in response to the first criterion, and the names solicited by the second criterion were designated by O's. The tests were scored manually by counting the number of choices and rejections received by each pupil.

Reliability and Validity of Sociometric Testing

To determine the reliability of the above sociometric test, a pilot study was carried out with the Grade IV class in school #4 in District C. A test-retest procedure was carried out over a two-week period. The subjects were unaware that retesting would be done. The subjects were given a sociometric status index according to the difference between the number of times they were chosen and the number of times they were rejected by their classmates. The rank order of sociometric status indices was then determined for each test. The rank difference method for computing the Spearman rank order correlation coefficient was then employed to determine whether or not the subjects had been given different ranks on the two separate testings.

The main data from the Pilot study is given in Table A1 of Appendix B. The correlation coefficient is calculated below:

$$\rho = 1 - \frac{6\,D^2}{N(N^2 - 1)}$$

$$= 1 - \frac{6 \times 639.00}{26(26^2 - 1)}$$

$$= 1 - \frac{3834.00}{17550}$$

$$= 1 - 0.218$$

$$= 0.782$$

The resulting reliability coefficient of 0.78 suggested that confidence could be placed in the sociometric test as a fairly reliable source of data.

Pepinsky[1] was among the first to point out that one should not approach reliability in sociometric testing in the same rigorous manner as in other forms of psychological and intelligence testing. Since sociometric tests measure interpersonal relationships, it is not surprising that the scores obtained will differ over a period of time. Still, more confidence can be placed in a test if the reliability is high.

Bonney and Hampleman[2] reported that twenty investigations show a substantial constancy of choice-status over a period of several months with correlation coefficients falling between .56 and .76. Much depends on the size of the group tested, the number of choices made by each student, and the kind of choice criteria used. In general, the higher correlations occur when approximately thirty students are given comprehensive (i.e., not specific) criteria to which they give five choices.[3]

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[1]P.N. Pepinsky, "The Meaning of Reliability and Validity as Applied to Sociometric Tests," Educational and Psychology Measurement, IX (Spring, 1949), pp.39-49.

[2]Bonney and Hampleman, p. 69.

[3]Bonney and Hampleman, p. 70.

Briefly, other findings have been reported as follows: Northway[1] reported a correlation of .64 to .84 on general criteria; Gronlund[2] found an average stability coefficient of .75 in nine elementary schools over a four month period; and Bonney reported correlation coefficients between .67 and .84 from one grade level to the next.[3]

Most of the researchers point out in their findings that even though individual-individual choices may change somewhat, the overall group structure generally remains the same. That is, group cleavages[4] and relative ranks achieved by students on one sociometric test are fairly representative of ranks and cleavages which will result from subsequent appraisal.

As is the case with reliability, so too the unique nature of sociometric testing makes it difficult to determine validity with as great confidence as may be expressed

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[1]M.L. Northway, A Primer of Sociology (Toronto: University of Toronto Press, 1967), pp.22-23.

[2]N.E. Gronlund, "Generality of Sociometric Status over Criteria in Measurement of Social Acceptability, Elementary School Journal, (December, 1955), pp. 173.176.

[3]M.E. Bonney, "The Relative Stability of Social, Intellectual and Academic Status in Grades II and IV and the Interrelationships Between these Various Forms of Growth," Journal of Educational Psychology, 34 (1943), pp.88-102.

[4]Group cleavage exists in a classroom to the extent that members of particular sub-groups within the class choose friends within their own sub-group and reject members of other sub-groups.

in other forms of testing. Some writers[1] state that sociometric tests have "face validity" since they are direct measurements of the phenomenon under consideration.

Other researchers[2] have compared the results of sociometric tests with those of teacher ratings, pupil ratings, and observation. The consensus is that when total groups are studied, the relationships between the various methods of testing are not marked; however, when those who are in the high sociometric status bracket are compared with those who are low, the findings are quite consistent no matter what type of instrument is used.

The California Test of Personality

The California Test of Personality (Form AA-- Elementary Level, grades 4-8, 1953 revision) is dichotomized into Personal Adjustment and Social Adjustment sections.[3] These two sections are further divided into six sub-tests or components, i.e., twelve components in all:

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[1] See, for example, Pepinsky, pp. 39-41, and H.H. Jennings, Leadership in Isolation (New York: Longman, Green and Co., 1950), P. 27.

[2] See summary of studies done by Bonney, Kuhler, and Lee reported by Bonney and Hampleman, p. 72.

[3] Louis P. Thorpe, Willis W. Clark, and Ernest W. Tiegs, Manual for California Test of Personality, 1953 Revision, (Monterey, California: California Test Bureau, 1953.)

1. Personal Adjustment
   1A. Self-reliance
   1B. Sense of personal worth
   1C. Sense of personal freedom
   1D. Feeling of belonging
   1E. Withdrawing tendencies (freedom from)
   1F. Nervous symptoms (freedom from)
       Total personal adjustment
       (sum of above scores)

2. Social Adjustment
   2A. Social standards
   2B. Social skills
   2C. Anti-social tendencies (freedom from)
   2D. Family relations
   2E. School relations
   2F. Community relations
       Total social adjustment (sum of
       above scores)

A study of the CTP Manual and the CTP test booklet lead to some delimitation of these components. The components chosen for the investigation were those in which the majority of items are related to experiences in the school environment. These components, together with a brief description from the CTP Manual are given below.

1A. Self-reliance--An individual may be said to be self-reliant to the extent that he does things independently of others, exhibits stability of emotions, and behaves in a responsible manner.

1B. Sense of personal worth--an individual possesses a sense of being worthy when he feels he is well regarded by others, when he feels that others have faith in his future success, and when he feels he is as capable as, or more capable than the "average" person.

1D. <u>Feeling of belonging</u>--an individual feels
that he belongs when he enjoys the love of his family, the
friendship of his peers, when he feels he relates well with
his teachers and people in general.

1E. <u>Withdrawing tendencies (freedom from)</u>--an
individual is free from withdrawing tendencies to the degree
that he does not substitute fantasy for real life: such a
person will be free from loneliness, and undue amounts of
self-concern.

2B. <u>Social skills</u>--these skills will be
manifested by a liking for people, a desire to be of assistance,
and diplomacy in dealing with both friends and strangers.
Egoistic tendencies will be suppressed in favour of interest
in the problems of others.

2C. <u>Anti-social tendencies (freedom from)</u>--
denotes freedom from bullying tendencies, frequent quarreling,
disobedience, and destructiveness to property. The anti-
social person is one who tries to get his satisfactions in
ways that are damaging and unfair to others.

2E. <u>School relations</u>--the student who is
adjusted to school feels that his teachers like him; he enjoys
being with the other students and believes that the school
work is adapted to his level of interest and maturity. He
feels that he counts for something in the life of the instit-
ution.

In addition to the foregoing components, the total personal adjustment and total social adjustment scores were submitted to analysis. These scores include all scores received on the six personal adjustment components and on the six social adjustment components, respectively.

Reliability and Validity of the California Test of Personality

The reliability coefficients for the California Test of Personality are given in Table III on page 58. The CTP Manual points out that the statistical reliability may sometimes appear to be somewhat lower than that of good tests of ability and achievement. It is important to remember, however, that some of the items of the CTP touch relatively sensitive personal and social areas of students whose feelings, convictions, and modes of behaviour are continually changing in accordance with their experiences.

In support of the validity of the CTP, researchers report the test as perhaps the most diagnostic of its type, having a distinct advantage over time consuming interviews. One analysis of five methods of evaluation (the CTP, interviews, experience rating, teacher rating and parent rating) resulted in the CTP as the superior method.[1]

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[1]See research reported in The CTP Manual pp.7-8.

TABLE III
RELIABILITY COEFFICIENTS FOR COMPONENTS OF THE
CALIFORNIA TEST OF PERSONALITY (ELEMENTARY LEVEL)

		r*			r
1.	Personal Adjustment.......	.93	2. Social Adjustment......		.92
	A. Self-reliance..........	.64	A. Social standards....		.59
	B. Sense of personal worth..................	.79	B. Social skills.......		.73
	C. Sense of personal freedom................	.79	C. Anti-social tendencies.............		.77
	D. Feeling of belonging.....................	.77	D. Family relations....		.77
			E. School relations....		.78
	E. Withdrawing tendencies.................	.83	F. Community relations..............		.79
	F. Nervous symptoms.......	.82	Total adjustment....		.94

*These reliability coefficients have been calculated
with the Kuder-Richardson formula.

The Norms for the California Test of Personality

The norms provided in the manual are given in terms of percentile ranks and were derived from the test data secured from 4562 pupils in Grades IV to VIII inclusive in schools in Nebraska, New Jersey, New York, Ohio, Massachusetts, and California. In their final form the norms for the California Test of Personality have been based on a sampling of cases which constituted a normal distribution of mental ability, typical age-grade relationships, and other character- istics as follows:[1]

1. Median I.Q. of Elementary Grades was 100, with S.D. of 16.

2. Seventy percent of those tested were making normal progress through their grade; about twenty percent were retarded one-half year or more; and ten percent were accelerated one-half year or more.

3. About eighty-five percent of the population was Caucasian, and the remainder was Mexican, Negro, and other minority groups.

There is little in the above factors to suggest that the CTP is not suitable for testing in Newfoundland schools.

IV. METHOD OF DATA COLLECTION

All testing was done by the writer over a period of approximately one month during May and June of 1970. To facilitate the administration of the sociometric test, all schools forwarded a list of students in Grades IV, V, and VI.

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[1]The CTP Manual, pp. 27-32.

This enabled the preparation of mimeographed class lists
to serve as answer sheets for the sociometric test.

The pilot study was carried out approximately
two weeks before the main testing began. The pilot study
provided reliability data for the sociometric test by the
test-retest method over a period of two weeks. The
California Test of Personality was also given during the
pilot study to determine any problems that might evolve during
its administration.

In every case principals were contacted by phone
or in person at least two or three days before the researcher
visited the schools. The testing period lasted about one
hour in each classroom: approximately fifty minutes for
the California Test of Personality and ten minutes for the
sociometric test. In alternate classrooms the order of the
testing was reverse to counteract any effect that one may
have had on the other.

The California Test of Personality was adminis-
tered according to the directions outlined in the manual.
In the administration of the sociometric test each subject
responded privately and silently on a prepared list of his
classmates according to the following directions read by the
writer.

1. If you were to move to a new classroom and
could take only five classmates with you, which five would

you take? Place an X in front of the five names you choose.

2. If you were to move to a new classroom, but
had to leave five classmates behind, which five would you
leave behind? Place an O in front of the five names you
choose.

V. THE RESEARCH DESIGN AND STATISTICAL TREATMENT

To facilitate acceptance or rejection of the null
hypotheses set up in this investigation, the research design
was arranged into two segments. One part of the design pro-
vided for a chi-square analysis of the sociometric data for
sociometric cleavages. The second part allowed computer
computation of a two-way analysis of variance for the
California Test of Personality scores of nontransported and
transported children.

The Chi-square Analysis

Table IV indicates the design used to extract
evidence of sociometric cleavage in the classroom. This re-
search design was applied separately to each of the three
grades comprising the sample. The operations in the table
were computed separately for boys and girls.[1] The chi-square
test was especially applicable here because of its suitability
to nonparametric data based on a nominal scale.

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[1]As will be seen, the subjects exhibited strong
same sex choices, thereby justifying separate treatment of
the data for males and females.

TABLE IV

RESEARCH DESIGN FOR EXTRACTION OF SOCIOMETRIC CLEAVAGES

| Choices (Rejections)* Sent | Choices (Rejections) Received | | | | Chi-Square | Probability |
	Nontransported Boys (Girls) f_1	F_1***	Transported Boys (Girls) f_2	F_2		P
Nontransported Boys (Girls)**	w	$(w+x)\dfrac{N-n-1}{N-1}$	x	$(w+x)\dfrac{n}{N-1}$	χ^2_{NT}	
Transported Boys (Girls)	y	$(y+x)\dfrac{N-n}{N-1}$	z	$(y+z)\dfrac{n-1}{N-1}$	χ^2_{T}	

* The design is applied separately to choices and rejections.

** The design is applied separately to boys and girls.

*** Method of calculation described on p.63.

In the above table:

f_i=the observed frequency of choices or rejections.

F_i=the expected frequency of choices or rejections.

N=the number of nontransported boys (girls) + number of transported boys (girls).

n=number of transported boys (girls).

N-n=number of nontransported boys (girls).

χ^2_{NT}=Chi-square statistic for choices (rejections) given by nontransported boys (girls). Degrees of freedom=1.

χ^2_{T} =Chi-square statistic for choices (rejections) given by transported boys (girls). Degrees of freedom=1.

Two items of information are necessary to compute the chi-square statistic: (i) the actual number of choices (or rejections) observed to be given, and (ii) the number of choices (or rejections) expected to be given by chance alone. The formula for computation of chi-square (x^2) is

$$\chi^2 = \sum_{i=1}^{c} \frac{(f_i - F_i)^2}{F_i} \dots\dots\dots\dots\dots\dots 1.$$

where f_i is the frequency of choices (or rejections) observed in the ith class of observations, F_i is the corresponding expected frequency for that class, and the number of classes is equal to c. Reference to the design of Table IV shows that for this study c=2, based on one nontransported and one transported group in each computation of the chi-square statistic. Also, for reasons given immediately below, a modification of formula (1) was used:

$$\chi^2 = \sum_{i=1}^{c} \frac{(f_i - F_i - .5)^2}{F_i} \dots\dots\dots\dots\dots 2.$$

where the factor .5 is called Yates' Correction for Continuity.[1] The only other condition to be met was that expected frequencies number at least 5 in all cases.[2]

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[1]Yates' Correction is a continuity correction necessary when the number of degrees of freedom is 1. This corrects for the lack of continuity in the random sampling distribution when there are only two classes of observations. See Daniel S. Lordahl, Modern Statistics for Behavioural Sciences, (New York: The Ronald Press Company, 1967), pp.202,203.

[2]For further discussion of the chi-square technique see Lordahl, Ibid., pp.190-215.

Application of formula (2) on the design in
Table IV elicited the degree to which each of the nontrans-
ported and transported groups were contributing to sociometric
cleavages in the classroom. A significant chi-square stat-
istic and inspection of the data indicated sociometric cleavage
when the pupils were sending most of their choices within
their respective groups (or were sending most of their re-
jections outside their respective groups.)

Calculation of Expected Frequencies.

At this point a method for calculating F_i will be
developed.[1] Consider the case with N students in a classroom
where n of them are being transported. Then the number of
nontransported students is N-n. Suppose the n transported
students send a total of c choices, some of which go to their
own group while the remainder goes to the N-n nontransported
students. Now each transported student can send choices to
everyone but himself, that is, to N-1 students. He is free
to send choices to all N-n nontransported students and to
n-1 transported students, since he is in this latter group.
Therefore, of the total number of choices, c, sent by the
transported group, the number expected to be sent across to
the nontransported group is $c.\frac{N-n}{N-1}$, and the number expected

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[1]The method given is adapted from Joan H. Criswell,
"Sociometric Methods of Measuring Group Preferences,"
Sociometry, 6 (1943), pp.398-408.

to be given within to the transported group is $c \cdot \frac{n-1}{N-1}$.[1]

The above method was used to calculate the expected frequencies, F_1 and F_2, in the design of Table IV on page 62. The second row expected frequencies for transported boys in Table IV are calculated below as an example of the application of the technique. Referral to the design on page 62 shows that total choices made by the transported boys are $c=f_1+f_2$ or $c=y+z$, y choices being sent within to transported boys and z choices being sent across to nontransported. Or, in more detail, we have:

observed frequencies — $\begin{aligned} &\text{in-group: } f_1=y \\ &\text{out-group: } f_2=z \end{aligned}$

expected frequencies — in-group: $F_1=c \cdot \frac{n-1}{N-1} = (y+z)\frac{n-1}{N-1}$

out-group: $F_2=c \cdot \frac{N-n}{N-1} = (y+z)\frac{N-n}{N-1}$

Similar calculations will result in F_1 and F_2 for the nontransported boys in the first row of Table IV.

The Analysis of Variance Design

Table V on page 66 presents the second segment of the research design. The table takes the form of a two-fold application of a 2 x 2 analysis of variance technique. In addition to extracting differences in the California Test of Personality scores of nontransported and transported

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[1]Note that $c \cdot \frac{N-n}{N-1} + c \cdot \frac{n-1}{N-1} = c$.

TABLE V

RESEARCH DESIGN FOR DETERMINATION OF PERSONAL AND SOCIAL ADJUST-
MENT DIFFERENCES BETWEEN NONTRANSPORTED AND TRANSPORTED PUPILS

A. ANALYSIS OF VARIANCE WITH SOCIOMETRIC STATUS LEVELS INTRODUCED

California Test of Personality Scores

	Nontransported Pupils	Transported Pupils
	CTP Scores	CTP Scores
High Sociometric Status	. . . . .	. . . . .
Low Sociometric Status	. . . .	. . . .

B. ANALYSIS OF VARIANCE WITH SUBJECTS GROUPED BY SEX

California Test of Personality Scores

	Nontransported Pupils	Transported Pupils
	CTP Scores	CTP Scores
Boys	. . . .	. . . .
Girls	. . . . . .	. . . . . .

The above design is applied separately to each of the following
CTP components for each of the three grade levels tested:

    1. Self-reliance
    2. Sense of personal worth
    3. Withdrawing tendencies (freedom from)
    4. Feeling of belonging
    5. Total personal adjustment (aggregate of scores in 1 to 4)
    6. Anti-social tendencies (freedom from)
    7. Social skills
    8. School relations
    9. Total social adjustment (aggregate of scores in 6 to 8)

students, the design attempts to reduce the error component
in the analysis by separating the scores into two levels:
first, according to the sociometric status of the subjects
(Table VA), and second, according to the sex of the subjects
(Table VB). The design of Table VA facilitated the accept-
ance or rejection of null hypotheses 3, 4, and 5, while
that of Table VB allowed for acceptance or rejection of
hypothesis #6.

To facilitate the punching of data cards and
subsequent interpretation of computer print output, the socio-
metric status levels (Table VA) and sex levels (Table VB)
in the design are referred to as factor A_1 and factor A_2
respectively. Similarly, the nontransportation-transportation
columns are designated factor B.

Computer program ANOV22 entitled "Two-Way Analysis
of Variance, Unequal Cell Frequency, Least Squares Solution,"[1]
was utilized to comput the two-way analysis of variance.
Program ANOV22 was especially applicable because it allowed
for unequal numbers of subjects in each of the four cells of
the design of Table V. Also, the assumptions underlying the
analysis of variance are such that this technique is typically

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[1]Program ANOV22: Two-Way Analysis of Variance
Unequal Cell Frequencies, Least Squares Solution, programmed/
documented by: T. Maguire and D. Precht, University of
Alberta, Division of Educational Research Services,
September, 1969.

used in an investigation of CTP scores. The print output
supplied F ratios and probability levels for (i) differ-
ences in CTP scores of nontransported and transported
students, (ii) differences in CTP scores of high and low
sociometric status students; (iii) the transportation by
sociometric status interaction effect on the CTP scores;
(iv) the transportation by sex interaction effect on the
CTP scores; and (v) differences in CTP scores of boys and
girls.

Determination of Sociometric Status.

For purpose of the 2 x 2 analysis of variance
design on page 66 the students were each assigned a
sociometric status index calculated in the following manner:

$$Sociometric\ Status=(C-R)/(N-1).$$

In the expression, C=the number of times an individual was
chosen by his classmates, R=the number of times the
individual was rejected by his classmates, and N=the
total number of students making choices and rejections in
a particular classroom. Students were placed in the High
Sociometric Status group or Low Sociometric Status group
according to whether or not the expression resulted in a
positive or negative index. Data related to cases in
which R=C were not used in the analysis of variance com-
putations.[1]   It should be pointed out that a sm ll

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[1]Altogether, 49 students received a sociometric
status index of 0.

number of these cases represented students who received

as many as 5 choices (counter-balanced by 5 rejections.)

However, inspection showed that all such data was randomly

dispersed throughout the sample. In view of the small

number of cases dropped in each section of the rather

large sample, it was assumed that the outcome of the

investigation would not be affected.

        For ease of reporting the following

abbreviations are used from time to time:

           NT............nontransported

           T.............transported

           High SMS.....high sociometric status

           Low SMS......low sociometric status

CHAPTER V

PRESENTATION AND INTERPRETATION OF DATA

The discussion in this section will proceed
according to the dual nature of the null hypotheses stated
for this investigation. Null hypotheses #1 and #2 are con-
cerned with the sociometric structure of the classroom, while
null hypotheses #3 to #6 deal with the personal and social
adjustment of the individual.[1] Accordingly, presentation
and interpretation of the sociometric data, relating to the
first two null hypotheses, shall be followed by similar treat-
ment of the CTP scores in the light of the remaining four null
hypotheses.

I.   THE CHOICE-REJECTION PATTERNS OF
NONTRANSPORTED AND TRANSPORTED STUDENTS

It has been pointed out that during elementary school
years students exhibit strong same sex preference in their
sociometric choices. The experimental design which involves
the chi-square analysis[2] was adopted to accommodate this
phenomenon. As was expected, a cursory overview of the data
from the Grade IV, V, and VI pupils of the sample indicated
a strong cleavage with respect to sex. It was deemed necessary

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[1]See the presentation of null hypotheses on page 25-26.

[2]See Table IV, page 62.

to determine the significance of this cleavage before pro-
ceeding with separate statistical treatments of boys' and
girls' sociometric data. This was done by submitting the
choice-rejection data to a chi-square analysis. Sample
calculations are given in Appendix C. The overall results
are summarized in Table VI on page 72. It is quite evident
that same-sex preference was very strong in all three
grades: boys chose boys over girls, and girls chose girls
over boys; boys rejected girls more than they did boys, and
girls rejected boys more than they did girls. It will be
noticed, however, that out-group rejection was not as strong
as in-group choices in the sense that the rejection chi-squares
are smaller than the choice chi-squares. This is not surpris-
ing since a group with strong in-group tendencies has minimal
interaction with another group and therefore will have fewer
reasons for rejecting that group.

Because of the strong sex preference illustrated
by the choice data in Table VI, discussion of boys choosing
girls, and girls choosing boys in both nontransported and
transported groups will be omitted from the analysis. Some
attention will be given, however, to the cross-sex rejection
data of both groups. It is obvious that the proportion of
choices or rejections given to any one group depends on the
male-female ratio not only in the receiving group, but in the

TABLE VI

CHI-SQUARE ANALYSIS OF CROSS-SEX CHOICE AND REJECTION DATA

A. CROSS-SEX CHOICE DATA

		Receivers					
		Boys		Girls		χ^2	P<
Grade	Senders	f_i*	F_i*	f_i	F_i		
IV	Boys (90)**	400	200	40	240	367	.001
V	Boys (88)	369	224	55	200	199	.001
VI	Boys (73)	337	154	27	210	378	.001
IV	Girls (105)	29	276	485	238	477	.001
V	Girls (78)	44	213	353	186	287	.001
VI	Girls (98)	31	209	456	278	266	.001

B. CROSS-SEX REJECTION DATA

IV	Boys (90)	156	203	288	241	20	.001
V	Boys (88)	179	223	244	200	18	.001
VI	Boys (73)	62	154	301	209	96	.001
IV	Girls (105)	363	241	157	279	115	.001
V	Girls (78)	233	210	161	184	5	.05
VI	Girls (98)	331	210	158	279	122	.001

*f_i= the observed frequency of choices (or rejections.)

F_i= the expected frequency of choices (or rejections.)

**The numbers in parenthesis indicate the number of students making choices (or rejections) in each case.

sending group as well. For this reason, the statistical analysis which follows treats each class as consisting of two main groups --nontransported and transported-- further divided into sub-groups according to sex. In this way, the sex factor, which would otherwise contaminate the frequency of choices and rejections, can be controlled.

The results of the sociometric testing are tabulated in Tables VII, VIII, and IX, on pages 74, 76, and 79. Each table involves two sets of chi-square analyses --one for the boys' responses and one for the girls' responses.

Table VII presents the nature of the responses to the first question on the sociometric test: "If you were to move to a new classroom, and could take only five classmates with you, which five would you choose?" Reference to the table leads to the following conclusions regarding the choice patterns of nontransported (NT) and transported (T) boys in the sample:

1. Neither the NT nor the T boys showed significantly greater preference for their respective groups within the Grade IV sample.

2. Both the NT and T boys showed strong in-group preference in the Grade V sample. Note that their choice patterns lead to chi-squares of 20.66 and 20.96, both of which are highly significant.

TABLE VII

ANALYSIS OF SOCIOMETRIC CHOICE DATA OF NONTRANSPORTED (NT)
AND TRANSPORTED (T) STUDENTS IN GRADES IV, V, AND VI

Grade	Senders	Receivers NT Boys f_i*	F_i	T Boys f_i	F_i	X^2	P<
IV	NT Boys (48)**	127.00	115.44	91.00	102.56	2.25	.10
IV	T Boys (42)	77.00	90.07	105.00	91.93	2.46	.20
V	NT Boys (51)	154.00	120.96	56.00	89.04	20.66	.001
V	T Boys (37)	55.00	84.31	104.00	74.69	20.96	.001
VI	NT Boys (35)	82.00	71.59	75.00	85.41	2.52	.20
VI	T Boys (38)	60.00	85.72	120.00	94.28	14.17	.001

Grade	Senders	NT Girls		T Girls			
IV	NT Girls (44)	105.00	82.75	101.00	123.25	9.22	.01
IV	T Girls (61)	88.00	117.06	191.00	161.94	12.00	.001
V	NT Girls (41)	127.00	111.02	73.00	88.98	4.85	.02
V	T Girls (37)	64.00	83.15	89.00	69.85	9.17	.01
VI	NT Girls (51)	172.00	135.51	68.00	104.49	21.93	.001
VI	T Girls (47)	60.00	100.21	155.00	114.79	29.52	.001

*The observed (f_i) and expected (F_i) frequencies are summations of observed and expected frequencies calculated separately for each class making up each grade. See Appendix D for sample computations.

**The numbers in parentheses indicate the number of students making choices in each case.

3. The Grade VI NT boys showed no biased tendency to choose from within their own group. However, the T boys exhibit strong in-group preference, as is illustrated by $X^2=14.17$ with P=.001.

The first null hypothesis implies that NT and T students will distribute their sociometric choices evenly throughout the classroom. In the light of the results given in the upper section of Table VI, it is evident that null hypothesis #1 can be accepted for NT boys in Grades IV and VI, and T boys in Grade IV, and rejected for NT boys in Grade V, and T boys in Grades V and VI.

The statistical analysis of the choice patterns of the girls which appears in the lower section of Table VII illustrates a more uniform situation. All chi-squares are significant at probability levels below the P=.05 level of significance. This means the NT and T girls in the sample declared choice preference for members of their respective groups. The resulting set of chi-squares in Table VII dictates the rejection of null hypothesis #1 for NT and T girls in all three grades.

Attention will now be given to null hypothesis #2 as it applies to the rejection data of the boys in Grades IV, V, and VI. Table VIII, page 76, indicates the nature of the boys' responses to the second question on the sociometric test: "If the whole class were to move to a new classroom,

TABLE VIII

ANALYSIS OF SOCIOMETRIC REJECTION DATA OF NONTRANSPORTED (NT)
AND TRANSPORTED (T) BOYS IN GRADES IV, V, AND VI

| | | Receivers (Classmates to be left behind) | | | | | |
| | | NT Boys | | T Boys | | χ^2 | |
Grade	Senders	f_1*	F_1	t_2	F_2		P<
IV	NT Boys (48)**	49.00	51.19	39.00	36.81	0.13	.80
IV	T Boys (42)	28.00	35.29	40.00	32.71	2.72	.10
V	NT Boys (51)	60.00	70.35	56.00	45.65	3.50	.10
V	T Boys (37)	44.00	35.21	19.00	27.79	4.42	.05
VI	NT Boys (35)	12.00	15.04	25.00	21.96	0.72	.50
VI	T Boys (38)	16.00	11.70	9.00	13.30	2.31	.20
		NT Girls		T Girls			
IV	NT Boys (48)	38.00	62.52	110.00	85.48	15.97	.001
IV	T Boys (42)	56.00	60.47	84.00	79.53	0.46	.50
V	NT Boys (51)	52.00	71.64	77.00	57.36	11.52	.001
V	T Boys (37)	58.00	55.79	57.00	59.21	0.10	.80
VI	NT Boys (35)	63.00	66.10	75.00	71.90	0.20	.70
VI	T Boys (38)	90.00	83.50	73.00	79.50	0.88	.50

*The observed and expected frequencies are summations
of the observed and expected frequencies calculated separately for
each class making up each grade. See Appendix D for sample computations.

**The numbers in parenthesis indicate the number of
students making rejections in each case.

but had to leave five classmates behind,which five would you leave behind?" Reference to Table VIII leads to the following conclusions with respect to the rejection patterns of the NT and T boys in the sample:

1.   In the Grade IV sample, strong out-group rejection was exhibited by the NT boys only, where they rejected the transported girls more strongly than they rejected the girls in their own group. There is no evidence of rejection between the two groups of boys, nor did the T boys reject NT girls more than would be expected by chance alone.

2.   The Grade V data indicates that the T boys rejected the NT boys slightly more often than would be expected by chance alone (P=.05.) The NT boys reciprocated by rejecting the T girls more often than they rejected the girls in their own group. At the same time, the NT boys showed no tendency to reject T boys, and the T boys did not reject the NT girls.

3.   The Grade VI analysis was void of significant rejections.

It was hypothesized in null hypothesis #2 that the frequency of out-group rejections of the NT and T students would not be greater than chance frequencies. The three statements made immediately above facilitate the acceptance or rejection of null hypothesis #2 for the NT and T boys in the sample. The hypothesis can thus be rejected for the Grade IV NT boys,

in that they rejected T girls to a greater extent than
they rejected NT girls: for Grade V NT boys, in that they
rejected T girls to a greater extent than they rejected NT
girls; and for Grade V T boys, in that they rejected NT boys
to a greater extent than they rejected T boys. In all other
cases the null hypothesis must be accepted for the rejection
patterns of Grades IV, V, and VI boys.

Finally, null hypothesis #2 shall be considered
for the rejection data of the girls as it appears in Table
IX on page 79. Again, the significance levels dictate the
following conclusions:

1. Neither the NT girls nor the T girls in Grade
IV sent rejections outside their respective groups to a
greater extent than would be expected by chance.

2. In Grade V, the only case of strong rejection
occurred where the NT girls sent a significantly greater number
of rejections to T girls than they did within to NT girls.

3. There was also only one case of rejection in
the sample of Grade VI girls: the NT girls rejected T boys
to a greater extent than they rejected the boys of their own
group.

The above conclusions lead to the rejection of null
hypothesis #2 for the Grade V and VI NT girls in the two
isolated cases where the Grade V NT girls rejected the T girls,

TABLE LX

ANALYSIS OF SOCIOMETRIC <u>REJECTION</u> DATA OF NONTRANSPORTED (NT)
AND TRANSPORTED (T) <u>GIRLS</u> IN GRADES IV, V, AND VI

Receivers (Classmates to be left behind)

Grade	Senders	NT Boys f_1*	F_1	T Boys f_2	F_2	X^2	P<
IV	NT Girls(44)**	66.00	65.78	76.00	76.52	--	ns
IV	T Girls(61)	112.00	114.23	109.00	106.77	0.05	.90
V	NT Girls(41)	69.00	62.15	40.00	46.85	1.51	.30
V	T Girls(37)	66.00	61.86	58.00	62.14	0.43	.70
VI	NT Girls(51)	61.00	77.94	104.00	87.06	6.58	.05
VI	T Girls(47)	94.00	83.24	72.00	82.76	2.54	.20
		NT Girls		T Girls			
IV	NT Girls(44)	22.00	28.68	51.00	44.32	2.19	.20
IV	T Girls(61)	41.00	33.99	43.00	50.01	2.10	.20
V	NT Girls(41)	39.00	60.52	65.00	43.48	17.60	.001
V	T Girls(37)	34.00	33.50	23.00	23.50	--	ns
VI	NT Girls(51)	37.00	46.76	53.00	43.24	3.81	.10
VI	NT Girls(47)	41.00	33.63	27.00	34.37	2.79	.10

*The observed (f_i) and expected (F_i) frequencies are summations of the observed and expected frequencies calculated from each class making up each grade. See Appendix D for computations.

**The numbers in parenthesis indicate the number of subjects making rejections in each group.

and the Grade VI NT girls rejected the T boys.

II.   PERSONAL AND SOCIAL ADJUSTMENT OF
NONTRANSPORTED AND TRANSPORTED STUDENTS

This section discusses the students' performance on the California Test of Personality (CTP). The components of the CTP are the main organizing elements, and the data from each of the three grades is presented under each component. The presentation is in the same order as the components appear in the CTP, that is:

1.   Self-reliance

2.   Sense of personal worth

3.   Feeling of belonging

4.   Withdrawing tendencies (freedom from)

5.   Total personal adjustment

6.   Social skills

7.   Anti-social tendencies

8.   School relations

9.   Total social adjustment

As suggested by null hypotheses 3, 4, 5, and 6 on pages 24-26, the following sources of variances will receive prime consideration in the analysis: 1. the transportation main effect, 2. the transportation by sociometric status[1]

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[1]Subjects were placed in the High Sociometric Status level if they received more choices than rejections, and were placed in the Low Sociometric Status level if they received more rejections than choices. See Supra., p.68.

interaction data, and 3. the transportation by sex interaction data. The analysis of the above sources of variance will provide answers to the following questions:

1. Do nontransported and transported students score differently on the personal and social adjustment components of the <u>California Test of Personality</u>?

2. Does the transportation treatment reflect any significant interaction with the adjustment scores of high and low sociometric status students?

3. Does the transportation treatment reflect any significant interaction with the adjustment scores of boys and girls?

Subsequently, the answers to these questions will provide for the acceptance or rejection of null hypotheses 3, 4, 5, and 6. The following discussion centers on the analysis of each of the CTP components which are listed on the foregoing page.

<u>Self-reliance.</u>

The means given in Table X indicate that in Grades IV and V the nontransported (NT) students scored slightly higher than did the transported (T) students on the "self-reliance" component of the CTP. The opposite occurred for the Grade VI scores with the transported (T) students scoring slightly higher than the nontransported (NT) students. However, the

TABLE X

ANALYSIS OF VARIANCE FOR SELF-RELIANCE
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
	SMS	6.398	6.595	1	1.824	0.642	0.424
	TRANS	6.582	6.409	1	1.453	0.511	0.476
IV	SEX	6.337	6.629	1	4.502	1.594	0.209
	SMSxTRANS**			1	2.186	0.769	0.382
	SEXxTRANS**			1	2.552	0.903	0.343
	SMS	7.282	6.493	1	22.531	8.513	0.004
	TRANS	7.148	6.632	1	8.612	3.254	0.073
V	SEX	6.638	7.224	1	14.582	5.402	0.021
	SMSxTRANS			1	8.274	0.031	0.860
	SEXxTRANS			1	2.275	0.008	0.927
	SMS	7.012	6.597	1	6.717	1.773	0.185
	TRANS	6.803	6.835	1	0.124	0.033	0.857
VI	SEX	6.167	7.303	1	49.600	14.044	0.000
	SMSxTRANS			1	6.141	1.621	0.205
	SEXxTRANS			1	1.990	0.563	0.454

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction means squares.

Terminology of above table:
 df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

 The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp.65-68.

probability levels, 0.476, 0.073 and 0.857 are not below

the level P=.05 necessary for the rejection of null hypo-

thesis #3 on page 25. It must be concluded, therefore, that

the nontransported (NT) and transported (T) students in the

sample did not receive significantly different scores on the

"self-reliance" component of the CTP.

Again, referring to Table X, since the significance

levels of the SMSxTRANS and SEXxTRANS interaction data do not

satisfy the required P=.05, null hypotheses #5 and #6 must

also be accepted for all subjects tested. This means that

the difference between the "self-reliance" scores of nontrans-

ported (NT) and transported (T) students is not significant

in the case of high and low sociometric status, and also in

the case of boys and girls.

Sense of Personal Worth

Table XI, page 84, presents the analysis of the data

for the second component of the CTP, i.e.,"sense of personal

worth." Again, the means and significant levels for the

transportation source of variance necessitates the acceptance

of null hypotheses #3 for all three grades. The nontransported

(NT) and transported (T) students did not receive significantly

different scores on the "sense of personal worth" component of

the CTP. Referral to the table also indicates that the two

interaction data resulted in F-ratios that are not significant,

thereby dictating the acceptance of null hypotheses #5 and #6.

TABLE XI

ANALYSIS OF VARIANCE FOR SENSE OF PERSONAL WORTH
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-ratio	Probability Level
IV	SMS	7.548	6.759	1	25.546	5.677	0.018
	TRANS	7.354	7.043	1	3.109	0.651	0.407
	SEX	7.072	7.292	1	3.205	0.692	0.407
	SMSxTRANS**			1	0.399	0.089	0.766
	SEXxTRANS**			1	1.120	0.242	0.624
V	SMS	8.282	7.338	1	35.103	6.409	0.012
	TRANS	7.795	7.926	1	1.268	0.231	0.631
	SEX	7.162	8.580	1	77.683	14.811	0.000
	SMSxTRANS			1	7.369	1.346	0.248
	SEXxTRANS			1	1.974	0.004	0.951
VI	SMS	8.217	7.542	1	17.046	2.997	0.085
	TRANS	8.000	7.810	1	0.866	0.152	0.697
	SEX	6.803	8.719	1	137.751	28.215	0.000
	SMSxTRANS			1	0.216	0.038	0.846
	SEXxTRANS			1	1.179	0.241	0.624

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:
  df=degrees of freedom; MS=mean square: SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

  The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp.65-68.

Therefore, it must be concluded that division of the sample into levels of sociometric status (i.e. high and low) did not elicit any adjustment differences between transported and nontransported pupils. A similar conclusion must be made with respect to division of the sample according to sex.

Feeling of Belonging

On the "feeling of belonging" component (Table XII, page 86) the F ratio of 4.660 at P=.032 provides for the rejection of null hypothesis #3 for the Grade IV sample. Within the significance level, P=.05, set for the rejection of the null hypotheses, it may be concluded that the NT students scored higher than did the T students on the "feeling of belonging" component of the CTP.

For Grades V and VI, probability levels of P=.687 and P=.881, respectively, dictate the acceptance of null hypothesis #3 for these grades. That is, the mean scores of NT and T students in Grades V and VI were not significantly different from each other for the component being tested.

The F ratios and significance levels for the two interaction sources of variance demonstrate that there was neither a transportation by sociometric status interaction nor a transportation by sex interaction affecting the scores. Therefore, null hypotheses #5 and #6 are accepted for all three grade levels.

Withdrawing Tendencies (freedom from)

Table XIII, page 87, contains the analysis of variance data for the component "withdrawing tendencies (freedom

TABLE XII

ANALYSIS OF VARIANCE FOR FEELING OF BELONGING
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
	SMS	9.161	8.620	1	10.917	2.834	0.094
	TRANS	9.278	8.602	1	17.949	4.660	0.032
IV	SEX	9.024	8.809	1	0.499	0.128	0.721
	SMSxTRANS**			1	4.203	1.091	0.298
	SEXxTRANS**			1	7.200	1.848	0.176
	SMS	9.565	9.310	1	2.374	0.596	0.441
	TRANS	9.511	9.368	1	0.648	0.163	0.687
V	SEX	9.150	9.763	1	15.021	3.854	0.051
	SMSxTRANS			1	3.688	0.925	0.338
	SEXxTRANS			1	4.315	1.107	0.294
	SMS	9.795	9.111	1	18.127	4.608	0.033
	TRANS	9.474	9.481	1	8.804	0.022	0.881
VI	SEX	8.924	9.888	1	35.490	9.285	0.003
	SMSxTRANS			1	0.504	0.128	0.721
	SEXxTRANS			1	1.048	0.003	0.958

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares

Terminology of above table:
    df=degress of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

    The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp.65-68.

TABLE XIII

ANALYSIS OF VARIANCE FOR WITHDRAWING TENDENCIES
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
IV	SMS	5.387	5.646	1	3.661	0.452	0.502
	TRANS	5.845	5.215	1	17.926	2.216	0.139
	SEX	5.385	5.618	1	4.912	0.606	0.437
	SMSxTRANS**			1	2.850	0.352	0.554
	SEXxTRANS**			1	2.138	0.003	0.959
V	SMS	5.882	5.225	1	16.072	2.053	0.154
	TRANS	5.693	5.441	1	1.807	0.231	0.632
	SEX	5.675	5.487	1	1.211	0.150	0.699
	SMSxTRANS			1	25.583	3.268	0.073
	SEXxTRANS			1	0.683	0.084	0.772
VI	SMS	6.060	5.550	1	12.670	1.385	0.241
	TRANS	5.697	5.898	1	2.139	0.234	0.629
	SEX	5.576	5.966	1	6.368	0.700	0.404
	SMSxTRANS			1	2.916	0.319	0.573
	SEXxTRANS			1	17.581	1.933	0.166

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:
   df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

   The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp.65-68.

from)." With respect to the transportation source of variance, the F ratios suggest the acceptance of null hypothesis #3 for all three grades.

There is no significant interaction within the level of significance set in this study. It may be worthwhile pointing out, however, that there is some indication of a weak SMSxTRANS interaction in the analysis of the Grade V scores (F=3.268, P=.073.) This point will be discussed later. It is sufficient to state here that null hypotheses #5 and #6 must be accepted for all three grade levels, since the condition for rejection is the computation of an F ratio which is at or below the P=.05 level of significance.

Total Personal Adjustment.

"Total personal adjustment" scores are summations of scores obtained on six separate personal adjustment components of the CTP.[1] Table XIV presents the "total personal adjustment" analysis for NT and T students in Grades IV, V, and VI. The table provides no statistical evidence for the rejection of null hypothesis #3, since all F ratios for the transportation source of variance have probability levels greater than P=.05. Neither are there any interactions implied, other than a weak SMSxTRANS effect presented by the Grade V sample. This interaction scores with F=2.984, P=0.086, is not beyond the level of significance required for the rejection of null hypothesis #5.

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[1] Supra, p. 54.

TABLE XIV . 89

ANALYSIS OF VARIANCE FOR TOTAL PERSONAL ADJUSTMENT
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
	SMS	42.645	41.937	1	16.361	0.210	0.647
	TRANS	43.215	41.559	1	112.049	1.441	0.232
IV	SEX	41.795	42.809	1	72.027	0.929	0.337
	SMS×TRANS**			1	28.263	0.363	0.547
	SEX×TRANS**			1	0.723	0.009	0.923
	SMS	46.965	43.366	1	488.382	5.595	0.019
	TRANS	45.739	44.794	1	21.695	0.249	0.619
V	SEX	43.737	47.000	1	427.295	4.780	0.030
	SMS×TRANS			1	260.492	2.984	0.086
	SEX×TRANS			1	1.767	0.020	0.888
	SMS	47.614	44.069	1	478.020	5.115	0.025
	TRANS	46.225	45.722	1	3.270	0.035	0.852
VI	SEX	43.515	47.787	1	682.238	7.490	0.007
	SMS×TRANS			1	19.402	0.204	0.652
	SEX×TRANS			1	180.012	1.976	0.162

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:
   df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

   The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp.65-68.

In summary of the "total personal adjustment" scores the following conclusions must be made: 1. nontransported and transported students did not score differently on this component of the CTP; 2. division of the sample into levels of sociometric status did not elicit any adjustment differences between transported and nontransported pupils; and 3. division of the sample according to sex did not elicit any adjustment differences between transported and nontransported pupils.

Social skills

Table XV, page 91, gives the variance analysis of the "social skills" component of the CTP. Table XV shows none of the F ratios for the transportation source of variance significant at the P=.05 probability level. In other words, there is no significant difference between the scores of NT students and T students on the "social skills" component, and null hypothesis #4 must be accepted for each of the three grade levels.

The SMSxTRANS and SEXxTRANS interaction sources of variance also fail to supply F ratios that are significant at the level required for the rejection of null hypotheses #5 and #6. As before, it must be concluded for this sample that the transportation treatment did not reflect any difference in the scores of high and low sociometric status students, nor in the scores of girls and boys.

TABLE XV

ANALYSIS OF VARIANCE FOR SOCIAL SKILLS
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
	SMS	8.247	8.278	1	8.287	0.030	0.863
	TRANS	8.405	8.140	1	3.048	1.102	0.295
IV	SEX	8.133	8.382	1	3.757	1.353	0.246
	SMSxTRANS**			1	5.546	2.005	0.159
	SEXxTRANS**			1	0.032	0.012	0.915
	SMS	9.023	8.254	1	22.534	7.304	0.008
	TRANS	8.739	8.588	1	0.457	0.148	0.701
V	SEX	8.275	9.092	1	26.548	8.680	0.004
	SMSxTRANS			1	0.019	0.006	0.937
	SEXxTRANS			1	0.015	0.005	0.944
	SMS	9.072	8.708	1	5.919	1.747	0.188
	TRANS	8.671	9.127	1	8.848	2.617	0.108
VI	SEX	8.318	9.337	1	42.851	13.411	0.000
	SMSxTRANS			1	8.097	2.390	0.124
	SEXxTRANS			1	0.184	0.058	0.810

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:
  df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX= the sex factor.

  The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp. 65-68.

Antisocial Tendencies (freedom from)

The analysis of variance for the component "antisocial tendencies (freedom from)" in Table XVI, presents a statistical picture comparable to the previous one in Table XV. The F ratios calculated as representative of the differences between NT and T scores are as follows: Grade IV--F=0.009, Grade V--F=1.196, Grade VI--F=0.035. Since these ratios would occur more than 5 times in 100 trials by chance alone, null hypothesis #4 is accepted at each grade level. This means that transported and nontransported pupils did not score differently on this component of the CTP.

Perusal of the table indicates similar insignificant F ratios for the two interaction sources of variance. This means that the two levels of sociometric status did not affect differentially the scores of NT and T students, nor did sex differentially affect the scores of NT and T students -- therefore null hypotheses #5 and #6 must be accepted for each grade level.

School Relations

Table XVII, page 94, gives the analysis for the "school relations" component of the CTP. The transportation source of variance, again presenting insignificant F ratios for the scores of NT and T students, dictates the acceptance of null hypothesis #4 for the "school relations" scores. It may be worth pointing out that the Grade V classes presented

TABLE XVI

ANALYSIS OF VARIANCE FOR ANTI-SOCIAL TENDENCIES
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
IV	SMS	7.149	7.784	1	5.625	0.919	0.339
	TRANS	7.556	7.612	1	0.055	0.009	0.925
	SEX	7.060	8.079	1	44.917	7.660	0.006
	SMSxTRANS**			1	0.001	0.000	0.998
	SEXxTRANS**			1	3.466	0.591	0.443
V	SMS	8.082	7.183	1	32.956	4.616	0.033
	TRANS	7.488	7.911	1	8.538	1.196	0.276
	SEX	7.063	8.316	1	59.393	8.456	0.004
	SMSxTRANS			1	11.352	1.590	0.209
	SEXxTRANS			1	2.513	0.358	0.551
VI	SMS	8.373	7.180	1	54.246	8.353	0.004
	TRANS	7.895	7.747	1	0.227	0.035	0.852
	SEX	6.970	8.450	1	82.149	13.081	0.000
	SMSxTRANS			1	7.246	1.116	0.293
	SEXxTRANS			1	11.619	1.850	0.176

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction means squares.

Terminology of above table:
df=degrees of freedom; MS=mean square; SMS=the sociometric statu factor; TRANS=the transportation factor; and SEX=the sex factor.

The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp. 65-68.

TABLE XVII

ANALYSIS OF VARIANCE FOR SCHOOL RELATIONS
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
IV	SMS	7.763	7.203	1	13.533	2.933	0.089
	TRANS	7.493	7.516	1	0.115	0.025	0.875
	SEX	7.301	7.697	1	6.769	1.461	0.228
	SMSxTRANS**			1	0.330	0.072	0.789
	SEXxTRANS**			1	3.969	0.857	0.356
V	SMS	7.965	6.944	1	43.120	7.142	0.008
	TRANS	7.227	7.853	1	17.804	2.949	0.088
	SEX	7.188	7.829	1	14.602	2.300	0.131
	SMSxTRANS			1	21.180	3.508	0.063
	SEXxTRANS			1	2.347	0.370	0.544
VI	SMS	8.169	7.222	1	34.475	4.939	0.028
	TRANS	7.750	7.709	1	0.006	0.001	0.977
	SEX	6.879	8.360	1	83.324	12.565	0.001
	SMSxTRANS			1	0.092	0.013	0.909
	SEXxTRANS			1	3.906	0.589	0.444

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:

df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp. 65-68.

a borderline case where the T students scored slightly
higher than the NT students, giving an F ratio of 2.949 at
P=.088. At the same time the SMSxTRANS interaction for
Grade V is somewhat more significant at the probability level
P=.063. While this is not sufficient to reject null hypo-
thesis #5, it does make the transportation main effect some-
what meaningless (more will be said on this point later.)[1]
Reference to the table shows no significant SEXxTRANS inter-
action, and hypothesis #6 is also accepted for all three
grades.

Total Social Adjustment

  "Total social adjustment" scores are summations
of scores obtained on six separate social adjustment components
of the CTP. Table XVIII, page 96, presents the "total social
adjustment" analysis for NT and T students in Grades IV, V,
and VI. The transportation source of variance results in F
ratios which are too small to be significant at the P=.05
probability level. This being the case, null hypothesis #4
is accepted for this component of the CTP.

  The analysis did not extract any sociometric
status by transportation or any sex by transportation inter-
actions -- null hypotheses #5 and #6 are therefore accepted
for all three grades. As has been the case with nearly all

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[1]Infra., pp. 106-110.

TABLE XVIII

ANALYSIS OF VARIANCE FOR TOTAL SOCIAL ADJUSTMENT
SCORES OF NONTRANSPORTED AND TRANSPORTED PUPILS

Grade	Source of Variance	Means*		df	MS	F-Ratio	Probability Level
IV	SMS	51.811	50.633	1	63.063	1.085	0.299
	TRANS	51.670	51.000	1	15.599	0.268	0.605
	SEX	50.193	52.348	1	225.719	3.958	0.048
	SMSxTRANS**			1	14.213	0.245	0.622
	SEXxTRANS**			1	33.968	0.596	0.441
V	SMS	53.459	49.676	1	577.596	7.346	0.007
	TRANS	51.114	52.544	1	102.471	1.303	0.255
	SEX	49.737	53.842	1	636.377	8.008	0.005
	SMSxTRANS			1	187.592	2.386	0.125
	SEXxTRANS			1	0.060	0.001	0.978
VI	SMS	55.084	51.111	1	607.543	7.831	0.006
	TRANS	53.329	53.152	1	0.044	0.001	0.981
	SEX	49.015	56.371	1	2057.460	30.257	0.000
	SMSxTRANS			1	104.081	1.342	0.249
	SEXxTRANS			1	101.664	1.495	0.223

*The means for the main effects are tabulated in the following order: high sociometric status-low sociometric status, nontransported-transported, and boys-girls.

**Interaction mean squares.

Terminology of above table:
   df=degrees of freedom; MS=mean square; SMS=the sociometric status factor; TRANS=the transportation factor; and SEX=the sex factor.

   The above table results from a 2-fold application of a 2-way analysis of variance design. For more detail see "The Analysis of Variance Design," Supra., pp. 65-68.

the other components, the following conclusions may be made
with respect to the "total social adjustment" analysis:

1. nontransported and transported students did
not score differently on the "total social adjustment"
component of the CTP; 2. the analysis of the adjustment scores
according to the high and low sociometric status levels of
the sample did not extract any adjustment differences
between transported and nontransported pupils; and 3. the
analysis of the adjustment scores according to the sex of
the subjects did not extract any adjustment difference
between transported and nontransported subjects.

CHAPTER VI

DISCUSSION OF RESULTS

In conjunction with the dual nature of the
statistical analysis, the discussion of results shall pro-
ceed along two distinct lines. First, consideration shall
be given to the sociometric data, and second, the personal
and social adjustment scores of nontransported (NT) and
transported (T) children shall be discussed in some detail.

I. THE SOCIOMETRIC DATA

The results of the sociometric testing have been
summarized in Tables XIX and XX, pages 99,102. Table XIX
illustrates the acceptance and rejection of null hypothesis
#1 for the choice data. Similarly, Table XX presents the
rejection data relating to null hypothesis #2.

The data in the two tables reflect notable differ-
ences. Table XIX provides for the rejection of null hypo-
thesis #1 in nine out of twelve cases. Therefore, it may be
said with some confidence that both NT and T boys and girls
tend to show strong choice preference for members of their
respective grade groups. This situation occurs in spite of
the generality and "school-relatedness" of criterion number
one on the sociometric test.[1]

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[1]A more specific criterion such as "Whom would you
like to go fishing with?" or "Whom would you invite to your
birthday party?" would be more "community-related" -- a factor
which would likely strengthen in-group preference.

TABLE XIX

SUMMARY OF THE ACCEPTANCE (a) AND REJECTION (r)
OF NULL HYPOTHESIS #1

Grade	NT Boys Choosing Boys	T Boys Choosing Boys	NT Girls Choosing Girls	T Girls Choosing Girls
IV	a	a	r	r
V	r*	r	r	r
VI	a	r	r	r

*Rejection of the null hypothesis means that the group which is choosing sends most of its choices within to its own members. For example, in the case of the Grade V "NT boys choosing boys," the rejection of the null hypothesis means that the NT boys give a significantly greater number of choices to themselves than to T boys.

The tendency to choose within groups is weakest in Grade IV, where only the girls contribute to a sociometric cleavage in the classroom. It is accepted that social awareness and social prejudice increase with age, and that boys tend to be boisterous while girls are more reserved in their social behaviour.[1] It was also pointed out earlier that popular girls are more dependent on the group than are popular boys.[2] These factors may be contributing to the sociometric behaviour of the youngest children in the sample, causing statistical significance for the in-group choices of the girls, only, in Grade IV.

Except for the isolated case in Grade VI, where the nontransported (NT) boys show no preference for their own group over transported (T) boys, it may be said that the Grade V and VI students exhibit a significantly greater number of in-group choices than out-group choices. This is not surprising since the school bus associations, lunch hour activities, and peer groups of the separate communities are likely contributing to these results. Nor are these in-group preferences undesirable in themselves. Only when there is no interaction or hostile interaction between sub-groups in the class, is there need for some alarm regarding the sociometric structure of the centralized elementary school.

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[1]Elizabeth B.Hurlock, Developmental Psychology,pp.283-84.

[2]Supra, p. 15.

Table XX, page 102, gives some indication of the acceptance-rejection pattern between NT and T students in Grades IV, V, and VI. Null hypothesis #2 is accepted in nineteen out of twenty-four cases. The null hypothesis, which states that NT and T students will not send a significantly greater number of rejections outside their respective groups than inside their respective groups, was rejected for the following cases: Grade IV NT boys rejected T girls; Grade V NT boys rejected T girls; Grade V T boys rejected NT boys; Grade V NT girls rejected T girls; and Grade VI NT girls rejected T boys. Since there seems to be no pattern in this minority of rejection cases, it appears that the degree of sociometric rejection between NT and T students has not reached significant levels.

At this point a quandary is evident, because a low degree of sociometric rejection may be interpreted in two different ways: (a) each sub-group may be so involved internally that little attention is paid to other sub-groups; or (b) there may be genuine harmony in the co-existence of sub-groups even though individuals choose friends from their own sub-groups. The present research design does not differentiate between these two conditions. It is also interesting to note that in the five cases of sociometric rejection described above, non-transported students are rejecting transported students in four instances while transported students are rejecting non-

TABLE XX

SUMMARY OF THE ACCEPTANCE (a) AND REJECTION (r)
OF NULL HYPOTHESIS #2

Grade	NT Boys Rejecting: Boys	Girls	T Boys Rejecting: Boys	Girls	NT Girls Rejecting: Boys	Girls	T Girls Rejecting: Boys	Girls
IV	a	r*	a	a	a	a	a	a
V	a	r	r	a	a	r	a	a
VI	a	a	a	a	r	a	a	a

*Rejection of the null hypothesis means that the group which is rejecting is sending more rejections outside the group than within the group. For example, in the case of Grade IV "NT boys rejecting girls," the rejection of the null hypothesis means that the NT boys are sending a significantly greater number of rejections to T girls than to NT girls.

transported students only once. Taken at face value this provides grounds for some concern. However, since the number of such cases is small, no great importance can be placed on this result. Further investigation on more specific criteria may supply insight into the significance of this occurrence.

II. THE PERSONAL AND SOCIAL ADJUSTMENT DATA

To aid discussion of the acceptance or rejection of null hypotheses #3, #4, #5, and #6, pertinent data from Tables X to XVIII has been summarized in Table XXI, page 104. The letters "a" and "r" indicate whether or not the null hypotheses were accepted or rejected at probability level P=.05. The asterisk appears in the table where the null hypothesis could be rejected at probability levels slightly greater than P=.05. Notwithstanding these borderline cases, Table XIII testifies that transported children appear to be nearly as well adjusted as nontransported children -- as far as the present sample and testing instruments are concerned.

In only one case is there outright rejection of a null hypothesis: rejection of null hypothesis #3 for the Grade IV sample on the "feeling of belonging" component of the California Test of Personality. This significant finding suggests that for the sample it is reasonable to expect that nontransported students may score better than transported students on items related to the love of the family, the

TABLE XXI

CTP COMPONENTS FOR WHICH
NULL HYPOTHESES WERE ACCEPTED (a) OR REJECTED (r)

CTP Component	Null hypotheses											
	#3 Grade			#4 Grade			#5 Grade			#6 Grade		
	IV	V	VI	IV	V	VI	IV	V	VI	IV	V	VI
Self-reliance	a	a*	a	na**	na	na	a	a	a	a	a	a
Sense of Personal worth	a	a	a	na	na	na	a	a	a	a	a	a
Feeling of belonging	r	a	a	na	na	na	a	a	a	a	a	a
Withdrawing tendencies (freedom from)	a	a	a	na	na	na	a	a*	a	a	a	a
Total personal adjustment	a	a	a	na	na	na	a	a*	a	a	a	a
Social skills	na	na	na	a	a	a	a	a	a	a	a	a
Anti-social tendencies (freedom from)	na	na	na	a	a	a	a	a	a	a	a	a
School relations	na	na	na	a	a	a	a	a*	a	a	a	a
Total social adjustment	na	na	na	a	a	a	a	a	a	a	a	a

*The (*) indicates the components and grade level for which the null hypotheses could be rejected at probability level P=.09. These near significant cases are discussed on pp. 107-110.

**Not applicable.

well-wishes of good friends, feelings towards teachers and school, and cordial relations with people in general.[1]

In most cases it is likely that the transported student faces a busy daily schedule with respect to bus travel, school classes, and home study. It may be that the bus transportation which keeps the child away from home during the day also prevents the child's close contact with teachers and other students in the congenial atmosphere of extra-curricular activities. The continuous shuttling back and forth might reasonably affect the child's "feeling of belonging" as described above. The fact that the Grade IV students are the youngest in the sample may be of some significance in this finding. It will be remembered that both Lee[2] and Hunka[3] reported significant findings on adjustment and achievement respectively in favour of the young non-transported subjects in their samples. It should be pointed out, however, that the subjects concerned in these two studies were younger than the Grade IV sample in this study. It should also be reiterated that the case under discussion is

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[1]These are the criteria to determine feeling of belonging as defined by the CTP Manual. See also, Supra.,p. 56.

[2]Supra., p. 41.

[3]Supra., p. 41.

an isolated one, since none of the null hypotheses are rejected for any other CTP component in either of the grades making up the sample. Also, at the .05 level of significance, four of the eighty-one cases tested in Table XXI, page 104, could give significant results by chance alone. Therefore, the above interpretation should be treated with caution.

Apart from the component "feeling of belonging" the analysis provides no conclusive evidence that Grades IV, V, and VI nontransported students score higher than transported students on the various components of the California Test of Personality.

It may be said that social adjustment is an out-growth of personal adjustment. Personal adjustment will tend to be affected to great extent by the innate characteristics and home environment of the child. In the generation of null hypotheses for this investigation it was reported that a relationship exists between socioeconomic class and personality.[1] In this regard it should be remembered that all testing for this study was done in rural areas.

It should also be pointed out that all transported children were in at least their second year of transportation. Even though sociometric cleavages along community lines still exist in the classrooms, the children may have had ample time to adjust to their new life pattern in such a way that the

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[1]Supra., p.24.

<u>Californian Test of Personality</u> is not sensitive to differences in personal and social adjustment of nontransported and transported students.

It may be worthwhile pointing out that the occurrence of school related items in the <u>California Test of Personality</u> could have contributed to a confounding factor in the analysis. This possibility becomes less remote when one considers the transition through which many transported children have gone. In most cases they have left a one or two room, often rundown, school, and have entered a larger, more modern school. In the new situation they have a teacher for every grade, rather than one teacher for several grades. The more prosperous school provides a varied curriculum; the teachers are usually better qualified, and have access to teaching aids that the small schools could not afford. These factors suggest that the CTP scores of the transported children may have been contaminated by a halo effect. If problems were precipitated by transportation practices, it is possible that the enriched curriculum, and improved school environment in general, may neutralize any adverse effects.

Some attention shall now be given to the near significant cases designated by asterisks in Table XXI, page 104. These borderline cases are so named because they result in statistical computations which are significant at probability levels between .05 and .09.

To facilitate this portion of the discussion, information from Tables X to XVIII, pages 82 to 96, which was not otherwise used in this investigation, has been summarized in Table XXII, page 109. The table presents a summary of the data arising from the sociometric status (SMS) and sex (SEX) main effects sources of variance. Reference to Tables X to XVIII, pages 82 to 96, lead to the following conclusions concerning the probability levels presented in Table XV:

1. High sociometric status students scored better than low sociometric status students on the California Test of Personality.

2. Girls scored higher than boys on the California Test of Personality.

3. These findings made a strong appearance in Grade V and continue into Grade VI.

The question now arises as to whether or not the differentiation of CTP scores (along sociometric status and sex lines) which make a strong first appearance in the Grade V sample is contributing to the near significant cases designated by the asterisks in Table XXI, page 104.

Since girls score higher than boys on adjustment instruments like the CTP,[1] it is reasonable to expect that cells in the design which have a preponderance of girls would

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[1]The results of Table XXI, page 104, are supported by other researchers - see for example, the discussion of Anderson's study, Supra., p. 15.

TABLE XXII

SUMMARY OF PROBABILITY LEVELS FOR DIFFERENCES IN CTP SCORES
OF HIGH AND LOW SOCIOMETRIC STATUS (SMS) PUPILS, AND FOR
DIFFERENCES IN CTP SCORES OF BOYS AND GIRLS (SEX)

| CTP Component | Probability Levels* | | | | | |
| | Grade IV | | GRADE V | | GRADE VI | |
	SMS	SEX	SMS	SEX	SMS	SEX
Self-reliance	0.424	0.209	0.004	0.021	0.185	0.000
Sense of personal worth	0.018	0.407	0.012	0.000	0.085	0.000
Feeling of belonging	0.094	0.721	0.441	0.051	0.033	0.003
Withdrawing tendencies (freedom from)	0.502	0.437	0.154	0.699	0.241	0.404
Total personal adjustment	0.647	0.337	0.019	0.030	0.025	0.007
Social skills	0.863	0.246	0.008	0.004	0.188	0.000
Anti-social tendencies (freedom from)	0.339	0.006	0.033	0.004	0.004	0.000
School relations	0.089	0.228	0.008	0.131	0.028	0.001
Total social adjustment	0.299	0.048	0.007	0.005	0.006	0.000

*In all cases, significant probability levels in
the SMS source of variance indicate that high sociometric status
students scored better than low sociometric status students, and
significant probability levels in the SEX source of variance
indicate that girls scored better than boys. For clarity, the
significant probability levels have been underlined.

exhibit a higher adjustment mean score than cells with more boys than girls. In fact, none of the cell means in the above-mentioned near significant cases supported this logic.[1]

It is interesting to note that all these borderline cases occurred in the Grade V sample. In this regard the results of Powell's study[2] may have some significance here. He found that eleven year-old girls exhibited greater adjustment conflict than eleven year-old boys. Note that eleven years is the Grade V age level. Powell found no difference in the adjustment conflict of boys and girls at the Grade VI age level.

One final point should be made with respect to the near significant cases under discussion. Earlier research has shown that sociometric testing elicits different modes of social interaction for boys and girls.[3] All these factors may be grounds for the refinement of the experimental design of this investigation so that a three-way "transportation by sociometric status by sex" interaction effect may be examined.

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[1]See Appendix E for sample calculation.

[2]_Supra_., p. 16.

[3]_Supra_., p. 15.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I.   SUMMARY

In summary, the main sections of the report shall
be used as organizing elements.

The Problem

The centralization of school services for primary
and elementary students in Newfoundland has been a source of
much debate and conflict in our rural areas. This study was
undertaken to determine whether or not the nature of student
interaction and adjustment in the classroom could be detected as
a cause for concern.

An attempt was made to determine the nature of
sociometric patterns and personal and social adjustment of a
selected sample of nontransported and transported pupils in
Grades IV, V, and VI. Briefly, the following questions were
extracted for investigation:

1.   Do sociometric cleavages exist between non-
transported and transported pupils?

2.   Can social and personal adjustment differences
between nontransported and transported pupils be identified
by an instrument such as the California Test of Personality?

3.   Will the transportation treatment interact
differentially with the CTP scores of children who are and
children who are not well accepted by their peers?

4.   Will the transportation treatment interact
differentially with the CTP scores of boys and girls?

The search of the literature revealed only one study on the adjustment of nontransported and transported children below the Grade VII level.[1] In this case it was found that young children who travelled by bus were not as well adjusted as those who lived in the school community. The work of psychologists in the area of late childhood development (see Chapter I) lead to six null hypotheses, two of which were concerned with the sociometric structure of centralized classrooms, and four of which related to the personal and social adjustment of the students. The condition for the rejection of the null hypotheses was statistical computations significant at, or below, the P=.05 probability level.

The null hypotheses are stated in an abridged form below:

1. Nontransported and transported students will not exhibit frequencies of in-group choosing greater than frequencies expected by chance.

2. Nontransported and transported students will not exhibit frequencies of out-group rejection greater than frequencies expected by chance.

3. There will be no difference in the personal adjustment of nontransported and transported students.

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[1]Supra., pp. 41-42. Except where bussing for racial integration is a confounding factor, Lee's is the only study concerned with the adjustment of transported students below the Grade VI level.

4. There will be no difference in the social adjustment of nontransported and transported students.

5. The transportation element will not interact differentially the adjustment scores of high and low sociometric status students.

6. The transportation element will not interact differentially the scores of boys and girls.

The Sample

The sample of this study consisted of 532 nontransported and transported students in Grades IV, V, and VI. The sample was drawn from widely separated geographical areas, but all subjects lived in rural regions. In all there were 261 transported and 271 nontransported students in the sample.

The Instruments

The nature of the hypotheses to be tested necessitated the use of two types of instruments: (1) a sociometric test was employed to determine the sociometric structure of the classroom; (2) the California Test of Personality was administered to determine any differences in the scores of nontransported and transported students in the following adjustment areas: 1. self-reliance, 2. sense of personal worth, 3. feeling of belonging, 4. withdrawing tendencies, 5. total personal adjustment, 6. social skills, 7. anti-social tendencies, 8. school relations, and 9. total social adjustment.

Data Collection

All testing was administered by the researcher during May and June of 1970, and scoring was done manually.

Statistical Analysis

Because of the strong same-sex preference inherent in the sociometric data, computations were carried out separately for boys and girls. A chi-square analysis, calculated manually, determined the significance levels at which nontransported and transported students were choosing within and rejecting without their respective groups at frequencies greater than those expected by chance.

The California Test of Personality scores were submitted to computer program ANOV22: "Two-way analysis of variance, unequal cell frequencies, least squares solution."[1] The program was applied to the data twice: firstly, the scores of the nontransported and transported students were grouped according to the sociometric status indices of the subjects, and secondly, according to the sex of the subjects. This grouping facilitated the study of the two interactions, SMSxTRANS and SEXxTRANS, of hypotheses #5 and #6.

Findings

The analysis of the sociometric choice data indicated that both nontransported and transported students have a

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[1]Program ANOV22: Two-Way Analysis of Variance Unequal Cell Frequencies, Least Squares Solution, programmed/documented by: T.Maguire and D.Precht, University of Alberta, Division of Educational Research Services, September, 1969.

strong tendency to choose within their own groups in response
to a relatively general criterion. Only the Grade IV boys
showed no inclination for this in-group preference. On these
grounds it may be stated that null hypothesis #1 was accepted
for the choice patterns of the nontransported and transported
boys in Grade IV only, and rejected for all other students
in the sample.

The analysis of the sociometric rejection data
did not suggest that nontransported and transported students
were inclined to reject each other to any great extent. In
only five of twenty-four group combinations were there signif-
icant chi-squares, indicating strong out-group rejection. A
interesting
~~disquiet~~ing fact, however, was that in four of these five cases
nontransported students were rejecting transported students,
while the reverse happened only once. More specifically,
hypothesis #2 was rejected for the following five cases:
Grade IV NT boys rejected T girls, Grade V NT boys rejected
T girls, Grade V T boys rejected NT boys, Grade V NT girls
rejected T girls, and Grade VI NT girls rejected T boys.
Since these rejection cases are isolated ones, any interpret-
ation should be dealt with cautiously. In all other cases
null hypothesis #2 was accepted.

The analysis of the <u>California Test of Personality</u>
scores resulted in the rejection of hypothesis #3 for only
one grade level group on one component of the CTP; in Grade

IV the NT pupils scored significantly higher than T pupils on the "feeling of belonging" component. Null hypotheses #3, #4, #5 and #6, were accepted for all other mean scores on all the CTP components in all three grades.

II. CONCLUSIONS

The findings of this study present no cause for alarm concerning the student social interaction in the centralized elementary school classroom. Both transported and non-transported sub-groups are choosing friends from within their own groups, but neither group is rejecting the other to the same extent. If the lack of strong rejection may be interpreted as an indication of tolerance between the two groups, there appears to be an absence of adverse community cleavages in the classroom. It should be remembered, however, that the sociometric criterion was somewhat general in nature. More specific work and play oriented criteria may shed more light on the nature of the rejection patterns. In this study it was found that the nontransported students were rejecting transported students in four of the five cases in which null hypothesis #2 was accepted. If this trend continues in future studies, there may be some cause for careful scrutiny of this matter.

In this investigation no attempt was made to compare the personal and social adjustment scores with the norms of the California Test of Personality. The sole purpose was to search for differences between nontransported and transported students.

Since only one isolated case out of a possible eighty-one[1] provided for the rejection of a null hypothesis, the conclusion is that no significant differences exist. This finding is consistent with the suggestion of other studies that a common socioeconomic background contributes to a common personal and social adjustment pattern.

Analysis of the responses on the sub-tests of the CTP supports the following conclusions with respect to the instrument used:

1. Nontransported and transported students do not differ in their sense of independency and responsibility (self-reliance.)

2. Nontransported and transported students have the same sense of personal worth. There is no difference in the way they feel about their capabilities and physical appearance (sense of personal worth.)

3. Nontransported and transported students experience the same relationships with family, friends, teachers, and people in general (feeling of belonging.)

4. Nontransported and transported students show no differentiation in the tendency to indulge in self-concern and fantasy (withdrawing tendencies.)

5. There is no difference in the ability of transported and nontransported students to interact skillfully and effectively with others in their environment (social skills.)

---

[1]See Table XX1, _Supra_., p. 104.

6. Nontransported and transported students do not exhibit different tendencies towards bullying, quarreling, disobedience, and destructiveness (anti-social tendencies.)

7. Nontransported and transported students have similar perceptions of teachers' and students' attitudes towards the individual. They perceive the school environment in a similar manner (school relations.)

8. Even though the near-significant cases in this study may warrant further investigation, it must be concluded that the transportation element does not interact differentially with the nature of the subject as regards sex and sociometric status. Again, there appears to be no cause for concern as regards the adjustment of transported pupils compared to the adjustment of nontransported pupils.

It should be pointed out that these conclusions are based on the nature of the <u>California Test of Personality</u> test items, on the students scores, and on the significance levels computed in this investigation. This necessarily leads to a very narrow definition of personal and social adjustment, since a different instrument may lead to quite different information regarding the adjustment of the students.

III. RECOMMENDATIONS FOR FURTHER RESEARCH

Concerning further research in the area of student behaviour in the centralized elementary school classroom, the

writer recommends:

1. Further sociometric research using more specific criteria. It may be that community cleavages in the classroom vary according to the nature of the criterion used. It is especially important to determine if there is unilateral rejection of one group by another. Also, since transported students come from several communities, there are sub-groups within the transported group. Further attention should therefore be given to community cleavages within the transported group itself. It may also be worthwhile to investigate the classroom interaction where students are bussed from rural areas into large towns and cities.

2. Further study of the personal and social adjustment of nontransported and transported students in all primary and elementary grade levels. Especially, information should be gathered for Grades K-III where transportation is becoming more and more prevalent. Future investigations should employ a sophisticated research design to extract such three-way interaction effects as the "transportation by sociometric status by sex" interaction effect.

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APPENDIX   A

CORRESPONDENCE

APPENDIX A

CORRESPONDENCE

Following is the letter sent to school district
superintendents requesting particulars on transportation pract-
ices in their districts:

October 4, 1969

Dear Superintendent:

I am presently doing studies in Educational
Administration at Memorial University of Newfoundland.

A project I am interested in requires data for
which the Provincial Department of Education has no stat-
istics at this time. Mr. Beaufield, who is now in charge
of bus transportation at the departmental level, advised
that I write the individual superintendents for the in-
formation needed.

I would be grateful if you could return the
bottom portion of this letter at your earliest convenience.

Yours sincerely,

Lloyd Gill

Name of School District: _____ .

Are any Primary pupils (K-6) being transported in your
school system?_____.

If the answer is YES, please complete questionnaire. In
the last column count the present school year.

Primary Grades Transported	Transported From (Name Hometown)	Transported to (School Location)	Pupils per Grade Transported	Approx. Mileage (one way)	Years of Trans- portation

At the same time that the foregoing letter was sent to super-
intendents, research at the Provincial Department of Education

provided supplementary information on the areas of transport-

ation concentration. The total information received suggested

a number of schools to which the following letter was sent:

February 20, 1970.

Dear Principal:

I am presently undertaking graduate studies in
Educational Administration at Memorial University of
Newfoundland. As you are no doubt aware, the course
work entails the completion of a research project by
each student.

A recent perusal of the statistics compiled
at the Department of Education, and the overall trend
towards consolidation, indicates that there is a move
towards the transportation of Primary and Elementary
Grades to centralized schools. I plan on doing
research in this area as a basis for the required re-
search project. For this reason, I am contacting
schools which, according to information compiled, have
a fair number of pupils transported to the school from
other communities.

I will be very grateful if you could spare five
minutes from your schedule to fill in the enclosed
form and return it in the stamped, self-addressed
envelope. Since time is, as always, a confounding
factor, your co-operation in this regard will be
greatly appreciated.

Thank you for your co-operation and assistance.

Yours sincerely,

Lloyd Gill.

Form attached to foregoing letter:

NAME AND ADDRESS OF SCHOOL:

ENROLLMENT COMPARISON OF NONTRANSPORTED AND TRANSPORTED STUDENTS

GRADE	TOTAL GRADE ENROLLMENT	NUMBER OF PUPILS BUSSED TO SCHOOL FROM OTHER COMMUNITIES	APPROXIMATE MILEAGE-- ONE WAY
K			
I			
II			
III			
IV			
V			
VI			
VII			

If your school has more than one grade in certain classrooms, please indicate the combinations in the space below:

Large schools may have reason to fill in the table below. In this table, please indicate which grades, if any, are large enough to be divided into two or more classes (i.e., class (1), class (2), etc.):

LARGE GRADES WITH 2 OR MORE CLASSES	TOTAL ENROLLMENT IN EACH CLASS (1) (2) (..)	TRANSPORTED PUPILS IN EACH CLASS (1) (2) (..)

Response to the previous letter suggested seven schools where there was a concentration of transportation in Grades IV, V, and VI. The first letter below was sent to one of the schools, requesting permission to do the pilot study. The second letter below was forwarded to the other six principals, requesting permission to do general testing in their schools. All replied in the affirmative:

March 23, 1970.

Dear Principal:

I am presently undertaking graduate studies in Educational Administration at Memorial University of Newfoundland. You will remember receiving an inquiry a few weeks ago concerning the ratio of nontransported and transported children in your school. Thank you for your response in this regard.

I am now at the second stage in my research project -- the pilot study. The pilot study shall consist of the administration of a sociometric test and the <u>California Test of Personality</u> to a group of Grade IV nontransported and transported pupils. The researcher hopes to detect whether or not there is a difference between the peer acceptance, personal, and social adjustment of the two groups of pupils. To test the reliability of the sociometric test the researcher would have to return to the school approximately two weeks later and do a retest. The testing should take about one hour. Schools used, of course, shall remain anonymous.

I would be very grateful if I could do this testing at your school, because it is within comfortable driving distance from the University, and because the proportion of transported-nontransported pupils in your Grade IV class is ideal.

If your reply is affirmative, I would also appreciate a list of names of the pupils in your Grade IV class. This advanced knowledge will facilitate the administration of the sociometric test.

With your consent I shall make contact by telephone to set up a testing time that will cause minimum disturbance to your teaching schedule.

I would be very grateful if you could spare five minutes from your schedule to acknowledge my request. Thank you for your consideration and co-operation in the past.

Yours sincerely,

Lloyd Gill

The letter forwarded to six principals, requesting permission to do general testing for thesis project:

April 1, 1970.

Dear Principal:

I am presently undertaking graduate studies in Educational Administration at Memorial University of Newfoundland. You will remember receiving an inquiry a few weeks ago concerning the ratio of transported-nontransported children in your school. Thank you for your response in this regard.

With the support and guidance of Dr. Z.F. Bacilious, my advisor; Dr. P.J. Warren, Head of the Department of Educational Administration; and Mr. R. Beaufield, Director of Bus Transportation at the Provincial Department of Education, I have now reached the second stage of my thesis research, that is, choosing a sample. The sample shall be Grade IV, V, and VI transported and nontransported pupils. My preliminary survey indicates that there is a limited number of schools with the ratio of transported-nontransported pupils that is suitable for my testing purposes. Because the number is small, I hope to include all these schools in my sample.

The Research Procedure shall consist of the administration of a Sociometric Test and the California Test of Personality to a sample of Grades IV, V, and VI transported and nontransported pupils. The researcher hopes to detect whether or not there is a difference between the Peer Acceptance, Personal, and Social Adjustment of the two groups of pupils. The testing should take about one to one and a half hours. Schools used will remain anonymous.

I would be very grateful for your permission to do a portion of my testing in your school. If your reply is affirmative, I would also appreciate a list of the pupils in Grades IV, V, and VI. This advanced knowledge will greatly facilitate the administration of the Sociometric Test. I am enclosing a stamped, self-addressed envelope for your convenience. With your consent I shall make contact to set up a testing time when my visit will cause a minimum disturbance to your teaching schedule. I hope to do my testing in April or early May.

Again, I wish to express my sincere gratitude for your assistance and co-operation in the past.

Yours sincerely,

Lloyd Gill.

APPENDIX B

THE PILOT STUDY

APPENDIX B

THE PILOT STUDY

The Grade IV class of school #4, District C, responded to the Sociometric Test on two occasions over a two week period. Table AI permits the computation of the rho correlation coefficient for the students' rank positions after each administration of the test.

From the data of Table AI:

$$\rho = 1 - \frac{6 \ D^2}{N(N^2-1)}$$

$$= 1 - \frac{6 \times 639.00}{26(26^2-1)}$$

$$= 1 - \frac{3834.00}{17550}$$

$$= 1 - 0.218$$

$$= 0.782$$

TABLE A1

CHOICES, REJECTIONS AND SOCIOMETRIC STATUS RANK RECEIVED BY
GRADE IV STUDENTS ON TWO ADMINISTRATIONS OF THE SOCIOMETRIC TEST

Student Number	Number of Choices received on		Number of Rejections received on		Status Score (Choices minus Rejections)		Rank		Difference in Rank (D)	D^2
	1 Test	2 Retest	1 Test	2 Retest	1 Test	2 Retest	T_1	T_2		
1	10	8	1	3	9	5	1	4	-3	9.00
2	9	9	1	2	8	7	2	2	0	0.00
3	9	11	2	2	7	9	3	1	2	4.00
4	7	4	1	2	6	2	4	7.5	-3.5	12.30
5	7	8	2	2	5	6	5	3	2	4.00
6	6	5	3	4	3	1	6.5	9.5	-3	9.00
7	4	3	1	4	3	-1	6.5	16.5	10.0	100.00
8	4	5	2	3	2	2	8	7.5	0.5	.25
9	7	5	6	6	1	-1	10	16.5	-6.5	42.30
10	5	4	4	3	1	1	10	9.5	0.5	.25
11	4	3	3	4	1	-1	10	16.5	-6.5	42.30
12	6	5	6	2	0	3	13	5.5	7.5	56.80
13	5	6	5	6	0	0	13	11.5	1.5	2.25
14	4	2	4	3	0	-1	13	16.5	-3.5	12.30
15	6	6	7	6	-1	0	15.5	11.5	4.0	16.00
16	1	3	2	4	-1	-1	15.5	16.5	-1.0	1.0
17	4	8	6	5	-2	3	17.5	5.5	12.0	144.00
18	1	0	3	7	-2	-7	17.5	24	-6.5	42.30
19	3	5	6	6	-3	-1	19	16.5	2.5	6.25
20	2	3	6	4	-4	-1	21	16.5	4.5	20.30
21	2	0	6	8	-4	-8	21	25.5	-4.5	20.30
22	4	4	8	12	-4	-8	21	25.5	-4.5	20.30
23	1	1	6	3	-5	-2	23.5	21	2.5	6.25
24	1	3	6	4	-5	-1	23.5	16.5	7.0	49.00
25	0	1	6	4	-6	-3	25	22.5	2.5	6.25
26	0	2	9	5	-9	-3	26	22.5	3.5	12.30
26=N									Total:	639.00

APPENDIX C

SAMPLE CALCULATION OF THE CHI-SQUARE
STATISTIC FOR SAME-SEX CHOICES IN
GRADES IV, V, VI.

APPENDIX C

SAMPLE CALCULATION OF THE CHI-SQUARE STATISTIC
FOR SAME-SEX CHOICES IN GRADES IV, V, VI

The sample chi-square statistic is calculated for the choice pattern of grade IV boys. Reference to Table VI on page 72 indicates that the 90 Grade IV boys send 400 choices to themselves and 40 choices to the 105 girls in their grade, for a total of 440 choices. Since the total number of students is 90+105=195, it is to be expected that boys receive $440 \times \frac{90}{195}$ choices, and girls receive $440 \times \frac{105}{195}$ choices.[1]

More specifically:

observed frequency $f_1 = 400$; expected frequency $F_1 = 440 \times \frac{90}{195} = 200$

observed frequency $f_2 = 40$; expected frequency $F_2 = 440 \times \frac{105}{195} = 240$

$$\chi^2 = \sum_{i=1}^{2} \frac{(|f_i - F_i| - \frac{1}{2})^2}{F_i} = \frac{(|400 - 200| - \frac{1}{2})^2}{200} + \frac{(|40 - 240| - \frac{1}{2})^2}{240}$$

$$= 200 + 167$$

$$= 367$$

For 1 degree of freedom and $\chi^2 = 367$, $P \leqslant .001$.

---

[1]This method of calculating expected frequencies is used here for convenience. The summation of expected frequencies from each classroom making up the Grade IV sample gives results which are infinitesimally different from the above computation of expected frequencies.

APPENDIX D

SAMPLE CALCULATION OF THE CHI-SQUARE
STATISTIC FOR SOCIOMETRIC DATA OF
NONTRANSPORTED AND TRANSPORTED
STUDENTS

APPENDIX D

SAMPLE CALCULATION OF THE CHI-SQUARE STATISTIC
FOR SOCIOMETRIC DATA OF NONTRANSPORTED AND TRANSPORTED STUDENTS

The sample calculation of chi-square is done for
the choice pattern of the Grade IV nontransported boys as they
send choices to boys in that grade. For maximum precision, the
expected frequencies were calculated for each classroom making
up the Grade IV sample. The method used is outlined on pages
58, 59. Table AII presents the observed and expected frequencies
for each of the seven Grade IV classrooms.[1]

TABLE AII

SUMMARY OF CHOICE DATA OF GRADE IV NONTRANSPORTED BOYS

Classroom	NT Boys f_1	NT Boys F_1	T Boys f_2	T Boys F_2
1	5	3.75	10	11.25
2	11	11.67	17	16.33
3	25	22.11	17	19.89
4	4	5.00	11	10.00
5	12	11.26	17	17.74
6	22	20.00	8	10.00
7	48	41.67	11	17.35
Totals*	127	115.44	91	102.56

*Note that totals are entered in Table VII, p. 74.

From Table AII:

$$\chi^2 = \sum_{i=1}^{2} \frac{(|f_i - F_i| - \frac{1}{2})^2}{F_i}$$

$$= \frac{(|127 - 115.44| - \frac{1}{2})^2}{115.44} + \frac{(|91 - 102.56| - \frac{1}{2})^2}{102.56}$$

$$= 0.106 + 0.119 = 2.25$$

For 1 degree of freedom and $\chi^2 = 2.25$, $P < .10$. These values have
been entered in Table VII, p. 74.

[1] In the school of District A there were two Grade IV classes.

APPENDIX E

NEAR SIGNIFICANT CASES

APPENDIX E

NEAR SIGNIFICANT CASES

The near-significant cases have been designated
by an asterisk in Table XXI, page 104. In the text of the
report (pp. 95-96), it was stated that a new perspective is
gained on the results when the boy/girl ratio of the sample
is considered. To illustrate this point, one of the near-
significant cases is discussed below.

The case chosen here concerns the near rejection
of null hypothesis #5 for the Grade V scores on the "total
personal adjustment" component of the California Test of
Personality. (See Table XIV, page 89.) Null hypothesis #5 is
related to the SMSxTRANS interaction effect on the CTP scores.
To illustrate the number of boys and girls, and the mean scores
in each cell of the experimental design, a special case of
Table VA, page 66, is presented in Table AIII, below.

Taken at face value, the data of Table AIII suggests
that low sociometric status, transported pupils score lower than
their peers in the other three cells. This possibility takes on
new significance when the data of Table XXII, page 109, is consid-
ered. There it is shown that the Grade V girls score higher than
the boys on "total personal adjustment" at probability level
P=.030.

Table AIII indicates that the ratio of boys to

girls in the low SMS NT cell (25/13) is almost double the
ratio of boys to girls in the Low SMS T cell (17/16).
Since, overall, boys scored lower than girls, it might be
expected that the Low SMS NT students would score lower
than the Low SMS T students. Table AII shows the opposite
to be the case. As stated earlier in the report, there
is some suggestion that a three way -- sociometric status
by transportation by sex -- interaction effect is affecting
the CTP scores of the Grade V nontransported and transported
students.

TABLE AIII

GRADE V SUBJECTS IN EACH CELL AND CELL MEANS FOR THE SMSxTRANS INTERACTION EFFECT ON "TOTAL PERSONAL ADJUSTMENT" SCORES

	Nontransported (NT) Students	Transported (T) Students
High Sociometric Status (High SMS)	22 boys 28 girls 50 total mean scores = 46.280	16 boys 19 girls 35 total mean score = 47.943
Low Sociometric Status (Low SMS)	25 boys 13 girls 38 total mean score = 45.026	17 boys 16 girls 33 total mean score = 41.455

APPENDIX F

THE SOCIOMETRIC TEST

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THE SOCIOMETRIC TEST

At the beginning of each testing session, each child was given a list of the names of all his classmates. The children then responded to the following criteria:

1. If you were to move to a new classroom and could take only five classmates with you, which five would you choose? Place an X in front of the names that you choose.

2. If the whole class were to move to a new classroom, but had to leave five classmates behind, which five would you leave behind? Place an O in front of these five names.