SOCIAL REINFORCER PREFERENCES

OF ELEMENTARY SCHOOL

AND COLLEGE STUDENTS

By

MARGARET RUTH GANSHORN

B.A., University of British Columbia, 1970

A THESIS SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Department of Educational Psychology and Special Education)

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

March 1983

© Margaret Ruth Ganshorn, 1983
In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Department of Educational Psychology and Special Education

The University of British Columbia
1956 Main Mall
Vancouver, Canada
V6T 1Y3

Date April 21, 1983
ABSTRACT

In order to assess the differences with respect to the social reinforcer preferences of adults and children, and the consistency of the preferences of the two groups over time and across situations, the rank order of preference of eight social reinforcers was measured by administering a paired-comparisons questionnaire on two occasions, one week apart, and a behavioural task involving the same eight reinforcers in the third week. The results indicated that expressed preference was highly stable over time, and consistent across assessment procedures (questionnaires and wool-sorting task), and that the two groups differed significantly in terms of order of preference. The findings of the present study are related to previous research; the educational and therapeutic implications of the results are discussed, and suggestions regarding future research are made.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>II</td>
<td></td>
</tr>
<tr>
<td>THE PROBLEM AND RELATED RESEARCH</td>
<td>5</td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>5</td>
</tr>
<tr>
<td>Selection of Reinforcers</td>
<td>5</td>
</tr>
<tr>
<td>Selection of Reinforcers for Adults</td>
<td>6</td>
</tr>
<tr>
<td>Selection of Reinforcers for Children</td>
<td>7</td>
</tr>
<tr>
<td>Social Reinforcement</td>
<td>8</td>
</tr>
<tr>
<td>Definition of Social Reinforcement</td>
<td>9</td>
</tr>
<tr>
<td>Efficacy of Social Reinforcement</td>
<td>11</td>
</tr>
<tr>
<td>Comparative Effectiveness of Social and Nonsocial Reinforcers</td>
<td>12</td>
</tr>
<tr>
<td>Atypical Populations</td>
<td>15</td>
</tr>
<tr>
<td>Selection of Social Reinforcers</td>
<td>17</td>
</tr>
<tr>
<td>Stability of Choice</td>
<td>18</td>
</tr>
<tr>
<td>Summary and Conclusions</td>
<td>20</td>
</tr>
<tr>
<td>STATEMENT OF THE PROBLEM</td>
<td>21</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>21</td>
</tr>
<tr>
<td>Rationale</td>
<td>21</td>
</tr>
<tr>
<td>Objectives</td>
<td>22</td>
</tr>
</tbody>
</table>
# CHAPTER

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td></td>
</tr>
<tr>
<td>METHOD</td>
<td>24</td>
</tr>
<tr>
<td>Subjects</td>
<td>24</td>
</tr>
<tr>
<td>Materials</td>
<td>24</td>
</tr>
<tr>
<td>Procedure</td>
<td>25</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>28</td>
</tr>
<tr>
<td>Tests of Consistency</td>
<td>28</td>
</tr>
<tr>
<td>Consistency over Time</td>
<td>28</td>
</tr>
<tr>
<td>Consistency over Test Mode</td>
<td>28</td>
</tr>
<tr>
<td>Tests of Group Differences</td>
<td>29</td>
</tr>
<tr>
<td>IV</td>
<td></td>
</tr>
<tr>
<td>RESULTS</td>
<td>30</td>
</tr>
<tr>
<td>Description of the Experimental Groups</td>
<td>30</td>
</tr>
<tr>
<td>Tests of Consistency</td>
<td>30</td>
</tr>
<tr>
<td>Consistency over Time</td>
<td>30</td>
</tr>
<tr>
<td>Consistency over Test Mode</td>
<td>35</td>
</tr>
<tr>
<td>Tests of Group Differences</td>
<td>38</td>
</tr>
<tr>
<td>Summary</td>
<td>49</td>
</tr>
<tr>
<td>V</td>
<td></td>
</tr>
<tr>
<td>SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH</td>
<td>52</td>
</tr>
<tr>
<td>Summary of Results</td>
<td>52</td>
</tr>
<tr>
<td>Conclusions</td>
<td>53</td>
</tr>
<tr>
<td>Implications for Education and Treatment</td>
<td>55</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>56</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>57</td>
</tr>
</tbody>
</table>
REFERENCES ............................................................................. 59

APPENDIX

A. Paired-Comparison Questionnaire ........................................ 64
B. Social Reinforcers ............................................................... 69
C. Occupational Categories used in the
   Classification of Parental Occupation ................................. 70
LIST OF TABLES

Table 1: Biodemographic Characteristics of the Two Experimental Groups ........................................ 31
Table 2: Kendall Rank Correlation Coefficient and Associated Probability for Each Subject ................. 32
Table 3: Median Taus for Males and Females .................................................. 36
Table 4: Median Taus for Subjects According to Parental Occupation ........................................... 37
Table 5: Frequency with which High, Medium, and Low Ranked Reinforcers were chosen at Non-Cued Times .......... 39
Table 6: Distribution of College and Elementary School Students with respect to the Rank Assigned to Touch .................................................. 40
Table 7: Distribution of College and Elementary School Students with Respect to the Rank Assigned to Use of Hand Gestures ........................................ 41
Table 8: Distribution of College and Elementary School Students with respect to the Rank Assigned to Trunk Lean .................................................. 42
Table 9: Distribution of College and Elementary School Students with respect to the Rank Assigned to Smile .................................................. 43
Table 10: Distribution of College and Elementary School Students with respect to the Rank Assigned to General Verbal Praise ........................................ 44
Table 11: Distribution of College and Elementary School Students with respect to the Rank Assigned to Explanatory Verbal Praise ........................................ 45

Table 12: Distribution of College and Elementary School Students with respect to the Rank Assigned to Brief Verbal Praise ........................................ 46

Table 13: Distribution of College and Elementary School Students with respect to the Rank Assigned to Inclusive Verbal Praise ........................................ 47

Table 14: Rank Order of Preference for Social Reinforcers ...................... 48

Table 15: Results of Chi Square Analyses of Distributions of Males and Females with respect to the Rank Assigned to Social Reinforcers ......................... 50

Table 16: Results of Chi Square Analyses of Distributions of Students by Parental Occupation with respect to the Rank Assigned to Social Reinforcers ........ 51
LIST OF FIGURES

FIGURE                                  Page

Figure 1: Procedural Flow Chart          27
I would like to express my sincere thanks to Dr. B. Munro and Dr. S. Foster, whose scholarly advice greatly helped to improve the quality of this work. My special gratitude goes to Dr. Roy Travis whose counsel, wisdom, and continuing support sustained me throughout this project.

I would also like to express my appreciation to my colleagues at Riverview Hospital, especially Dr. B. Ledwidge, for their encouragement, advice, and plentiful social reinforcement.
CHAPTER 1
INTRODUCTION

Educational and treatment institutions are constantly looking for better techniques and tools for modifying and changing behaviour. These methods and tools must be effective (i.e., produce the desired behavioural change), useful in a wide variety of situations, easily portable, and relatively simple to learn and use. Ample evidence has been provided to show that the procedures of applied behavioural analysis (more commonly known as behaviour modification) satisfy all of these criteria (Bandura, 1969, Mahoney, Kazdin and Lesswing, 1974; Sloane, Buckholdt, Jensen and Crandall, 1979).

Since reinforcement, conceived of as a process which strengthens behaviour, is central to the intervention procedures of applied behavioural analysis or behaviour modification, the availability of reinforcers is crucial.

Reinforcement, conceived of as a procedure in conditioning paradigms, has an operational, empirical meaning (Hilgard and Marquis, 1961). Thorndike (1911), in his description of the Law of Effect, views reinforcement as being integral to the definition of learning and proposes a theory as to how reinforcement, as a process, strengthens behaviour:

Of several responses made to the same situation, those which are accomplished or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections with that situation weakened, so that, when it recurs, they will be less likely to occur. The greater the discomfort, the greater the strengthening or weakening of the bond (p. 244).

Reinforcement, as it is viewed in current behaviour modification programs is defined empirically (Tarpy, 1975):
In more general terms a reinforcer may be defined as a stimulus that increases response probability. On the one hand, positive reinforcement occurs when the increase in response probability is achieved by the presentation of a positive stimulus ... On the other hand, negative reinforcement occurs when the response is strengthened by the termination of a negative or aversive stimulus (p. 44).

In order to implement a behaviour modification program, it is necessary to have available reinforcers (Bandura, 1969; Bellack and Hersen, 1977; Skinner, 1953; Tapp, 1969). Reinforcers are used to alter, maintain or direct behaviour. Selection of reinforcers can be, and is, undertaken in a variety of ways (Sloane, Buckholdt, Jensen and Crandall, 1979; Mash and Terdal, 1976). One of the methods is direct observation of the individual. Another is the interview situation, wherein the individual is questioned regarding preferred consequences. A third way of determining reinforcers is to interview others (e.g., teachers, parents, staff) regarding the person's preferences. Also available are reinforcement surveys, which provide a written list of possible reinforcers that the individual is to choose from. And finally, there is experimentation: that is, the person is exposed to a wide variety of potential reinforcers, and their relative potency is assessed by noting the characteristics of the plotted curve for the behaviours they follow (as consequences).

The most common reinforcers are often classified according to seven categories: edible, material, activity, social, token, visual and auditory reinforcers (Sloane, Buckholdt, Jensen, and Crandall, 1979). Another important category is the combination of two or more of these reinforcers, for as Cautela and Kastenbaum (1967) state, "While experimental procedures often focus upon a single reinforcing stimulus, it is often the case in an individual's daily life that he is confronted with a combination of stimuli and responses from a variety of sources" (p.1117). Dancing to music, for example, may entail reinforcement of three sorts: activity, social and auditory. There has been some evidence to suggest that the use of a variety of reinforcers, both within and between categories of reinforcers, increases the amount

This study concerns the selection of a variety of reinforcers within a single category, that of social reinforcement. Bandura (1969) states that "... social reinforcement processes assume a role of major importance in the modification and maintenance of personality patterns" (p.78). Indeed, social reinforcement is a powerful resource in both classrooms and therapeutic situations, in that the social character of these situations provides, at least in principle, a large supply of potential social reinforcers. As Sloane, et al. (1979) assert, "There is no practical way for a teacher to avoid all interaction and contact with students ...", therefore, ".. by and large, the real decisions that must be made are about how to use praise and attention, not whether to use them" (p.97).

The advantages of using social reinforcement are numerous. As compared to tangible rewards, social reinforcement is more economical and readily available. It is available in natural settings (i.e., will be accessible away from the treatment settings and personnel) and is completely portable. If done properly, it eliminates the apparent artificial, or contrived nature of some operant programs to which many critics object. For those who criticize the use of mindless behaviourism (Barzun, 1964; Koch, 1964), a heavier reliance on social reinforcement might make behaviour modification programs more acceptable.

There are further advantages. With the use of social contingencies, there is no danger of tissue damage. Social rewards are transferable from situation to situation. There would probably be less public outcry and litigation against behaviour modification programs prompted by concern for civil liberties. Social reinforcement can be used in virtually any educational or behavioural intervention situation. Social reinforcement is particularly useful in those circumstances when it
is preferred that the client not be aware of the treatment process. Another value of social reinforcement is the effective contrast that it provides for nonreinforcement techniques, such as time-out and extinction.

Social reinforcers are preferable to other categories of reinforcement in several aspects. Social rewards vary greatly, both between and within individuals, giving the behaviour modifier more ways to intervene, and thereby increasing the efficacy of treatment. Many clients feel less manipulated by a smile or a kind word than by a token and consequently experience less resentment and manifest fewer objections. An important advantage of social reinforcement over material reinforcement is that it is less disruptive to the behaviour being reinforced. There is, furthermore, another asset: modeling. The client witnesses and learns appropriate social skills. If the client and his peers in the learning situation then adopt these skills, they may learn to reinforce each other, leading to a very potent reward source.

Evidence suggests that social consequences can effectively alter behaviour (Bandura, 1969). In an extensive review of the social reinforcement literature, Raben, Wood, Klimoski, and Hakel (1974) conclude that there is a variety of behaviours amenable to change with the use of social reinforcement, such as various forms of verbal behaviour, clinical phobias, group participation, and leadership behaviours. In conclusion they state:

Future research should systematically investigate determinants of the value of social incentives and the processes through which they can be applied to changing human behaviour in social and learning settings (p.41).
CHAPTER II
THE PROBLEM AND RELATED RESEARCH

In Chapter I, the concepts of reinforcement as process and procedure are introduced, and some of the advantages of social reinforcement, particularly for the modification of behaviour in educational and therapeutic settings are outlined. Chapter II consists of a discussion of the relevant research on social reinforcement, reinforcer selection and stability. The purpose, rationale, and objectives of the study are provided.

LITERATURE REVIEW

SELECTION OF REINFORCERS

Mash and Terdal (1976) believe that there is a need for awareness of the potentiality of reinforcers prior to any contingent application. Assessment of potential reinforcers, they maintained, should focus not only on the reinforcers that are currently available, but also on the various possible reinforcers not immediately accessible. As direct exposure and observation of these possible reinforcers is not always feasible, some form of self-report could be used. Most behaviourists of the 1960's relied on motoric criteria for their measurement indices, and attributed the poor correlation between motor and verbal measurements to the inadequacy and inaccuracy of self-reports (Hersen, 1978). However, there is some indication that this verbal-motor discrepancy may be due, at least in part, to insufficient descriptive detail (Lick, Sushinsky, and Malow 1977). Furthermore, although there is no guarantee that how a person feels is the major determinant of his report of how he feels, to ignore the verbal measures "... is tantamount to denying that the patient's self-report as to how he feels is of any value" (Hersen, 1978, p.333).
Selection of Reinforcers for Adults

Cautela and Kastenbaum (1967) advocate the use of a reinforcement survey for the determination of reinforcer potential. The Reinforcement Survey Schedule which they developed attempts to identify possible reinforcers and their relative reinforcing values. The Survey is divided into four sections. Section I contains items that can easily be made available within a therapeutic setting (e.g. cookies). Section II contains items that are used primarily through imagination or facsimile within the therapy session, but are available in the ordinary social environment (e.g. watching baseball). Section III contains descriptions of situations, rather than discrete objects or activities. These situations comprise combinations of stimuli and responses.

For these first three sections, the subject is asked to evaluate preferences for various reinforcers by rating each item on a five-point scale, ranging from "not at all" to "very much". The final section is included to facilitate the use of Premack's Principle (1959), which states that a more frequently engaged-in behaviour may be used to reinforce a lower frequency behaviour. Thus, Section IV instructs the subjects to list activities or thoughts which they engage in more than 5, 10, 15 and 20 times a day.

Keehn, Bloomfield, and Hug (1970) measured the internal consistency of the Reinforcement Survey Schedule and found it to be highly consistent, yielding coefficients of .96 for their data collected from a group of alcoholics, and .89 for the original Cautela and Kastenbaum data.

Another instrument for assessing reinforcer potential is that of Bersoff and Moyer (1976) who developed an instrument to assess positively reinforcing behaviour for both adults and children. The Positive Reinforcement Observation Schedule assumes that "... reinforcement is relational rather than an absolute property of any
activity" (p.241). Ten categories are included, which consist of possible reinforcing behaviours that the social mediator (i.e. teachers, psychologists) may emit. The Positive Reinforcement Observation Schedule can be used a) to guide observations for assessment purposes, and b) as a target preference schedule.

Selection of Reinforcers for Children

Willner, Braukmann, Kirigin, Fixsen, Phillips and Wolf (1977) propose that youth satisfaction and willingness to participate in treatment can be increased when the youths are allowed to select the social behaviours which the childcare personnel will provide. Their study investigated youths' preferences for various social interaction behaviours, and then had the youths evaluate personnel trained in the use of these preferred behaviours. The data indicated a positive correlation between amount of training and youth ratings of social interaction. This result is of interest, conclude Willner et al. (1977), given that "... a number of preferred interaction behaviours considered in the present study have also been demonstrated to be effective in modifying (delinquent) youth behaviour" (p.229).

Clement and Richard (1976) developed the Children's Reinforcement Survey in 1968 - 1970. They wished to provide a means for assessing motivational incentives for children, such as Cautela and Kastenbaum (1967) had provided for adults. The Children's Reinforcement Survey can be completed by either the target child, or by an informant (e.g. a parent). The Survey asks the person to identify and list people, places, things and activities which the child prefers. When the Survey is completed by the child, an interview with the parents and some direct behavioural observations are included in the assessment process.

The use of a "Reinforcement Menu" is favored by Daley (1976). A list of high frequency behaviours is determined through natural observations. These activities
are drawn and placed in a "Reinforcement Menu" book. Then, applying the Premack (1959) principle, the children are permitted to choose an activity from the book upon completion of a specified work unit.

Ferster and DeMyer (1962) were interested in assessing potential reinforcers for autistic children. Each child was placed in a room which contained a group of possible rewarding consequences which could be obtained by pressing a key. The procedure they used was entirely automatic and the child was alone in the room. The most frequently selected reinforcers were subsequently integrated into an operant program to sustain and widen the children's behavioural repertoire.

SOCIAL REINFORCEMENT

Patterson's statement to the effect that "the most powerful reinforcers for a child or an adult are found in the behaviours of another person" (Patterson, 1971, p.17) may require qualification, but social reinforcers such as smiles, touch, attention and praise are believed to be very important and effective consequences (Harris, Wolf and Baer, 1967; Patterson, 1971). Baron, DeWaard, and Galizio (1981), who factor-analyzed the 162 items of an expanded Reinforcement Survey Schedule, found the responses to the survey can be described in terms of 38 distinct and meaningful factors. Among the adults sampled by Baron et al., members of the two sexes were in good agreement about the superior reinforcing properties of positive social interactions (the factor which accounted for more variance than any of the other 38 factors) and praise (the fourth ranking factor in terms of variance accounted for).

Sloane, et al. (1979) offered a list of social reinforcers which included hugging, congragulating, shaking hands, touching or patting, praising, paying special attention, peer approval, smiling, applause, recognition, nodding, winking, tickling
and kissing. They contended that a teacher can tentatively assume that these listed consequences will serve to reinforce appropriate behaviour. Naturally, however, it is important to assess whether this assumption is valid for any particular child in a given situation by monitoring the child's behaviour which is followed with the particular consequence of interest.

An important benefit of social reinforcement is its reciprocal nature. As the mother praises the child, the child may smile at the mother, and thus both individuals are encouraged to continue. Furthermore, in order to ensure adequate transfer effects, natural, social incentives must supplement training which has occurred in a contrived, artificial situation (Bandura, 1969). Forness (1973) suggested that social reinforcers are useful in the prevention of "reinforcement overkill", i.e., the use of contrived contingencies where they are not necessary. He believed that material reinforcers (such as food or tokens), which are lower than social reinforcers on Forness' hierarchy, are too often used in cases where praise and other social reinforcers might be just as effective. Forness advocated the development of a "reinforcement continuum", with emphasis placed upon a movement towards higher-order (social) reinforcers.

**Definition of Social Reinforcement**

There are two general ways of defining reinforcers. The first defines a reinforcer as that which reinforces, a tautology which explains and describes nothing. The other escapes circularity by employing the Premack principle: any behaviour that occurs at a higher frequency than another serves as a reinforcer for the lower frequency behaviour. There are problems with a tautological definition of a reinforcer. As Bolles (1972) and Estes (1972) contend, the existence of a reinforcement procedure does not necessarily prove that a change in behaviour is
the result of an underlying reinforcement process or mechanism. To assert that a given event strengthens an operant because it is reinforcing would be circular (Skinner, 1953). Thus, the development of a response, or the failure to develop a response, may be unrelated to the specified "reinforcer". Rather, the key to learning may be the development of expectancies, especially for the more sophisticated organisms (Estes, 1972), or for highly species-specific behaviour patterns (Bolles, 1972).

Descriptions of social reinforcers tend to be of the tautological type. Bellack and Hersen (1977) consider social reinforcers to be "conceptualized as those behaviours explicitly emitted in an interpersonal interaction to convey the expression of approval, pleasure or esteem, and which increase the occurrence of the targeted behaviour" (p.311). A more parsimonious viewpoint is taken by Sloane, et al. (1979), who state that, "... if the behaviour of one individual will reinforce the behaviour of a second individual, it is called a social reinforcer" (p.64). Raben, et al. (1974) "... consider a reinforcing stimulus to be social if its reward value is related to another individual or group interacting with the reinforced subject" (p.39).

There are some difficulties inherent in an attempt to operationalize social reinforcement. Firstly, social reinforcers, unlike tokens, are difficult to dispense in measured amounts; and, secondly, it is often very difficult to determine exactly which particular aspect of the social situation is reinforcing.

For the purposes of this study, the reinforcement value of an interpersonal behaviour is estimated by the extent to which a subject indicates a preference for that behaviour.
Efficacy of Social Reinforcement

A number of studies have investigated the effectiveness of social reinforcers in the production and maintenance of behavioural change. Unikel and Strain (1971) tested male and female undergraduate students under three conditions: social approval, concrete reinforcement, and no reinforcement. The subjects chose one statement to read out from each of a series of paired statements. The word "good" after a statement was assumed to indicate social approval; the word "correct" after a statement was assumed to indicate concrete reinforcement. The results showed both social approval and concreteness to be effective, and both were significantly more effective than no reinforcement.

In an investigation into the effects of verbal reinforcement and tape recorded modeled behaviour, Bourdon (1968) found direct verbal reinforcement increased performance of the desired behaviour. The 16 subjects were exposed to tapes in which the experimenter positively reinforced a "stooge" upon the emission of self-reference statements. In the treatment phase that followed, only those individual whom the experimenter verbally reinforced showed gains in response rate; the others did not.

Buys (1970) wished to investigate the effects of verbal social reinforcement from the teacher on student attitudes. Eighteen children were assigned to either a control or an experimental group. Attitudes toward the teacher and the class and measures of student disruption were collected during the experiment. The findings indicated that: attitudes were more favorable during the reinforcement phases; and there was a decrease in the amount of disruptive behaviours when reinforcement was being provided for appropriate classroom behaviour.

Buzas and Ayllon (1981) compared the effectiveness of social reinforcers for motor behaviours (tennis skills) with negative feedback regarding errors. The
operant procedure, praising correct performance and ignoring incorrect performance, improved the correct execution of three tennis skills compared to the baseline performance when only negative feedback was given.

Comparative Effectiveness of Social and Nonsocial Reinforcers

Most of the experiments which analyze the efficacy of social reinforcement compare the effectiveness of social to nonsocial reinforcers. Tosi, Upshaw, Lande, and Waldron (1971) were interested in increasing verbalization among elementary students. In the first treatment group, verbalizations were praised. In the second group the Premack principle was employed, and time for play was the reinforcer. The third treatment group viewed a film, and in the ensuing discussion the teacher's expectations were made clear. The control group saw the film and had a discussion about it. Although the group that received praise for verbalization did not differ from the group that was reinforced with contingent play, the social reinforcement did produce significantly higher response rates than did nonreinforcement or knowledge of teacher expectations, whereas the reinforcement procedure based on the Premack principle was superior to neither the control group nor the "teacher expectation" group.

Finch (1971) compared the effects of social and monetary reinforcers for adults. Males and females were reinforced with either money or social rewards, under either direct or vicarious delivery systems. Results confirmed the hypothesis that direct reinforcement would produce significantly more imitative responses than would vicarious reinforcement for both types of reward. Similarly confirmed was the hypothesis that performance would be higher for social reinforcers than for monetary reinforcers in the vicarious delivery group.
A further study using adults as subjects was undertaken by Williams (1971). Three hundred and forty-three college undergraduate students were measured on persistence at task. Female students were more persistent than males; and social reinforcement led to a greater increase in persistence than monetary reward for both sexes.

Swingle and Coady (1969) compared monetary and verbal incentive effectiveness on a leverpressing task. Middle and lower class children of three age groups (6, 10, and 15 years) were tested using four different consequences: money, verbal praise, a combination of money and praise, and nothing. The youngest children exhibited equal response rates for the social and the nonsocial reinforcers. However the older children produced markedly different results, with the lower class children performing best under the monetary incentive condition and the middle class children performing best for verbal incentives.

A number of studies have attempted to measure social reinforcement effectiveness during test situations. Bergan, McManis and Melchert (1971) wished to determine whether reinforcement (in the form of tokens or words) could affect performance (accuracy and speed) on the WISC BLOCK DESIGN. Testing was done on 48 fourth graders and the results suggested major sex differences. The boys were more accurate under the token reinforcement condition; however they completed their test faster with social reinforcement. The girls were equally fast when reinforced with tokens or social reinforcers but were more accurate under the social reinforcement condition.

Silverman and Waite (1969) considered social and nonsocial reinforcers in relation to test anxiety. After being divided into high and low test anxious groups, the children completed a probability learning task. Although the authors predicted that the child's level of anxiety would interact differently with the two types of
reinforcement, this was not the case. However, in terms of the response measure on the learning task social reinforcement was more effective than nonsocial reinforcement in both the high and low test anxious groups.

A combination of reinforcers was deemed to be the most effective method for increasing performance on a task, by Brown (1971). Bar press rates in children were compared under three reinforcement conditions: tangible, social, and alternating tangible and social reinforcement. The rate of the group which had received only tangible reinforcers dropped below the other two groups during periods of nonreinforcement. When reinforcement was being provided, the highest performance level was achieved by the group which received alternating tangible and social reinforcement.

Equivalent efficacy of tangible and social rewards was found by Biron, Ramos and Higa (1977). Verbal explanations and rewards had previously been found to be sufficient for development of cooperation among college students; the experimenters wanted to know if the same would hold true for children. In the first part of the experiment, material reward (a colored star) was tested against a control condition. As expected, the control group showed no change while the experimental group showed a significant improvement. In the second part of the research there were three conditions: a tangible (colored star) reinforcer, social reinforcement and social reinforcement combined with an explanation. All three groups showed a significant increase, with no measurable difference between the three conditions.

Mixed results were obtained by Schumaker, Hovell and Sherman (1977). There were two experimental conditions, using parent-controlled reinforcers for the management of adolescents' classroom behaviour. When parents used a combination of praise and permission for privileges, there were significant increase in grades, teachers' expressions of approval, rules followed and amount of work done. Under
the praise-alone condition there was initial improvement, with deterioration over time. The conditions differed in one important respect, however; as is usually the case in experiments of this type, the privileges were varied and were scheduled in a hierarchy; the social reinforcement was not.

In a recent study, Sewell and Walker (1981) found monetary and social rewards equally effective in facilitating the performance of low SES black children on the Raven Colored Progressive Matrices and a paired-associate task. In discussing their results, the authors note:

Finally, it is a reasonable assumption that material rewards would effectively enhance the school-related performance of economically disadvantaged children. However, the present experimental evidence does not lend support to any generalization based on the assumption that monetary rewards would be more highly valued as a reinforcer than symbolic rewards (p.98).

**Atypical Populations**

Social reinforcement is frequently considered to be most useful with clinically normal populations (Patterson, 1971), and to have limited effectiveness with atypical cases (Sloane, Buckholdt, Jensen, and Crandall, 1979). However, many researchers and theorists conclude that social reinforcement can produce significant effects for clinically deviant populations (Bandura, 1969; Forness, 1973; Raben, Wood, Klimoski, and Haken, 1974). Furthermore, it has been suggested (Berkowitz and Zigler, 1965) that atypical populations such as retardates may be even more responsive than normals to social approval, due to a high occurrence of social deprivation in their environments.

There is some evidence that social reinforcement, used for atypical cases, will be most beneficial when either varied within itself or combined with other rewards. Johnson's (1976) results underlined the effectiveness of a combination of social reinforcers. While testing the comparative responsiveness to social reinforcement of delinquents, she also measured improvements attributable to money versus social
rewards. In five out of her six experiments, delinquents were found to be equally responsive to money, but not as responsive to social contingencies, in comparison with the non-delinquents. This remained the same whether the reinforcement was delivered by an adult or by a peer. Delinquents were also poorer at discriminating between approval and disapproval. However, in the one experiment which varied the social reinforcement, delinquents and non-delinquents responded identically, showing significant gains.

Milan and McKee (1976) found social rewards to be no more effective than coercion on inmates of a maximum security institution, but when a combination of praise and a token economy was introduced, the behaviour of the prisoners did improve. Unfortunately, neither praise alone nor the token condition alone were separately evaluated. (In the praise-coercion comparison, praise was combined with noncontingent tokens).

In atypical as well as normal populations, social reinforcement can effectively supplement other reinforcers. There are three reasons for pairing social and nonsocial rewards. First, in situations in which social reinforcers are an effective form of reinforcement, pairing will add to the value of the reinforcement "package". Second, in situations in which social reinforcers are ineffective, pairing may in time, (i.e. eventually), increase the value of the social consequences. Third, social reward is so common in the "real world" (it is the most common form of reinforcement in schools, according to Sloane, Buckholdt, Jensen and Crandall, 1979) that it should, in the interests of generalization, be included as part of the reward in any behaviour modification program.

When considering all of the research on the relative efficacy of social reinforcers, it becomes apparent that often it is the efficacy of a particular procedure, rather than the usefulness of social reinforcement as a whole which has
been evaluated. It is not surprising that the social reinforcers used become less effective over time, as they are seldom varied. If it can be assumed that a variety of reinforcers is more effective than any one reinforcer in modifying behaviour, it would appear to be important, at this point, to develop a "menu" of social reinforcers for use in behaviour modification programs.

**SELECTION OF SOCIAL REINFORCERS**

Potential social reinforcers can be identified using the same methods as are used to identify reinforcers in general, viz., observation, experimentation, interviews and surveys. However, in the case of social reinforcement the problems of definition and description are especially complicated. As Sloane, et al. (1979) state, "all reinforcers are observable, objective events, even though it may be very difficult to discover exactly what they are or to specify them" (p.60). In addition, even the less subtle types of social reinforcers may not be identical on successive occasions (Mash and Terdal, 1976). Furthermore, the experimental literature has produced discrepant views regarding what constitutes social reinforcement. Cernius (1968), for example, considered correctness ("right") to be a social reinforcer, while Unlikel and Strain (1971) believed correctness to be concrete reinforcement which can be contrasted with social approval.

Social reinforcers often comprise one class or a group of classes on a Reinforcement Survey (Cautela and Kastenbaum, 1967; Bersoff and Moyer, 1978). One of the rare attempts to evaluated a variety of potential social reinforcers was performed by Willner, Braukman, Kirigin, Fixsen, Phillips and Wolf (1977). Using videotaped interactions, they had their clients select liked and disliked social behaviours and rate these behaviours on a five-point scale. Haase and Tepper (1972)
similarly used videotaped interactions but in their investigation the mediators (counsellors) themselves were the evaluators. After viewing the tapes the subjects rated the effectiveness of the various nonverbal components of the behavioural segment. This study may be limited, as Haase and Tepper (1972) suggest, by the use of trained observers for the subject sample.

In an effort to determine potential reinforcers for slow learners and regular students, Serralde de Scholz and McDougall (1978) classified social reinforcement as one part of a seven-level reinforcement continuum. Using a revised survey based on the Reinforcement Survey Schedule of Cautela and Kastenbaum (1967), they tested 297 grade seven children. This survey technique, suggest Serralde de Scholz and McDougall (1978), could help the teacher identify the learners' valued reinforcers and thereby aid in the design of an intervention program.

Witryol, Lowden, Fagen and Bergen (1968) had children choose between verbal and material rewards in an investigation of reinforcement and task-relevant motivation. With only one exception, the subjects chose equal levels of verbal and material incentives, or chose a higher level of verbal rewards.

**Stability of Choice**

There is very little information regarding the stability of choice for preferred reinforcers. In a study by Turner, Foa, and Foa (1971) six classes of interpersonal reinforcers (e.g., love, status) were investigated to determine their perceived similarity, their exchange value, and their "structural invariance" (i.e. proximity of preference rating). Subjects were asked to perform three tasks. First, they were asked to rate the similarity of a series of messages representing the six "resource" (interpersonal reinforcer) classes. Next, they were to imagine trading resources with another person, and to choose from a list of paired comparisons which of the
two items they would prefer from the exchange. For the third study, subjects were to rate statements pertaining to a particular class of reinforcer on a five-point scale, from highly desirable to not at all desirable. The results suggested that reinforcers that were proximal in terms of order of preference were more often substituted for one another across exchange situations; furthermore, for each reinforcer class that the subject was to imagine surrendering, there was one class of reinforcer most frequently chosen for exchange.

In an attempt to find an economical method of ordering reinforcers, Witryol and Fischer (1960) used paired-comparisons to scale incentive values. Twenty-seven preschool children were instructed to choose one item from a pair. There were ten such pairs involving five incentive objects. Eighteen of the 27 children made perfectly consistent choices for the ten possible pairings. However, the rank-ordering of the five items showed only moderate correlation among individuals. Ferster and DeMeyer (1962) suggested that these findings imply: first, that it may be possible to scale incentive classes into "standard reinforcement values"; and second, that the procedure enables the experimenter to quickly determine the individuals' preferred incentives (within a given set) prior to experimentation.

Only one study investigated the stability of reinforcer preferences over time. Kleinknecht, McCormick, and Thorndike (1973) measured test-retest reliability over three time intervals of one, three and five weeks for undergraduate psychology students. Median correlations for the 140 items of the Reinforcement Survey Schedule were .734 for the one week interval, .665 for the three week interval, and .709 for the five week interval. Median correlations for the subjects across items for the one, three and five week intervals were .829, .775, and .801, respectively.
SUMMARY AND CONCLUSIONS

Reinforcement occupies a central position within learning theories in the operant tradition. The effectiveness of social reinforcement for adults, children, and special populations has been amply documented (Bandura, 1969; Harris, Wolf and Baer, 1967; Raben, Wood, Klimoski and Hakel, 1974) and there is some evidence to suggest that a combination of reinforcers will lead to the most efficacious results (Raben, Wood, Klimoski and Hakel, 1974), but there is a notable lack of procedures for determining individual preferences with respect to social reinforcers. A failure to define, describe and vary social reinforcers in published studies has led to some conflicting findings; the majority of the studies use "some form of verbal praise" (Raben, Wood, Klimoski and Hakel, 1974). Although the reinforcement surveys contain more operationalized descriptions of a variety of social reinforcers, more detailed and specific research on social reinforcers is necessary because we have no knowledge of the relative potency of different social reinforcers for various populations.

It is the view of Witryol and Fischer (1960) that the method of paired-comparisons offers an economical and reliable way of determining incentive values for children. Although child and adult populations are generally investigated with divergent methods (Mash and Terdal, 1976), the position is taken in this study that scaling through paired-comparisons is a technique that can be used for adults as well as children. Further, the position is taken that an actual behavioural choice measure be included for comparison and contrast with the results derived from the paired-comparisons questionnaire in order to assess relative potency of social reinforcers as indicated by expressed preferences in choice tasks and the stability of these preferences within and across individuals. There is a paucity of information regarding the stability of choice for preferred reinforcers but what there is suggests
that the preferences of individuals will be stable over time and across test modes but that individuals and groups of populations will differ systematically with respect to social reinforcer preference.

In the present study preferences of adults and children with respect to social reinforcers are compared. The stability of those preferences over time and across test modes for individuals and for groups is also analyzed.

STATEMENT OF THE PROBLEM

PURPOSE OF THE STUDY

The present study investigates social reinforcer preferences among adults and children. Consistency of choice is assessed by comparing the rank orders assigned a set of social reinforcers on a paired-comparisons questionnaire, administered twice, a week apart, and these were compared with indicated preferences during a behavioural task, administered a week after the second questionnaire. The study addresses three questions:

1) What is the extent of the consistency of choice of preferred social reinforcers for each subject?

2) Do the two groups differ with respect to the consistency of choice?

3) Are there significant differences with respect to preferred social reinforcers between the groups of subjects?

RATIONALE

The rationale for an examination of the selection of social reinforcers arises from two main considerations. First, the narrow range of reinforcers utilized in published experiments involving social reinforcement indicates the need for a
procedure for establishing a "menu" of reinforcers that can be interchanged and rotated to prevent satiation (Forness, 1973; Sloane, Buckholdt, Jensen, and Crandall, 1979). The second consideration is that there is a practical need for an effective method of determining potential social reinforcers which is faster and simpler than observation or experimentation.

An established order of preference can be a useful tool in the design of behavioural management programs in applied settings. Some studies have found a relatively stable preference of choice for reinforcers (Turner, Foa and Foa, 1971; Witryol and Fischer, 1960). If this be the case, then it should be possible to develop an individualized and flexible reinforcement hierarchy for each person. Armed with such a hierarchy and given the nature of the task (which may preclude the use of some social reinforcers) the behaviour modifier can select from the hierarchy those reinforcers that rank highest in the individual's hierarchy.

At present, there seem to be two major deficits in the research literature concerning selection of reinforcers. The first is that there is no selection procedure designed specifically for social reinforcement. The second need is for a simple selection method which can be used with a variety of populations.

OBJECTIVES

Consistent with the rationale, articulated above, and the review of the literature, the three main objectives of the present study are:

1) to explore the extent to which subjects are consistent in their choice of social reinforcers;

2) to explore the extent to which adults and children differ with respect to their consistency of choice; and

3) to explore the extent to which adults and children differ significantly with respect to choice of social reinforcer.
To address these objectives, the social reinforcer preferences of a group of adults are compared to the preferences of a group of children. Preference were measured by questionnaire and by securing indications of preference during a behavioural test.

Chapter II has discussed the background to the problem in terms of conceptualization, definition and measurement of social reinforcement. The purpose, rationale and objectives of the study have been provided. Chapter III presents a detailed description of the procedures employed in the study.
CHAPTER III

METHOD

Chapter III describes the populations sampled, and discusses the experimental procedures used, including the construction of a paired-comparison questionnaire to rate social reinforcer preference, and a procedure to assess social reinforcer preference during a behavioural task. The final section of this chapter discusses the data analyses used in this study.

SUBJECTS

Two groups of 30 volunteer subjects were tested. Thirty undergraduate students, male and female, from the Education Faculty at the University of British Columbia constituted Group I. Group II was composed of 30 children from a suburban elementary school, male and female, from Grades 6 and/or 7. The age, group membership, sex, and parental occupation of each subject was recorded (reported in Table 1, P. 31). The total time required per subject was 60 minutes spread over three sessions.

MATERIALS

The materials used in the experimental procedures include a paired-comparison questionnaire, pieces of wool, a tape recorder, and cards specifying the possible reinforcer choices.

The paired-comparison instructs the subject to express a preference for one of a pair of reinforcers. The questionnaire contains 28 such paired-comparisons (each of the eight social reinforcers is paired with every other). A copy of the questionnaire is appended (Appendix A).
A bag of three inch strips of wool in ten different colors was supplied to the subject for the behavioural task in Session III.

A tape recorder was used in Session III, to present buzzer tones. These tones were distributed (recorded) randomly on the tape. Each subject listened to the same recorded set of tones.

The social reinforcers specified on the three cards that the subject pointed to during the behavioural task were derived from the subject's responses on the paired-comparison questionnaires, and represented little preferred, moderately preferred, and highly-preferred choices.

PROCEDURE

Initially, each group of volunteer subjects met with the experimenter as a group, with Group I (adults) and Group II (children) meeting at different times. The procedure was identical for both groups. At the first meeting, subjects were asked to fill out a pen and paper questionnaire (Appendix A). The experimenter read the instructions, which also appeared on the questionnaire in written form. The subjects had 20 minutes to complete the questionnaire. One week following this, each group of subjects was given the same questionnaire with the same instructions and the same choices, but with the order of items randomly varied.

Prior to the third and final experimental session, each subject's two paired-comparison questionnaires were combined to produce a preference hierarchy for each subject. The three choices of behavioural actions used for the task were derived from this hierarchy, with one item chosen from each of high, medium, and low preferences items.
The final session occurred the following week, when each subject met individually with the experimenter for the behavioural choice task. At the start of this final session, the following written instructions were read to the subject and she/he was given a copy of the instructions:

This bag contains small pieces of wool in different colors. I would like you to sort this wool into separate piles, putting all of one color into each pile. Use one hand only. As you are sorting the wool, you may want me to break the monotony by reacting to your work. Although I will react in only three ways, you can choose which reaction you get. In front of you there are three signs, with different actions written on each sign. When you want some encouragement, point to the sign with the action that you would prefer, and I will perform that action. Each action will be brief and you should then continue the wool sorting. Now remember I will react every time you point to a sign. You may select any one of the three signs; choose the one which you would most prefer. There can be as many occasions as you wish. However, during the session, there will be a buzzer sounding periodically. When the buzzer sounds, you must point to the action that you would prefer at that time. I will inform you when the session is completed. Are there any questions?

The subject was given a box containing pieces of yarn, and asked to sort these pieces according to color. Three signs were placed in front of the subject, with different actions written on each sign. The subject was instructed to point to the sign with the preferred action whenever she/he desired some encouragement (non-cued reinforcement). The experimenter then performed that action. Each action was of brief duration, and the subject immediately returned to the wool sorting. The experimenter reacted every time a sign was pointed to, indicating the character of the subject's wishes. During the session, a buzzer sounded periodically. When the buzzer was heard, the subject pointed to a sign (cued reinforcement). This task had a duration of 20 minutes. The buzzer was activated 15 times.

The language and the procedures used in this research were developed to be as simple as possible, in order that the same set of instructions and the same procedures could be used for both children and adults. The eight possible social reinforcers that comprise the initial list (see Appendix B) were selected according to three criteria. First, these items were frequently referred to as useful and
appropriate varieties of social reinforcement in the current literature (Sloane, Buckholdt, Jensen and Crandall, 1979; Haase and Tepper, 1972; Willner, Braukman, Kirigin, Fixsen, Phillips, and Wolf, 1977). Second, the author had observed these items being commonly used for social reinforcers on an operant program. Third, any item which created ambiguity was eliminated. (For example, "verbal praise using the subjects' name" was eliminated, because its inclusion would necessitate all verbal praise items being listed with the name and also listed without the name. Similarly, "eye contact" was eliminated, because a lack of eye contact may detract from the reinforcing value of the tested social reinforcer). During the task, eye contact was used with every choice.

The research procedure is illustrated below.

Group I (Adults)

\[ 0_1 \quad 0_3 \quad 0_5 \quad (T_1) \]

Group II (Children)

\[ 0_2 \quad 0_4 \quad 0_6 \quad (T_2) \]

\[ \begin{array}{c}
\text{start} \quad \text{Day 1} \quad \text{Day 8} \quad \text{Day 15-17} \quad \text{finish}
\end{array} \]

01, 02 - Administration of first pen and paper paired-comparison choice list.
03, 04 - Administration of second pen and paper paired-comparison choice list.
05 (T1), 06 (T2) - Behavioural task situation using individual social reinforcement hierarchies derived from 01 & 03, or 02 & 04.

Figure 1: Procedural Flow Chart
Tests of Consistency

Consistency of preference of social reinforcers was measured in two ways.

1) **Consistency over time.** For each subject a Kendall rank correlation coefficient, \( \tau \) (Siegel, 1956), was calculated between the ranks (i.e. order of preference) assigned each of the social reinforcers by that subject at the time of the initial administration of the questionnaire (Appendix A) and one week later, at the time of the second administration of the questionnaire. (Siegel, 1956, recommends the Kendall rank correlation coefficient as the nonparametric measure of choice for estimating the correlation between variables with ordinal levels of measurement). The \( \tau \)s for the college students were compared with the \( \tau \)s for the elementary school students using the Mann-Whitney U Test for independent samples (Siegel, 1956). The \( \tau \)s for females were compared with the \( \tau \)s for males, and the \( \tau \)s for mature college students were compared to the \( \tau \)s of college students under 30 years of age using the Mann-Whitney U Test. Students were classified according to the occupation of the supporting parent (using the occupational classification system from the Dictionary of Occupational Titles - Appendix C) and the \( \tau \)s of each group of students so classified were compared using the Kruskal-Wallis one-way analysis of variance (Siegel, 1956).

2) **Consistency over test mode.** For each subject, the ranking of the low, medium and high reinforcers derived from the questionnaire was compared with the ranking of the same three reinforcers derived from the behavioural test. The probability of the observed proportion of students who ranked the three reinforcers in exactly the same order on both tests was calculated using the normal curve
approximation to the binomial distribution (Runyon and Haber, 1971). The proportion of college students who ranked the three reinforcers in the same order in both test modes was compared with the proportion of elementary school students who were consistent in their order of preference across modes using a chi square test for two independent samples (Siegal, 1956). In a similar manner, differences with respect to consistency across test mode were calculated for sex, age, and parental occupation.

Tests of Group Differences

For each reinforcer, the distributions of college and elementary school subjects with respect to the rank (the mean rank computed from the two questionnaires) assigned that reinforcer were compared using a chi square analysis for two independent samples. Similarly, groups of subjects defined in terms of sex, and parental occupation were compared.
CHAPTER IV
RESULTS

Chapter IV presents a description of the two experimental groups of subjects and the results of analyses for the rank-ordering of social reinforcer preference. The results have been organized into two major sections: tests of consistency, and tests of group differences.

Description of the Experimental Groups

There were 30 subjects in each of the two experimental groups (see Table 1, p.31, for biodemographic characteristics). One group consisted of 18 male and 12 female children, ranging in age from 11.0 to 12.3 years ($\bar{X} = 11.7$ years). The second group consisted of 21 male and nine female college students, ranging in age from 20.5 to 53.6 years ($\bar{X} = 31.9$ years). The parental occupations of both groups of subjects was biased toward professional-managerial occupations, with 13 of the 30 subjects in each of the two groups reporting a parent who is a professional or a manager. The groups did not differ significantly with respect to gender distribution ($\chi^2 = 0.66$, df = 2), or parental occupation ($\chi^2 = 8.23$, df = 6).

Tests of Consistency

1) Consistency over time. The Kendall rank correlation between the ranks assigned each of the social reinforcers by a subject at the time of the initial administration of the questionnaire and one week later are listed in Table 2 below, along with the associated probability of the $\tau$. The associated probability-values for the $\tau$s were obtained from a table of such probabilities in Siegel (1956).

For 52 of the 60 subjects the Kendall rank correlation coefficients were significant at the .05 level or better; 34 of the 60 subjects had correlation
<table>
<thead>
<tr>
<th>Group</th>
<th>Age</th>
<th>Gender</th>
<th>Occupational Groupings(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>Mean 31.91 yrs. 53.58-20.50 yrs. 7.89 yrs</td>
<td>M 21 F 9</td>
<td>1 13 6 0 1 4 2 4</td>
</tr>
<tr>
<td>Elementary</td>
<td>11.70 yrs 12.33-11.00 yrs. 0.34 yrs.</td>
<td>M 18 F 12</td>
<td>13 5 5 0 4 0 3</td>
</tr>
</tbody>
</table>

\(^a\) Occupational Groupings
1. Professional Managerial
2. Clerical and Sales
3. Service Occupations
4. Agricultural
5. Skilled Occupations
6. Semi-Skilled Occupations
7. Unskilled Occupations
Table 2

Kendall Rank Correlation Coefficient (tau) and Associated Probability (p) for Each subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Group</th>
<th>tau</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>College</td>
<td>0.66</td>
<td>0.016</td>
</tr>
<tr>
<td>2</td>
<td>College</td>
<td>0.93</td>
<td>0.003</td>
</tr>
<tr>
<td>3</td>
<td>College</td>
<td>0.84</td>
<td>0.002</td>
</tr>
<tr>
<td>4</td>
<td>College</td>
<td>0.78</td>
<td>0.003</td>
</tr>
<tr>
<td>5</td>
<td>College</td>
<td>0.21</td>
<td>0.360</td>
</tr>
<tr>
<td>6</td>
<td>College</td>
<td>0.28</td>
<td>0.274</td>
</tr>
<tr>
<td>7</td>
<td>College</td>
<td>0.96</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>College</td>
<td>0.60</td>
<td>0.031</td>
</tr>
<tr>
<td>9</td>
<td>College</td>
<td>0.17</td>
<td>0.360</td>
</tr>
<tr>
<td>10</td>
<td>College</td>
<td>0.94</td>
<td>0.000</td>
</tr>
<tr>
<td>11</td>
<td>College</td>
<td>0.74</td>
<td>0.007</td>
</tr>
<tr>
<td>12</td>
<td>College</td>
<td>0.86</td>
<td>0.001</td>
</tr>
<tr>
<td>13</td>
<td>College</td>
<td>0.74</td>
<td>0.007</td>
</tr>
<tr>
<td>14</td>
<td>College</td>
<td>0.92</td>
<td>0.003</td>
</tr>
<tr>
<td>15</td>
<td>College</td>
<td>0.74</td>
<td>0.007</td>
</tr>
<tr>
<td>16</td>
<td>College</td>
<td>0.64</td>
<td>0.016</td>
</tr>
<tr>
<td>17</td>
<td>College</td>
<td>0.71</td>
<td>0.007</td>
</tr>
<tr>
<td>18</td>
<td>College</td>
<td>0.24</td>
<td>0.274</td>
</tr>
<tr>
<td>19</td>
<td>College</td>
<td>0.74</td>
<td>0.007</td>
</tr>
<tr>
<td>20</td>
<td>College</td>
<td>0.44</td>
<td>0.089</td>
</tr>
</tbody>
</table>
Table 2 (Con't)

Kendall Rank Correlation Coefficient ($\tau$) and Associated Probability (p) for Each subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Group</th>
<th>$\tau$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>College</td>
<td>0.65</td>
<td>0.031</td>
</tr>
<tr>
<td>22</td>
<td>College</td>
<td>0.92</td>
<td>0.000</td>
</tr>
<tr>
<td>23</td>
<td>College</td>
<td>0.92</td>
<td>0.000</td>
</tr>
<tr>
<td>24</td>
<td>College</td>
<td>0.94</td>
<td>0.001</td>
</tr>
<tr>
<td>25</td>
<td>College</td>
<td>0.94</td>
<td>0.001</td>
</tr>
<tr>
<td>26</td>
<td>College</td>
<td>0.44</td>
<td>0.138</td>
</tr>
<tr>
<td>27</td>
<td>College</td>
<td>0.88</td>
<td>0.001</td>
</tr>
<tr>
<td>28</td>
<td>College</td>
<td>0.83</td>
<td>0.003</td>
</tr>
<tr>
<td>29</td>
<td>College</td>
<td>0.64</td>
<td>0.016</td>
</tr>
<tr>
<td>30</td>
<td>College</td>
<td>0.71</td>
<td>0.016</td>
</tr>
<tr>
<td>31</td>
<td>Elementary</td>
<td>0.75</td>
<td>0.016</td>
</tr>
<tr>
<td>32</td>
<td>Elementary</td>
<td>0.64</td>
<td>0.016</td>
</tr>
<tr>
<td>33</td>
<td>Elementary</td>
<td>0.95</td>
<td>0.001</td>
</tr>
<tr>
<td>34</td>
<td>Elementary</td>
<td>0.76</td>
<td>0.016</td>
</tr>
<tr>
<td>35</td>
<td>Elementary</td>
<td>0.37</td>
<td>0.138</td>
</tr>
<tr>
<td>36</td>
<td>Elementary</td>
<td>0.83</td>
<td>0.003</td>
</tr>
<tr>
<td>37</td>
<td>Elementary</td>
<td>0.93</td>
<td>0.000</td>
</tr>
<tr>
<td>38</td>
<td>Elementary</td>
<td>0.87</td>
<td>0.003</td>
</tr>
<tr>
<td>39</td>
<td>Elementary</td>
<td>0.74</td>
<td>0.007</td>
</tr>
<tr>
<td>40</td>
<td>Elementary</td>
<td>0.67</td>
<td>0.031</td>
</tr>
</tbody>
</table>
Table 2 (Con't)

Kendall Rank Correlation Coefficient (tau) and Associated Probability (p) for Each subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Group</th>
<th>tau</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Elementary</td>
<td>0.84</td>
<td>.003</td>
</tr>
<tr>
<td>42</td>
<td>Elementary</td>
<td>0.63</td>
<td>.031</td>
</tr>
<tr>
<td>43</td>
<td>Elementary</td>
<td>0.60</td>
<td>.031</td>
</tr>
<tr>
<td>44</td>
<td>Elementary</td>
<td>0.79</td>
<td>.007</td>
</tr>
<tr>
<td>45</td>
<td>Elementary</td>
<td>0.71</td>
<td>.007</td>
</tr>
<tr>
<td>46</td>
<td>Elementary</td>
<td>0.86</td>
<td>.001</td>
</tr>
<tr>
<td>47</td>
<td>Elementary</td>
<td>0.74</td>
<td>.007</td>
</tr>
<tr>
<td>48</td>
<td>Elementary</td>
<td>0.86</td>
<td>.001</td>
</tr>
<tr>
<td>49</td>
<td>Elementary</td>
<td>0.79</td>
<td>.003</td>
</tr>
<tr>
<td>50</td>
<td>Elementary</td>
<td>0.85</td>
<td>.003</td>
</tr>
<tr>
<td>51</td>
<td>Elementary</td>
<td>0.79</td>
<td>.007</td>
</tr>
<tr>
<td>52</td>
<td>Elementary</td>
<td>0.54</td>
<td>.054</td>
</tr>
<tr>
<td>53</td>
<td>Elementary</td>
<td>0.60</td>
<td>.054</td>
</tr>
<tr>
<td>54</td>
<td>Elementary</td>
<td>1.00</td>
<td>.000</td>
</tr>
<tr>
<td>55</td>
<td>Elementary</td>
<td>0.98</td>
<td>.003</td>
</tr>
<tr>
<td>56</td>
<td>Elementary</td>
<td>0.72</td>
<td>.016</td>
</tr>
<tr>
<td>57</td>
<td>Elementary</td>
<td>0.67</td>
<td>.031</td>
</tr>
<tr>
<td>58</td>
<td>Elementary</td>
<td>0.59</td>
<td>.031</td>
</tr>
<tr>
<td>59</td>
<td>Elementary</td>
<td>0.64</td>
<td>.016</td>
</tr>
<tr>
<td>60</td>
<td>Elementary</td>
<td>0.62</td>
<td>.031</td>
</tr>
</tbody>
</table>
coefficients of .01 or better. The median value of \textit{tau} for the 60 subjects was 0.74, which has an associated probability of .007 (Siegel, 1956, p.221).

The college students and elementary school students were equally consistent in their rank-ordering of preference of social reinforcers over time. The median \textit{tau} of the college students (0.740, \(p = .007\)) did not differ from the median \textit{tau} of the elementary school students (0.745, \(p = .007\)) when compared using the Mann-Whitney U Test for two independent samples (\(U = 448; n_1 = 30, n_2 = 30; p = .976\)).

Consistency of reinforcer preference over time was not a function of sex, or age of college students, but was related to parental occupation. Males and females were equally consistent in rank-ordering of social reinforcers. Table 3 lists the median \textit{taus} for males and females for the college students, the elementary school students, and the total group. Consistency over time as a function of age was examined for college students only. The median \textit{tau} of mature college students (0.685) did not differ from the median \textit{tau} of college students under age 30 (0.785), using the Mann-Whitney U Test for two independent samples (\(U = 84; n_1 = 14, n_2 = 16; ns\)). A one-way analysis of variance, calculated to compare consistency over time of subjects grouped according to parental occupation listed in Appendix C, revealed significant differences among the students grouped by parental occupation, with the children of professional, managerial and service occupations exhibiting higher levels of consistency over time (\(H = 10.72; df = 4; p < .05\)). The median \textit{taus} are listed in Table 4. Two occupational categories involving three students were excluded from the analysis because the number of subjects with parents in those occupational categories was too small.

2) \textbf{Consistency over test mode.} The order of preference for the high, medium and low rated reinforcers (derived from the questionnaire data) was identical to the order of preference derived from the behavioural test data for 43 of
### Table 3

**Median Taus for Males and Females**

<table>
<thead>
<tr>
<th>Group</th>
<th>Median Taus for Males</th>
<th>Median Taus for Females</th>
<th>U</th>
<th>$n_1$</th>
<th>$n_2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School Students</td>
<td>0.75</td>
<td>0.77</td>
<td>102</td>
<td>12</td>
<td>18</td>
<td>ns</td>
</tr>
<tr>
<td>College Students</td>
<td>0.71</td>
<td>0.86</td>
<td>55</td>
<td>9</td>
<td>21</td>
<td>ns</td>
</tr>
<tr>
<td>Total Sample</td>
<td>0.74</td>
<td>0.83</td>
<td>309</td>
<td>21</td>
<td>39</td>
<td>ns</td>
</tr>
</tbody>
</table>
### Table 4

**Median Taus for Subjects According to Parental Occupation**

<table>
<thead>
<tr>
<th>Parental Occupation</th>
<th>n</th>
<th>Median tau</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional and Managerial</td>
<td>26</td>
<td>0.84</td>
</tr>
<tr>
<td>Clerical and Sales</td>
<td>11</td>
<td>0.67</td>
</tr>
<tr>
<td>Service Occupations</td>
<td>5</td>
<td>0.79</td>
</tr>
<tr>
<td>Skilled Occupations</td>
<td>8</td>
<td>0.69</td>
</tr>
<tr>
<td>Unskilled Occupations</td>
<td>7</td>
<td>0.64</td>
</tr>
</tbody>
</table>

\[ H = 10.72; \text{ df } = 4; \ p < .05 \]
the 60 subject (z=11.25, p<.0001). The proportion of college students who ranked
the three reinforcers in the same order in both test modes did not differ from the
proportion of elementary school students who were consistent in their order of
preference across modes (χ²=0.048, df=1). Similarly, no significant differences
between males and females with respect to consistency across test mode were found
for the college students (χ²=2.30, df=1), for the elementary school students
(χ²=2.30, df=1), or for the group as a whole (χ²=0.41, df=1); nor was consistency
across test mode a function of parental occupation (χ²=7.88, df=4).

Only nine of the 60 subjects pointed to a reinforcer (indicating that she/he
desired some encouragement, as per instructions from the experimenter) at non-
cued times. Seven of the nine subjects selected the high-ranked reinforcer most
frequently; the other two subjects selected the high-ranked reinforcer and medium-
ranked reinforcer equally often, and selected both more frequently than the low-
ranked reinforcer (Table 5).

Tests of Group Differences

The distributions of college and elementary school students with respect to the
rank assigned touch as a reinforcer did not differ from each other using chi square
for two independent samples (Table 6). Similarly, the two groups did not differ
from each other with respect to the rank assigned use of hand gestures, trunk lean,
smile, general verbal praise (1-2 sentences), or explanatory verbal praise, as
reinforcers (Tables 7-11). The distributions of the two groups with respect to the
rank assigned brief verbal praise (1-2 words) and inclusive verbal praise (includes at
least one other person) did differ, with the elementary school students assigning
higher ranks to those two reinforcers than did the college students (Tables 12-13).

The order of preference for social reinforcers is listed in Table 14 for the two
groups of students separately and for the combined group.
Table 5

Frequency with which High, Medium and Low Ranked Reinforcers were chosen at Non-Cued Times

<table>
<thead>
<tr>
<th>Subject's I.D. Numbers</th>
<th>Group</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>College</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18</td>
<td>College</td>
<td>9</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>College</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>College</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>College</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>35</td>
<td>Elementary</td>
<td>7</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>Elementary</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>50</td>
<td>Elementary</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>55</td>
<td>Elementary</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>38</td>
<td>16</td>
<td>9</td>
</tr>
</tbody>
</table>
Table 6

Distribution of College and Elementary School Students with respect to the Rank Assigned to Touch

<table>
<thead>
<tr>
<th>Rank</th>
<th>Group 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>College Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1.5a</td>
<td>1.5</td>
<td>1.0</td>
<td>1.5</td>
<td>3.0</td>
<td>7.0</td>
<td>14.5</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>Elementary School Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.0</td>
<td>0</td>
<td>3.5</td>
<td>11.0</td>
<td>13.5</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>Total Group</td>
<td>0</td>
<td>1.5</td>
<td>1.5</td>
<td>3.0</td>
<td>1.5</td>
<td>6.5</td>
<td>18.0</td>
<td>28.0</td>
</tr>
</tbody>
</table>

\( \chi^2 = 2.90, \text{ df } = 7, \text{ ns} \)

*Non-integer frequencies result from assigning half of any student with tied ranks to each of the cells of the tie.*
Table 7

Distribution of College and Elementary School Students with respect to the Rank Assigned to Use of Hand Gestures

<table>
<thead>
<tr>
<th>Rank</th>
<th>Group 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>College Students</td>
<td>1.0</td>
<td>2.0</td>
<td>3.5</td>
<td>3.5</td>
<td>4.0</td>
<td>11.0</td>
<td>4.0</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Elementary School Students</td>
<td>0</td>
<td>1.0</td>
<td>0</td>
<td>1.5</td>
<td>9.5</td>
<td>11.5</td>
<td>4.5</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Total Group</td>
<td>1.0</td>
<td>3.0</td>
<td>3.5</td>
<td>5.0</td>
<td>13.5</td>
<td>22.5</td>
<td>8.5</td>
<td>3.0</td>
</tr>
</tbody>
</table>

$\chi^2 = 6.81$, df = 7, ns
Table 8

Distribution of College and Elementary School Students with respect to the Rank Assigned to Trunk Lean

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Students</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>1.5</td>
<td>3.5</td>
<td>7.0</td>
<td>9.5</td>
<td>7.5</td>
<td>30.0</td>
</tr>
<tr>
<td>Elementary School Students</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.0</td>
<td>5.5</td>
<td>9.0</td>
<td>13.5</td>
<td>30.0</td>
</tr>
<tr>
<td>Total Group</td>
<td>0</td>
<td>0</td>
<td>1.0</td>
<td>1.5</td>
<td>5.5</td>
<td>12.5</td>
<td>18.5</td>
<td>21.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 4.84, \ df = 7, \ ns \]
Table 9

Distribution of College and Elementary School Students with respect to the Rank Assigned to Smile

<table>
<thead>
<tr>
<th>Rank</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
<th>Group 6</th>
<th>Group 8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Students</td>
<td>9.5</td>
<td>3.5</td>
<td>2.0</td>
<td>7.5</td>
<td>5.0</td>
<td>1.5</td>
<td>1.0</td>
<td>0</td>
<td>30.0</td>
</tr>
<tr>
<td>Elementary School Students</td>
<td>1.5</td>
<td>5.0</td>
<td>4.5</td>
<td>5.5</td>
<td>8.5</td>
<td>4.0</td>
<td>1.0</td>
<td>0</td>
<td>30.0</td>
</tr>
<tr>
<td>Total Group</td>
<td>11.5</td>
<td>8.5</td>
<td>6.5</td>
<td>13.0</td>
<td>13.5</td>
<td>5.5</td>
<td>2.0</td>
<td>0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

χ² = 9.00, df = 7, ns
Table 10

Distribution of College and Elementary School Students with respect to the Rank Assigned to General Verbal Praise

<table>
<thead>
<tr>
<th>Rank</th>
<th>Group 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>College Students</td>
<td>4.0</td>
<td>9.0</td>
<td>5.0</td>
<td>5.0</td>
<td>3.5</td>
<td>2.5</td>
<td>1.0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Elementary School Students</td>
<td>0.5</td>
<td>2.0</td>
<td>7.0</td>
<td>10.5</td>
<td>5.0</td>
<td>3.0</td>
<td>2.0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total Group</td>
<td>4.5</td>
<td>11.0</td>
<td>12.0</td>
<td>15.5</td>
<td>8.5</td>
<td>5.5</td>
<td>3.0</td>
<td>0</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 10.12, \text{ df } = 7, \text{ ns } \]
Table 11

Distribution of College and Elementary School Students with respect to the Rank Assigned to Explanatory Verbal Praise

<table>
<thead>
<tr>
<th>Rank</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>College Students</td>
<td>11.0</td>
<td>4.0</td>
<td>5.0</td>
<td>2.5</td>
<td>3.0</td>
<td>1.5</td>
<td>3.0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Elementary School Students</td>
<td>2.5</td>
<td>9.0</td>
<td>9.5</td>
<td>5.0</td>
<td>2.0</td>
<td>0.5</td>
<td>1.5</td>
<td>0</td>
</tr>
<tr>
<td>Total Group</td>
<td>13.5</td>
<td>13.0</td>
<td>14.5</td>
<td>7.5</td>
<td>5.0</td>
<td>2.0</td>
<td>4.5</td>
<td>0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

\( \chi^2 = 12.56, \ Df = 7, \ ns \)
Table 12

Distribution of College and Elementary School Students with respect to the Rank Assigned to Brief Verbal Praise

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Students</td>
<td>1.5</td>
<td>5.0</td>
<td>12.0</td>
<td>7.5</td>
<td>3.0</td>
<td>0</td>
<td>1.0</td>
<td>0</td>
<td>30.0</td>
</tr>
<tr>
<td>Elementary School Students</td>
<td>16.5</td>
<td>5.5</td>
<td>3.5</td>
<td>3.5</td>
<td>1.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30.0</td>
</tr>
<tr>
<td>Total Group</td>
<td>18.0</td>
<td>10.5</td>
<td>15.5</td>
<td>11.0</td>
<td>4.0</td>
<td>0</td>
<td>1.0</td>
<td>0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 22.20, \quad df = 7, \quad p = .01 \]
Table 13

Distribution of College and Elementary School Students with respect to the Rank Assigned to Inclusive Verbal Praise

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>6</th>
<th>8</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Students</td>
<td>3.0</td>
<td>2.0</td>
<td>4.0</td>
<td>2.5</td>
<td>2.5</td>
<td>6.5</td>
<td>3.5</td>
<td>6.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Elementary School</td>
<td>7.0</td>
<td>11.5</td>
<td>2.5</td>
<td>4.0</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Total Group</td>
<td>10.0</td>
<td>13.5</td>
<td>6.5</td>
<td>6.5</td>
<td>3.5</td>
<td>8.5</td>
<td>4.5</td>
<td>7.0</td>
<td>60.0</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 16.66, \ df = 7, \ p = .02 \]
Table 14

Rank Order of Preference for Social Reinforcers

<table>
<thead>
<tr>
<th>Total Sample</th>
<th>College Students</th>
<th>Elementary School Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>brief praise</td>
<td>explanatory praise</td>
<td>brief praise&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>explanatory praise</td>
<td>smile</td>
<td>inclusive praise&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>smile</td>
<td>general praise</td>
<td>explanatory praise</td>
</tr>
<tr>
<td>general praise</td>
<td>brief praise</td>
<td>smile</td>
</tr>
<tr>
<td>inclusive praise</td>
<td>inclusive praise</td>
<td>general praise</td>
</tr>
<tr>
<td>hand gestures</td>
<td>hand gestures</td>
<td>hand gestures</td>
</tr>
<tr>
<td>lean</td>
<td>lean</td>
<td>lean</td>
</tr>
<tr>
<td>touch</td>
<td>touch</td>
<td>touch</td>
</tr>
</tbody>
</table>

<sup>a</sup> Elementary school students ranked this reinforcer significantly higher than did college students (p=.01).

<sup>b</sup> Elementary school students ranked this reinforcer significantly higher than did college students (p=.02).
The distributions of male and female students with respect to the rank assigned to each social reinforcer did not differ from each other for any of the eight social reinforcers (Table 15). Similarly, the distributions of students by parental occupation with respect to social reinforcer preference did not differ from each other for any of the eight social reinforcers (Table 16).

**Summary**

The rank-ordering of social reinforcer preference on the paired-comparison questionnaire was highly consistent across the two administrations of the test. This consistency over time was not a function of age or sex, but was a function of parental occupation of the subjects. There was also high consistency across test modes, with no differences attributable to age, sex, or parental occupation. The college and elementary school students did differ significantly with respect to the rank order assigned to two of the social reinforcers, but sex or parental occupation did not discriminate the rank order assigned any of the social reinforcers.
Table 15

Results of Chi Square Analysis of Distributions of Males and Females with respect to Rank Assigned to Social Reinforcers

<table>
<thead>
<tr>
<th>Reinforcer</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>touch</td>
<td>4.36</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>hand gestures</td>
<td>3.69</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>trunk lean</td>
<td>5.09</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>smile</td>
<td>3.53</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>brief praise</td>
<td>3.65</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>general praise</td>
<td>3.24</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>explanatory praise</td>
<td>5.36</td>
<td>7</td>
<td>ns</td>
</tr>
<tr>
<td>inclusive praise</td>
<td>2.59</td>
<td>7</td>
<td>ns</td>
</tr>
</tbody>
</table>
Table 16

Results of Chi Square Analysis of Distributions of Students by Parental Occupation with respect to the Rank Assigned to Social Reinforcers

<table>
<thead>
<tr>
<th>Reinforcer</th>
<th>X²</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>touch</td>
<td>18.30</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>hand gestures</td>
<td>21.14</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>trunk lean</td>
<td>14.20</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>smile</td>
<td>25.46</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>brief praise</td>
<td>12.33</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>general praise</td>
<td>16.09</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>explanatory praise</td>
<td>26.60</td>
<td>28</td>
<td>ns</td>
</tr>
<tr>
<td>inclusive praise</td>
<td>29.29</td>
<td>28</td>
<td>ns</td>
</tr>
</tbody>
</table>

N = 57, number of occupational categories = 5
CHAPTER V
SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Summary of Results

The objectives of this study (as described on page 22) were:

1) to explore the extent to which subjects are consistent in their choice of social reinforcers;

2) to explore the extent to which adults and children differ with respect to their consistency of choice; and

3) to explore the extent to which adults and children differ significantly with respect to choice of social reinforcer.

Accordingly, the study was designed to obtain evidence which would address or answer the following specific questions (as described on page 21):

1) What is the extent of the consistency of choice of preferred social reinforcers for each subject?

2) Do the two groups differ with respect to the consistency of choice?

3) Are there significant differences with respect to preferred social reinforcers between the groups of subjects?

The results fulfill these objectives since the data answer the foregoing questions. In summary, it was found:

1) that children and adults are consistent in their choice of social reinforcers across time (two weeks) and across test mode (questionnaire and indicated choice during a behavioural task).
2) that children and adults as groups do not differ significantly with respect to consistency of choice.

3) that children and adults as groups differ significantly from each other with respect to their preference for two of the eight social reinforcers.

4) furthermore, that social reinforcer preferences and consistency of preferences are not significantly related to gender, but are related to parental occupation.

Conclusions

In the Introduction to this thesis, the essential characteristics of effective behaviour modification techniques were described: "these methods and tools must be effective, useful in a wide variety of situations, easily portable, and relatively simple to learn and use" (p.1). Data from the behaviour modification literature indicate that social reinforcement can satisfy all of these criteria. Given the wide variety of potential social reinforcers, however, it is desirable that an instrument for measuring subject preference be available. The questionnaire used in the present study, although sampling only a narrow spectrum of social behaviour, has several distinct advantages. The administration of the questionnaire requires no prior training on the part of the subject or the tester, and it can be administered in virtually any setting.

In the Introduction, five methods of reinforcer selection were described: direct observation, experimentation, interview of the subject, interview of others, and a reinforcement survey. In most applied settings, operational demands preclude the use of direct observation, experimentation, or interview of others, as a means of selecting social reinforcers. Therapists and teachers must often rely on self-report
of reinforcer preference, and a survey facilitates this process (older subjects could complete the survey without assistance, and for very young subjects, the survey could serve to structure the interview).

In the Introduction, it was pointed out that there is no practical way for a teacher to avoid all interaction with students, and that therefore the issue is not whether to use social reinforcement, but instead is how best to use it. Given this constraint, it is essential that teachers and therapists have a procedure for estimating, however crudely, preference for social reinforcers, especially during the initial stage of contact, or when the duration of contact is very brief. A social reinforcement survey serves this purpose.

It is difficult to relate the findings of the present study to previous research, since there are few references in the literature to studies which examined preferences with respect to different types of social reinforcement; and the categories of social reinforcers used, and the populations sampled, do not correspond to the categories and/or subjects in this study. Willner, et al. (1977), for example, determined preferences of the subjects for social reinforcers, but the reinforcers were not selected from a survey, the categories of social reinforcers (33 categories) corresponded poorly with those used in this study, and the population sampled was composed of 12-16 year old youths. Similarly, Baron, et al. (1981) examined the preferences of adults with respect to all types of reinforcers, but only 18 of the 162 items were social reinforcers, and the social reinforcement items did not correspond well with the items described in this study. Baron and his colleagues found that positive social interactions and praise represented reinforcer clusters that were much preferred to most nonsocial reinforcers, but because the study relied heavily on data obtained from college students the researchers concluded "... further
research with other populations is needed to determine whether the observed structure of reinforcer preferences is independent of such characteristics as age, education, or socioeconomic status" (p.217). Previous researchers have examined the consistency over time with respect to reinforcer preference; Kleinknecht et al. (1973) calculated test-retest reliability of the Reinforcement Survey Schedule over three time intervals of one, three, and five weeks, respectively. They found a high degree of consistency for subjects, across items, over a one week interval (r=.829, N=313, z=20.92), as did the present research (r=.721, N=60, z=2.49). Willner, et al. (1977), as an incidental finding, discovered consistency over time with respect to classification and rating of various categories of social behaviours.

Implications for Education and Treatment

As Stevenson (1972) has observed, "... social reinforcement, to some degree, enters into practically every psychological study of children's learning" (p.398). Not only is social reinforcement ubiquitous, it also has many important advantages which have been previously mentioned, including economy, availability, portability, innocuousness, non-intrusiveness, inobtrusiveness and, finally, it represents the modeling of appropriate social behaviours. The recent literature (Kazdin, 1982; Anderson, et al., 1976) stresses yet another advantage: increased generalization of the learned behaviour over time and across contexts. In an update on the token economy, Kazdin (1982) identifies a number of strategies that increase the likelihood that behaviours are maintained and extend to new settings, including "... substituting naturally occurring reinforcers such as praise and activities in place of tokens" (p.437). Anderson, et al. (1976) found that positive verbal reinforcement increased subsequent unreinforced drawing in pre-school children, whereas money
and awards decreased subsequent unreinforced drawing. Finally, there is some evidence to suggest that social reinforcers are less subject to satiation, especially with very young subjects. Gewirtz (1969) found that, for boys 73 to 90 months old, the potency of the word "good", as measured by performance on a discrimination test, was not affected by frequent use of the word prior to the test (prior to the discrimination test the word "good" was dispensed noncontingently up to 32 times in a space of 10 minutes, 45 seconds).

Given the prevalence of the use of social reinforcement, and its numerous advantages, there is an obvious need for the development of an instrument for facilitating the identification of social reinforcer preference. Such an instrument would be particularly valuable to teachers and therapists who cannot usually afford the luxury of using direct observation to assess the meaningfulness of various social rewards to their students and patients.

Limitations of the Study

One must be cautious in generalizing from the present findings, given that the value of a social reinforcer depends to a great extent on who is dispensing it. A "Smartie" is a "Smartie" no matter if it is dispensed by a favourite teacher or a machine; a touch from a mother and a touch from an experimenter with whom you have only a passing acquaintance are two very different things. Would the social reinforcement preferences be different if the reinforcing agent were a close friend or a member of the subject's immediate family?

It should be borne in mind that the present study examined social reinforcer preference and not social reinforcer effectiveness. The adults and children who were subjects in the present study indicated (using paper and pencil and later, during
a behavioural task, by pointing to an action which was then carried out by the experimenter) which social reinforcers they preferred, but no attempt was made to measure the effectiveness (i.e., increase of reinforced behaviour) of the various social reinforcers. Although it is reasonable to assume that the preferred reinforcers would also be the most effective (especially in view of the fact that, during the behavioural task, the reinforcer indicated was then delivered), there are factors that could influence preference but not effectiveness (social desirability of some choices, perceived demand that the subject be consistent over time and across testing situations).

It is not at all clear why the children had a stronger preference for brief praise and inclusive verbal praise than did the adults. One can speculate that children preferred brief praise because they do not value elaborate rationales; rather they appreciate unambiguous, concise approval. With respect to the inclusive praise, one could speculate that the result reflects a desire in young children to have as many others as possible, especially peers, know of their accomplishments. While the complexity of such post hoc speculations reflect the ingenuity of the interpreter, they are probably not warranted by the data.

**Recommendations for Future Research**

In light of the limitations listed in the previous section: (a) that indicated preference and reinforcer effectiveness may not be as closely related as one might like to assume; (b) that preference for, and effectiveness of, social reinforcers might be expected to vary widely within subjects depending on the person dispensing the social reinforcer; and, (c) that the meaning of the group differences remains unclear; future researchers might focus on these three issues.
1) Future research might examine the relationship between indicated preferences (as measured in the present study) and reinforcer effectiveness (measured by change in performance following reinforcement). Cautela and Wisocki (1969) investigated the question whether items marked as highly reinforcing on the Reinforcement Survey Schedule could actually serve as reinforcing stimuli, but unfortunately the reinforcers were administered vicariously only, and the response measured was an attitude.

2) Future studies might consider the relationship between preferences and effectiveness, on the one hand, and characteristics of the reinforcing agent (age, sex, kinship, etc.) on the other.

3) Subsequent investigations might address the prediction of preference based on theoretical considerations. Investigators might factor-analyze a wider range of social reinforcers and make predictions about the expected loadings of the factors derived (the narrow range examined in the present study was dictated by a review of the literature, present practice in applied settings, and constraints imposed by the experimental design).

To quote Stevenson (1972), "There is no dearth of positive findings in studies of social reinforcement; the challenge is to bring them into some type of order" (p.398).
REFERENCES


Serralde de Scholz, H.C. and McDougall, D. Comparison of potential reinforcer ratings between slow learners and regular students. *Behavior Therapy*, 1978, 9, 60-64.


Unikel, I.P. and Strain, G.S. Type of reinforcement and generality in verbal operant conditioning. *Psychological Reports*, 1971, 28 (2), 495-500.

Williams, M.W. Problem solving persistence as a function of type of reinforcement and need for approval among college students. *Dissertation Abstracts*, 1971, 31 (8-A), 3892.


Paired-Comparison Questionnaire

I.D.: #
Sex: M F (circle one)
Age: _____ years _____ months
Parental occupation:

When a person is praising or encouraging you for doing a good job, she/he can do so in a number of different ways. Imagine that you are doing some work. From the following pairs of items choose the form of praise or encouragement that you would most like to receive.

For each pair, place an "X" beside the preferred item.

e.g. I want the person to:

_____ give me an apple.
_____ give me an orange.

We want to know what you like most. You are the only person who knows the right answer for you. Be sure to choose the one out of each pair which you want the most. There will be 20 minutes in which to complete the questionnaire. While you answer these questions, remember that you are imagining that a person is praising or encouraging you for doing a good job.
I want the person to:
    _____ lightly touch me.
    _____ say "good" or "well done".

I want the person to:
    _____ lean toward me.
    _____ tell someone how well I've done.

I want the person to:
    _____ praise me using a few sentences of general approval.
    _____ use hand gestures.

I want the person to:
    _____ praise me and explain why I deserve it.
    _____ smile at me.

I want the person to:
    _____ say "good" or "well done".
    _____ praise me using a few sentences of general approval.

I want the person to:
    _____ tell someone how well I've done.
    _____ lightly touch me.

I want the person to:
    _____ smile at me.
    _____ lean toward me.

I want the person to:
    _____ use hand gestures.
    _____ praise me and explain why I deserve it.
APPENDIX A (cont'd)

I want the person to:
    _____ tell someone how well I've done.
    _____ smile at me.

I want the person to:
    _____ praise me using a few sentences of general approval.
    _____ lightly touch me.

I want the person to:
    _____ lean toward me.
    _____ use hand gestures.

I want the person to:
    _____ praise me and explain why I deserve it.
    _____ say "good" or "well done".

I want the person to:
    _____ use hand gestures.
    _____ tell someone how well I've done.

I want the person to:
    _____ lightly touch me.
    _____ lean toward me.

I want the person to:
    _____ smile at me.
    _____ say "good" or "well done".

I want the person to:
    _____ praise me using a few sentences of general approval.
    _____ praise me and explain why I deserve it.
I want the person to:

_____ say "good" or "well done".

_____ use hand gestures.

I want the person to:

_____ praise me and explain why I deserve it.

_____ lean toward me.

I want the person to:

_____ tell someone how well I've done.

_____ praise me using a few sentences of general approval.

I want the person to:

_____ lightly touch me.

_____ smile at me.

I want the person to:

_____ say "good" or "well done".

_____ lean toward me.

I want the person to:

_____ use hand gestures.

_____ lightly touch me.

I want the person to:

_____ tell someone how well I've done.

_____ praise me and explain why I deserve it.

I want the person to:

_____ smile at me.

_____ praise me using a few sentences of general approval.
APPENDIX A (cont'd)

I want the person to:

_____ say "good" or "well done".

_____ tell someone how well I've done.

I want the person to:

_____ praise me and explain why I deserve it.

_____ lightly touch me.

I want the person to:

_____ smile at me.

_____ use hand gestures.

I want the person to:

_____ lean toward me.

_____ praise me using a few sentences of general approval.
APPENDIX B

Social Reinforcers

1.) touch
2.) use of hand gestures
3.) trunk lean
4.) smile
5.) brief verbal praise (1 - 2 words)
6.) general verbal praise of 1 - 2 sentences
7.) explanatory verbal praise
8.) inclusive verbal praise (includes at least one other person)
APPENDIX C

Occupational Categories used in the Classification of Parental Occupation


1. Professional and Managerial

   Professional Occupations:
   Accountants and auditors
   Actors and actresses
   Architects
   Artists, sculptors, teachers of art
   Chemists
   Clergymen
   College president, professors and instructors
   Dentists
   Engineers, metallurgical, metallurgists, (chemical, civil, electrical, industrial, mechanical, mining)
   Lawyers and judges
   Librarians
   Musicians - teachers of music
   Nurses - registered
   Pharmacists
   Physicians and surgeons
   School principals
APPENDIX C (cont'd)

1. Professional and Managerial (cont'd)

   Professional Occupations:
   School teachers (kindergarten, primary, secondary)
   Scientists - natural, social
   Social and welfare workers
   Teachers and instructors
   Veterinarians

   Semi-Professional Occupations:
   Athletes, sports - instructors and sports officials
   Aviators
   Chiropractors
   Commercial artists
   Dancers and chorus girls
   Decorators and window dressers
   Designers
   Draftsmen
   Embalmers and undertakers
   Optometrists
   Photographers
   Radio operators
   Showmen
   Surveyors
   Technicians - laboratory, x-ray, radio, T.V., others
APPENDIX C (cont'd)

1. Professional and Managerial (cont'd)

Managerial & Office Occupations:

Advertising agents
Buyers and department heads, stores
Conductors - railroad
Credit men
Floormen, floor managers, stores
Hotel and restaurant managers
Inspectors - managerial and official
Inspectors - public service
Managers and superintendents of buildings
Officials of unions, lodges, societies, etc.
Public officials
Purchasing agents and buyers
Retail managers
Ship Captains, mates, pilots and engineers
Wholesales managers

2. Clerical and Sales

Agents and appraisers
Assistants and attendants to physicians and dentists
Auctioneers
Baggagement - transportation
Bookkeepers and bookkeeping machine operators
Cashiers
2. **Clerical and Sales (cont'd)**

- Checkers
- Clerks - general (financial, institution, hotel clerks, insurance clerks, clerks in trade, file clerks)
- Collectors - bills and accounts
- Correspondence clerks
- Demonstrators
- Express messengers, railway mail clerks
- Library assistants and attendants
- Mail clerks
- Messengers, errand boys, office boys and girls
- Newsboys
- Office machine operators
- Paymasters, payroll clerks and timekeepers
- Post office clerks
- Salesclerk
- Salesmen - insurance, real estate, stocks and bonds
- Secretaries
- Shippers
- Shipping and receiving clerks
- Statistics clerks and compilers
- Stenographers and typists
- Technical clerks
- Telegraph operators
- Ticket agents
APPENDIX C (cont'd)

3. **Service Occupations**

**Domestic Service Occupations:**
- Cooks - domestic
- Day workers
- Horseman and yardsman
- Housekeepers - private family
- Laundresses - private family
- Maids - general
- Miscellaneous servants - private family
- Nursemaids
- Parlor maids

**Personal Service Occupations:**
- Apprentice to service occupations
- Attendants - professional and personal service
- Attendants - recreation and amusements
- Bartenders
- Beauticians, manicurist
- Bellmen
- Boarding house and lodging house keepers
- Bootblacker
- Camp attendants
- Cooks - commercial
- Doormen
3. **Service Occupations** (cont'd)

   **Personal Service Occupations;** (cont'd)
   - Guides (except hunting and trapping)
   - Housekeepers, stewards and hostesses
   - Kitchen workers - commercial
   - Maids and housemen - hotels, restaurants, etc.
   - Midwives and practical nursing
   - Ship stewards
   - Waiters and waitresses except private family

   **Protective Service Occupations:**
   - Armed forces
   - Bridge tenders
   - Firemen - fire department
   - Guards and watchmen
   - Policemen and detectives
   - Sheriffs and bailiffs

   **Building Service Workers:**
   - Charwomen and cleaners
   - Elevator operators
   - Janitors and sextons
   - Porters
4. **Agricultural, Fisheries, Forestry & Kindred Occupations**

**Agricultural & Horticultural:**
- Blight control laborers and weed eradicators
- Farm managers and foremen
- Farm mechanics
- Farmers
- Gardeners and grounds keepers - parks, cemeteries
- Graders of fruit and vegetables
- Hatchery men
- Irrigation workers
- Miners
- Nursery operators and flower growers
- Stablemen

**Fishery:**
- Fishermen and oystermen

**Forestry:**
- Forest occupations (except logging) which is classified under skilled, semi-skilled or unskilled
- Hunters and trappers
- Hunting and trapping guides
5. **Skilled Occupations**

This group includes craft and manual occupations that require a predominantly thorough and comprehensive knowledge of processes involved in the work, the exercise of considerable independent judgement, usually a high degree of manual dexterity and in some instances extensive responsibility for valuable product or equipment. Workers in these conditions usually become qualified by serving apprenticeships or completing extensive training periods.

Foremen of manual and craft workers are also included with these occupations.

- Bakers
- Bus Drivers
- Cabinetmakers
- Foremen
- Gas fitters, steam fitters
- Goldsmiths, silversmiths
- Jewelers
- Lithographers
- Locomotive engineers
- Locomotive firemen
- Motelmen
- Photo engravers
- Piano and organ tuners
- Plasterers
- Plate printers and processmen
- Seamstresses and dressmakers
5. **Skilled Occupations** (con't)

   Sheet metal workers
   Tailors and workers
   Textile weavers
   Tinsmiths, coppersmiths
   Toolmakers
   Watchmakers

6. **Semi-skilled Occupations**

   This group includes manual operations that are characterized by one, or a combination of parts of the following requirements:

   The exercise of manipulative ability of a high order but limited to a fairly well-defined work routine.

   Major reliance, not so much upon the worker's judgment or dexterity but upon vigilance and alertness in situations in which lapses in performance would cause extensive damage to product or equipment.

   The exercise of independent judgment to set variables in the work situation which is not based on wide knowledge of a work field and with the nature and extent of the judgment limited either (a) by application of a relatively narrow task situaiton or (b) by having important decisions made by others.

   These occupations may require the performance of part of a craft or skilled occupation.

   Apprentices
   Attendants - filling stations and parking lots
6. **Semi-skilled Occupations**

   Gate men
   
   Loggers of semi-skilled type
   
   Non-process occupations in manufacturing
   
   Roofers and slaters
   
   Seamen
   
   Train callers
   

7. **Unskilled Occupations**

   This group includes manual occupations that involve the performance of simple duties that may be learned within a short period of time and that require the exercise of little or no independent judgment.

   Characteristically, such occupations do not require previous experience in the specific occupation in question, although a familiarity with the occupation environment may be necessary or very desirable. The occupations in the group vary from those involving a minimum of physical exertion to those characterized by heavy physical work.

   Laborers
   
   Loggers (of unskilled type)
   
   Longshoremen
   
   Miscellaneous assembly occupations
   
   Oilers of machinery
   
   Stovedores