



National Library  
of Canada

Bibliothèque nationale  
du Canada

Acquisitions and  
Bibliographic Services Branch

Direction des acquisitions et  
des services bibliographiques

395 Wellington Street  
Ottawa, Ontario  
K1A 0N4

395, rue Wellington  
Ottawa (Ontario)  
K1A 0N4

*Your file* *Votre référence*

*Our file* *Notre référence*

## NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

## AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

UNIVERSITY OF ALBERTA

INTERPERSONAL DISTANCE  
AND POSITIVE REINFORCEMENT

by

Anthony D. Skorjanc

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE  
OF MASTER OF ARTS

DEPARTMENT OF SOCIOLOGY

EDMONTON, ALBERTA

FALL, 1993



National Library  
of Canada

Bibliothèque nationale  
du Canada

Acquisitions and  
Bibliographic Services Branch

Direction des acquisitions et  
des services bibliographiques

395 Wellington Street  
Ottawa, Ontario  
K1A 0N4

395, rue Wellington  
Ottawa (Ontario)  
K1A 0N4

*Your file* *Votre référence*

*Our file* *Notre référence*

**The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.**

**L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.**

**The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.**

**L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.**

ISBN 0-315-88376-6

**Canada**

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR                    Anthony D. Skorjanc  
TITLE OF THESIS                    Interpersonal Distance and  
    Positive Reinforcement  
  
DEGREE FOR WHICH THESIS WAS PRESENTED            Master of Arts  
YEAR THIS DEGREE GRANTED                            1993

Permission is hereby granted to THE UNIVERSITY OF ALBERTA LIBRARY to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves all other publication rights in association with the copyright in the thesis, and except as hereinbefore provided neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.

*A. Skorjanc*  
.....

PERMANENT ADDRESS:

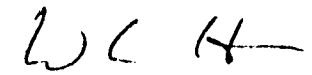
11426 - 78 Avenue  
Edmonton, Alberta  
T6G 0N3

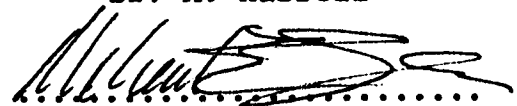
DATED *August 25* 1993

THE UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled: "Interpersonal Distance and Positive Reinforcement," submitted by Anthony Dean Skorjanc in partial fulfillment of the requirements for the degree of Master of Arts.

  
.....  
Dr. L. Hayduk

  
.....  
Dr. A. Harrell

  
.....  
Dr. M. Enzle

Date: *July*.....*15*.....*1993*

## **DEDICATION**

I dedicate this thesis to my Aunt Hedi and Uncle John Wagner for opening their hearts and home to me during a crucial time in my academic career.

## ABSTRACT

Hypotheses regarding the effect of positive reinforcement on interpersonal distance preferences were tested. Reinforcement theory predicts that persons reinforced at large or small interpersonal distances would maintain similarly large or small interpersonal distances in the future. Preferred interpersonal distance was measured via unobtrusive observation of the distance subjects maintained between themselves and another person. Points, later exchangeable for lottery tickets, served as the reinforcement.

Only one of the reinforcement conditions resulted in a statistically significant change in preferred distance. In this condition, the positive reinforcement expanded subjects' interpersonal distance preferences. The distance measurements of subjects reinforced to reduce their distance preferences were not significantly different from the control group. The subjects' ratings of their mood (via Likert scales) at a neutral distance, were unaffected by prior attempts to either expand or reduce their interpersonal distance preferences according to the reinforcement schedule. Skin conductance was unassociated with distance preferences, and also unaffected by the reinforcement schedule. The methodological limitations on this research and suggestions for future studies are discussed.

### **ACKNOWLEDGEMENTS**

My appreciation for the time and effort afforded to this thesis by my friend and mentor Dr. Leslie Hayduk is greater than words can express. From generating the initial thesis topic to the finalization of revisions his analytical contributions were of paramount importance to the success of this thesis.

I also thank Dr. Andrew Harrell and Dr. Michael Enzle for their contributions to the overall logic and design of this thesis.

Many thanks are also given to Ki Bensalah and Marla Peters for their help and patience assisting in the experiment.



## Table of Contents

Chapter	Page
I. Introduction.....	1
Interpersonal Distance.....	2
Operant Conditioning and Positive Reinforcement.....	2
Points as Reinforcers.....	3
Variables.....	4
Hypotheses.....	5
Ethical Concerns.....	5
II. Methodology.....	6
Brief Overview of the Experiment.....	6
Subjects.....	9
Apparatus.....	10
Procedure.....	13
Control Groups.....	20
III. Results.....	24
Means.....	24
Correlations.....	26
Regression Analyses.....	36
Regression Analysis for Second Distance.....	48
Regression Analysis for Third Distance.....	43
Regression Analysis for Likert Items.....	47
Regression Analysis for Skin Conductance.....	51

IV. Discussion.....	53
REFERENCES.....	56
Appendix A - Cover Story and Lottery Explanation.....	59
Appendix B - Record Sheet 1.....	60
Appendix C - Target Box Set-up.....	61
Appendix D - Record Sheet 2.....	62
CODEBOOK.....	63
DATA APPENDIX.....	65

## List of Tables

Table		Page
1.	Means of the Distances and Other Measures by Group.....	25
2.	Correlations between Skin Conductance Measures.....	27
3.	Correlations between Distance Measures.....	27
4.	Overtime Stability in the 4 Likert Items.....	29
5.	Overtime Stability in the 4 Likert Items by Group..	30
5.	- Continued.....	31
6.	Correlations between Likert Scales by Group.....	33
6.	- Continued.....	34
7.	Correlations between Distance Measures and Demographic Variables.....	35
8.	Regression Analyses for Distances 2 and 3.....	39
9.	Regression Analyses for Calm Time-7 and Uncomfortable Time-7.....	49
9.	- Continued.....	50
10.	Regression Analysis for Skin Conductance at Calm Question-7.....	52

### List of Figures

Figure		Page
1.	Laboratory Layout.....	8
2.	Reinforcement Schedules 1 & 2.....	15
3.	First Control Group Reinforcement Schedule.....	22
4.	Second Control Group Reinforcement Schedule.....	23
5.	Cube Diagram for Distances 1 and 2.....	41
6.	Cube Diagram for Distances 2 and 3.....	46

## INTRODUCTION

Several studies over the last three decades have examined interpersonal distance, that is, the distance separating one individual from another during social interaction (Gilmour & Walkey, 1981; Harrell, 1979; Hayduk 1978, 1981, 1983; Hildreth, Derogatis, & McCusker, 1971; Kinzel, 1970; Konecni, Libuser, Morton, & Ebbesen, 1975; Roger & Schalekamp, 1976; Skorjanc, 1991; Sommer, 1969, Strube & Werner, 1982; Sundstrom & Altman, 1976; Thompson, Aiello, & Epstein, 1979). Nowhere among the many variables explored within this context, has a study systematically examined the use of reinforcements as an implicit determinant of interpersonal distance. While standard or shared culture can predict similarities among individuals within cultures (Roger & Schalekamp, 1976), it is unable to account for the differences among individuals. Hence, we need an explanation identifying the sources of the substantial individual variations in interpersonal distance preferences. If interpersonal distance is dependent on reinforcers, then intervention strategies for strengthening individual's preferences might be developed [e.g., to reduce the unusually large distances maintained by violent offenders (Kinzel, 1970)]. The present study was designed to explore the relationship between interpersonal distance and positive reinforcement by assessing whether positive reinforcers can modify individuals' interpersonal distance preferences.

### Interpersonal Distance

Research on interpersonal distance (Sundstrom & Altman, 1976) demonstrates that there is an optimal distance preferred by individuals, that is, distances that are too large or too small are experienced as uncomfortable. The distance between two interacting individuals is a function of their optimal distance preferences and can be referred to as their interpersonal distance preference. If a stationary individual is approached by another person, the distance at which the approacher stops, is the approacher's interpersonal distance preference. This distance is the preferred interpersonal distance preference of both individuals, if the stationary individual displays no reaction or signs of discomfort.

### Operant Conditioning and Positive Reinforcement

Operant (or instrumental) conditioning refers to a process in which emitted behavior is strengthened or suppressed as a result of the consequences of the behavior (Reynolds, 1975). Operants are behaviors that act or "operate" on the environment to produce consequences, which are in turn affected by these consequences (Nye, 1979). Any event that increases the likelihood that the behavior it follows will recur in the future is defined as a reinforcer (Fantino and Logan, 1979). In the case of positive reinforcers, the behaviors they follow are made more probable by their occurrence. For example, an individual who stands near another person (emitted behavior) and is subsequently rewarded with

a lottery ticket (positive reinforcement) is likely to repeat this behavior in the future.

Skinner's approach to operant conditioning and positive reinforcement focuses specifically on phenomena that are directly observable and does not go beyond (1) stating that consequences do strengthen behavior, and (2) accounting for the conditions under which this strengthening effect occurs. Based upon these Skinnerian principles of reinforcement, it can be argued that an individual presented with a positive reinforcement for maintaining a small interpersonal distance will emit a similar behavior in the future. If a relatively small interpersonal distance is maintained the next time the individual approaches another, then the reinforcer is successful for reducing the size of his/her interpersonal distance preference.

Similarly, if a positive reinforcer is presented to an individual for maintaining a large interpersonal distance, then we could expect that individual to maintain a similarly large interpersonal distance on future occasions.

### **Points as Reinforcers**

Recent research has demonstrated that points which can be exchanged for money or lottery tickets are significant reinforcers for strengthening subject's emitted behaviors in experimental settings (Bennett & Samson, 1987; King & Logue, 1990; Kimoto, Shimamune, & Jitsumori, 1989; Torgrud & Holborn, 1990). The

present study used points (exchangeable for lottery tickets) as positive reinforcers to strengthen individuals' operant behaviors (e.g., approaching and standing near another person).

### Variables

A study conducted by McBride, King, and James (1965) found a social proximity effect on subjects' skin conductance. In this study, skin conductance served as a control variable as well as a possible alternative to other measures of the reinforcement effect (e.g., there may be a physiological response and some or no change in the size of the individual's interpersonal distance preference).

The measures of age, gender, height and weight were also used in the present study. According to Hayduk (1978, 1983) there are mixed findings linking these variables to interpersonal distance. In view of this, these variables are used only as controls in the data analyses. Individuals' feelings also served as a control variable in the regression analyses. These included feeling: 1) threatened through secure, 2) comfortable through uncomfortable, 3) nervous through calm, and 4) embarrassed through self-assured served .



## Hypotheses

### Hypothesis 1

Preferences for greater interpersonal distancing will be strengthened when greater interpersonal distances are reinforced.

### Hypothesis 2

Preferences for lesser interpersonal distancing will be strengthened when lesser interpersonal distances are reinforced.

## Ethical Concerns

For the present study, an experiment was conducted using university students as subjects and points (exchangeable for lottery tickets) were used as reinforcers. The subjects were reinforced to either reduce or expand their interpersonal distance preferences. The experiment followed an ABA, BAB design to reveal any sequencing effects of the treatments and to overcome any net lasting effect on the subjects. Initial reinforcers, which were presented to modify a subject's interpersonal distance preference, were followed by subsequent reinforcers designed to return the interpersonal distance preference back to its original size.

## METHODOLOGY

### Brief Overview of the Experiment

Subjects arrive at the laboratory one at a time and are asked (by the experimenter) to proceed along a corridor of tables towards the assistant (at position A1 in Figure 1). Once the subject stops approaching the assistant, the **First** distance is unobtrusively noted (mentally) by the assistant, and used to assign the subject to the Reduce-Then-Expand or Expand-Then-Reduce condition. The assistant then directs the subject to approach the Experimenter's Table to connect him/herself to a skin conductance monitor and the assistant takes the position at A2 (in Figure 1). The subject is then told a cover story (see Appendix A) that the purpose of the experiment is to determine different styles of search procedures. The subject is told that the 10 poles (labelled A through E) correspond to slips of paper located in the boxes labelled 1 through 6 and that he/she should select a slip of paper from box number 1 and then go stand directly in front of one of the poles that corresponds to the letter indicated upon the slip of paper. The subject is then told he/she may select a card from the pole box where they stand, the letters upon which correspond to points that are exchangeable for Western Express lottery tickets at the end of the experiment. The subject is then instructed to select slips of paper from the 5 remaining boxes and stand in front of the corresponding 5 poles (one at a time) from which they will choose

more cards with letters that correspond to points.

Once the subject approaches a post (located closer or more distant from the assistant), Likert and Skin conductance measurements are made and reinforcers are presented according to reinforcement schedule. The assistant then goes back to position A1 while the subject disconnects him/herself from the skin conductance monitor. On the pretext of obtaining more instructions from the assistant, the subject approaches the assistant at A1 for a **Second** unobtrusive distance measurement. The next instructions are to repeat the cover-story search task.

The subject then reattaches him/herself to the skin conductance monitor (as the assistant resumes position A2) and receives counterbalancing reinforcers for approaching posts located closer or further from the assistant. Likert and skin conductance measurements are again recorded for the approaches. While the subject is disconnected from the monitor the assistant once more resumes position A1. The subject then approaches the assistant for the **Third** unobtrusive distance measurement on the pretext of obtaining more instruction from the assistant.

After the Third distance measure is recorded the subject is debriefed, probed for suspiciousness and dismissed.

The reason for including three distance measures is that the First distance measurement is a baseline interpersonal distance preference for the subject. Subjects are then presented reinforcers at posts located closer to or further from the

Figure 1

Laboratory Layout

A1, A2 = Position of Assistant

assistant, in an attempt to manipulate the Second, and subsequent Third distance measurements.

This cover story does not imply any exchange rate for the points received by subjects and the number of lottery tickets allocated at the end of the experiment. Subjects are left to orientate themselves to the search task and to calculate their own relative value for the points during the course of the experiment as various point allocations are made. Due to the complexity of the task and the non-specific nature of the search strategies, we anticipate that most subjects felt somewhat disorientated or at least some degree of uncertainty during the initial trials. We could also anticipate that while this uncertainty was never fully dissipated, the repetitive nature of the task, with specific choice points provided a framework for continuing interaction in the experimental setting. Subjects' personal experiences for their approaches on the assistant are relative to what each subject perceives during his/her approach. For example, one subject may perceive the assistant as threatening while another will perceive the assistant as comforting.

### Subjects

The subjects for this experiment were 33 female and 24 male undergraduate students enrolled in Introductory Sociology courses at the University of Alberta. Their ages ranged from 18 to 38 years, with a mean of 20.7 years. All subjects participated on a

voluntary basis and received no course credit. Some subjects were assigned to serve as controls while others were assigned to one of the two experimental groups. Subjects with large initial interpersonal distance preferences were assigned to the Reduce-Then-Expand group (ABA), while those displaying small initial interpersonal distance preferences were assigned to the Expand-Then-Reduce group (BAB).

## Apparatus

### Research Assistants

The experiment was conducted by an experimenter (the author) and two assistants. The experimenter was a slender 28-year-old male Caucasian, 185 cm. tall, while both assistants were slender 27 year old female Caucasians standing approximately 165 cm. tall.

### Room Layout

The experimental setting was a lecture room containing tables and chairs arranged as in Figure 1 so that a row of 6 tables made a corridor 7 metres long and 1.2 metres wide running along the right wall. The Assistant's Desk was situated at the far end of this corridor. A sign labelled "ASSISTANT" was taped to the front of the desk and the assistant stood at the same position (A1) near the desk for each of the unobtrusive distance measurements. A clipboard with distance record sheets (see Appendix B) was on the table. The floor tiles along the corridor leading up to the desk

were marked with unobtrusive distance indicators.

### Target Poles

A total of 10 poles (target poles) were labelled in pairs A,A, B,B, C,C, D,D, E,E and positioned as indicated in Figure 1. Each pole consisted of a small paper box glued on top of a 1 metre high wooden shaft stuck into a brick base. Similarly labelled poles (eg. B and B) were equi-distant from position A2, where the assistant stood when not at the Assistant's Desk for the distance measurements. Each of the two 'A' poles were positioned 25 cm away from the assistant's position (A2), the two 'B' poles 60 cm away, the two 'C' poles 95 cm away, the two 'D' poles 130 cm away, and the two 'E' poles located 165 cm away from the assistant's position. The boxes (pole boxes) each contained several file cards, which were labelled with random 2 letter combinations (e.g., XT, ZQ, WX etc.).

### Target Pole Specification

Two sets of 7 cardboard boxes were on a table located near the centre of the room. Each set of boxes was numbered 1-6, with the last of each labelled "USED". Each numbered box held several folded slips of paper with one letter (A,B,C,D, or E) on it. The boxes labelled "USED" were empty). Only one letter (eg. C) was assigned to a particular box. For the first set of boxes, every slip of paper in box 1 was labelled "C", the slips of paper in box

2 were labelled "B", and so on. Set one was used for the Expand-reinforcement trials, and set two was used for the Reduce-reinforcement trials. (See Appendix C for the details of the target pole designation in each of the boxes). Subjects selected from these boxes and used the letters on the slips of paper to determine which of the poles they approached, thereby also determining how close they approached the assistant at A2.

#### Experimenter's Table

On the Experimenter's Table were (1) a list of instructions for the subjects, (2) four reinforcement schedules, (3) record sheets to record monitor readings and Likert scale scores (see Appendix D), and (4) an electronic skin conductance monitor connected to a 6 m cable attached to two velcro finger-tip fasteners.

#### Measurement

Three interpersonal distance preference measurements were made for each subject: First (baseline), Second (reinforced away from baseline) and Third (reinforced back towards baseline).

At each of the target pole locations, measurements were made for the subjects' skin conductance and their feelings on 4 different Likert scales. Subjects were measured a total of thirteen times for skin conductance (1 baseline and 12 target pole approach measurements). Subjects were also measured a total of



twelve times for each of the 4 Likert scales (at every target pole approach). The other measurements included subjects' height, weight, age, and gender.

### Front wall

Two posters of the four Likert scale questions were strategically placed on the front wall of the laboratory, immediately behind and just to each side of the assistant's A2 position, thereby manipulating the subject into facing, and looking, in the direction of the assistant during specific parts of the experiment. This helped to keep the subjects from looking or facing away from the assistant when the experimenter asked the Likert questions. Furthermore, the posters were designed to help subjects visualize where their feelings might fall on each of the Likert scales thus allowing for more accurate responses.

### Procedure

Subjects were scheduled to arrive one at a time and were met in the hallway outside the laboratory by the experimenter, who asked the subject to come into the laboratory and walk (down the corridor) over to the research assistant (at position A1) for instructions. In order to eliminate any effects that eye contact might have on how closely the subject approached, the assistant always turned her head to the side and looked down at the clipboard until the subject had stopped approaching. The assistant's feet

and body were oriented directly down the corridor, so this seemed like a frontal approach to the subject even though the assistant's head was turned slightly aside. The distance from the assistants' toes to the subject's closest toe was mentally noted (in the mind of the assistant) and the subject was asked to go to the Experimenter's Desk for further instructions. The distance in centimetres (First distance preference) was then recorded (on record sheet 1) by the assistant.

After the subject's First distance preference was recorded, the assistant signalled the experimenter (with a raised finger) if the distance was greater than 60 cm, and then walked to position A2. The signal informed the experimenter which of the two reinforcement conditions the subject was in (see Figure 2), and the experimenter positioned the appropriate 7 target location boxes on the table to make them accessible to the subject. The subject entered the First-Reduce-Then-Expand condition if their initial distance preference was greater than 60 cm, and the First-Expand-Then-Reduce condition if their initial distance preference was less than 60 cm<sup>1</sup> .

---

<sup>1</sup> The 60 cm criterion was used because the mean-stop distance measure for frontal approaches on university students in Hayduk's 1981 study is approximately 60 cm (p. 89).

**Figure 2****Reinforcement Schedules 1 & 2**

- (1a)** Reinforcement schedule for the reduce segment of the First Reduce Then Expand group (i.e., initial interpersonal distance preference >60 cm).

Reinforcement Schedule ----->	Start: C = 1000 points
(Location and Points Allocated)	2nd D = 0 points
	3rd B = 2000 points
	4th A = 7000 points
	5th A = 8000 points
	6th A = 9000 points

- (1b)** Reinforcement schedule for the expand segment of the First Reduce Then Expand group.

Reinforcement Schedule ----->	Start: C = 1000 points
(Location and Points Allocated)	2nd B = 0 points
	3rd D = 2000 points
	4th E = 7000 points
	5th E = 8000 points
	6th E = 9000 points

- (2a)** Reinforcement schedule for the expand segment of the First Expand Then Reduce group (i.e., initial interpersonal distance preference <60 cm).

Reinforcement Schedule ----->	Start: C = 1000 points
(Location and Points Allocated)	2nd B = 0 points
	3rd D = 2000 points
	4th E = 7000 points
	5th E = 8000 points
	6th E = 9000 points

- (2b)** Reinforcement schedule for the reduce segment of the First Expand Then Reduce group.

Reinforcement Schedule ----->	Start: C = 1000 points
(Location and Points Allocated)	2nd D = 0 points
	3rd B = 2000 points
	4th A = 7000 points
	5th A = 8000 points
	6th A = 9000 points

(Note that the last two schedules are the same as the first two schedules, but in reverse order).

### Task explanation

After arriving at the Experimenter's Table, the experimenter asked the subject to slip the velcro fasteners (attached to the skin conductance monitor) onto the subject's first and second fingertips. The experimenter then read aloud the cover story from the sheet on the Experimenter's Desk.

Since only one letter (A-E) was assigned to a particular box (1-6), it was possible to prearrange the order in which the subject approached different poles, and hence, manipulate the distance between the subject and the assistant. In the Reduce reinforcement condition, subjects were reinforced for standing near the assistant (minimum 25 cm and see Figure 2). In the Expand reinforcement condition, subjects were reinforced for standing farther from the assistant (maximum 165 cm and see Figure 2). The subject was not informed that only one letter appeared in each of the target boxes, so the subjects experienced the target locations as if they had been randomly selected.

Once the subject approached a pole, the experimenter waited for 2 seconds to permit the skin conductance reading to stabilize, and then recorded the digital reading indicated on the skin conductance monitor. Whenever the subject approached and stood in front of a pole the assistant always turned her body towards the subject so that no matter where the subject was, the assistant was always directly facing that direction and looking over the subject's shoulder.

The experimenter then asked the subject to look at the Likert scale questions on the front wall (located just behind the research assistant) and to indicate a response for each of the four Likert scales. The subject's response to each Likert question was recorded by the experimenter and was taken to determine how the subjects felt as they stood at different distances from the assistant.

For every target pole approach, a second skin conductance measurement was recorded by the experimenter two seconds after the subject answered the third Likert scale question (nervous-calm). A third skin conductance measurement was then recorded two seconds after the subject answered the fourth Likert scale question (embarrassed-self assured). Skin conductance measurements were not taken after the first and second Likert questions as the variation in skin conductance (caused by the subject's physical exertion to move to the new location) may have confounded the skin conductance readings for those questions. It was felt that the delay (approximately 10 seconds) until the third and fourth Likert questions provided time for the effects of moving to subside.

After answering the fourth Likert question, the subject was asked to select one of the file cards from the pole box, read aloud the letters written on it, and return it to the box it came from. Once the subject had indicated the letters on the card, the experimenter indicated a point value (supposedly corresponding to that particular letter combination). In reality, these cards were

part of the cover story and allowed the experimenter to provide a predetermined reinforcement after the subject approached a pole (i.e., a specified distance from the assistant), and selected a card from the box. The reinforcement schedule determined the allocation of points and this schedule was based exclusively on (1) which experimental condition the subject was in and (2) which pole the subject was standing in front of. Asking subjects to select lettered cards gave an impression of randomness to the allocation of points they received at any of the poles.

The experimenter then asked the subject to return to the table, select a slip of paper from box number 2, and follow the same set of instructions as in the first search process (i.e., approach a pole, provide Likert ratings, and choose a card for point allocation). Each subject repeated these same steps until all six boxes (1-6) had been used.

The experimenter then asked the subject to disconnect the velcro-finger fasteners and to go back down the corridor to the assistant (who was again situated at position A1) for further instructions. Once the subject stopped approaching, the assistant mentally noted the **Second** distance and told the subject the following cover story: "You happen to be in the experimental condition that requires you to go through a second set of search trials. Please go back over to the experimenter for some more instructions". The assistant then recorded the **Second** distance measurement on the record sheet.

While the subject was preoccupied with the assistant, the experimenter switched the original 7 target boxes with the other 7 target boxes on the table. As a result, the subject would select slips of paper from these new boxes and consequently follow the compensating predetermined schedule of pole approaches.

The second set of trials consisted of the subjects going through nearly the same routine. All subjects received the identical amount of points in the same order as before but, the distances from the assistant were reversed so that those initially reinforced at small distances were now reinforced at large distances, and those initially reinforced at large distances were now reinforced at small distances. This reversal was designed to cancel out any effects of the initial reinforcements on interpersonal distance, thereby leaving the subjects with the same interpersonal distance preferences with which they entered the study.

After using up all the other six boxes, the subject was asked by the experimenter to return to the assistant (again situated at position A1) for further instructions. Once the subject stopped approaching the assistant, the Third distance preference was recorded and the assistant collected demographic information from the subject. Subjects were then asked by the experimenter what they thought the experiment was all about, to see if anyone had guessed the true nature of the experiment. None had. The experimenter then gave a lottery ticket to the subject for

participating in the experiment, debriefed the subject regarding the true purpose of the experiment, and asked the subject to refrain from disclosing any information about the study to other students until after the completion of the study.

### Control Groups

The two control groups used for the experiment were as follows:

(1) The first control group of subjects followed the same procedure and schedule as the experimental groups; however, they were not told how many points they were earning during the experiment (see Figure 3). Hence, these control subjects did not receive any reinforcement for the duration of the experiment.

(2) The second control group of subjects followed the same procedure and schedule as the experimental groups; however, they were given point allocations that similarly reinforced both small and large distances. (See Figure 4). This was done to determine if there was a reinforcing effect from receiving any points on subjects' interpersonal distance preferences.

The first assistant processed all the subjects in the experimental groups and the first control group, while the second assistant worked only with the subjects in this second control group. Hence, there are three confounded explanations for differences between the two control groups: 1) differences between assistant 1 or 2, 2) receiving points or receiving no points, and



3) the first control group experiencing more ambiguity by not receiving any points.

Subjects for the two control groups were not randomly assigned. Subjects for the first control group were run through the experiment after all the subjects in the experimental conditions were completed. Since the conditions for the second control group were conceived of as an after-thought, these subjects were run through the experiment in succession at the very end of all the trials.

Figure 3First Control Group Reinforcement Schedule

- (a) Reinforcement schedule for the reduce segment of the First Reduce Then Expand group (i.e., initial interpersonal distance preference >60 cm).

Reinforcement Schedule -----> Start: C = NPA  
 (Location and Points Allocated) 2nd D = NPA  
 3rd B = NPA  
 4th A = NPA  
 5th A = NPA  
 6th A = NPA

NPA = No Points Assigned.

- (b) Reinforcement schedule for the expand segment of the First Reduce Then Expand group.

Reinforcement Schedule -----> Start: C = NPA  
 (Location and Points Allocated) 2nd B = NPA  
 3rd D = NPA  
 4th E = NPA  
 5th E = NPA  
 6th E = NPA

- (c) Reinforcement schedule for the expand segment of the First Expand Then Reduce group (i.e., initial interpersonal distance preference <60 cm).

Reinforcement Schedule -----> Start: C = NPA  
 (Location and Points Allocated) 2nd B = NPA  
 3rd D = NPA  
 4th E = NPA  
 5th E = NPA  
 6th E = NPA

- (d) Reinforcement schedule for the reduce segment of the First Expand Then Reduce group.

Reinforcement Schedule -----> Start: C = NPA  
 (Location and Points Allocated) 2nd D = NPA  
 3rd B = NPA  
 4th A = NPA  
 5th A = NPA  
 6th A = NPA

**Figure 4****Second Control Group Reinforcement Schedule**

- (a) Reinforcement schedule for the reduce segment of the First Reduce Then Expand group (i.e., initial interpersonal distance preference >60 cm).

Reinforcement Schedule ----->	Start:	C = 4000 points
(Location and Points Allocated)	2nd	D = 5000 points
	3rd	B = 4000 points
	4th	A = 5000 points
	5th	A = 4000 points
	6th	A = 5000 points

- (b) Reinforcement schedule for the expand segment of the First Reduce Then Expand group.

Reinforcement Schedule ----->	Start:	C = 4000 points
(Location and Points Allocated)	2nd	B = 5000 points
	3rd	D = 4000 points
	4th	E = 5000 points
	5th	E = 4000 points
	6th	E = 5000 points

- (c) Reinforcement schedule for the expand segment of the First Expand Then Reduce group (i.e., initial interpersonal distance preference <60 cm).

Reinforcement Schedule ----->	Start:	C = 4000 points
(Location and Points Allocated)	2nd	B = 5000 points
	3rd	D = 4000 points
	4th	E = 5000 points
	5th	E = 4000 points
	6th	E = 5000 points

- (d) Reinforcement schedule for the reduce segment of the First Expand Then Reduce group.

Reinforcement Schedule ----->	Start:	C = 4000 points
(Location and Points Allocated)	2nd	D = 5000 points
	3rd	B = 4000 points
	4th	A = 5000 points
	5th	A = 4000 points
	6th	A = 5000 points

## RESULTS

The data collected in the experiment was key-punched and verified by a professional keypuncher. All data were analyzed using a mainframe version of SPSS.

### Means

The subjects stopped, on average, 61.3 cm from the assistant for the First distance approach. The 60 cm mean estimated for First distances was close to one found (61.3 cm), hence, the estimate was a good choice for splitting the subjects into two equal groups<sup>2</sup>. Subjects in the Reduce-Then-Expand group stopped, on average, 74.4 cm from the assistant for the First distance approach and 55.3 cm for the Second distance approach. Subjects in the Expand-Then-Reduce group stopped, on average, 51.1 cm for the First distance approach and 42.9 cm for the Second distance approach (see Table 1). From these results, the reinforcements seem successful for reducing distance preferences, but not for increasing them.

For the Third distance measurements, subjects in the Reduce-Then-Expand group stopped, on average, 58.7 cm from the assistant compared to 40.8 cm for the subjects in the Expand-Then-Reduce

---

<sup>2</sup> Actually, these distances are slightly (8 or so cm) larger than those reported in Hayduk's (1981) study, because he used a toe-to-body centre distance rather than a toe-to-toe distance.

**Table 1**

**MEANS OF THE DISTANCES AND OTHER MEASURES BY GROUP**

VARIABLES	ALL GROUPS N=57			REDUCE THEN EXPAND GRP. N=16		EXPAND THEN REDUCE GRP. N=15		1ST CONTROL GROUP N=13		2ND CONTROL GROUP N=13	
	MEAN	STD. DEV		MEAN	STD. DEV	MEAN	STD. DEV	MEAN	STD. DEV	MEAN	STD. DEV
DISTANCE 1	61.3	19.8		74.4	18.1	51.1	7.9	65.6	21.3	52.8	20.7
DISTANCE 2	51.5	16.7		55.3	18.6	42.9	12.5	61.4	18.8	47.1	9.6
DISTANCE 3	51.1	16.1		58.7	16.6	40.8	13.0	58.9	16.2	45.6	9.9
GENDER	1.6	.5		1.6	.5	1.7	.5	1.5	.5	1.5	.5
AGE	20.7	4.7		20.1	4.0	21.0	5.8	19.5	1.1	22.3	6.2
HEIGHT	67.5	4.1		67.9	3.0	65.8	5.5	68.4	3.4	68.2	4.0
WEIGHT	144.6	26.9		142.3	27.5	131.1	23.4	156.2	29.3	151.3	22.7
SC BASELINE	71.3	51.8		70.9	42.0	65.1	47.8	82.9	71.7	67.1	47.8

SC = SKIN CONDUCTANCE

group. Basically, the reinforcements seem successful for both reducing and expanding distance preferences from the Second to the Third distance measurements.

These results are somewhat deceiving however, as we will come to slightly different conclusions when we do regression analyses which enter various types of control variables.

## Correlations

### Skin Conductance

The measurements for skin conductance were indexed "1" through "12" according to when skin conductance measurements were taken from the subject. The large N (684) is a result of multiplying 57 subjects by the 12 times their skin conductance was recorded for one of the three measures (Highest SC, Calm question SC or Assured question SC).

All the skin conductance measurements correlated highly with each other (see Table 2). As skin conductance increased for any one of the measures, a similar increase was maintained in the other two skin conductance measures. Indeed, the correlations are so high that there is little to distinguish between the measures of skin conductance; hence, we chose to use only one of the skin conductance measures (calm SC 1), as the measure for skin conductance for the remainder of the data analyses.

**Table 2****CORRELATIONS BETWEEN SKIN CONDUCTANCE MEASURES**

ALL GROUPS N=684			
	HIGHEST SC	CALM SC	ASSURED SC
HIGHEST SC	1.000		
CALM SC	.996***	1.000	
ASSURED SC	.995***	.999***	1.000
* P < .05 ** P < .01 *** P < .001			

**Table 3****CORRELATIONS BETWEEN DISTANCE MEASURES**

ALL GROUPS N=57			
	DISTANCE 1	DISTANCE 2	DISTANCE 3
DISTANCE 1	1.000		
DISTANCE 2	.571***	1.000	
DISTANCE 3	.493***	.779***	1.000
* P < .05 ** P < .01 *** P < .001			

**Distance Measurements**

The correlations among the three distance measures were also high (see Table 3). As the First distance measurements increased, the Second and Third distance measurements were proportionately

larger. These correlations are calculated for all the cases combined, and hence demonstrate that this consistency persisted despite any disruptions introduced by the experimental treatments. One implication of this, is that we must control for the variations in initial distance preferences in attempting to reach an assessment of the effects of the experimental treatments.

By treating these correlations as simple test-retest correlations of interpersonal distance preference, we have observed correlations that are slightly lower than the typical test-retest correlation of about .81 for studies using the stop-distance technique (Hayduk, 1983, p. 295). The correlations indicated in Table 3 are surprisingly strong however, given that our procedure is unobtrusive and hence that we were unable to control for as many factors as are controlled when making stop-distance measurements.

#### Likert items

The discussion of Likert items focuses on selecting which of these items should be used as control variables for the Distance 1 and Distance 2 regression analyses.

The four likert questions were indexed "1" through "12", according to which of the 12 times subjects were asked a particular question. Table 4 examines the correlations between each of the time 1 Likert items and their 11 subsequent measures. All four of the Likert scales displayed some stability over time, with 'assuredness' being the most stable of the Likert items. Though we



have no reason to pursue these correlations to determine what the decline in correlations is due to, we can at least conclude that the temporal stability in the Likert items shows that they are not just all error.

**Table 4** OVERTIME STABILITY IN THE 4 LIKERT ITEMS  
(CORRELATIONS)

ALL GROUPS				
	SECURE TIME 1	UNCOMFORTABLE TIME 1	CALM TIME 1	ASSURED TIME 1
TIME 1	1.000	1.000	1.000	1.000
TIME 2	.735***	.753***	.676**	.670***
TIME 3	.423**	.580***	.582***	.813***
TIME 4	.325**	.502***	.523***	.702***
TIME 5	.166	.393**	.269*	.680***
TIME 6	.093	.445***	.328**	.614***
TIME 7	.310**	.345**	.470***	.611***
TIME 8	.279*	.290*	.399**	.625***
TIME 9	.311**	.315**	.435***	.638***
TIME 10	.252*	.278*	.367**	.470***
TIME 11	.322**	.234*	.371**	.332**
TIME 12	.327**	.189	.382**	.544***
* P < .05 ** P < .01 *** P < .001				N=57

Breaking the results down by group shows that subjects in the Reduce-Then-Expand group displayed the least stability (Table 5).

**Table 5**

**OVERTIME STABILITY IN THE 4 LIKERT ITEMS BY GROUP**

(CORRELATIONS)

	REDUCE THEN EXPAND GROUP N=16				EXPAND THEN REDUCE GROUP N=15			
	SECURE TIME 1	UNCMFRT TIME 1	CALM TIME 1	ASSURED TIME 1	SECURE TIME 1	UNCMFRT TIME 1	CALM TIME 1	ASSURED TIME 1
<b>TIME 1</b>	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
<b>TIME 2</b>	.647**	.854***	.730**	.845***	.741**	.449*	.660**	.574*
<b>TIME 3</b>	.094	.426	.367	.801***	.453*	.559*	.734**	.892***
<b>TIME 4</b>	.034	.297	.430*	.566*	.393	.389	.599**	.800***
<b>TIME 5</b>	-.097	.207	.222	.619**	.060	.355	.506*	.718**
<b>TIME 6</b>	-.139	.287	.316	.388	-.096	.267	.556*	.834***
<b>TIME 7</b>	.196	.142	.077	.179	.420	.359	.442*	.742**
<b>TIME 8</b>	-.100	-.056	-.029	.162	.355	.171	.524*	.820***
<b>TIME 9</b>	.203	.469*	.372	.288	.435	.162	.490*	.767***
<b>TIME 10</b>	-.224	-.135	.105	.110	.430	.139	.422	.402
<b>TIME 11</b>	.000	.157	-.153	.336	.452*	.051	.451*	.188
<b>TIME 12</b>	.143	.159	-.025	.231	.369	.063	.456*	.650**

\* P < .05  
 \*\* P < .01  
 \*\*\* P < .001

Table 5 - Continued

OVERTIME STABILITY IN THE 4 LIKERT ITEMS BY GROUP

(CORRELATIONS)

	1ST CONTROL GROUP N=13				2ND CONTROL GROUP N=13			
	SECURE TIME 1	UNCMFRT TIME 1	CALM TIME 1	ASSURED TIME 1	SECURE TIME 1	UNCMFRT TIME 1	CALM TIME 1	ASSURED TIME 1
TIME 1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
TIME 2	.649**	.707**	.765**	.627*	.906***	.916***	.796**	.762**
TIME 3	.551*	.476	.622*	.779**	.864***	.903***	.719**	.855***
TIME 4	.318	.529*	.502*	.687**	.863***	.859***	.799**	.817***
TIME 5	.077	.155	.408	.731**	.846***	.876***	-.082	.751**
TIME 6	.061	.317	.397	.680**	.585*	.937***	.145	.738**
TIME 7	.081	.484*	.653**	.711**	.638**	.528*	.568*	.804***
TIME 8	.254	.402	.582*	.538*	.576*	.664**	.494*	.866***
TIME 9	.318	.191	.711**	.597*	.326	.448	.458	.800**
TIME 10	.116	.564*	.599*	.543*	.153	.642**	.648**	.887***
TIME 11	.271	.421	.539*	.521*	.137	.591*	.537*	.883***
TIME 12	.274	.626*	.559*	.567*	.271	.330	.704**	.673**

\* P < .05

\*\* P < .01

\*\*\* P < .001

Subjects in the second control group displayed the largest number of overall significant correlations, though the reduced N makes some reasonably large correlations appear as insignificant. Table 6 shows the correlations among the four Likert items at time 1 and time 7 respectively. Times 1 and 7 were chosen since they both occurred when the subject was at a neutral distance (target pole C location) from the assistant. The time 7 correlations are generally slightly larger than the time 1 correlations, so the items have become more consistent over the course of the experiment. That is, the subjects initially rated the questions somewhat more independently than they did later on. Of the four Likert items - secure, uncomfortable, calm, and assured - uncomfortable and calm are highly correlated to the other Likert items. When we combine this with the fact that an assessment of discomfort is the cue used for the frequently used stop-distance measure of spatial preference, we can resolve to use the uncomfortable rating as a control variable in the regression analysis to which we will turn shortly.

#### Distance Measures with Demographics and Likert items.

The lower portion of Table 7 convinces us that the Likert items are generally uncorrelated with the subject's distance preferences, but this is with all groups combined. This makes us suspect that the Likert items will in fact be ineffective predictors in regression equations having any of these distances as dependent variables, but

Table 6

**CORRELATIONS BETWEEN LIKERT SCALES BY GROUP**

(TIME 1)

REDUCE THEN EXPAND GROUP N=16				
TIME 1	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.673**	1.000		
CALM	.375	-.506*	1.000	
ASSURED	.257	-.173	.591**	1.000
EXPAND THEN REDUCE GROUP N=15				
TIME 1	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.619**	1.000		
CALM	.507*	-.345	1.000	
ASSURED	.161	-.233	.475*	1.000
1ST CONTROL GROUP N=13				
TIME 1	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.692**	1.000		
CALM	.528*	-.596*	1.000	
ASSURED	.319	-.407	.779**	1.000
2ND CONTROL GROUP N=13				
TIME 1	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.654**	1.000		
CALM	.735**	-.236	1.000	
ASSURED	.779**	-.525*	.612*	1.000
* P < .05 ** P < .01 *** P < .001				

TABLE 6 - Continued

## CORRELATIONS BETWEEN LIKERT SCALES BY GROUP

(TIME 7)

REDUCE THEN EXPAND GROUP N=13				
TIME 7	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.955***	1.000		
CALM	.665**	-.689**	1.000	
ASSURED	.714**	-.636**	.824***	1.000
EXPAND THEN REDUCE GROUP N=13				
TIME 7	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.909***	1.000		
CALM	.899***	-.876***	1.000	
ASSURED	.891***	-.825***	.914***	1.000
1ST CONTROL GROUP N=13				
TIME 7	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.808***	1.000		
CALM	.212	-.576*	1.000	
ASSURED	.746**	-.790**	.572*	1.000
2ND CONTROL GROUP N=13				
TIME 7	SECURE	UNCOMFORTABLE	CALM	ASSURED
SECURE	1.000			
UNCOMFORTABLE	-.640**	1.000		
CALM	.690**	-.488*	1.000	
ASSURED	.656**	-.543*	.835***	1.000
* P < .05 ** P < .01 *** P < .001				

we can not guarantee this since this table does not incorporate any effect of any of the experimental treatments, or control variables.

In Table 7, the overall correlations indicate that height was positively related to First distance with taller subjects preferring slightly larger First distances. Again, though we intend to use these demographic variables as controls in the planned regressions, the correlations suggest that these variables will generally prove to be ineffective, and unnecessary as controls.

**TABLE 7**

**CORRELATIONS BETWEEN DISTANCE MEASURES AND OTHER VARIABLES**

	ALL GROUPS N=57		
	DISTANCE 1	DISTANCE 2	DISTANCE 3
GENDER	-.182	-.168	-.131
AGE	-.119	-.039	-.146
HEIGHT	.243*	.170	.218
WEIGHT	.025	.046	.036
CALM SC TIME 1	-.076	-.102	.025
SECURE TIME 1	-.194	-.003	.138
UNCOMFORTABLE TIME 1	.084	.022	-.071
CALM TIME 1	-.170	-.135	-.067
ASSURED TIME 1	-.123	.011	.008
* P < .05 ** P < .01 *** P < .001			

### Regression analyses

Three dummy variables were created to permit analysis of the data via regression. The dummy variable 'Reduce-Then-Expand' was created by assigning all the subjects in this experimental group a value of "1", while all the other subjects were assigned a value of zero. The dummy variable Expand-Then-Reduce was created by assigning a value of "1" to all subjects in the Expand-Then-Reduce experimental group and a zero to everyone else. The third dummy variable was scored "1" for subjects in the control group which received no point allocations (control group 1) and zero for everyone else. When all three of these dummy variables are entered into a regression the implicit comparison group is composed of those subjects who were never coded "1" into any of these three dummy variables, namely the subjects in the 2nd control group which received point allocations, but with the points distributed in a way which did not selectively reinforce either smaller or larger distance maintenances. Hence, the slopes associated with the dummy variables compare each of the designated groups to the second control group. Significant slopes for the Reduce-Then-Expand and the Expand-Then-Reduce dummy variables would indicate significant differences in distance preferences that were the result of the reinforcements administered during the experiment.

The dependent variables of interest are the Second and Third distance measurements, since these are the distances observed immediately after the various reinforcement administrations.



Numerous studies have demonstrated that there is considerable stability in distance preferences (Hayduk, 1983, 1985) so we planned to use the subject's distance preference just prior to reinforcement as a control variable in the regressions. When the Second distance preference is the dependent variable, the First distance preference is used as a control. When the Third distance preference is the dependent variable, the Second distance preference is used as a control since these preferences reflect the subjects' preferences just prior to the reinforcements which were designed to influence the Third distance measurements.

A short and a long regression equation were calculated for the regressions in which both the Second and Third distances are the dependent variables. The short regressions just enter the immediately prior distance preference and the three dummy variables as predictors. These regressions assess the effect of the reinforcement conditions controlling only for the subjects' immediately prior distance preferences. The long form of the regressions add several additional predictor variables to the list of predictors used in the short regressions. This introduces a statistical controlling for the effects of these other variables, and hence permits an assessment of the effectiveness of the experimental reinforcement conditions uncontaminated by the potentially confounded effects of these other variables. The extra control variables that were entered include gender, age, height, weight, skin conductance at the first 'calm' Likert question (calm

SC time 1), and subjects report of their comfort-discomfort just prior to the first reinforcement (uncomfortable time 1). These regressions are reported in Table 8.

### Regression Analysis for Second Distance

The only statistically significant predictor of the Second distance preferences was the subject's First distance preference ( $b = .452$ ,  $p < .001$ ), see Table 8. The First distance preference accounts for about 28.6% of the variance, which is calculated by  $.452^2(\text{variance of First distance})/(\text{variance of the Second distance})$  [see Hayduk (1987): Equation 1.26 or 1.28], which is the bulk of the overall Adjusted  $R^2$  of .352. The positive slope indicates that for every additional 1 cm in initial preferred distance, there was a corresponding .452 cm contribution to the Second distance preference. Or, nearly half of the subjects' initial distance preferences persisted to the Second distant measurement.

As anticipated, the slope for the Reduce-Then-Expand treatment group was negative (-1.627), indicating that the Second distance preferences for the subjects receiving this treatment were, on average, about 1.6 cm smaller than those for individuals with comparable initial distances in the second control group, but this decline was too small to be statistically significant. The slope for the Expand-Then-Reduce group (-3.440) is also statistically insignificant, but is opposite to the expansion that would have been observed if the expand reinforcement would have been effective.

**Table 8**

**REGRESSION ANALYSES FOR DISTANCES 2 & 3**

Predictor Variables												
DEPEND VARS and ("a")	DIST 1	DIST 2	REDUCE EXPAND GROUP	EXPAND REDUCE GROUP	1ST CONTRL GROUP	GENDER	AGE	HEIGHT	WEIGHT	CALM SC TIME 1	UNCMFO RTABLE TIME 1	ADJ. R SQ.
DIST 2 (23.2)	.452***		-1.627	-3.440	8.532							.352
DIST 2 (46.7)	.408***		-.798	-4.127	10.47*	-6.286	.200	-.014	-.085	-.031	.072	.302
DIST 3 (13.8)		.676***	7.550*	-1.971	3.640							.630
DIST 3 (-20.)		.691***	6.701*	-3.130	1.972	4.193	-.302	.604	-.032	.029	-1.725	.637
* P < .05 ** P < .01 *** P < .001 - ("a" = INTERCEPT) - One Tailed Test For The First Five Predictors N=57												

To get a better view of these results we plotted this regression in a data cube (see Figure 5). The following calculations parallel the calculations done in locating the predicted Second distances ( $D_2$ ) (that is, how high the various groups are located within the cube), but use the means of the appropriate group's initial distances to show how the regressions correspond to the means from Table 1.

### 1.1 Short Equation for the Reduce Then Expand Group

$$\hat{D}_2 = 23.21 + .452(D_1) - 1.627(DRE) - 3.44(DER) + 8.532(D1C)$$

$$\hat{D}_2 = 23.21 + .452(74.4) - 1.627(1) - 3.44(0) + 8.532(0)$$

$$\hat{D}_2 = 55.3$$

$D_1$  = mean for initial distance preferences

$\hat{D}_2$  = predicted mean for Second distance preferences

DRE = dummy variable Reduce-Then-Expand

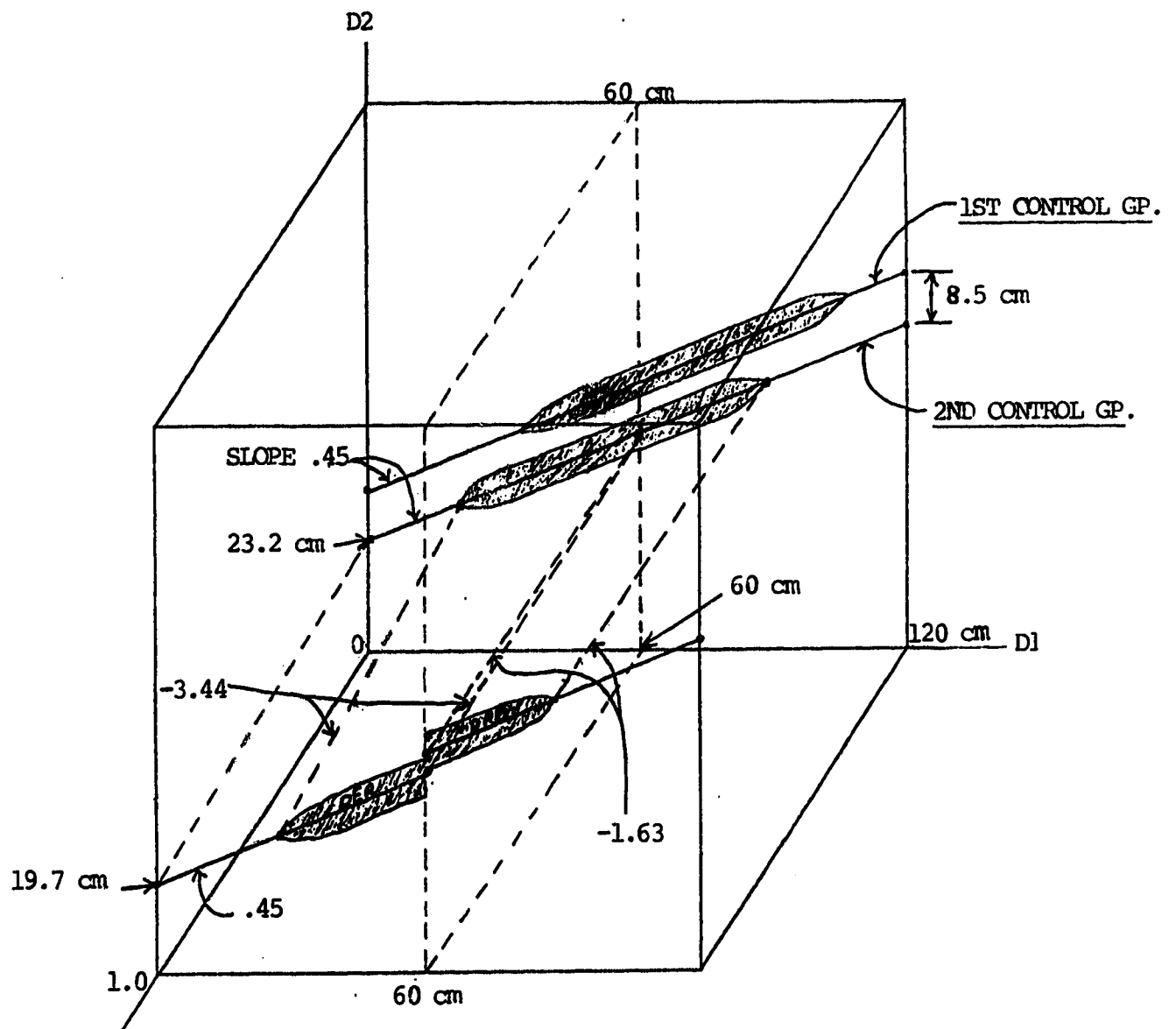
DER = dummy variable Expand-Then-Reduce

D1C = dummy variable for the first control group

Summing up the product of each value in equation 1.1 provides the expected value for the average second distance preferences for individuals in the Reduce-Then-Expand group. The results of the equation are consistent with the means from Table 1, as the mean First distance preference is 74.4 cm ( $D_1$ ) and the calculated value for the Second distance mean ( $D_2$ ) is 55.3 cm.

**Figure 5**

Cube Diagram for Distances 1 and 2



### 1.2 Short Equation for the Expand Then Reduce Group

$$\hat{D}_2 = 23.21 + .452(D_1) - 1.627(DRE) - 3.44(DER) + 8.532(D1C)$$

$$\hat{D}_2 = 23.21 + .452(51.1) - 1.627(0) - 3.44(1) + 8.532(0)$$

$$\hat{D}_2 = 42.9$$

Contrary to our expectation that the Expand-Then-Reduce treatment group would display an expansion of preferred distance at the second observation, these subjects also displayed a reduction in their preferred distances (-3.440 cm), though this was also too small a change to be significant.

### 1.3 Short Equation for the 1ST Control Group

$$\hat{D}_2 = 23.21 + .452(D_1) - 1.627(DRE) - 3.44(DER) + 8.532(D1C)$$

$$\hat{D}_2 = 23.21 + .452(65.6) - 1.627(0) - 3.44(0) + 8.532(1)$$

$$\hat{D}_2 = 61.4$$

The Second distance preferences of individuals in the first control group were on average 8.5 cm larger than the Second distance preferences of individuals with comparable initial distance preferences in the other control group. This difference is not significant, though it is very close. Note that the 8.5 cm difference does not correspond to the mean difference between the two control groups reported in Table 1 because there is no controlling for prior distance or initial distance in Table 1.

By controlling for all the variables in the long regression,

the difference between the two control groups increases to about 10.5 cm, which is significant at the .05 level if we adopt a one-tailed test. This says that something about the absence of point allocation feedback, perhaps the uncertainty created by repeated unevaluated exchanges, resulted in preferences for larger Second distances. We could not find any reasonable interpretation for why this could be due to the characteristics of the 2nd experimental assistant. Controlling for  $D_1$  controls for initial response differences to this assistant, and hence any connection to  $D_2$  requires a delayed effect type argument which seems unreasonable.

#### Regression Analysis with More Control Variables

The slopes for gender, age, height, weight, calm SC 1, and uncomfortable 1 indicate that these are not statistically significant predictors of Second distance preferences, and since we observe essentially the same pattern for the experimental treatment groups, no further comment seems necessary.

#### Regression Analysis for Third Distance

Still using Table 8, we can see that the strongest predictor of Third distance preferences was the subjects' Second distance preferences ( $b = .676$ ,  $p < .001$ ). The Second distance preference accounts for about 49% of the variance, which is most of the overall Adjusted  $R^2$  of .630. The positive slope indicates that for every additional 1 cm in Second preferred distance, there was a

corresponding .676 cm contribution to the Third distance preference. That is, about two-thirds of the subjects' Second distance preferences persisted to the Third distance measurement.

As we hypothesized, the reduce-expand treatment group was a statistically significant predictor of Third distance preferences ( $b = 7.55$ ,  $p < .05$ ), accounting for about 4% of the variance. The positive slope indicates that the Third distance preferences for subjects receiving the expand treatment were, on average, about 7.5 cm larger than those for comparable individuals in the second control group.

As expected, the expand-reduce treatment group displayed a reduction of preferred distance at the Third observation ( $-1.971$ ). The negative slope indicates that subjects in this treatment group displayed Third distance preferences, on average, about 1.9 cm smaller than those for comparable individuals in the second control group, but this decline was too small to be statistically significant.

The Third distance preferences of individuals in the first control group were on average 3.6 cm larger than the Third distance preferences of individuals with comparable Second distance preferences in the other control group, though this was also too small a difference to be statistically significant.

The slopes for gender, age, height, weight, calm SC 1, and uncomfortable 1 indicate that these variables are not statistically significant predictors for Third distance preferences.

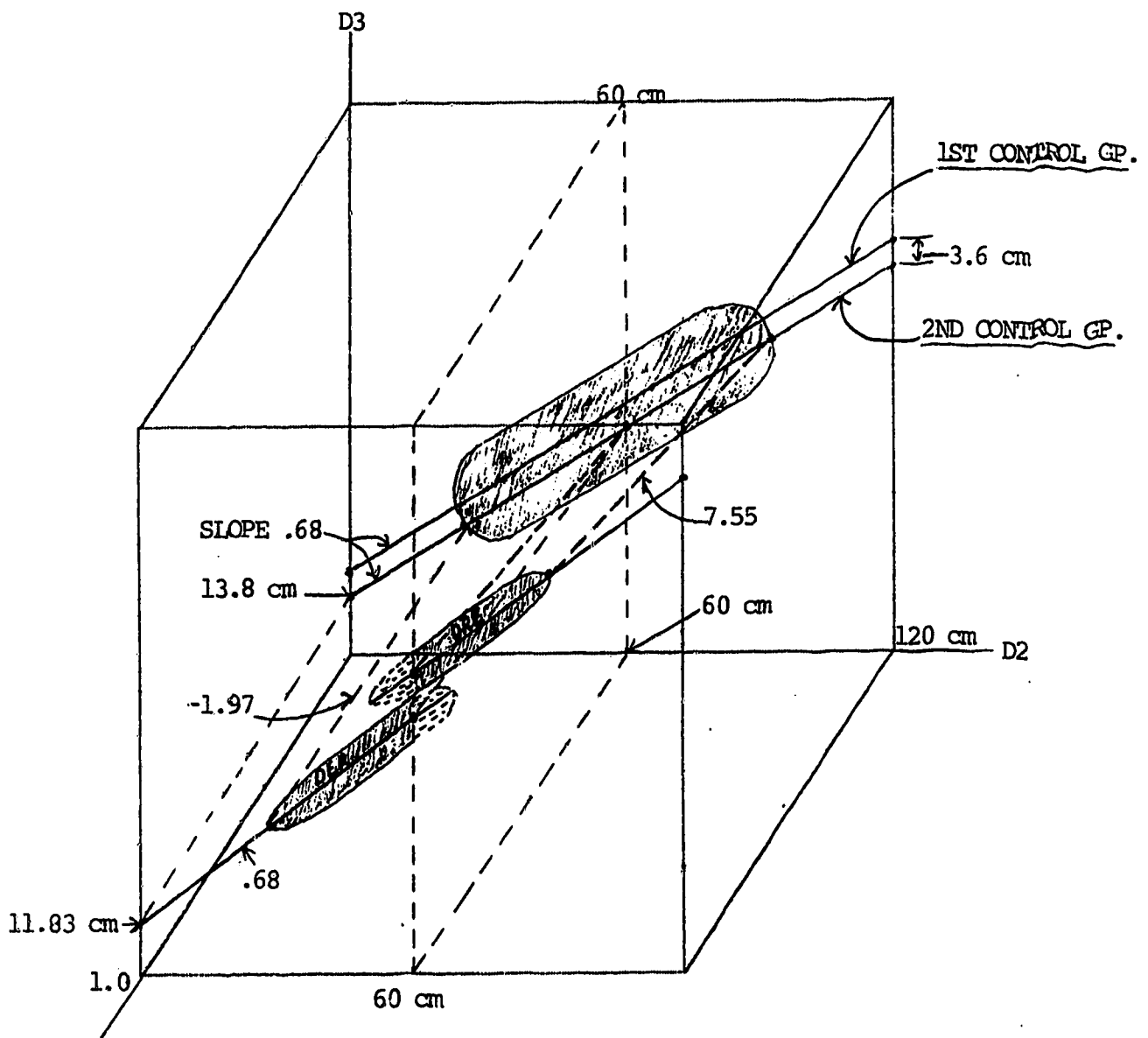


See Figure 6 for a three-dimensional representation of the short regression with Third distance as the dependent variable. Note that the shading depicts the placement of individual cases in the various groups in Figures 5 and 6, and under-states the degree of variability in the subjects' First, Second and Third distances.

Depicting the true degree of variability in the dependent variables would have unnecessarily complicated these figures. A more realistic representation of the within group vertical spread of cases can be retained by taking the square root of the error variance from each of the regressions. For Figure 5 the square root of 180.7 is 13.4, and for Figure 6 the square root of 95.8 is 9.8. That is, roughly two-thirds of the cases should fall within this distance above and below the regression lines for the groups in these figures.

Figure 6

Cube Diagram for Distances 2 and 3



### Regression Analysis for Likert Items

We have now seen that only one of the four potential treatment effects on distance preferences was in fact statistically demonstrable. This section presents an unplanned analysis which examines whether the subjects' feelings, at a particular distance, were altered by the reinforcers.

Recall that both the first and second reinforcement trials began with the subject approaching to a moderate distance of 95 cm, namely to location "C", and that the subjects report their feelings at this distance prior to receiving their point allocation. The question we now address is whether the reduce-first subjects became more comfortable or calm when they returned to this moderate distance as a result of receiving prior reinforcements for maintaining small distances, and whether the expand-first subjects became less comfortable or less calm as a result of having received prior reinforcements for maintaining large distances. Note that we can only examine the first treatment of the subjects in this fashion since no Likert scale measurements were made after completion of the second set of reinforcement trials.

The Likert scale scores at time-7 follow, and hence could be influenced by, the administration of one of the reinforcement schedules (expand or reduce, depending on which treatment group the subject is in) and are immediately prior to the beginning of the second reinforcement schedule. Thus, the Likert scores at time-7 could not be influenced by even the first of the point allocations for the second reinforcement schedule planned for that subject.

In all of the regressions using the time-7 Likert items as dependent variables, the strongest predictors were the time-1 measurements for the corresponding Likert items (see Table 9). This is indicative of the stability of the subjects' responses, and is of little interest, other than as a sign that these items behave consistently and hence are not all measurement error. Only one of the sixteen possible effects of the treatment groups is statistically significant.

On average, subjects in the expand-first treatment condition were more calm at time-7 than corresponding subjects in the second control group. That is, the positive slope indicates that subjects in the expand treatment condition measured .851 points higher (more calm), on the 7-point scale, than corresponding subjects in the control condition. This difference is not particularly trustworthy considering that 1 out of every 20 effects we examine are likely to be mere random sampling fluctuations if we use a .05 level of significance. Here we examine 16 possible effects and one is significant, hence we are nearly at what chance would predict. Furthermore, this difference is significant only if we control for all the variables in the long regression. Since none of these other predictors are significant, each could be dropped, and hence we should return to the short equation in which the slope is insignificant.

Overall, we must conclude that the reinforcements seem to have made no difference to the feelings of the subjects at the moderate distance from the subject.

**Table 9**

**REGRESSION ANALYSIS FOR CALM TIME 7 & UNCOMFORTABLE TIME 7**

Predictor Variables												
DEPEND VARS and ("a")	CALM TIME 1	UNCOMF RTABLE TIME 1	REDUCE GROUP	EXPAND GROUP	1ST CNTRL GROUP	GENDER	AGE	HEIGHT	WEIGHT	CALM SC TIME 1	CALM SC TIME 7	ADJ. R SQ.
CALM TIME 7 (3.78)	.363***		.461	.617	.573							.218
CALM TIME 7 (-3.59)	.348***		.588	.851*	.617	.362	.033	.081	.002	.003	-.002	.218
UNCMFR TIME 7 (1.50)		.269*	-.091	-.080	-.497							.085
UNCMFR TIME 7 (4.67)		.281*	-.172	-.232	-.600	-.577	-.027	-.012	-.006	-.007	-.007	.034
("a" = INTERCEPT)												
* P < .05												
** P < .01												
*** P < .001												
N=57												

Table 9 - Continued

## REGRESSION ANALYSIS FOR SECURE TIME 7 &amp; ASSURED TIME 7

DEPEND VARS and ("a")	Predictor Variables											ADJ. R SQ.	
	SECURE TIME 1	ASSURD TIME 1	REDUCE GROUP	EXPAND GROUP	1ST CNTRL GROUP	GENDER	AGE	HEIGHT	WEIGHT	ASSURE SC TIME 1	ASSURE SC TIME 7		
SECURE TIME 7 (4.37)	.252**		.241	.433	.576								.147
SECURE TIME 7 (3.49)	.229*		.306	.529	.671	.054	.025	.001	.003	-.003	.003		.062
ASSURD TIME 7 (3.05)		.521***	.027	.037	.375								.346
ASSURD TIME 7 (-1.12)		.528***	.114	.269	.466	.393	.024	.030	.007	-.007	.007		.310

\* P < .05  
 \*\* P < .01  
 \*\*\* P < .001

("a" = INTERCEPT)

N=57

### Regression Analysis for Skin Conductance

A similar analysis was attempted for skin conductance, to see if the reinforcements altered subjects' skin conductance as the subjects maintained a moderate distance from the assistant.

Using Table 10, the only statistically significant predictor of skin conductance at time-7 was the subjects' skin conductance at time-1 ( $b = .984$ ,  $p < .001$ ). The amount of skin conductance at time-1 accounted for most of the variance in later skin conductances. This again provides us with evidence that the skin conductance measurements are stable, but this is not the key issue.

The slopes for the reduce treatment condition, the expand condition, our 1st control group, gender, age, height, weight, calm SC time 1, and uncomfortable time-1 were not statistically significant predictors of skin conductance at time-7. Hence, again we have no evidence of any treatment effects, and the additional analysis has provided no new developments.

Table 10

## REGRESSION ANALYSIS FOR SKIN CONDUCTANCE AT CALM QUESTION 7

DEPEND VARS and ("a")	Predictor Variables										ADJ. R SQ.	
	CALM SC TIME 1	REDUCE GROUP	EXPAND GROUP	1ST CONTROL GROUP	GENDER	AGE	HEIGHT	WEIGHT	UNCOMFORTABLE TIME 1			
CALM SC TIME 7 (-2.09)	.984***	-3.757	-6.480	-8.350								.948
CALM SC TIME 7 (57.46)	1.001***	2.436	-8.750	-7.456	-6.562	.039	-.515	-.136	1.377			.947
* P< .05 ** P< .01 *** P< .001 ("a" = INTERCEPT)												



### Discussion

This study began as an attempt to examine the relationship between interpersonal distance preferences and positive reinforcement. We operationalized the study by systematically reinforcing individuals at small or large interpersonal distances, and subsequently measuring changes in their approach distances on another individual. The most fundamental analyses were the regressions in which the dependent variables were the second and third distances, and the independent variables were the reduce and expand treatment conditions. Overall, we found only one of the four relevant regression slopes to be significant. Subjects' interpersonal distance preferences were significantly expanded for the third distance measurements. The distance measurements for subjects in expand first condition and the two reduce conditions were not significantly different from the subjects in the control condition. While not as consistent as we would have preferred, these results indicate that positive reinforcement is capable of manipulating interpersonal distance preferences.

A possible explanation for why the reinforcers lacked effectiveness at first, may reside in the overwhelming initial amount of information confusing subjects about the value of the points awarded to them. Hence, the subjects may have been so overwhelmed or distracted that the strength of the points, as reinforcers, was lost for the first experimental trials. In the

second experimental trials, subjects were more aware of the value of the points (fewer distractions), allowing the reinforcement value of the points to emerge. In view of this, the differences between the first and second distance measurements seem invalid and the starting point for future research should begin with the differences between the second and third distance measurements. Future research should also include additional experimental trials (eg. third and fourth sequences) to determine whether the reinforcing strength of points is indeed diminished only in initial experimental trials and whether their reinforcing strength reemerges over time.

So far, we have only been able to demonstrate that while positive reinforcement is capable of expanding interpersonal distance preferences, we cannot claim to have demonstrated reinforcements can reduce interpersonal distance preferences. One possible explanation for this expand-only phenomena is that individuals with initially small (<60 cm) interpersonal distance preferences are not as susceptible to modification as are individuals with initially large (>60 cm) interpersonal distance preferences. The individuals in the Expand-Then-Reduce group initially displayed small interpersonal distance preferences and did not experience a significant change to their distance preferences for the duration of the experiment. Those subjects whose interpersonal distances expanded in response to the reinforcement had displayed initially large distance preferences,

which were supposed to be shrunk by a reduce condition (which in fact did not shrink), but which expanded when they encountered the reinforcements at large distances. The ineffectiveness of the initial reinforcement to expand initially small interpersonal distances allowed the small distance preferences to persist to the second set of reinforcers, which tried to reduce these distance preferences. The reinforcements used in the experiment were not strong enough to further shrink these distance preferences beyond their already small size.

In summary, the results are mixed for the predictions of reinforcement theory and the effects of positive reinforcement on interpersonal distance preferences. Positive reinforcement is capable of increasing the size of interpersonal distance preferences, but not for reducing them. Further research is needed to examine the possibilities that the strength of reinforcements varied over time, as well as the possibility that small interpersonal distance preferences are more resistant to change than are large distance preferences.

## References

- Bennett, R. H., & Samson, H.H. Human Performance Under Progressive Ratio Contingencies. *Psychological Record*, 1987, 37(2), 213-218.
- Booraem, J. R. A further look at equilibrium theory: visual interaction as a function of interpersonal distance. *Environmental Psychology and Nonverbal Behavior*, 1977, 1, 122-140.
- Curran, S. S. F., Blatchley, R. J., & Hanlon, T. E. Relationship between body buffer zone and violence as assessed by subjective and objective techniques. *Criminal Justice and Behavior*, 1978, 11, 93-97.
- De Luca, R.V. & Holborn, S.W. Effects of a Fixed-Interval Schedule of Token Reinforcement on Exercise with Obese and Non-Obese Boys. *Psychological Record*, 1985, 35, 525-533.
- Gilmour, D. R., & Walkey, F. H. Identifying violent offenders using a video measure of interpersonal distance. *Journal of Consulting and Clinical Psychology*, 1981, 49, 117-134.
- Harrell, W.A. Physical attractiveness and public intimacy of married couples: An observational study. *Social Behavior and Personality*, 1979, 1, 65-75.
- Hayduk, L.A. Personal Space: An evaluative and orienting overview. *Psychological Bulletin*, 1978, 85, 117-134.
- Hayduk, L.A. Personal Space: Where we now stand. *Psychological Bulletin*, 1983, 94, 293-335.
- Hayduk, L.A. The Permeability of Personal space. *Canadian Journal Of Behavioural Science*, 1981, 13, 274-287.
- Hayduk, L.A. The Shape of Personal Space: An Experimental Investigation. *Canadian Journal Of Behavioural Science*, 1981, 13, 87-93. (b).
- Hayduk, L.A. *Structural Equation Modeling with Lisrel: Essentials and Advances*, Baltimore, Maryland.:John Hopkins University Press, 1987.
- Hildreth, A. M., Derogatis, L. R., & McCusker, K. Body buffer zone and violence: a reassessment and confirmation. *American Journal of Psychiatry*, 1971, 127, 1641-1645.

- King, G. R., & Logue, A. W. Humans' sensitivity to variation in reinforcer amount: Effects of the method of reinforcer delivery. *Journal of the Experimental Analysis of Behavior*, 1990, 53, 33-45.
- Kinzel, A. F. (1970) Body buffer zone in violent prisoners. *American Journal of Psychiatry*, 127, 59-64.
- Konecni, V. J., Libuser, L., Morton, H., & Ebbesen, E. B. Effects of a violation of personal space on escape and helping responses. *Journal Of Experimental Social Psychology*, 1975, 11, 288-299.
- McBride, G., King, M.G., & James, J.W. Social proximity effects on galvanic skin responses in adult humans. *The Journal Of Psychology*, 1965, 61, 153-157.
- Reynolds, G. S. *A Primer of Operant Conditioning*, Glenview, Illinois.:Scott, Foresman and Company, 1975.
- Roger, D. B., & Schalekamp, E. E. Body-buffer zone and violence: across-cultural study. *Journal of Social Psychology*, 1976, 98, 153-158.
- Skinner, B. F. *Contingencies of Reinforcement: A Theoretical Analysis*, New York.:Merodith Corporation, 1969.
- Skorjanc, A. D. Interpersonal distance differences in non-offenders as a function of violence in offenders. *Perceptual and Motor Skills*, 1991, 73, 659-662.
- Sommer, R. *Personal Space*. Englewood Cliffs, New Jersey: Prentice-Hall, 1969, 29.
- Strube, M. J., & Werner, C. Interpersonal distance and personal space:: A conceptual and methodological note. *Journal of Nonverbal Behavior*, 1982, 6, 163-170.
- Sundstrom, E. & Altman, I. Interpersonal relationships and personal space:: Research review and theoretical model. *Human Ecology*, 1976, 4, 47-67.
- Torgrud, L. J., & Holborn, S. W. The Effects of Verbal Performance descriptions on Nonverbal Operant Responding. *Journal of Experimentanal Analysis of Behavior*, 1990, 54(3), 273-291.
- Thompson, D. E., Aiello, J. R., & Epstein, Y. M. Interpersonal distance Preferences. *Journal of Nonverbal Behavior*, 1979, 4, 113-118.

Wilds, C. E. (1973) Evaluation of a method of predicting violence in offenders. *Criminology, An Interdisciplinary Journal*, 11, 427-435.

**APPENDIX A****COVER STORY AND LOTTERY EXPLANATION**

The purpose of the experiment is to determine different styles of search procedures. The 10 poles labelled A through E correspond to the letters indicated upon the slips of paper in the boxes labelled 1 through 6. Beginning with box number 1, select a slip of paper, look at the letter indicated upon it (A through E), place the slip of paper in the box labelled "USED" and go stand directly in front of one of the poles that corresponds to that letter. After I have asked you a few questions about your feelings, you may select one of the cards from the pole box and tell me the letters indicated upon it. The letters indicated upon the cards correspond with points that are exchangeable for Western Express lottery tickets at the end of the experiment. Once you tell me the letters on the card, you may place it back in the pole box and come back to the table to select a slip of paper from box number 2, following the same procedure as before until all 6 boxes have been chosen from.

APPENDIX B  
RECORD SHEET 1

ID. \_\_\_\_\_

Corridor Approach

Distance

- |    |           |        |        |        |
|----|-----------|--------|--------|--------|
| 1. | _____ cm. | Start: | Reduce | Expand |
| 2. | _____ cm. |        |        |        |
| 3. | _____ cm. |        |        |        |

Sex:        Male        Female

Age:        \_\_\_\_\_ years.

Height:    \_\_\_\_\_ .

Weight:    \_\_\_\_\_ lbs.

Question: What do you think this experiment was about?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_.



**APPENDIX C****Target Box Set-up**

There were a total of 14 target boxes on the Experimenter's Table. The first set of 7 boxes (numbered 1-6 and "USED"), were made accessible to subjects in the Expand reinforcement condition. In each of these 6 target boxes, the slips of paper were labelled as follows:

**Expand Distance Target Boxes**

Box 1 = Cs only

Box 2 = Bs only

Box 3 = Ds only

Box 4 = Es only

Box 5 = Es only

Box 6 = Es only

The second set of 7 boxes (also numbered 1-6 and "USED"), were made accessible to subjects in the Reduce reinforcement condition. In each of these 6 target boxes, the slips of paper were labelled as follows:

**Reduce Distance Target Boxes**

Box 1 = Cs only

Box 2 = Ds only

Box 3 = Bs only

Box 4 = As only

Box 5 = As only

Box 6 = As only



## CODEBOOK

VAR	REC	COL	
VAR01	1	1- 2	SUBJECT IDENTIFICATION NUMBER (CODE ACTUAL NUMBER)
VAR02	1	3- 4	RECORD (CODE ACTUAL NUMBER)
VAR03	1	6- 8	FIRST DISTANCE (CODE ACTUAL CENTIMETERS)
VAR04	1	10-12	SECOND DISTANCE (CODE ACTUAL CENTIMETERS)
VAR05	1	14-16	THIRD DISTANCE (CODE ACTUAL CENTIMETERS)
VAR06	1	18	* REDUCE/EXPAND REINFORCEMENT 1 REDUCE 2 EXPAND
VAR07	1	20	GENDER 1 MALE 2 FEMALE
VAR08	1	22-23	AGE (CODE ACTUAL YEARS)
VAR09	1	25-27	HEIGHT (CODE ACTUAL INCHES)
VAR10	1	29-31	WEIGHT (CODE ACTUAL LBS.)
VAR11	1	34-36	** BASELINE GSR READING AT BEGINNING OF EXPERIMENT (CODE ACTUAL NUMBER INDICATED ON GSR MONITOR)
VAR12	1	38-40	* HIGHEST GSR READING FOR EACH POSITION ** (CODE ACTUAL NUMBER INDICATED ON GSR MONITOR)
VAR13	1	42-44	* GSR READING AFTER CALM QUESTION ASKED ** (CODE ACTUAL NUMBER INDICATED ON GSR MONITOR)
VAR14	1	46-48	* GSR READING AFTER ASSURED QUESTION ASKED ** (CODE ACTUAL NUMBER INDICATED ON GSR MONITOR)

## VAR REC COL

VAR15	1	50
VAR16	1	51
VAR17	1	52
VAR18	1	53
VAR19	1	55

THE FOLLOWING 4 QUESTIONS WERE ASKED IN THE SAME WAY:

[ON A SCALE OF "1" THROUGH "7" WHERE "1" IS "THREATENED" AND "7" IS "SECURE", CAN YOU TELL ME HOW "THREATENED" THROUGH "SECURE" YOU FEEL?]

- \* HOW THREATENED THROUGH SECURE DO YOU FEEL?  
1 THREATENED  
7 SECURE
- \* HOW COMFORTABLE THROUGH UNCOMFORTABLE DO YOU FEEL?  
1 COMFORTABLE  
7 UNCOMFORTABLE
- \* HOW NERVOUS THROUGH CALM DO YOU FEEL?  
1 NERVOUS  
7 CALM
- \* HOW EMBARRASSED THROUGH SELF ASSURED DO YOU FEEL?  
1 EMBARRASSED  
7 SELF ASSURED

CONTROL OR EXPERIMENTAL SUBJECTS

- \*\*\* 1 CONTROL GROUP #1
- 2 EXPERIMENTAL
- \*\*\* 3 CONTROL GROUP #2

[THERE ARE 12 RECORDS FOR EACH OF THE 44 CASES]

- \* COLUMN 18, AND COLUMNS 38 THROUGH 53 OF RECORDS 2 THROUGH 12 CONTAIN CORRESPONDING INFORMATION FOR EACH OF THE 11 ADDITIONAL EXPERIMENTAL APPROACHES.

[FOR THESE VARIABLES, RECORDS 2 THROUGH 12 ARE CODED THE SAME AS RECORD 1 IN EACH OF THE 44 CASES]

- \*\* THE GSR READINGS LOCATED IN COLUMNS 38 THROUGH 48 INDICATE THE MONITOR REGISTERED SKIN CONDUCTANCE IN MILLIAMPS. THE NUMBERS RECORDED HERE ARE IN MILLIAMPS X 10.0, SO THAT THE ACTUAL AMPERAGE IN MILLIAMPS CAN BE RETRIEVED BY DIVIDING THE REPORTED AMPERAGE BY 10.0
- \*\*\* SUBJECTS IN CONTROL GROUP #1 WERE NOT TOLD HOW MANY POINTS THEY WERE EARNING DURING THE EXPERIMENT.

SUBJECTS IN CONTROL GROUP #3 WERE GIVEN ARBITRARY NUMBERS OF POINTS DURING THE EXPERIMENT.

## DATA APPENDIX

1234567890123456789012345678901234567890123456789012345

0101	045	030	045	1	2	19	063	110	090	128	116	120	6256	2
0102				1						144	140	128	6266	
0103				1						154	142	143	6256	
0104				1						151	146	149	6266	
0105				1						162	152	158	6266	
0106				1						180	168	156	6266	
0107				2						120	128	138	6266	
0108				2						143	139	145	6266	
0109				2						140	143	147	6266	
0110				2						165	158	163	6267	
0111				2						159	153	150	6267	
0112				2						146	149	150	6267	
0201	050	030	045	1	2	18	068	150	098	098	100	101	3644	2
0202				1						116	124	120	4555	
0203				1						122	127	127	5555	
0204				1						161	149	136	5645	
0205				1						171	156	148	6655	
0206				1						178	152	152	5544	
0207				2						097	098	097	5366	
0208				2						150	161	170	6266	
0209				2						150	146	134	6266	
0210				2						169	181	178	6266	
0211				2						183	186	189	6276	
0212				2						186	181	171	6266	
0301	080	057	045	1	1	18	071	185	140	199	175	164	3456	2
0302				1						165	160	154	5466	
0303				1						180	176	172	4655	
0304				1						190	189	181	2755	
0305				1						180	162	160	3636	
0306				1						171	166	166	4645	
0307				2						161	170	171	6266	
0308				2						178	169	169	5446	
0309				2						184	178	173	6267	
0310				2						200	178	178	7266	
0311				2						228	213	198	6256	
0312				2						248	224	211	5356	
0401	115	075	065	1	2	21	065	120	094	080	082	082	4434	2
0402				1						089	091	093	4534	
0403				1						100	105	102	5344	
0404				1						097	098	098	4344	
0405				1						109	110	111	5344	
0406				1						113	112	108	5344	
0407				2						071	062	060	5354	
0408				2						073	080	080	5354	
0409				2						086	081	080	5354	
0410				2						090	094	089	5354	
0411				2						102	104	102	5255	
0412				2						103	102	103	5355	

**1234567890123456789012345678901234567890123456789012345**

0501	065	055	042	2	1	19	071	125	092	096	087	090	2335	2
0502				2						100	096	093	5435	
0503				2						096	096	096	6535	
0504				2						091	095	091	5544	
0505				2						094	091	092	6254	
0506				2						090	085	088	6455	
0507				1						060	061	061	4554	
0508				1						064	067	062	4346	
0509				1						068	069	064	3536	
0510				1						073	066	066	2626	
0511				1						070	068	067	2615	
0512				1						066	066	066	2715	
0601	075	060	055	1	1	23	072	190	139	158	147	150	5635	2
0602				1						186	154	147	6436	
0603				1						190	162	167	7266	
0604				1						184	164	160	7167	
0605				1						170	154	145	7177	
0606				1						169	169	163	7177	
0607				2						163	156	146	7177	
0608				2						159	148	146	7177	
0609				2						167	148	149	7667	
0610				2						176	159	158	7177	
0611				2						188	163	160	5267	
0612				2						186	165	161	6277	
0701	061	055	057	1	1	20	072	165	042	048	047	043	6266	2
0702				1						064	050	051	6266	
0703				1						065	058	056	6255	
0704				1						066	060	062	5256	
0705				1						073	067	072	6256	
0706				1						078	069	074	6266	
0707				2						050	048	047	5354	
0708				2						055	052	055	5256	
0709				2						062	061	063	5266	
0710				2						069	061	065	6266	
0711				2						071	071	072	6256	
0712				2						081	077	077	6266	
0801	060	035	033	2	2	20	060	120	069	073	074	070	3347	2
0802				2						073	068	067	3344	
0803				2						073	071	073	6667	
0804				2						069	071	068	7667	
0805				2						070	067	065	7577	
0806				2						069	065	067	7377	
0807				1						063	062	063	7177	
0808				1						070	071	068	7177	
0809				1						073	066	064	6277	
0810				1						076	070	067	6254	
0811				1						069	065	063	6362	
0812				1						065	064	063	7177	

1234567890123456789012345678901234567890123456789012345

0901	059	050	060	2	1	18	074	145	179	250	253	249	4246	2
0902				2						270	262	260	3424	
0903				2						279	279	262	6256	
0904				2						271	277	264	6266	
0905				2						269	264	263	6266	
0906				2						267	262	264	6267	
0907				1						269	260	255	5355	
0908				1						260	252	251	6366	
0909				1						282	279	273	3535	
0910				1						281	279	277	2624	
0911				1						284	280	281	1622	
0912				1						261	253	251	2435	
1001	055	045	050	2	1	20	072	155	109	113	110	113	3466	2
1002				2						114	110	109	5266	
1003				2						111	113	116	7267	
1004				2						116	114	113	7156	
1005				2						110	112	110	7177	
1006				2						106	104	105	7177	
1007				1						097	103	099	7267	
1008				1						101	101	099	7177	
1009				1						100	100	100	7177	
1010				1						105	101	101	7177	
1011				1						104	101	101	7177	
1012				1						106	104	105	7177	
1101	075	042	045	1	2	18	066	135	044	045	035	039	5536	2
1102				1						046	046	045	4346	
1103				1						052	048	050	3456	
1104				1						052	049	047	3546	
1105				1						052	047	047	2346	
1106				1						050	047	048	5556	
1107				2						047	045	045	6356	
1108				2						050	047	048	3256	
1109				2						048	040	040	5356	
1110				2						039	039	038	7257	
1111				2						040	041	040	7267	
1112				2						046	039	039	7267	
1201	040	032	038	2	2	22	056	089	019	029	030	029	6265	2
1202				2						040	035	040	5355	
1203				2						037	033	038	6266	
1204				2						042	039	041	7176	
1205				2						045	044	046	6255	
1206				2						045	043	045	6266	
1207				1						025	022	025	5355	
1208				1						032	037	031	5255	
1209				1						037	045	039	4445	
1210				1						049	041	040	3534	
1211				1						041	049	045	3534	
1212				1						047	046	043	3443	

1234567890123456789012345678901234567890123456789012345

1301	060	050	045	2	2	18	063	125	100	102	101	100	4234	2
1302				2						116	107	109	5255	
1303				2						122	118	110	5255	
1304				2						129	119	116	5255	
1305				2						117	112	111	6255	
1306				2						116	115	112	6256	
1307				1						091	087	084	5254	
1308				1						096	099	092	5425	
1309				1						100	097	092	5445	
1310				1						112	108	106	5255	
1311				1						110	106	105	4245	
1312				1						110	106	106	5345	
1401	050	033	031	2	2	18	062	115	032	058	051	052	5333	2
1402				2						057	055	054	4243	
1403				2						058	054	057	5433	
1404				2						062	063	064	5344	
1405				2						065	063	060	5355	
1406				2						066	060	059	5255	
1407				1						046	045	044	5443	
1408				1						049	050	051	4433	
1409				1						053	051	051	3433	
1410				1						060	057	058	3534	
1411				1						057	055	056	4334	
1412				1						061	058	058	5344	
1501	057	032	028	2	2	18	067	125	032	039	040	041	7177	2
1502				2						042	042	043	7177	
1503				2						041	042	040	7177	
1504				2						042	040	040	7177	
1505				2						042	041	040	7177	
1506				2						043	044	043	7177	
1507				1						030	030	031	7177	
1508				1						033	033	032	7177	
1509				1						035	035	036	7177	
1510				1						036	035	034	7177	
1511				1						036	035	035	7177	
1512				1						037	036	036	7177	
1601	050	028	031	2	2	18	064	128	030	030	030	030	6265	2
1602				2						036	035	035	6177	
1603				2						037	037	036	7177	
1604				2						038	037	037	7177	
1605				2						038	039	039	7177	
1606				2						039	039	039	7177	
1607				1						030	031	031	7177	
1608				1						034	034	034	7177	
1609				1						036	035	036	7177	
1610				1						040	039	039	7177	
1611				1						041	040	040	7177	
1612				1						041	041	041	7177	



**1234567890123456789012345678901234567890123456789012345**

1701	045	035	028	2	2	31	066	114	030	028	028	027	7156	2
1702				2						045	042	039	7166	
1703				2						043	042	041	7177	
1704				2						045	043	042	7177	
1705				2						043	040	040	7177	
1706				2						047	042	042	7177	
1707				1						020	020	020	7177	
1708				1						024	023	023	7177	
1709				1						025	024	023	7177	
1710				1						025	025	024	7177	
1711				1						024	024	024	7177	
1712				1						026	026	024	7177	
1801	075	032	060	1	2	18	068	150	129	133	128	136	6134	2
1802				1						126	131	124	7145	
1803				1						129	126	124	4344	
1804				1						141	138	138	2233	
1805				1						133	142	133	3344	
1806				1						134	136	139	4445	
1807				2						110	112	114	7166	
1808				2						116	113	115	7266	
1809				2						118	110	118	7166	
1810				2						117	118	114	7166	
1811				2						114	110	109	7167	
1812				2						122	115	118	7166	
1901	045	035	032	2	2	18	062	120	015	018	018	017	5233	2
1902				2						024	023	022	6254	
1903				2						024	024	024	5254	
1904				2						029	028	026	5254	
1905				2						028	029	029	6265	
1906				2						030	031	030	6265	
1907				1						013	012	012	6265	
1908				1						014	011	012	6265	
1909				1						016	017	018	6255	
1910				1						017	014	016	5355	
1911				1						021	020	022	5334	
1912				1						023	020	020	5345	
2001	061	033	028	1	2	18	067	120	054	050	046	040	5257	2
2002				1						052	052	049	6267	
2003				1						056	055	055	6267	
2004				1						060	056	055	6366	
2005				1						064	061	060	6267	
2006				1						063	063	061	7167	
2007				2						034	033	032	6256	
2008				2						040	041	040	6266	
2009				2						045	045	045	7267	
2010				2						048	048	048	7266	
2011				2						051	052	051	7167	
2012				2						050	049	048	7177	

1234567890123456789012345678901234567890123456789012345

2101	105	085	090	1	1	18	071	180	098	101	098	099	5346	2
2102				1						107	103	103	5246	
2103				1						098	094	090	4445	
2104				1						095	093	091	4345	
2105				1						094	093	092	4434	
2106				1						094	090	091	4344	
2107				2						099	102	101	4555	
2108				2						109	103	104	4445	
2109				2						099	099	100	5345	
2110				2						098	095	094	5345	
2111				2						096	094	093	5345	
2112				2						093	093	091	5355	
2201	090	085	090	1	2	19	064	110	017	021	021	021	6266	2
2202				1						024	023	023	6266	
2203				1						026	024	025	6266	
2204				1						027	024	023	5366	
2205				1						029	027	029	5366	
2206				1						032	030	028	5366	
2207				2						017	018	019	5366	
2208				2						022	021	020	5366	
2209				2						024	023	023	5366	
2210				2						027	026	025	6266	
2211				2						027	027	027	6266	
2212				2						029	030	029	6266	
2301	067	062	061	1	1	21	070	150	064	061	062	064	3434	2
2302				1						079	078	077	5454	
2303				1						079	078	078	6355	
2304				1						081	079	078	6266	
2305				1						081	082	083	6266	
2306				1						081	079	080	7266	
2307				2						062	067	069	6266	
2308				2						077	071	072	7166	
2309				2						078	073	072	7166	
2310				2						080	080	080	7177	
2311				2						090	084	084	7176	
2312				2						087	086	086	7177	
2401	075	063	050	1	1	19	066	125	029	039	038	037	6356	2
2402				1						044	043	042	6256	
2403				1						049	047	046	6266	
2404				1						055	052	051	6265	
2405				1						064	060	057	6255	
2406				1						057	056	055	5255	
2407				2						039	037	036	7177	
2408				2						048	045	047	6177	
2409				2						053	053	052	6266	
2410				2						059	058	057	6266	
2411				2						064	060	060	6266	
2412				2						064	062	064	7177	

1234567890123456789012345678901234567890123456789012345

2501	045	075	075	2	2	18	063	120	039	051	052	051	7346	2
2502				2						064	064	062	7567	
2503				2						065	064	064	7267	
2504				2						068	070	069	6267	
2505				2						072	073	072	5247	
2506				2						073	073	073	4347	
2507				1						048	048	048	6267	
2508				1						049	047	048	6267	
2509				1						051	049	048	6367	
2510				1						058	058	055	6267	
2511				1						059	061	060	6267	
2512				1						066	065	064	6267	
2601	080	073	063	1	2	34	065	125	023	026	024	024	5255	2
2602				1						028	026	026	6266	
2603				1						028	027	027	6166	
2604				1						031	028	028	7177	
2605				1						031	031	030	7177	
2606				1						032	030	032	7177	
2607				2						018	018	019	7177	
2608				2						021	021	021	7177	
2609				2						022	022	023	7177	
2610				2						025	025	026	7177	
2611				2						027	027	027	7177	
2612				2						029	028	029	7177	
2701	040	045	034	2	2	38	062	135	026	027	026	026	7266	2
2702				2						031	028	030	7267	
2703				2						033	033	033	7177	
2704				2						033	033	033	7177	
2705				2						034	034	033	7177	
2706				2						035	037	036	7177	
2707				1						020	022	022	7177	
2708				1						024	024	024	7177	
2709				1						027	027	026	7177	
2710				1						029	028	027	7177	
2711				1						031	030	030	7177	
2712				1						030	030	030	7177	
2801	062	045	075	1	1	18	071	155	046	055	050	052	6256	2
2802				1						059	058	056	6256	
2803				1						059	058	060	6356	
2804				1						059	058	063	5356	
2805				1						065	065	065	5266	
2806				1						070	065	066	5266	
2807				2						066	069	068	6266	
2808				2						083	075	079	5256	
2809				2						076	073	072	6366	
2810				2						095	093	095	6566	
2811				2						095	093	092	6356	
2812				2						100	096	097	6356	

1234567890123456789012345678901234567890123456789012345

2901	075	057	065	1	2	19	067	107	028	028	030	030	6243	2
2902				1						032	032	033	5225	
2903				1						036	036	035	3422	
2904				1						039	040	039	2623	
2905				1						042	040	041	1622	
2906				1						043	041	043	3445	
2907				2						043	044	046	6255	
2908				2						054	051	052	5266	
2909				2						053	054	053	5366	
2910				2						055	055	056	5266	
2911				2						060	059	059	6265	
2912				2						064	063	064	5366	
3001	050	060	058	2	2	20	062	160	024	028	028	028	5426	1
3002				2						029	029	029	5556	
3003				2						030	031	031	6266	
3004				2						031	030	030	6266	
3005				2						031	031	031	7256	
3006				2						031	031	031	6266	
3007				1						019	019	019	7226	
3008				1						022	022	022	6267	
3009				1						023	024	024	7166	
3010				1						025	025	026	6166	
3011				1						027	026	026	6126	
3012				1						028	027	027	6256	
3101	105	090	065	2	2	18	069	132	028	034	030	028	5366	1
3102				2						040	043	042	6276	
3103				2						046	046	046	7276	
3104				2						053	045	049	7177	
3105				2						056	050	053	7177	
3106				2						058	053	056	7177	
3107				1						036	037	038	7177	
3108				1						055	057	058	7277	
3109				1						061	061	058	7277	
3110				1						059	061	059	7276	
3111				1						072	074	073	7276	
3112				1						073	072	071	7276	
3201	070	050	048	1	1	20	070	170	102	106	087	088	7266	1
3202				1						100	101	101	7177	
3203				1						120	085	088	7265	
3204				1						114	105	105	6265	
3205				1						110	110	113	6355	
3206				1						117	113	112	5355	
3207				2						069	071	070	6266	
3208				2						075	070	073	6265	
3209				2						075	079	081	7276	
3210				2						081	082	084	7176	
3211				2						080	080	080	7276	
3212				2						082	087	088	7166	

1234567890123456789012345678901234567890123456789012345

3301	105	050	060	1	1	19	072	160	090	091	088	087	5423	1
3302				1						086	088	087	5253	
3303				1						091	092	090	5443	
3304				1						095	095	093	3533	
3305				1						097	097	098	4433	
3306				1						100	099	101	4344	
3307				2						080	083	081	5444	
3308				2						086	090	090	4433	
3309				2						089	092	092	5443	
3310				2						094	095	095	5444	
3311				2						097	097	097	5245	
3312				2						099	099	099	5344	
3401	070	105	100	1	1	20	072	154	077	084	083	081	6224	1
3402				1						088	089	087	7267	
3403				1						089	084	086	6266	
3404				1						096	093	091	7267	
3405				1						094	088	088	7266	
3406				1						090	087	088	7167	
3407				2						079	076	078	7166	
3408				2						081	078	081	7167	
3409				2						081	083	080	7167	
3410				2						084	083	082	7167	
3411				2						084	085	086	7277	
3412				2						091	093	090	7277	
3501	062	058	058	1	1	20	074	200	079	100	090	090	6433	1
3502				1						098	094	090	6556	
3503				1						090	086	084	6355	
3504				1						097	099	096	5565	
3505				1						113	104	101	5355	
3506				1						111	100	100	5354	
3507				2						058	062	060	6366	
3508				2						067	064	063	6266	
3509				2						070	069	068	6266	
3510				2						076	082	081	7266	
3511				2						083	080	078	7266	
3512				2						083	088	088	7266	
3601	040	045	045	2	1	21	067	165	296	294	291	292	7177	1
3602				2						330	312	311	7177	
3603				2						314	304	296	7177	
3604				2						310	305	310	7177	
3605				2						321	314	313	7177	
3606				2						333	332	323	7177	
3607				1						299	301	300	7177	
3608				1						305	297	299	7177	
3609				1						301	299	295	7177	
3610				1						326	321	320	7177	
3611				1						319	312	311	7177	
3612				1						315	310	305	7177	

1234567890123456789012345678901234567890123456789012345

3701	055	055	065	2	2	19	068	130	097	096	102	109	5467	1
3702				2						112	128	131	3267	
3703				2						121	120	118	6267	
3704				2						115	115	117	7177	
3705				2						107	114	113	7177	
3706				2						111	106	107	7177	
3707				1						079	078	080	7177	
3708				1						076	075	076	7177	
3709				1						081	077	079	7177	
3710				1						079	078	083	7567	
3711				1						075	074	077	6567	
3712				1						082	081	080	7277	
3801	075	075	045	1	1	18	068	129	024	024	023	025	6256	1
3802				1						026	025	026	6266	
3803				1						028	027	028	6266	
3804				1						028	027	026	6266	
3805				1						028	027	027	7177	
3806				1						028	028	028	7177	
3807				2						016	018	019	7177	
3808				2						020	021	021	7277	
3809				2						023	021	022	7277	
3810				2						022	022	022	7277	
3811				2						023	025	025	7267	
3812				2						025	025	025	7277	
3901	060	050	063	1	2	19	070	160	038	042	043	043	6256	1
3902				1						044	044	044	5266	
3903				1						044	045	045	6166	
3904				1						052	051	053	7167	
3905				1						049	047	047	7266	
3906				1						046	043	044	7266	
3907				2						025	024	025	6176	
3908				2						028	029	030	7166	
3909				2						028	026	026	7177	
3910				2						028	027	028	7166	
3911				2						029	030	029	7167	
3912				2						029	029	028	7166	
4001	045	038	040	2	1	18	073	165	083	084	086	083	5237	2
4002				2						081	079	080	5347	
4003				2						079	083	082	7167	
4004				2						079	081	080	7177	
4005				2						080	081	082	7177	
4006				2						080	082	082	7177	
4007				1						045	045	044	7177	
4008				1						045	047	049	7177	
4009				1						051	052	053	7177	
4010				1						058	057	061	7177	
4011				1						062	060	060	7177	
4012				1						062	063	064	7177	

1234567890123456789012345678901234567890123456789012345

4101	050	055	045	2	1	21	072	185	122	124	132	133	4434	2
4102				2						145	137	136	5355	
4103				2						134	139	140	5355	
4104				2						133	148	144	6266	
4105				2						133	134	133	6256	
4106				2						133	140	138	7166	
4107				1						120	124	125	6266	
4108				1						124	124	125	6266	
4109				1						125	122	122	6266	
4110				1						125	122	122	6266	
4111				1						127	126	128	6177	
4112				1						128	129	131	7176	
4201	040	045	045	2	2	21	063	130	107	100	101	097	6446	1
4202				2						110	109	108	5456	
4203				2						114	115	113	6257	
4204				2						116	111	113	7367	
4205				2						113	109	111	7267	
4206				2						111	105	106	6277	
4207				1						095	091	091	6267	
4208				1						095	090	094	6266	
4209				1						096	093	093	6266	
4210				1						096	095	098	4356	
4211				1						094	092	093	5346	
4212				1						098	092	094	6367	
4301	045	045	039	2	2	18	068	220	087	118	114	112	4424	1
4302				2						114	105	109	5534	
4303				2						126	119	120	5545	
4304				2						123	121	120	5345	
4305				2						124	120	125	6255	
4306				2						128	129	130	6266	
4307				1						073	075	075	6266	
4308				1						085	091	092	6266	
4309				1						094	092	094	6166	
4310				1						089	090	087	7166	
4311				1						106	100	099	7166	
4312				1						105	099	100	7266	
4401	075	070	075	1	2	20	066	120	028	029	029	030	6166	1
4402				1						032	032	032	6266	
4403				1						033	033	033	5356	
4404				1						033	031	031	5246	
4405				1						031	032	032	4335	
4406				1						033	032	032	6256	
4407				2						020	021	020	6266	
4408				2						021	022	023	6266	
4409				2						024	024	024	6266	
4410				2						025	027	027	7166	
4411				2						028	029	029	7166	
4412				2						029	028	028	7266	

**1234567890123456789012345678901234567890123456789012345**

4501	060	070	061	2	2	23	064	140	049	066	061	062	7157	3
4502				2						056	062	063	7177	
4503				2						068	067	069	7177	
4504				2						062	063	063	7177	
4505				2						067	079	080	7177	
4506				2						084	090	079	7177	
4507				1						059	067	064	7177	
4508				1						054	053	054	7177	
4509				1						065	069	077	7177	
4510				1						082	089	095	7167	
4511				1						079	082	078	7177	
4512				1						073	070	069	7177	
4601	085	040	043	1	1	26	074	178	041	055	057	058	6256	3
4602				1						061	062	063	6256	
4603				1						064	071	069	6266	
4604				1						077	074	071	6266	
4605				1						076	077	074	6266	
4606				1						076	072	069	6267	
4607				2						046	050	049	6266	
4608				2						066	063	062	6266	
4609				2						069	068	066	6266	
4610				2						071	070	071	6266	
4611				2						073	070	070	6266	
4612				2						068	070	068	6266	
4701	045	042	030	2	1	37	068	196	027	030	028	029	6245	3
4702				2						038	040	040	6255	
4703				2						039	040	040	5255	
4704				2						041	042	043	6255	
4705				2						045	046	045	6255	
4706				2						044	043	044	5255	
4707				1						022	024	024	6255	
4708				1						028	029	029	5255	
4709				1						031	032	032	5255	
4710				1						037	036	036	5255	
4711				1						037	037	036	5255	
4712				1						039	042	042	5255	
4801	043	043	059	2	2	33	067	135	093	092	101	081	6255	3
4802				2						112	101	091	5355	
4803				2						123	110	105	5255	
4804				2						100	091	090	5255	
4805				2						134	136	120	5355	
4806				2						125	118	113	5255	
4807				1						079	085	082	5355	
4808				1						096	090	082	5355	
4809				1						090	066	065	5256	
4810				1						102	097	096	5455	
4811				1						109	096	090	5355	
4812				1						108	106	106	5255	



1234567890123456789012345678901234567890123456789012345

4901	074	057	059	1	2	18	061	110	009	014	017	018	5344	3
4902				1						019	019	019	5354	
4903				1						021	020	020	5444	
4904				1						021	021	022	4444	
4905				1						022	022	022	5244	
4906				1						024	024	024	5255	
4907				2						010	011	011	6244	
4908				2						013	014	014	5344	
4909				2						015	015	015	6255	
4910				2						016	016	016	6255	
4911				2						017	016	016	6265	
4912				2						017	017	016	6344	
5001	030	043	033	2	2	18	066	135	027	030	030	029	4544	3
5002				2						041	037	039	4455	
5003				2						041	039	039	5355	
5004				2						042	040	040	5355	
5005				2						041	041	042	5355	
5006				2						043	043	044	5355	
5007				1						020	024	025	5255	
5008				1						029	031	029	5255	
5009				1						032	032	032	5255	
5010				1						038	036	039	5554	
5011				1						040	039	037	5455	
5012				1						041	038	040	5355	
5101	065	060	037	1	2	19	068	145	048	048	042	046	2624	3
5102				1						052	057	055	3633	
5103				1						068	065	068	3533	
5104				1						073	076	078	3544	
5105				1						073	073	072	4454	
5106				1						073	082	081	5455	
5107				2						072	076	073	5355	
5108				2						075	073	073	5355	
5109				2						073	076	075	6355	
5110				2						078	078	079	6355	
5111				2						078	085	079	6355	
5112				2						085	081	086	6256	
5201	073	043	044	1	1	22	072	160	137	131	126	127	5354	3
5202				1						147	159	152	5266	
5203				1						155	141	141	6245	
5204				1						157	165	162	6266	
5205				1						150	148	148	6266	
5206				1						157	160	159	7266	
5207				2						129	126	129	6276	
5208				2						125	118	117	7235	
5209				2						121	124	121	6423	
5210				2						120	116	115	6554	
5211				2						118	116	118	6355	
5212				2						120	114	117	6266	

1234567890123456789012345678901234567890123456789012345

5301	018	035	044	2	2	19	064	130	047	051	058	061	7576	3
5302				2						069	059	055	7477	
5303				2						079	080	076	7477	
5304				2						093	087	084	7377	
5305				2						089	086	082	7337	
5306				2						086	082	085	7357	
5307				1						058	059	059	7267	
5308				1						062	062	061	7376	
5309				1						064	064	064	7376	
5310				1						061	062	064	6667	
5311				1						064	062	063	6467	
5312				1						070	071	069	7377	
5401	045	045	043	2	2	18	067	150	094	111	106	099	5234	3
5402				2						102	095	098	4345	
5403				2						103	105	102	5255	
5404				2						105	101	096	5255	
5405				2						100	100	098	5266	
5406				2						099	101	099	6166	
5407				1						105	103	099	4345	
5408				1						094	092	093	6255	
5409				1						096	092	094	3545	
5410				1						096	092	091	2534	
5411				1						094	092	090	3545	
5412				1						092	090	089	4545	
5501	027	048	053	2	1	18	073	170	068	068	069	070	6166	3
5502				2						077	076	075	6166	
5503				2						086	087	085	6177	
5504				2						084	090	090	6177	
5505				2						085	085	085	6177	
5506				2						088	092	090	7177	
5507				1						062	066	069	6167	
5508				1						073	077	078	7177	
5509				1						081	083	083	7177	
5510				1						092	091	091	7167	
5511				1						102	101	100	6266	
5512				1						106	105	104	6267	
5601	048	045	044	2	1	19	073	155	179	187	186	187	5255	3
5602				2						195	197	192	6255	
5603				2						194	194	196	6266	
5604				2						192	187	185	6266	
5605				2						178	176	173	6266	
5606				2						171	168	165	6266	
5607				1						146	151	149	6266	
5608				1						155	152	151	6266	
5609				1						151	150	152	6266	
5610				1						155	154	156	6266	
5611				1						159	159	161	6266	
5612				1						158	158	155	6266	

**1234567890123456789012345678901234567890123456789012345**

5701	073	044	044	1	1	20	069	163	053	071	071	069	4554	3
5702				1						091	085	083	4443	
5703				1						087	086	086	4444	
5704				1						088	087	086	4554	
5705				1						090	092	092	4444	
5706				1						096	093	097	4336	
5707				2						069	068	065	5555	
5708				2						069	074	078	5555	
5709				2						080	079	079	5555	
5710				2						082	081	080	6655	
5711				2						080	079	083	6555	
5712				2						088	082	085	6456	