Nurses' Attitudes Toward, Knowledge of and Years of Experience with Behaviour Modification

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Abstract

The study, "Attitudes, Knowledge and Years of Nursing Experience of a Sample of Nurses Towards Behaviour Modification," was conducted by Valarie Spencer. The results were submitted in February, 1986. Administrative ($n = 28$), ward ($n = 12$) and student nurses ($n = 39$) were surveyed with a three part questionnaire. Results of the survey indicate that nurses generally posses a positive attitude towards behaviour modification and are slightly knowledgeable of behaviour modification. A positive correlation between knowledge and attitude was observed, $r = .46$, $t(20) = 2.19$, $p < .05$. A one-day workshop in the principles and techniques of behaviour modification was provided for an experimental group ($n = 11$) of ward nurses in order to demonstrate that attitudes toward behaviour modification could be increased as a function of increased knowledge. Although attitude did increase, knowledge did not. These findings were related to an inconsistency between knowledge measured and knowledge acquired at the workshop.

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Introduction

Nursing professionals are assuming greater responsibility for the management of patients as well as for their care (Closurdo, 1975). They are now identifying maladaptive behaviours and attempting to educate patients toward a healthier existence. The use of techniques of behaviour modification could enhance the effectiveness and efficiency of nursing care, provided they are carried out properly and consistently (Bolton & Beattie, 1981).

The acquisition of knowledge and skills regarding behaviour modification techniques by nurses depends upon two things: the availability of specialized training programmes or resource personnel with pertinent educational information, and more importantly, the perceived need by the nursing profession to acquire this information and develop these skills. Upon examining the question of programme availability it becomes apparent that there are a number of training programmes in behavioural techniques in existence. These range from two-day workshops (Debert & Golden, 1973; Kerrigen, Ayala, Braukman, Brown, Minkin, Phillips, Fixen & Wolf, 1975) to year-long courses including practicum experiences (Watson, Gardner & Sanders, 1971; Marks, Hallam, Philpot & Connolly, 1975). Other training programmes have been modified and produced as educational kits for the purpose of teaching in an applied setting (Watson, 1974; Hall

& Fox, 1981). Resource personnel knowledgeable about behavioural principles and techniques can generally be found in any large center as they are often employed in hospitals or educational institutions.

It would seem then that the first condition can be easily met leaving the second condition, perceived need to acquire knowledge, yet to be explored. The extent of knowledge, information or skills regarding behaviour modification that is offered by different nursing programmes could be considered a reflection of the perceived need or attitude regarding this information and its usefulness. A small survey was conducted in Nova Scotia in 1981 wherein eight institutions offering nursing programmes of varying degrees, ie. degree, diploma, post graduate psychiatric speciality, were contacted concerning curriculum content. Specifically, these institutions were asked if they ever offered a course in behaviour modification (Spencer, 1981). In all cases, including the six month post graduate psychiatric speciality programme, the answer was no. However, behaviour modification was generally presented by nursing instructors during one of their classes as a therapeutic technique used by psychiatrists and/or psychologists with psychiatric and developmentally delayed patients. Operant Learning Theory, the underpinnings of behaviour modification, was not discussed at all, and practical experience with behaviour modification only occured if by chance a student nurse was assigned to a patient who was being treated by

way of a behavioural programme. Consequently, a student nurse in Nova Scotia may never be exposed to behavioural principles and techniques and any exposure that might occur would be extremely limited.

Perhaps these findings are indicative of a lag in the professional development of nurses in Nova Scotia as there is a rapidly growing body of literature attesting to the proven effectiveness of behavioural techniques for use by nurses (Whitney, 1966; LeBow, 1973; Marks, Connolly, Hallam & Philpot, 1975; Closurdo, 1975; Roose-Auger, 1976; Bernie & Fordyce, 1977; Jasmin & Trygstad, 1979; Dudding, 1980). On the other hand, these findings may reflect the existence of a negative valuation of behavioural technology held by nurses which would decrease the likelihood that they would perceive behaviour modification as relevant to their profession. A search of the literature indicates that there does not appear to have been any research conducted regarding nursing attitudes toward behaviour modification. However, some research has been conducted regarding the public's perceptions and reactions to behaviour modification (Young & Patterson, 1981; Turkat & Feuerstein, 1978; Carey, Carey & Turkat, 1983; Woolfolk, Woolfolk & Wilson, 1975; Turkat, Harris & Forehand, 1979). If nurses are considered equivalent to the general public then this research may have some bearing on the results of this study and for this reason, will be discussed briefly.

Young and Patterson (1981) conducted a study to assess

the knowledge about and attitudes toward several aspects of behaviour modification using students and non-psychology faculty as subjects. They found that attitudes toward behaviour modification were generally favourable with greater knowledge of behaviour modification (as measured by a very simple task, ie. recognition of behavioural techniques listed with a number of psychological terms), being associated with more favourable attitudes. However, there was a substantial proportion of Young and Patterson's subjects who misidentified brainwashing, sensory deprivation and electroconvulsive shock therapy as behavioural techniques. Also, many failed to recognize the established behavioural procedure of time out. Consequently, Young and Patterson stressed concern regarding the public's level of understanding of behavioural therapies and the effect this lack of understanding might have on public opinion of behavioural interventions.

Turkat and Feuerstein (1978) studied 27 articles indexed under behaviour modification in the New York Times between January 1, 1973 and April 15, 1977 and found approximately 48% of the articles inaccurately representing behaviour modification. Behaviour modification was often associated with such procedures as psychosurgery, brainwashing, drugs, sensory deprivation and even torture. A five year follow up study conducted during the period from January 1, 1977 to December 31, 1981, by Carey, Carey and Turkat (1983) found three of 14 articles to misrepresent behaviour modification.

While the percentage of misrepresentation is down in comparison with the previous study from X to Y, so too is the number of articles published about behaviour modification. This is an interesting and unexpected finding considering the rapid growth in the field in the past decade. Although Carey et al. (1983) generally found a more positive portrayal of behaviour modification, there is still evidence of inaccurate media presentation.

Woolfolk, Woolfolk and Wilson (1975) studied the effect of presentation labels upon subjects' evaluation of behaviour modification. Two groups were shown identical videotapes of a teacher using reinforcement methods; to one group it was presented as being illustrative of "Behaviour Modification" while to the other it was described as "Humanistic Education." They were then requested to evaluate the teacher and lesson by completing a questionnaire. The researchers found that the teacher received more favourable ratings by the group who saw the "Humanistic Education" video. They interpret the bias as being a function of language as opposed to technique and suggested that if the language of behaviour modification could be changed, ie. terms such as <u>behavioural engineer</u>, or <u>behavioural programmer</u>, then perhaps the techniques themselves would be received better by the general public. Rather than a simple response to the language of behaviour modification, it is possible that these results reflect a preconceived notion that behaviour modification is a less desirable form of treatment.

Finally, Turkat, Harris and Forehand (1979) asked over 600 college students who had not taken a college psychology course and thus supposedly representing the general public, to indicate if they agreed or disagreed with each of 15 items concerning behaviour modification in an attempt to determine if the public reaction to behaviour modification was indeed negative. Their results showed that behaviour modification is not viewed as threatening, nor is it viewed as 'good'. They found that with prisoners and the retarded the use of behaviour modification was considered appropriate, however with other populations such as individuals with marital problems, homosexuals and normal children, it was not considered appropriate.

The results of these studies suggest that generally behaviour modification is not understood by the public or the media. Considering that the principles and techniques of behaviour modification are not taught in schools of nursing, one can assume that nurses' exposure to behaviour modification is similar to that of the general public. Consequently, they too may not understand behaviour modification and thus may also have a negative attitude toward it. Marilyn Hauser (1978) in her article "Nurses and Behaviour Modification: Resistance, Ignorance or Both," discusses the suspiciousness and skepticism held by many professionals, including nurses, regarding behaviour modification techniques. She says, "Perhaps behaviour modification is equated with mechanicalization and

unsympathetic manipulation which is antithetical to tender nursing care" (p. 18). However Hauser also states that if nurses want to be effective in the long run, they are going to have to reconsider their role. She suggests that ignorance may be the other major factor preventing nurses from adopting behavioural techniques. Although there are a number of nursing sectors trained in behavioural management, she says that training is far from widespread and feels that it is time to revamp nursing curricula and inservice programmes.

Interestingly, some behavioural techniques such as positive and negative reinforcement are already being demonstrated by nurses through their daily interactions with patients. Studies have shown that at times nurses inappropriately reinforce maladaptive behaviour (Gelfand, Gelfand & Dobson, 1967; Mikulic, 1971). For example, in Mikulic's study (1971) of reinforcement given to dependent and independent patient behaviour by nursing staff on an extended care unit he found that "Nursing personnel more consistently provided positive reinforcement for dependent patient behaviours than for independent behaviours" (p. 165). He said that "If the operant approach to behaviour analysis is accepted the assumption might be made that these reinforcement practices tend to increase the patient's dependent behaviours at the expense of the independent behaviours" (p. 165). Thus, nurses engaging in these practices are essentially creating more work for themselves. If they had knowledge

about the principles and techniques of behaviour modification at their disposal, then presumably they would be capable of increasing independent patient behaviour and decreasing dependent patient behaviour. Therefore, incorporating the principles and techniques of behaviour modification into the existing nursing process so that a therapeutic relationship can be planned, specifically in the instances where patients are engaging in maladaptive behaviours, can only enhance therapeutic effectiveness.

Purpose of the Present Study

Although there has been some investigation pertaining to the public's perceptions and reactions to behaviour modification, little effort has been made to assess that of the nursing profession. Nurses were chosen as the target population for this study for a variety of reasons. Firstly, the inherent nature of their profession as caretakers and educators identifies them as behaviour change agents. Nurses are in positions of authority or power over patients who in turn look to nurses for guidance. Secondly, nurses have more frequent and consistent contact with patients than other hospital personnel. Consequently nurses are the ones most likely to be involved in the implementation of in-hospital behaviour modification programmes. Finally, there is a respectable literature pertaining to the utility of behavioural techniques for nurses.

The purpose of the present study was twofold: to determine whether a correlation exists between attitude and knowledge regarding behaviour modification; to determine whether attitude can be changed as a direct result of training or education. The first inquiry was conducted through the use of a survey and the second by comparing the attitudes and knowledge of an experimental group of ward nurses who attended a one-day workshop in the principles and techniques of behaviour modification, with that of a

waiting-list control group of ward nurses.

It was hypothesized that attitudes held by nurses toward behaviour modification are correlated with their knowledge of behaviour modification such that greater knowledge of behaviour modification gives rise to more favourable attitudes toward it. Additionally, it was hypothesized that attitudes toward behaviour modification can be changed in a positive direction through an increase in knowledge of behaviour modification.

Method

Subjects

Survey. Seventy-nine nurses (28 administrative, 12 ward and 39 first year nursing students) at Western Memorial Regional Hospital in Corner Brook, Newfoundland, participated in this aspect of the study. Samples were drawn from each group of nurses in an attempt to obtain a cross-section of all levels of nursing.

Administrative nurses were older (mean age = 39) and had more years of nursing experience (mean = 16) than either the ward nurses (mean age = 31; mean years of experience = 8) or the student nurses (mean age = 24; mean years of experience = 1.1). Administrative and ward nurses were all female, whereas 85% of the student nurses were female and 15% were male.

Most of the administrative and ward nurses received their nursing training in Newfoundland General Hospitals, 72 and 100 percents respectively. Ninety percent of the administrative group; 10% did not indicate their qualifications, and 100% of the ward nurses were Registered Nurses.

Five administrative nurses, two ward nurses and three student nurses indicated that they had received some training in behaviour modification. Six of these ten indicated that it was offered by their employers in the form of a workshop, while the remaining four attended courses elsewhere.

Also, a total of 15 nurses (five administrative, four ward and eight student) indicated that they were currently utilizing behavioural techniques in their nursing positions. Of these 15, only two nurses (one administrative and one ward) had received previous training in behaviour modification.

Sixteen nurses (seven administrative, six ward and three student) indicated that they have worked on units where behaviour modification treatment programmes were in effect. Of these 16, three were unable to give input regarding programme design. Only 10 of the 79 nurses had received some training in behaviour modification. Of those only five worked on units where behaviour modification treatment programmes were in effect. Since thirteen nurses were actively involved in the design of behaviour modification programmes some must have done so without any training in behaviour modification.

Workshop. Twenty-two ward nurses employed at Western Memorial Regional Hospital in Corner Brook, Newfoundland, participated in this aspect of the study. The experimental group (N = 11) consisted of one male ward nurse and 10 female ward nurses, with a mean age of 28 years. Four of them were Nursing Assistants, six were Registered Nurses and one had a Bachelor of Nursing Degree (B.N.). Ten of these nurses received their training in Newfoundland General Hospitals; seven at Western Memorial Regional Hospital in Corner Brook, the other three at St. Clare's Mercy Hospital

in St. John's. The B.N. was obtained at the University of New Brunswick. The mean number of years of nursing experience for the experimental group was 5.8 years.

Four of the experimental group nurses indicated that they had received prior training in behaviour modification in the form of a course. However, only one of these four indicated that the course required more than 40 hours. Two of the four attended courses of 11 to 15 hours duration and one attended a course of one to five hours duration. Seven of the nurses in the experimental group indicated that they have worked on units where behavioural treatment programmes were in effect. Four of these seven were able to give input regarding programme design. All of the experimental group nurses indicated that they felt the principles and techniques of behaviour modification would be useful for them to know and use.

The control group (N = 11) consisted of all female nurses, with a mean age of 28 years. Three of them were Nursing Assistants, six were Registered Nurses and two held B.N. degrees. All of these nurses received their training in Newfoundland; six at Western Memorial Regional Hospital in Corner Brook, three at St. Clare's Mercy Hospital in St. John's and the two B.N. degrees were obtained at Memorial University, also in St. John's. The mean number of years of nursing experience for the control group was 4.4 years.

Six of the control group nurses indicated that they had received prior training in behaviour modification, all in

the form of inservice training. Two of the inservices were of one to five hours duration, two were of six to ten hours duration and one was 16 to 20 hours duration. The sixth nurse did not indicate duration of training. Eight of the control group nurses indicated that they had worked on units where behavioural treatment programmes were in effect. Six of these eight were able to give input regarding programme design. All of the control group nurses indicated that they felt the principles and techniques of behaviour modification would be useful for them to know and use.

Apparatus

Questionnaire. A self-report questionnaire which assesses attitudes toward, knowledge of and experience with behaviour modification was constructed (see Appendix). Part A of the questionnaire was designed to assess attitude. It is a modified version of part of the survey "Opinions About Behavior Modification," by Young and Patterson (1981) to assess the knowledge about and attitude towards several aspects of behaviour modification. Eleven of Young and Patterson's items were retained: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 15. Four additional items were included: 11, 12, 13, and 14. Also, Part A in the present questionnaire differs in that the items are rated on a 5-point continuum ranging from Strongly Agree to Strongly Disagree. It was fashioned after the Likert method of attitude scale construction (Likert, 1932). Likert's 5-point scale provides an objective measure of attitude as it renders a single score

for each item. Item scores can then be added to represent attitude in general. In the Young and Patterson survey (1981) responses were examined individually rather than as parts of a whole. In the Likert method each of the possible choices on the continuum is assigned a score of 5 to 1 with a score of 5 assigned to the most favourable response. For example, on Part A, item 5: "Behaviour modification is unethical," any of the following scores could be obtained depending on the response: Strongly Agree - 1; Agree - 2; Uncertain - 3; Disagree - 4; Strongly Disagree - 5. An extremely positive attitude obtained by responding most favourably on each of the 15 items would be reflected by a score of 75, with an extremely negative attitude being reflected by a score of 15.

Opinions of behaviour modification were assessed in Part B, #4 of the questionnaire by having nurses indicate the appropriateness of three therapeutic procedures: behaviour modification, psychotherapy, and shock therapy or sensory deprivation. Question 4 is also a modified version of a question taken from the Young and Patterson survey (1981). They solicited opinions from college students regarding therapeutic procedures for 10 different client populations: mental hospital patients, prisoners, normal children, persons with marital problems, the mentally retarded, children with academic difficulties, people with emotional problems, child molesters, people with difficulty at casual parties, and homosexuals. In the Young and Patterson survey all of the above client populations were

listed for behaviour modification. However they only listed five for psychotherapy: people with emotional problems, people with marital problems, children with academic difficulties, prisoners, and homosexuals; and five for shock therapy or sensory deprivation: people with emotional problems, homosexuals, prisoners, mental hospital patients, and child molesters. In the present study all client populations are listed for each therapeutic procedure.

Part B of the questionnaire was designed primarily to assess knowledge regarding behaviour modification. Question three of Part B was also taken from the Young and Patterson survey. Nurses were required to identify, from a list of 18 psychological terms, techniques which would be considered procedures of behaviour modification. Seven of these items should be identified: time-out, cognitive restructuring, thought stopping, systematic desensitization, positive reinforcement, negative reinforcement, and overcorrection. The score is calculated by subtracting the number of terms incorrectly identified from the number of terms correctly identified. All terms are equally weighted with the maximum possible score being 7. Question five of Part B consists of six multiple-choice questions taken from the survey "An Instrument to Measure Nurses' Knowledge of Behavioural Methods with Chronic Pain Patients," conducted by Sanders and Webster (1982). These questions assess knowledge about decreasing behaviour, increasing behaviour, as well as the understanding of terms, principles and facts

of behaviour modification. The correct answers for these questions are as follows: A = 4; B = 2; C = 4; D = 3; E = 2; F = 2. The score for question five is equal to the number of answers correctly identified. The maximum possible score for this question is 6. The final knowledge score is equal to the sum of scores calculated for questions three and five, with the maximum possible score equalling 13.

Part C of the questionnaire was designed to assess the extent of experience that the nurse has with behaviour modification. It was also designed to gather some biographical data which may have some bearing on the results of this study.

Workshop materials. The workshop material was taken primarily from The Responsive Teaching and Parenting Model Transparency Kit, How to Teach Behaviour Modification, by Hall and Fox (1978). The kit was originally developed by Hall for teaching a graduate level course on the management of behaviour, however it can also be used for workshops and inservice training programmes.

The major focus of the workshop was on the principles and techniques of behaviour modification with special attention given to the techniques most appropriately used in a nursing setting. In order to supplement the principles and techniques of behaviour modification provided by the kit, case studies and films were also presented. The case study extracted from "Behavioral Treatment of Psychogenic Vomiting Amoung Children - A Review and Case Example" by Nakanishi and

Anderson (1982) was presented initially for reference use throughout the presentation of the principles and techniques of behaviour modification. Following the main presentation, the film "Harry" by Richard Fox (1980) was shown to the workshop participants to demonstrate the application and effectiveness of behaviour modification.

The workshop participants were then divided into two groups and requested to devise treatment programmes for problematic behaviours of patients. Each group was given a description of a patient taken from "Applied Behavioral Analysis of Disturbed Elderly Patients" (Prehn, 1982).

Finally, Behavioral Principles for Parents, A Discrimination Program (Forehand, 1979) was used with the workshop participants. This film consists of 31 short scenes showing a variety of parent/child interactions. The scenes demonstrate three basic procedures for changing children's behaviour: positive reinforcement; removal of attention and punishment; rearrangement of events prior to the child's behaviour. Each workshop participant was also given a package of relevant handouts prepared by the workshop leader.

Procedure

Survey. Questionnaires were distributed to the entire population of administrative nurses in the hospital (N = 37) due to their small numbers. An assistant director of nursing was assigned the task of distributing and collecting the questionnaires in order to ensure a high rate of return.

Of these 37 questionnaires, 30 were returned. However, two did not have the section on attitude completed and thus were not used. The return rate for the administrative nurses equalled 75.6%, (n = 28).

The ward nursing sample (40) was obtained by randomly choosing names from a list of all ward nursing staff in the hospital. As they work shifts, it was decided that the best way to contact them with the questionnaires was to send them out with their paychecks. Instructions for completion of the questionnaire and a self-addressed envelop for its return was included. Of these 40 only 13 questionnaires were returned, and one nurse attached a note indicating that she was not familiar with the subject and therefore could not complete the questionnaire. The return rate for this group of nurses was 30%, (n = 12).

A random sample of 40 first year nursing students was drawn from the total population of first year nursing students. Arrangements were made for them to complete the questionnaires in a classroom setting. Thirty-nine of the 40 students showed up to complete the questionnaires rendering a return rate of 97.5%, (n = 39).

Although the manner in which the questionnaires were distributed differed for each group, the instructions for completion remained the same for all (see instructional cover sheet attached to the questionnaire, Appendix). The major limitation with the distribution was the lack of control for the return of the ward nurses' questionnaires.

Workshop. A one-day educational workshop in the principles and techniques of behaviour modification was offered to the ward nursing staff at Western Memorial Regional Hospital. The Department of Staff Education sent a memorandum to all nursing units informing staff of the date the workshop was to be held. Staff who could not attend the workshop due to commitments, were invited to register for another workshop to be held at some point in the future. The nurses who were able to attend the scheduled workshop comprised the experimental group (N = 11), while those who were unable to attend but interested in doing so at some point in the future, comprised the waiting-list control group (N = 11). Pretesting occured at the time of registration, held one week prior to the scheduled workshop. Posttesting occured one month following the scheduled workshop. The questionnaire described in the "Apparatus" section was used as the pre and post test instrument. None of the nursing staff had to attend the workshop, rather it was offered for those who were interested. The nurses were informed that research was being conducted, however no details were provided. Also, the questionnaires used for pre and post testing were completed anonymously, thus protecting the identity of the participants. The workshop was conducted by Valarie Spencer, known to the staff as the psychologist for Children's Mental Health Service.

Operational Definitions

The following definitions constitute the criteria used

in testing the research hypotheses. The attitude scores were derived from Part A of the questionnaire described in the "Apparatus" section.[1] The knowledge scores were derived from Part B, Questions three and five, also described in the "Apparatus" section.

Attitude. Attitude is defined as a favourable or unfavourable evaluation of an object (Fishbein & Ajzen, 1975). In this study the object is behaviour modification. The possible range of scores is 11 to 55.

Negative attitude	A score of 22 or less
Slightly negative attitude	A score of 23 to 33
Slightly positive attitude	A score of 34 to 44
Positive attitude	A score of 45 or greater

Knowledge. Knowledge is defined as what nurses know about behaviour modification. The possible range of scores is -11 to 13.

Insufficient knowledge	A score of -4 or less
Slightly knowledgeable	A score greater than or equal to -3 and less than or equal to 4
Knowledgeable	A score equal to or greater than 5

[1] The attitude scores describes previously (pp. 15) ranged from 15 to 75, however four of the 15 items were dropped (2, 4, 11, & 15) because they measured knowledge rather than attitude. Therefore, the possible range of scores is 11 to 55.

Data Analysis

Survey. Considering that nurses were surveyed in groups according to position, ie. administrative, ward and student, the first data analysis will examine between group differences. Analysis of variance will be used to determine if nursing groups differ in their level of knowledge of behaviour modification and in their attitudes toward it. Should differences exist, then an Analysis of Covariance will be conducted to determine if their ages or years of nursing experience are influencing the results.

The first research hypothesis states that: Nurses' attitudes toward behaviour modification are correlated with their knowledge of behaviour modification such that greater knowledge of behaviour modification gives rise to more favourable attitudes toward it. In order to test this hypothesis a Pearson Product Moment Correlation Coefficient will be computed for the knowledge and attitude scores of nurses considered "Knowledgeable" regarding behaviour modification and nurses who possess "Insufficient knowledge" of behaviour modification. In an attempt to supply further support for this research hypothesis, Chi Square Analysis will be conducted to compare nurses' opinions of the appropriateness of behaviour modification, psychotherapy and shock therapy or sensory deprivation, for use with a variety of client populations.

Workshop. The second research hypothesis states that: Attitudes toward behaviour modification can be changed in a

positive direction through an increase in knowledge of behaviour modification. In order to test this hypothesis Analysis of variance will be conducted on the pre and post test data for the experimental and control group nurses. Specifically, their knowledge and attitude scores will be analyzed. The hypothesis will be confirmed if the experimental group demonstrates a significant increase in both attitude and knowledge regarding behaviour modification, in comparison to that of the control group, on the posttest questionnaire. Should the hypothesis not be confirmed, then an item analysis will be conducted on the experimental group's knowledge data obtained at pre and post testing. This analysis will be done using Chi Square.

Results

Survey

Knowledge of behaviour modification. Knowledge of behaviour modification was assessed in two ways. The nurses were presented with a recognition task in which they were required to identify, from a list of 18 psychological terms, techniques which would be considered procedures of behaviour modification (Part B, Question 3). They were also required to answer six multiple-choice questions assessing knowledge about decreasing behaviour, increasing behaviour, and terms, principles and facts of behaviour modification (Part B, Question 5). The knowledge score for each nurse was calculated by adding the scores obtained on these two questions.

Table 1 presents the frequency distribution of knowledge scores for administrative, ward and student nurses. None of the nurses obtained knowledge scores of -4 or less, the criterion used to define "insufficient knowledge." A substantial percentage of nurses from each group, 57.1%, 66.7% and 84.6% for administrative, ward and student nurses respectively, obtained knowledge scores greater than or equal to -3 and less than or equal to 4, the criterion used to define "slightly knowledgeable." A total of 42.9%, 33.3% and 15.4% of administrative, ward and student nurses respectively, obtained knowledge scores equal to or greater

Table 1

Frequency Distribution of Knowledge Scores for Administrative, Ward and Student Nurses

Criterion range	Knowledge score	Admin. n = 28	Ward n = 12	Student n = 39
Slightly knowledgeable	-3	1	0	1
	-2	0	0	4
	-1	1	1	4
	0	2	0	2
	1	4	1	6
	2	1	4	7
	3	6	1	8
	4	1	1	1
Knowledgeable	5	4	1	5
	6	2	2	0
	7	1	1	0
	8	3	0	0
	9	2	0	1
Total		28	12	39

Note. 72.2% of all nurses obtained knowledge scores in the criterion range "Slightly knowledgeable" while the remaining 27.8% obtained knowledge scores in the criterion range "Knowledgeable."

than 5, the criterion used to define "knowledgeable." The mean knowledge scores for administrative, ward and student nurses were 3.82, 3.25 and 1.7 respectively. There was a significant difference in knowledge held between the three groups, F (2,76) = 4.8, $p < .05$ (see Table 2). The significant difference was found to occur between administrative and student nurses, F (2,76) = 8.03, $p < .05$ (see Table 3).

The fact that administrative nurses were significantly older than both ward, F, (2,76) = 8.8, $p < .05$, and student nurses, F (2,76) = 72.2, $p < .01$ (see Tables 4 & 5), and had significantly more years of nursing experience than ward, F (2,76) = 12.78, $p < .01$ and student nurses, F (2,76) = 95.64, $p < .01$ (see Tables 6 & 7), may contribute to their superior knowledge of behaviour modification. An analysis of covariance was conducted in order to determine if the uncontrolled variable of age influenced the variation in knowledge scores obtained by the three groups of nurses. A significant difference in covariance was found, F (2,75) = 4.5, $p < .05$, suggesting that the variation in knowledge scores obtained by administrative, ward and student nurses was not attributable to the variation in their ages (see Table 8).

An additional analysis of covariance was conducted in order to determine if the uncontrolled variable of years of nursing experience influenced the variation in their knowledge

Table 2

Analysis of Variance for the Knowledge Scores of Administrative, Ward and Student Nurses

Source	SS	df	MS	F
Between groups	72.04	2	36.02	4,8*
Within groups	573.40	76	7.54	
Total	645.44	78		

*p < .05

Table 3

Scheffe's Multiple Comparison of Knowledge Scores for Administrative, Ward and Student Nurses

Comparison	F
Admin. - Ward	0.36 ns
Admin. - Student	8.03 *
Ward - Student	2.93 ns

*$p < .05$

Table 4

Analysis of Variance for the Ages of Administrative, Ward and Student Nurses

Source	SS	df	MS	F
Between groups	3415.0	2	1707.5	36.5**
Within groups	3559.3	76	46.8	
Total	6974.3	78		

**$p < .01$

Table 5

Scheffe's Multiple Comparison of the Ages of Administrative, Ward and Student Nurses

Comparison	F
Admin. - Ward	8.80*
Admin. - Student	72.25**
Ward - Student	10.73**

*$p < .05$. **$p < .01$.

Table 6

Analysis of Variance for Administrative, Ward and Student Nurses' Years of Nursing Experience

Source	SS	df	MS	F
Between groups	3415.97	2	1707.98	47.89**
Within groups	2710.64	76	35.66	
Total	6126.61	78		

**$p < .01$

Table 7

Scheffé's Multiple Comparison for Administrative, Ward and Student Nurses' Years of Nursing Experience

Comparison	F
Admin. - Ward	12.78**
Admin. - Student	95.64**
Ward - Student	12.92**

**p < .01

Table 8

Analysis of Covariance for the Ages and Knowledge Scores of Administrative, Ward and Student Nurses

	Between groups	Within groups	Total
Sum of squares: Y	3415.00	3559.30	6974.30
Sum of squares: X	72.04	573.40	645.44
Sum of products	487.82	43.58	531.40
Degrees of freedom	2.00	76.00	78.00
Adjusted sum of squares: X	68.00	572.90	640.90
Degrees of freedom for adjusted sum of squares	2.00	75.00	77.00
Variance estimates	34.02	7.64	
F = 4.45*			

*$p < .05$

scores. The F-ratio in this case was not significant, $F(2,75) = 2.9$, $p > .05$, suggesting that some of the variation in their knowledge scores can be attributed to the influence of nursing experience (see Table 9).

Attitudes toward behaviour modification. Attitudes toward behaviour modification were assessed by having the nurses rate 11 statements regarding behaviour modification on a Likert scale. Table 10 presents the frequency distribution of attitude scores for administrative, ward and student nurses. Using the criterion of a score of 22 or less, none of the administrative, ward or student nurses expressed a "negative" attitude towards behaviour modification. Although none of the administrative or ward nurses expressed a "slightly negative" attitude towards behaviour modification, as indicated by a score of 23 to 33, 7.7% of the student nurses did. The majority of all three groups of nurses obtained scores within the range of 34 to 44, the criterion used to define a "slightly positive" attitude, 85.7%, 75% and 66.7% of administrative, ward and student nurses respectively. A "positive" attitude, defined by the criterion of a score of 45 or greater, was expressed by 14.3%, 25% and 25.6% of administrative, ward and student nurses respectively.

The mean attitude score for each group of nurses was 42.5, 41.9 and 41.4 for administrative, ward and student nurses respectively. Analysis of variance indicated that there was no significant difference in attitude between the three groups, $F(2,76) = .48$, $p > .05$ (see Table 11).

Table 9

Analysis of Covariance: Years of Nursing Experience and Knowledge Scores for Administrative, Ward and Student Nurses

	Between groups	Within groups	Total
Sum of squares: Y	3371.10	2746.60	6117.70
Sum of squares: X	72.04	573.40	645.44
Sum of products	486.00	-63.70	422.35
Degrees of freedom	2.00	76.00	78.00
Adjusted sum of squares: X	44.34	571.90	616.24
Degrees of freedom for adjusted sum of squares	2.00	75.00	77.00
Variance estimates	22.17	7.60	

$F = 2.9$, ns

Table 10

Frequency Distribution of Attitude Scores for Administrative, Ward and Student Nurses

Criterion range	Attitude score	Admin. n = 28	Ward n = 12	Student n = 39
Slightly negative attitude	30	0	0	1
	31	0	0	1
	32	0	0	0
	33	0	0	1
Slightly positive attitude	34	1	0	1
	35	1	0	2
	36	0	1	2
	37	1	0	0
	38	0	1	1
	39	1	1	3
	40	4	0	1
	41	2	3	6
	42	2	2	1
	43	5	0	3
	44	7	0	6
	45	0	2	4
	46	0	1	2
	47	2	1	0

(table continues)

Criterion range	Attitude score	Admin. n = 28	Ward n = 12	Student n = 39
Positive attitude	48	0	0	2
	49	1	0	1
	50	0	0	0
	51	0	0	0
	52	1	0	1
Total		28	12	39

Note. Of all nurses, 3.8% obtained attitude scores in the criterion range "slightly negative attitude," 73.4% obtained scores in the range "slightly negative attitude" and 22.8% obtained scores in the "positive attitude" criterion range.

Table 11

Analysis of Variance for the Attitude Scores of Administrative, Ward and Student Nurses

Source	SS	df	MS	F
Between groups	18.30	2	9.15	.48 ns
Within groups	1449.20	76	19.07	
Total	1467.50	78		

Attitude towards behaviour modification was also assessed through one question (Part C, Question 11). The nurses were asked to indicate whether they felt that the principles and techniques of behaviour modification would be useful for them to know and use. The majority of all of the nurses indicated "yes," 78.5%, 100% and 77% of administrative, ward and student nurses respectively. None of the nurses indicated "no." However, 3.6% of administrative and 3% of student nurses indicated "maybe," while the remaining 17.9% of administrative and 20% of student nurses did not respond.

Correlation: knowledge and attitude scores. A Pearson product moment correlation coefficient was calculated for nurses' knowledge scores, regardless of group classification, who obtained knowledge scores equal to or greater than 5, the criterion used to define "knowledgeable." Twenty-two nurses (12 administrative, four ward and six student) obtained knowledge scores in this range, with a mean knowledge score of 6.2. The mean attitude score for this group of nurses equalled 42.9, with the scores ranging from 34 to 49. According to the criteria used in the research hypothesis, these nurses were "knowledgeable" regarding behaviour modification and expressed either a "slightly positive" ($n = 15$) or "positive" ($n = 7$) attitude toward behaviour modification. A significant positive correlation was found between the knowledge and attitude scores for this group of "knowledgeable" nurses, $r = .46$, $t\ (20) = 2.19$; $p < .05$.

Nurses who were "knowledgeable" of behaviour modification

(n = 22) were compared with nurses who were "slightly knowledgeable" (n = 57) regarding their opinions about the appropriateness of three therapeutic procedures: behaviour modification, psychotherapy and shock therapy or sensory deprivation, for 10 different client populations. The nurses were asked to express their opinions about the appropriateness of these therapeutic procedures for different client populations by indicating one of four categories: Very Appropriate, Somewhat Appropriate, Somewhat Inappropriate or Very Inappropriate (Part B, Question 4). Table 12 presents the percentage of "knowledgeable" and "slightly knowledgeable" nurses who considered behaviour modification as either "very" or "somewhat" appropriate for use with 10 different client populations. Chi Square analysis indicates that behaviour modification was essentially considered equally appropriate by both groups of nurses for all of the client populations except homosexuals. For these clients the "slightly knowledgeable" nurses considered behaviour modification as either "very" or "somewhat" appropriate significantly more often than the "knowledgeable" nurses did, χ^2 (1) = 4.0, $p < .05$.[2]

The percentage of "knowledgeable" nurses endorsing the appropriateness of behaviour modification and the percentage endorsing the appropriateness of psychotherapy, differed in

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[2] For this analysis the categories of "very" and "somewhat" appropriate were collapsed.

Table 12

Summary of Chi Square Analysis: Percentage of "Knowledgeable" and "Slightly Knowledgeable" Nurses who Considered Behaviour Modification as an Appropriate Form of Treatment for Different Client Populations

Client population	"Knowledgeable" (n = 22)	"Slightly knowl." (n = 57)	χ^2
Mentally retarded	95.4	80.7	2.70 ns
Prisoners	95.4	84.2	1.80 ns
Mental hospital patients	90.9	89.5	0.04 ns
Normal children	81.8	85.9	0.21 ns
Child molesters	81.8	82.5	0.004ns
People with difficulty at casual parties	81.8	77.2	0.20 ns
Children with academic difficulties	81.8	77.2	0.20 ns
People with emotional problems	72.7	84.2	1.40 ns
Persons with marital problems	68.2	77.2	0.68 ns
Homosexuals	50.0	73.4	4.00 *

*$p < .05$

favour of behaviour modification for the mentally retarded, χ^2 (1) = 32.9, $p < .01$, normal children, χ^2 (1) = 13.2, $p < .01$, and people who have difficulty at casual parties, χ^2 (1) = 4.96, $p < .05$. Both behaviour modification and psychotherapy were considered equally appropriate for the remaining seven client populations (see Table 13). Shock therapy or sensory deprivation was considered significantly less appropriate than behaviour modification for all of the client populations listed (see Table 14).

At this point it should be noted that repeated statistical significance at the .05 level of probability can be problematic. It is not possible to determine if all significances are in fact significant or if some are attributed to chance alone.

Effect of previous training in behaviour modification. Five of the "knowledgeable" nurses indicated that they had received previous training in behaviour modification. In an attempt to determine if their previous training was influencing the results of this study, both their knowledge and attitude scores were extracted and new means calculated for the knowledge and attitude scores of the remaining 17 "knowledgeable" nurses. In the case of knowledge scores, the new mean equalled 6.4, slightly higher than the previous mean of 6.2 which included the scores of nurses with previous training. This suggests that either the nurses with previous training knew less than those without previous training, or more likely, that the knowledge they gained from their

Table 13

Summary of Chi Square Analysis: Percentage of "Knowledgeable" Nurses (n = 22) who Considered Behaviour Modification vs Psychotherapy as either "Very" or "Somewhat" Appropriate Forms of Treatment for 10 Different Client Populations

Client Population	Beh. Mod.	Psychotherapy	χ^2
Mentally retarded	95.4	31.8	32.90**
Prisoners	95.4	77.3	3.10ns
Mental hospital patients	90.9	90.9	0.00ns
Normal children	81.8	27.3	13.20**
Child molesters	81.8	95.4	2.03ns
People with difficulties at casual parties	81.8	50.0	4.96*
Children with academic difficulties	81.8	59.1	2.73ns
People with emotional problems	72.7	81.8	0.52ns
Persons with marital problems	68.2	72.7	0.11ns
Homosexuals	50.0	77.3	3.50ns

Note. The categories of "very" and "Somewhat" appropriate were collasped.

*$p < .05$. **$p < .01$.

Table 14

Summary of Chi Square Analysis: Percentage of "Knowledgeable" Nurses who Considered Behaviour Modification vs Shock Therapy or Sensory Deprivation as either "Very" or "Somewhat" Appropriate Forms of Treatment for Different Client Populations

Client Population	Beh. Mod.	Shock T./ Sen. D.	χ^2
Mentally retarded	95.4	9.1	32.90 **
Prisoners	95.4	31.8	19.25 **
Mental hospital patients	90.9	59.1	5.94 *
Normal children	81.8	0.0	30.50 **
Child molesters	81.8	40.9	7.76 **
People with difficulties at casual parties	81.8	0.0	30.50 **
Children with academic difficulties	81.8	4.5	26.80 **
People with emotional problems	72.7	36.4	5.87 *
Persons with marital problems	68.2	0.0	22.80 **
Homosexuals	50.0	4.5	11.50 **

Note. The categories of "Very" and "Somewhat" appropriate were collapsed.

*$p < .05$. **$p < .01$.

previous training was not tapped by the questionnaires. Interestingly, the new mean for the attitude scores slightly decreased from 42.9 to 42.6, suggesting that the nurses with previous training in behaviour modification possessed a more positive attitude than those without training. Although the difference in these means is very slight and could have occured by chance alone, it might be speculated that exposure to behaviour modification, or any subject matter, influences attitude regardless of knowledge gained or lost.

Workshop

Examination of the experimental and control group characteristics indicates that they were very similar in composition. There was only one significant difference found: the experimental group had significantly more years of nursing experience than the control group, F (1,19) = 10.85, $p < .01$ (see Table 15).

Attitude and knowledge scores for the experimental and control group data, on the pre and post test questionnaires, were derived using the same methods and criteria used in the analysis of the data obtained from the survey. Results of the pretest questionnaires indicate that there was no significant difference in attitude between the experimental and control groups, F (1,20) = 3.0, $p > .05$ (see Table 16). The experimental group's mean attitude score was 44.5 and the control group's mean attitude score was 41.6. Using the criterion of a score of 34 to 44, both groups expressed a "slightly positive" attitude towards behaviour modification.

Table 15

Analysis of Variance: Years of Nursing Experience, Experimental vs Control Group

Source	SS	df	MS	F
Between groups	252.05	1	252.05	10.85**
Within groups	441.41	19	23.22	
Total	693.46	20		

**$p < .01$.

Table 16

Analysis of Variance: Pretest Attitude Scores for Experimental and Control Groups

Source	SS	df	MS	F
Between groups	46.5	1	46.5	3.0 ns
Within groups	307.3	20	15.4	
Total	353.8	21		

Similarly, there was no significant difference in their knowledge of behaviour modification, F (1,20) = 1.61, $p > .05$ (see Table 17). The experimental group's mean knowledge score was 4.8 and the control group's mean knowledge score was 6.

Results of the posttest questionnaire administered to both groups one month following the workshop indicate that a significant difference in attitude was found with the experimental group demonstrating a significant increase in attitude toward behaviour modification in comparison to that of the control group, F (1,18) = 17.3, $p < .01$ (see Table 18). The experimental group's mean attitude score was 47.8 and the control group's mean attitude score was 41.6. Using the criterion of a score of 45 or greater, the experimental group expressed a "positive" attitude, whereas the control group maintained their "slightly positive" attitude. However, results of the posttest questionnaire indicate no significant difference between the experimental group's knowledge of behaviour modification and that of the control group, F (1,18) = .05, $p > .05$ (see Table 19). The experimental group's mean knowledge score was 4.3 and the control group's mean knowledge score was 4.6.

In an attempt to understand the lack of increase in knowledge by the experimental group following the workshop, their answers to the questions used to determine knowledge (Part B, Questions 3 & 5) were examined in detail. Comparison of the percentage of experimental group nurses who indicated

Table 17

Analysis of Variance: Pretest Knowledge Scores for Experimental and Control Groups

Source	SS	df	MS	F
Between groups	7.68	1	7.68	1.61 ns
Within groups	95.64	20	4.78	
Total	103.32	21		

Table 18

Analysis of Variance: Posttest Attitude Scores for Experimental and Control Groups

Source	SS	df	MS	F
Between groups	186.6	1	186.6	17.3**
Within groups	194.2	18	10.8	
Total	380.8	19		

**$p < .01$

Table 19

Analysis of Variance: Posttest Knowledge Scores for Experimental and Control Groups

Source	SS	df	MS	F
Between groups	.45	1	.45	.05 ns
Within groups	148.55	18	8.25	
Total	149.00	19		

each technique as a "behaviour modification" technique (Part B, Question 3) at pre and post testing, suggests gains in some areas and losses in others. Although a slightly higher percentage of the nurses at posttesting recognized thought stopping, and a significantly higher percentage recognized time out, $\chi^2(1) = 4.09$, $p < .05$, a significantly higher percentage of the nurses also incorrectly identified sensory deprivation as a "behaviour modification" technique, $\chi^2(1) = 7.0$, $p < .01$ (see Table 20).

Table 21 presents the summary of Chi Square analysis conducted on the percentage of experimental group nurses' correct responses on six multiple-choice questions (Part B, Question 5) at pre and post testing. Although there were no significant differences indicated for any of the questions, the experimental group nurses identified the correct answer at posttesting slightly more often for questions C, D and F. However, the percentage of correct responses for questions A and E slightly decreased at posttesting. For question B there was no difference in the frequency of correct responses from pre to post testing.

Table 20

Summary of Chi Square Analysis: Percentage of Experimental Group Nurses who Identified each Procedure as a "Behaviour Modification" Technique at Pre and Post Testing

Procedure	Pretest (n = 11)	Posttest (n = 9)	χ^2
Positive reinforcement	100.0	100.0	0.00 ns
Negative reinforcement	54.4	44.4	0.18 ns
Cognitive restructuring	45.4	55.6	0.18 ns
Time out	63.6	100.0	4.09 *
Systematic desensitization	18.2	22.2	0.05 ns
Thought stopping	0.0	22.2	2.67 ns
Overcorrection	9.1	11.1	0.02 ns
Psychotherapy	27.3	66.7	3.06 ns
Psychoanalysis	18.2	33.3	0.60 ns
Neutral reinforcement	27.3	22.2	0.60 ns
Electroconvulsive shock therapy	9.1	22.2	0.67 ns
Sensory deprivation	45.4	100.0	7.00 **
Mind control drugs	0.0	11.1	1.28 ns
Transactional analysis	0.0	0.0	0.00 ns
Brainwashing	0.0	0.0	0.00 ns
Psychosurgery	0.0	0.0	0.00 ns
EST	0.0	0.0	0.00 ns
Rolfing	0.0	0.0	0.00 ns

*$p < .05$ **$p < .01$

Table 21

Summary of Chi Square Analysis: Percentage of Experimental Group Nurses' Correct Responses on Six Multiple-choice Questions at Pre and Post Testing

Question	Pretest (n = 11)	Posttest (n = 9)	χ^2
A. At the early stages of training which of the following greetings would be the best to begin a conversation?			
1. Hello, how are you feeling today?			
2. Hello, how did physical therapy go this morning?			
3. Hello, don't you look good today.			
4. Hello, I saw your family last night. Boy are they attractive.	66.7	33.3	.93 ns
B. As you encourage your patient's discussions of non-pain related subjects you notice in the nursing records that he still talks mostly about his pain to the other shift. This tells you that:			
1. The patient's pain is worse during the other shift than during your own.			
2. The other shift is not consistently following your programme.	100.0	100.0	0.00 ns
3. The patient is more open and honest with the other shift.			
4. The patient's pain is not psychological in nature and your pain programme should be redesigned.			

(table continues)

Question	Pretest (n = 11)	Posttest (n = 9)	χ^2
C. An effective programme to increase verbal well behaviour should emphasize:			
1. The ignoring of verbal pain behaviour.			
2. The rewarding of verbal well behaviour.			
3. The prompting of verbal well behaviour.			
4. All of the above are correct.	81.8%	100.0	.45 ns
D. If your pain patient stops discussing his pain behaviour but still talks about negative aspects of his home life and future, this suggests that you need to:			
1. Console and comfort him, reassuring him that everything will turn out all right.			
2. Ignore these responses but monitor him closely and reward him the first time he speaks of more positive topics.			
3. Bring up topics or bring in materials that were of interest before his pain preoccupied his life, that will prompt more positive communication.	36.4	66.7	1.82 ns
4. Encourage him to get his feelings out and unleash his despaire.			
E. The behavioural law which states that consequences of an act primarily influence whether the act will be repeated is:			
1. The Law of Consistency.			
2. The Law of Effect.	36.4	11.1	1.68 ns

(table continues)

Question	Pretest (n = 11)	Posttest (n = 9)	χ^2
3. The Law of Stiuational Control.			
4. The Law of Demand.			
F. It is best to view chronic pain behaviour as under the control of:			
1. Primarily tissue damage.			
2. Tissue damage and environmental factors.	9.0	22.2	.67 ns
3. Primarily environmental factors.			
4. Both tissue damage and early childhood experiences.			

Note. Questions A, B, C, and D are based on the following situation: Your patient is a notorious complainer, if he isn't feeling bad he is griping about how terrible he felt in the past. You wish to increase the amount of time he discusses other things besides his poor health. In other words, you wish to increase his discussions of non-pain related subjects.

Discussion

The purpose of this study was to examine the relationship between nurses' attitudes toward behaviour modification and their knowledge of it. The basic premise was that if nurses' level of knowledge was similar to that of the general public, then nurses may also have misconceived notions of behaviour modification, thereby producing negative attitudes toward it.

It was hypothesized that a relationship between nurses' attitudes toward behaviour modification and their knowledge of it, does exist; such that greater knowledge would give rise to more favourable attitudes. The results of the present study provide inconsistent findings: Results of the survey conducted with administrative, ward and student nurses provide support for the hypothesis, whereas results of the workshop conducted with an experimental and control group of ward nurses suggest a lack of support for the hypothesis. It is believed that the results of the workshop occured as a function of experimentor error. A detailed discussion of this will be presented later, but first the results of the survey will be discussed.

All of the nurses surveyed were either "slightly knowledgeable" or "knowledgeable" regarding behaviour modification and primarily expressed either "slightly positive" or "positive" attitudes toward it. This is an interesting and unexpected finding, if nurses are considered similar to

the general public in terms of their level of knowledge of behaviour modification. Although a measure of the attitudes toward, knowledge of and experience with behaviour modification was not obtained for the general public and therefore a direct comparison cannot be made, it might be inferred from the results of this survey that nurses are more knowledgeable of behaviour modification than the general public. The fact that years of nursing experience appear to be correlated with nurses' knowledge of behaviour modification, such that knowledge increases with a correspondent increase in the number of years worked (as indicated by the analysis of covariance), suggests that nurses are exposed to behaviour modification throughout their nursing careers. Considering that nurses work in the same environment as other health service providers, like psychologists, and both professions share the basic commonality of 'treating' people, it is likely that behaviour modification would be more familiar to professionals working in the same environment, than to people not working in the same environment or in a similar profession. If other health service providers, ie. social workers, occupational therapists, physiotherapists, etc., working in the same environment, were surveyed regarding their knowledge of behaviour modification, one would probably find that they too possess a higher level of knowledge than the general public.

Young and Patterson (1981) found that with greater knowledge of behaviour modification more favourable attitudes

were expressed towards it. The results of the survey do not provide conclusive evidence to support their findings, however the results do suggest that a relationship might exist in this direction. A significant positive correlation was found for the knowledge and attitude scores of nurses who were "knowledgeable" regarding behaviour modification. Also, both the mean knowledge and attitude scores, 6.2 and 42.9 respectively, for these "knowledgeable" nurses, are higher than the mean knowledge and attitude scores, 1.3 and 41.5 respectively, for the "slightly knowledgeable" nurses. Although the difference between their mean attitude scores is slight, it is in the direction postulated. Unfortunately, the range of knowledge scores obtained in the survey did not include scores less than or equal to -4, the criterion used to define "insufficient knowledge". Had these scores been obtained, then examination of their corresponding attitude scores may have clarified the nature of the relationship between nurses' knowledge of behaviour modification and their attitudes toward it.

The fact that some form of relationship exists between nurses' knowledge of and attitudes toward behaviour modification is demonstrated through the results of the "knowledgeable" nurses' opinions regarding the appropriateness of three therapeutic procedures: behaviour modification, psychotherapy and shock therapy or sensory deprivation, for use with various client populations. Their positive attitudes toward behaviour modification were revealed by the fact that

they considered it significantly more appropriate than psychotherapy for: normal children, the mentally retarded and people who have difficulty at casual parties. The "knowledgeable" nurses also considered behaviour modification as a significantly more appropriate form of treatment than shock therapy or sensory deprivation for all of the client populations listed. Now, although only knowledge of behaviour modification was assessed by the questionnaire, it was discovered that nurses gained knowledge of behaviour modification through their years of nursing experience. It might be inferred that they also gained knowledge of psychotherapy and shock therapy or sensory deprivation through a similar process. Thus, if the nurses can be considered equally knowledgeable regarding the therapeutic procedures, then the distinctions that they made regarding the appropriateness of therapeutic procedures for use with different client populations, may also have occured as a result of the knowledge they possessed about them.

It would appear that the formation of attitudes may be greatly influenced by knowledge. Examination of the literature on attitude formation suggests that knowledge does influence attitude (Fishbein & Ajzen, 1975).

Fishbein and Ajzen developed a conceptual framework involving the distinction between attitudes, beliefs, intentions and behaviour, and the relations between these variables. They propose a causal chain linking beliefs to attitude, beliefs and attitude to intentions and intentions

to behaviour. Since performance of behaviour may provide the person with new information which can influence beliefs the process is thus cyclical with the variables being subject to change depending on the nature of the input at any given time (Fishbein & Ajzen, 1975).

According to Fishbein and Ajzen, beliefs are the foundation of the theory. Beliefs represent the information held about an object, gathered from direct observation, outside sources, or by way of various inference processes. They say that, "The totality of a person's belief serves as the informational base that ultimately determines his attitudes, intention and behaviour" (p. 14).

Relating their theory to the results of this study, the knowledge of behaviour modification possessed by the nurses can be considered a component of the informational base upon which their beliefs and thus attitudes toward behaviour modification were determined.

The workshop was conducted for ward nurses with the intention of demonstrating that an increase in knowledge of behaviour modification would produce more favourable attitudes toward behaviour modification. Although more favourable attitudes were expressed by the experimental group of nurses in comparison to that of the control group, from pre to post testing, the results do not suggest that this occured as a function of increased knowledge. To the contrary, both the experimental and control groups of nurses demonstrated a decrease in knowledge from pre to post testing.

However, the results can be interpreted as a function of experimentor error, rather than to suggest that the experimental group of nurses did not learn anything from the workshop. The problem lies in the use of the questionnaire used in the survey as the pre and post test instrument for the workshop.

Comparison of the questions used to measure knowledge of behaviour modification with the content of what was taught to the nurses at the workshop, reveals considerable inconsistency. For example, three of the seven behaviour modification techniques listed for recognition: cognitive restructuring, thought stopping and systematic desensitization, were not taught during the workshop. Actually, the techniques that were primarily focused upon in the workshop were the other behaviour modification techniques: positive reinforcement, negative reinforcement, time out, and overcorrection. The remaining 11 non-behaviour modification techniques listed were not addressed in any way which would have enabled the workshop participants to make a distinction between them and techniques of behaviour modification. This may account for the significant increase from pre to post testing of the indication that sensory deprivation is a technique of behaviour modification. The workshop participants may have confused sensory deprivation with time out.

Examination of the six multiple-choice questions asked, indicates further inconsistency between what was taught and what was measured. The workshop participants were required

to indicate which law states "... that consequences of an act primarily influence whether the act will be repeated." Although the behavioural principles involved in this law were addressed in the workshop, the law itself was not named. The remaining multiple-choice questions require not only a complete understanding of the principles of behaviour modification but the ability to generalize and apply them as well.

It is apparent then, that the instrument used to measure knowledge gained by attendance and participation at the workshop was not a valid measurement instrument. Consequently, the knowledge scores obtained cannot be considered a valid reflection of what was learned. At this point it can only be assumed that the nurses did increase their knowledge of behaviour modification through attendance and participation at the workshop, and that this increase in knowledge would have been reflected had an appropriate measurement instrument been used for pre and post testing.

It is interesting to note that regardless of knowledge, attitudes toward behaviour modification became even more favourable. Although it can only be assumed that an increase in knowledge did occur and thus contributed to the increase in attitudes, one might ask if there were any other factors that prompted the increase in attitude as well. One possible explanation for the increase in attitude can be borrowed from Persuasion Theory of attitude change. Cooper and Croyle (1984) reported that research has demonstrated, "Comprehension

was apparently unnecessary for attitude change when the target relied on salient source chacteristics which suggested that the source was high in credibility" (p. 417). Essentially they are suggesting that if the workshop participants considered the leader and/or materials used, as credible, then their attitudes toward behaviour modification may have increased as a function of the source characteristics, rather than as a function of increased understanding of behaviour modification.

The theory proposed by Fishbein and Ajzen (1975) may also account for some of the increase in attitude. Recall their proposal that performance of behaviours may provide a person with new information which can influence beliefs. The fact that nurses engaged in the behaviour of attending a workshop in the principles and techniques of behaviour modification may have contributed to an increase in attitude towards behaviour modification.

The above explanations for the demonstrated increase in attitude by the experimental group following the workshop in the principles and techniques of behaviour modification, suggest that many factors contribute to the formation of attitudes. It is apparent that the relationship hypothesized between knowledge and attitude is not as simple as first thought. This study has demonstrated that a relationship does exist between knowledge and attitude, however the extent of knowledge which influences attitude has yet to be determined. Considering that the primary focus of this thesis

deals with nurses' knowledge of, attitudes toward and experience with behaviour modification, readers interested in attitudes and attitude formation are referred to the literature for a detailed discussion (Fishbein & Ajzen, 1975; Cooper & Croyle, 1984).

Marilyn Hauser (1978) questioned whether nurses were resisting behaviour modification, or whether they were simply ignorant regarding its potential utility for them. Inspection of the knowledge and attitude data in the present study indicates that nurses are at least slightly knowledgeable of behaviour modification and generally consider it in a positive light. However, the majority of this data was obtained from administrative and student nurses, not ward nurses. Only 13 of 40 ward nurses returned the questionnaires and only 22 of over 1000 ward nurses were interested in attending a workshop in the principles and techniques of behaviour modification. Considering that ward nurses are the ones who have the most direct patient contact of these three groups, their low return rate for the questionnaires and minimal interest in the workshop was quite discouraging. Perhaps ward nurses are resisting behaviour modification or are generally ignorant of its potential utility for them.

If this study were to be conducted again, the survey should be distributed to ward nurses only. Perhaps then the true status of nurses and behaviour modification would be reflected. Also, considering that this survey was conducted in one hospital in Newfoundland, a relatively isolated

province, nurses from across Canada should be surveyed in an attempt to control for any biases which might result as a function of geography. Rather than attempt a two-part study such as this one either a survey or an experiment should be conducted. In this way confusion of data would be avoided and the research would be more focused.

In the event that the workshop procedure were replicated, a number of changes would be recommended. First of all, the pre and post test instrument would have to be designed to assess what was being taught in the workshop. Secondly, an evaluation of nurses' utilization of behaviour modification techniques should be incorporated into the experimental design, an important component not included in the present study. Finally, a multiple-baseline design could be considered, ie. offer repeated workshops and examine the data obtained, in order to observe the progressive development of nurses knowledge of, attitudes toward and experience with behaviour modification.

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Appendix

Questionnaire

A survey regarding Behaviour Modification is being conducted at this hospital by Mrs. Valarie Spencer, Psychologist, in conjunction with the Department of Nursing. We would like your assistance by answering the following questions. Your 'own' answers are important, so please do not discuss the questions with your collegues. Your answers will be coded for computer processing and you will remain completely anonymous. Do not sign your name to any part of the questionnaire. Remember, it is your own answers that count.

The term behaviour modification is used synonomously with behaviour therapies, behavioural interventions or behavioural treatments.

Part A

Answer the way you really feel about each statement. There are no right or wrong answers. There are five possible answers to choose from: Strongly Agree, Agree, Uncertain, Disagree, and Stringly Disagree.

Please answer every question by placing a checkmark (✓) under the answer you choose.

Behaviour modification..	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. is desirable for increasing desired behaviour.					
2. is effective for increasing desired behaviour.					
3. is desirable for decreasing undesired behaviour.					
4. is effective for decreasing undesired behaviour.					
5. is unethical.					
6. enhances human potential.					
7. is dehumanizing.					
8. affects human dignity positively.					

table continues

Behaviour modification..	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
9. should be illegal.					
10. increases the personal freedom of the client or patient.					
11. is meant only for use by psychologists.					
12. techniques should definitely enhance nursing care.					
13. is mechanistic and impersonal.					
14. techniques are cost effective over time.					
15. Could help you improve the quality of your life.					

Part B

Please circle the number corresponding to your response.

1) How knowledgeable do you think you are about behaviour modification and its implications for human society?

1. Very informed
2. Informed
3. Poorly informed
4. Very poorly informed

2) Where did you obtain most of your information regarding behaviour modification?

1. newspapers
2. psychology class
3. radio
4. at work
5. friends
6. other (specify) _____

3) Which of the following are part of behaviour modification? Check all that apply.

( ) mind control drugs
( ) est
( ) brainwashing
( ) time out
( ) cognitive restructuring
( ) rolfing
( ) sensory deprivation (isolation)
( ) electroconvulsive shock therapy (ECT)
( ) thought stopping
( ) transactional analysis
( ) systematic desensitization
( ) psychosurgery
( ) psychoanalysis
( ) positive reinforcement
( ) negative reinforcement
( ) neutral reinforcement
( ) psychotherapy
( ) overcorrection

4) How appropriate is EACH form of treatment for the following groups of people? KEY: V. A. = Very Appropriate; S. A. = Somewhat Appropriate; S. I. = Somewhat Inappropriate; V. I. = Very Inappropriate.

Groups	Treatments	V. A.	S. A.	S. I.	V. I.
Normal children	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
Homosexuals	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
Persons with marital problems	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
The mentally retarded	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				

table continues

Groups	Treatments	V. A.	S. A.	S. I.	V. I.
Prisoners	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
Mental hospital patients	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy.				
People with emotional problems	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
Child molesters	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				

table continues

Groups	Treatments	V. A.	S. A.	S. I.	V. I.
Children with academic difficulties	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				
Poeple who have difficulty at casual parties	Behaviour modification				
	Shock therapy or Sensory deprivation				
	Psychotherapy				

5) Read each question and circle the number of the one answer which best answers the question.

Questions A to D are based on the following situation: Your patient is a notorious complainer, if he isn't feeling bad he is gripping about how terrible he felt in the past. You wish to increase the amount of time he discusses other things besides his poor health. In other words, you wish to increase his discussions of non-pain related subjects.

A) At the early stages of training which of the following greetings would be the best with which to begin a conversation?

1. Hello, how are you feeling today?
2. Hello, how did physical therapy go this morning?
3. Hello, don't you look good today.
4. Hello, I saw your family last night. Boy are they attractive.

B) As you encourage your patient's discussions of non-pain related subjects you notice in the nursing records that he still talks mostly about his pain to the other shift. This tells you that:

1. The patient's pain is worse during the other shift than during your own.
2. The other shift is not consistently following your programme.
3. The patient is more open and honest with the other shift.
4. The patient's pain is not psychological in nature and your pain programme should be redesigned.

C) An effective programme to increase verbal well behaviour should emphasize:

1. The ignoring of verbal pain behaviour.
2. The rewarding of verbal well behaviour.
3. The prompting of verbal well behaviour.
4. All of the above are correct.

D) If your pain patient stops discussing his pain behaviour but still talks about negative aspects of his homelife and future, this suggests that you need to:

1. Console and comfort him, reassuring him that everything will turn out all right.
2. Ignore these responses but monitor him closely and reward him the first time he speaks of more positive topics.
3. Bring up topics or bring in materials that were of interest before his pain preoccupied his life, that will prompt more positive communication.

4. Encourage him to get his feelings out and unleash his despair.

E) The behavioural law which states that consequences of an act primarily influence whether the act will be repeated is:

1. The Law of Consistency.
2. The Law of Effect.
3. The Law of Situational Control.
4. The Law of Demand.

F) It is best to view chronic pain behaviour as under the control of:

1. Primarily tissue damage.
2. Tissue damage and environmental factors.
3. Primarily environmental factors.
4. Both tissue damage and early childhood experience.

Part C

This is the final section of the questionnaire and we would like to remind you that you will remain completely anonymous.

Please indicate the correct answer by either placing a checkmark (✓) in the appropriate bracket, or writing it down in the designated space.

1. Sex: Male ( )
   Female ( )
2. Do you have any children? Yes ( )
   No ( )
   If yes, how many? _____

3. What was your age last birthday? ____ years.

4. What are your nursing qualifications? Check as many as you have.

Nursing assistant ( )

Chartered nursing assistant ( )

Registered nurse (Diploma) ( )

Bachelor of Nursing ( )

Master of Nursing ( )

Other _____

5. Where did you receive your training?

_____

6. How many years of actual nursing experience do you have?

____ year/s

7. Have you ever received any training in behaviour modification?

Yes ( )

No ( )

If yes, a) Was it offered in the form of a:

Course ( )

Workshop ( )

Inservice ( )

Other _____

7b) Where did you receive this training?

Place of employment ( )

Other local facility ( )

Out of town ( )

7c) Approximately how many hours did it take to complete this training?

1 - 5 hours ( ) 11 - 15 hours ( ) 21 - 25 hours ( )

6 - 10 hours ( ) 16 - 20 hours ( ) 26 - 30 hours ( )

31 - 35 hours ( ) 36 - 40 hours ( ) more ( )

7d) What was your position at the time?

Staff nurse ( )

Ward nurse ( )

Charge nurse ( )

Head nurse ( )

Nursing supervisor ( )

Nursing coordinator ( )

Assistant director of nursing ( )

Director of nursing ( )

Nurse practitioner ( )

Other _____

7e) Were you able to apply what you learned at work?

Yes ( )

No ( )

N/A ( )

8. Have you ever worked on a unit where behavioural treatment programmes were in effect?

Yes ( )

No ( )

If yes, a) Where were you employed at the time? _____

8b) What was your position at the time? (Please refer to the classifications provided in 7d).

_____

8c) Were you able to give input regarding programme design?

Yes ( ) No ( ) Sometimes ( )

9. Are you currently utilizing any behavioural techniques in your nursing position?

   Yes ( )

   No ( )

   N/A ( )

10. Do you currently use problem oriented charting?

   Yes ( )

   No ( )

   N/A ( )

11. Do you feel that the principles and techniques of behaviour modification would be useful for you to know and use?

   Yes ( )

   No ( )

   Please give reasons why.

   _____

   _____

   _____

Thankyou for your participation in this study.