NURSING PAPERS
PERSPECTIVES EN NURSING

Preliminary Examination of Long-Term Outcomes of Stimulation Programs for Pre-Term Infants

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NURSING PAPERS
PERSPECTIVES EN NURSING
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EDITORIAL

This is a double issue of Nursing Papers, comprising the Summer 1978 and Fall 1978 issues, which are being bound and mailed together. Our production is catching up — Fall 1978 is the fifth issue mailed within the past ten months.

We are pleased to publish the names of representatives selected by the regions for our journal's Steering Committee:

Joan Anderson — Western Region
Julienne Provost — Quebec Region
Patricia Sullivan — Atlantic Region
May Yoshida — Ontario Region

The three remaining members of the Steering Committee are Moyra Allen, Editor; Mary Jerrett, Ambassador from McGill University; and Vivian Geeza, Managing Editor. These three members, together with Julienne Provost who represents the Quebec region as well as the Université de Montréal, are responsible for managing and coordinating the week-to-week operations of Nursing Papers. The entire Steering Committee intends to meet at each Annual Meeting and each Deans and Directors Meeting of the C.A.U.S.N.

Within each region, members of the Steering Committee work to help faculties recognize the importance of scholarly writing and reporting on research. They keep up to date on nursing research within the regions, which in turn acts to stimulate the development of research in nursing, regionally.

The Ambassador and/or Review Board members of each faculty work on behalf of the journal to solicit articles and subscriptions, and to promote the use of *Nursing Papers* in teaching. We hope that each regional committee, comprising the Regional Representative, Review Board members and Ambassadors, will meet from time to time to focus on regional needs and issues.

The Steering Committee, we believe, is a means to make *Nursing Papers* more responsive and accountable to all parts of the country's nursing leadership.

Half a year ago, we proposed to the alumnae associations of major university and hospital schools of nursing a three-year program of major support for *Nursing Papers*. We are pleased to acknowledge the receipt of a $1,000 donation from the alumnae of the University of Alberta Faculty of Nursing. MacMaster University and the University of Toronto have also contributed to this appeal.

EDITORIAL

Voici un double numéro de la revue "Perspectives en Nursing" comprenant le numéro de l'été et celui de l'automne 1978 que nous avons reliés ensemble à votre intention. Nous sommes donc bien en voie de mise à jour: en effet, le numéro d'automne 1978 est le cinquième à paraître en dix mois.

Nous sommes heureux de publier le nom des représentantes choisies par les régions pour siéger au comité directeur de la revue:

Joan Anderson, région de l'Ouest
Julienne Provost, région du Québec
Patricia Sullivan, région de l'Atlantique
May Yoshida, région de l'Ontario

Les trois autres membres du comité directeur sont Moyra Allen, rédacteur-en-chef, Mary Jerrett, représentante de l'Université McGill et Vivian Geeza, adjointe-administrative. Toutes trois, de même que Julienne Provost, représentante de la région du Québec et de l'Université de Montréal, sont chargées de la direction et de la coordination des activités de publication de "Perspectives en Nursing". Tous les membres du comité directeur se proposent d'assister aux assemblées annuelles ainsi qu'aux réunions des doyens et des directeurs de l'A.C.E.U.N.

Dans leur région respective, les membres du comité directeur travaillent de façon à faire prendre conscience aux facultés de l'importance des rapports de recherche et des articles d'érudition. Ils se tiennent au courant des recherches en sciences infirmières dans leur région, ce qui contribue à stimuler le développement régional de telles recherches.

La représentante de la Rédaction et les membres du comité de révision de chaque faculté travaillent pour la revue en sollicitant articles et abonnements. Ils encouragent également l'emploi de "Perspectives en Nursing" dans l'enseignement. Nous espérons que les membres de chaque comité régional, y compris la représentante de la région, les membres du comité et les représentantes de la rédaction se réuniront de temps à autre pour se centrer sur les besoins et les questions d'importance dans chaque région.

A notre avis, le comité directeur devrait permettre de mieux adapter "Perspectives en Nursing" aux besoins et aux attentes des leaders en sciences infirmières dans le pays tout entier.

Il y a sept mois, nous proposions aux Amicales des principales écoles de science infirmières des universités et des hôpitaux, un important programme de soutien de notre revue "Perspectives en Nursing" échelonné sur trois ans. Nous sommes heureux d'annoncer que nous avons reçu un don de $1,000 des anciennes de la faculté des sciences infirmières de l'Université de l'Alberta. L'Université MacMaster ainsi que l'Université de Toronto ont également répondu à notre appel.

Dans un prochain numéro, Julienne Provost, Représentante de la Région du Québec et de L'Université de Montréal, apportera ses commentaires suite à un miniquestionnaire adressé à des infirmières de la région.

The Effect of Pre-Term Infants' Decreasing Mortality on their Future Morbidity: Preliminary Examination of Long-Term Outcomes of Stimulation Programs for Pre-Term Infants

JACQUELINE S. CHAPMAN*
Professor, Faculty of Nursing
University of Toronto

ORIENTATION TO THE PROBLEM

The percentage of neonates that will be classified as premature infants in 1978 will be approximately 8 percent of all live births. In spite of all the advances in perinatalogy in the past decade the rate of prematurity has remained unaltered. The definition of a premature infant, however, has received critical scrutiny in the past decade.

Any infant who, at birth, weighs 2500 grams (5½ pounds) or less, for vital statistic purposes, is classified as premature. Such a definition does not differentiate between the undersized infant who is the product of a 9 month pregnancy and the infant of comparable birth weight who is born several weeks or even months prior to his mother's expected date of confinement. 'Pre-term infant' is the term now used to connote an infant who is born at 37 or fewer weeks from conception (Hunt and Rhodes, 1977, p. 206). The term 'small-for-gestational-age infant' is used by Lubchenco (1978) for an infant of any gestational age who, at birth, is below the 10th percentile for the expected weight of an infant born that long after conception. The term 'appropriate-for-gestational-age' means that the pre-term infant's measurements, clinical features, and neurological examination are congruent with expected values for the length of time he has been in utero.

Mortality and morbidity of premature infants have been found to be influenced both by how long before term the infant is born and,

* This project is supported by NHRDP grant 606-2024-48. It could not have been accomplished without the aid of (1) members of the Faculty of Nursing competent in administration of the Rosenblith Test — Elizabeth Benson, Roslyn Goode, Judith Hendry, Ellen Hodnett and Blondina Matheson; (2) consultant from and graduates of the Institute of Child Study — Professor Betty Flint, Linda Mounts and Margaret Wilson; (3) research assistants Sharon Samland and Carol Mellor; (4) the premature nursing staff of three teaching hospitals; (5) Dr. A. Shennan, neonatologist; and (6) the public health nurses throughout the province of Ontario.

in the case of the small-for-gestational-age infant, the degree of intrauterine growth retardation experienced. The earlier in pregnancy the child is born, the lower his birth weight and the higher his risk for mortality.

In the past decade the mortality rate of the smallest group of preterm infants who at birth weigh 1500 grams (3 lbs. 5 oz.) or less has decreased from 85% to 50% (Fitzhardinge and Campbell, 1977, p. 126). Use of neonatal intensive care units, the neonatalogist, and the machinery available for ventilatory assistance are key factors in this decline of mortality in these very small infants. When all pre-term infants up to 35 gestational weeks are included — many of whose birth weights would exceed 1500 grams (3 lbs. 5 oz.) — the mortality rate encountered a decade ago was 35% (Chase, 1973, p. 25).

Today, or at least from 1977 statistics, in one hospital with 2619 live births, 209 (7.9%) were classified as premature.* Only 15 (7.2%) of these 209 infants died, and 13 of these 15 deaths occurred in infants under 1500 grams. Hence although the rate of prematurity has not changed, an increasing number of infants survive prematurity.

Statement of the problem. Fitzhardinge and Campbell (1977, p. 126) ask, "Does a reduction in mortality now lead to an increase in morbidity later on?" Morbidity as defined by Lubchenco and others (1972) encompasses learning problems as well as physical handicaps.

Justification for the study. Outcome studies of U.S. health care for pre-term infants born in the early 1960's (Lubchenco and others, 1972, p. 510) show that few survivors were devoid of some developmental handicap at 10 years of age. In France 21% of pre-term infants born before 1962 had long-term "serious and definitive neurological sequellae" (Dargassies, 1977, p. 465).

Giles (1978), a physician, in presenting an historical perspective of perinatalogy at the 3rd Annual March of Dimes Perinatal Nursing Conference outlined the nursery policies that existed in the early 60's as follows: 1) prevent the mother from seeing her infant particularly if it is likely to die; 2) separate the mother and the baby at birth; 3) allow no visitors into the nursery; and 4) if the infant is 10 weeks or more early allow it to die. From today's perspective it does not seem surprising that the long-term follow-up of infants housed in the 1960 nurseries which observed these policies should show high rates of morbidity. In the 1960's however, nurses such as Eileen

* According to the 1977 Neonatal Intensive Care Unit Annual Report of Hospital A where the majority of the sample was obtained.

Hasselmeyer (1961, 1963) began to challenge those policies. She provided planned tactile and vestibular stimulation for infants who could maintain their temperature outside of the isolette. By 1967 another nurse, Mary Neal, had patented a motor-driven hammock so that smaller infants, unable to be removed from an isolette, could be rocked within its warm confines. In the 1970's several nurses have placed speakers inside the isolette to present, periodically, music, a heart beat, or taped parental voices to premature infants (Barnard, 1973; Chapman, 1975; Katz, 1971; Segall, 1971). Parents are now encouraged to visit their premature infants and to participate in their care. The 'no-touch' phenomenon of the 1960's is gone and hospital nursing staffs who recognize the importance of intermittant, multimodality, patterned incoming stimuli to the developing infant's brain provide such stimuli.

Stimulation programs both in the nursery (Chapman, 1975; Barnard, 1973; Katz, 1971; Neal, 1967; Segall, 1971) and during the first year (Williams and Scarr, 1971, p. 296) have been shown to have beneficial effects on infant development. However, recently the beneficial effects of early stimulation programs on long-term development has been challenged (Wachs and Cucinotta, 1977). Clarke (1977) states that the effects of even prolonged early intervention fade if not followed by similar intervention. In 1976 Ross and Leavitt contended that there was a clear and present need to evaluate the effectiveness of infant stimulation programs. The project "Longitudinal Assessment of Planned Hospital and Home Stimulation Programs for Pre-Term Infants" (NHRDP project 606-2024-48) was initiated to meet this need as well as to see if, since 1975, the health care system has succeeded in decreasing morbidity as well as mortality in pre-term infants.

Research questions. Two specific problems were identified and formulated into research questions:

(1) "When if ever, does the pre-term infant catch up?" (Hunt and Rhodes, 1977).

(2) Do planned stimulation programs influence the long-term development of pre-term infants?

LITERATURE REVIEW

Previous publications (Chapman, 1975, 1976, 1978) provide more extensive reviews of the literature on the modalities available for use in infant stimulation programs, and introduce the rationale for selecting auditory stimulation as an appropriate modality for use with pre-term infants who are confined to incubators.

The younger the premature infant, the greater the number of purposeless, uninhibited limb movements he exhibits. These gestationally younger infants concurrently have low birth weights ($r = .67$; Chapman, 1975, p. 114) and may take from 12 days to 3 weeks to regain even that low birth weight level. It is assumed that shortening of the aforementioned length of time to regain, by decreasing the extent of initial weight loss for those infants, contributes to a decrease in mortality. Brackbill (1971, p. 25) contends that the motility of the gestationally young infant poses a threat to his survival. Wolff (1966, p. 40) found that among the auditory, visual, and tactile modalities, sound was the most effective way to achieve decrement in the level of the neonate's activity.

Concurrently, as for all other modalities, auditory stimulation can be planned to meet the criterion of continually changing, patterned stimuli. The premature infant housed in an incubator does not have the same opportunity for either the variety or extent of stimuli to meet this criterion as does his/her counterpart who completes the last trimester *in utero*. Normal human development is believed to be contingent on the impact of varied stimuli on the organism (Fiske and Maddi, 1961, p. 13). Hence, prematurely born infants miss much of the multimodality patterned stimuli available to the fetus during the last trimester.

It is assumed that provision for simulation of any of the interuterine modalities in the extrauterine environment of the premature infant contributes to a decrease in the morbidity statistics referred to earlier in this report. A continually varied, patterned external stimulus is effective because it creates excitation in the reticular activating system (Morruzzi and Magoun, 1949, p. 470). A stimulus in any modality enhances the sensitivity of the cortical sensory receptors for other modalities (Sokolov, 1963, p. 13). Hence, since auditory stimulation concurrently achieves decrement in motility, a mortality-related factor, patterned auditory stimulation was chosen as the modality of choice for stimulation of pre-term infants confined to incubators.

Conceptual framework. The research questions are raised within one of nursing's theoretical frameworks. Martha Roger's interrelated concepts about the phenomenon of man's interaction with his environment through time are paramount for this study. She states: "Developmental events along life's axis express the growing complexity of pattern and organization evolving out of multiple previous man-environment interactions" (Rogers, 1970, p. 16). Recently extrauterine life for the pre-term infant has been found to actually accelerate

development for the first few months (Hunt and Rhodes, 1977, p. 207). Pre-term infants have had multiple interactions by the time they reach their mother's expected date of confinement. It would seem that if these interactions were planned to aid development, the potential of the infant would be maximized. Nursing practice both in the hospital and in the public health fields is viewed as promoting integrative interactions such that the pre-term infant's development is optimized.

Purpose. The purpose of the study is 1) to assess the intellectual, motor, and social functioning of pre-term infants at the developmental ages of 9 and 18 months, at 3 years, and yearly thereafter until age 8; and 2) to evaluate the effectiveness of planned hospital and home stimulation programs provided to some of these infants.

Research hypothesis. Pre-term infants exposed to stimulation programs will have greater developmental attainment than control subjects as demonstrated by 1) scores on The Rosenblith Scale prior to hospital discharge; and 2) after discharge by a) infant self and other trust as demonstrated on The Flint Infant Security Scale at four periods in the first year and one period in the second year; and on b) The Bayley Scales of Infant Development at 9 and 18 months from their mothers' expected dates of confinement, and on c) The Sanford-Binet and Vineland Social Maturity tests at 3 years chronological age.

For this report it is only possible to take a preliminary look at the potential answers for these hypotheses. To date almost 200 subjects have been admitted to the study. As yet, however, only 35 subjects have attained 18 months from their mother's expected date of confinement; the target sample will be 216 subjects (6 groups with 36 subjects in each).

METHOD

Subjects. Cluster sampling (Treece and Treece, 1973, p. 82) provides the initial population. Three high-risk nurseries are the source of the pre-term infants in this study. All pre-term infants without congenital anomalies or addicted mothers who are admitted to these 3 nurseries are eligible for inclusion in the sample if their anticipated hospital stay is at least 4 weeks. A three-group randomized block assignment of subjects is used. Groups are stratified by hospital and sex. Subjects are assigned to one of three groups: a control group, an alternate group, or a sequential group. The control group receives the usual care provided in the facility. In addition, the alternate group's stimulation program consists of 5 minutes of Brahms's "Lullaby" alternated with 5 minutes of a taped recording

of the infant's parent(s) voice(s) reading nursery rhymes. This alternating tape is played for 5 to 10 minutes at the midpoint of the infant's feeding schedule.

A second experimental group, designated the sequential group, has, in addition to the usual care, Brahms's "Lullaby" played at the same intervals as the alternate group during the first half of their hospitalization, then, the parental voice tape is substituted for the latter half of the infant's hospitalization.

The comparison of the effect of sequential presentation of music and voice to the alternate presentation has been derived from inductive theoretical considerations.

As pointed out in the literature review, patterned auditory stimulation would seem the independent variable of choice to decrease the mortality-related writhing of the premature infant as well as to concurrently contribute to maturation and reduce long-term morbidity.

Auditory patterns used in an earlier study on pre-term infants (Chapman, 1978) were a lullaby which had been noted to have a quieting influence when used with normal infants (Hardy and others, 1959) and speech since Rothschild (1967) had suggested that daily verbal stimulation of infants in incubators might reduce the incidence of later behavioral disturbances. The 1978 study's music group, although not significantly different in weight or gestional age at birth from the control groups, attained, on average, the weight of 4 pounds significantly earlier (a week) than the control group. This suggested that musical stimulation conserves energy and permits use of calories for weight gain. The speech group in the same study had their right arm movements, in comparison to the control group, significantly affected. That is, brain maturation as evidenced in laterality appeared (Segalowitz and Chapman, 1978).

Both music and speech alone produced benefits in the former sample. The question for the current research then was: might not a combined auditory program be beneficial and what type(s) of combination should be provided? Latest information indicates that the entire brain would be stimulated if both music and speech were used since music stimulates the right side of the brain; speech, the left (Molfese, 1977).

Since the greatest weight loss occurs in the first week or so of the premature infant's life and music has been shown to be most efficacious in promoting weight gain, a sequential program in which music would be provided for the first half of the infant's hospitalization was planned. Later, when the infant's weight gain was well-established, the music would be replaced with a parental voice (usually the

mother's) to stimulate maturation and promote bonding and emotionally stable development. Since weight gain could possibly be promoted with a pattern which allowed a shorter exposure to music but also provided exposure to the human voice from the outset, the alternate presentation was selected as a second regime for the current study. Both experimental groups receive comparable amounts of planned auditory stimulation but the pattern of presentation differs.

Procedure. During the first four days of the subject's life the investigator visits the infant's mother to explain the study and to secure her written consent for her child's inclusion.

The auditory regime is started on the 5th day of life for the two experimental groups. By this time the effects of maternal medication are diminishing in the infant. An instrument that emits a sound like a bird tweet is used to ascertain if the infant blinks in response to sound. The regime continues until a few days before the infant's discharge. Following discontinuation of the hospital stimulation program all subjects are assessed on an instrument known as the Rosenblith Scale (Rosenblith, 1961) prior to discharge. Two trained testers independently rate each subject. These testers are unaware of the hospital stimulation program to which the subject was assigned.

At discharge the subjects in each of the three hospital groups are assigned at random to either the home control or the home stimulation program. All subjects receive a monthly visit from the public health nurse until they reach 9 months from their mother's expected date of confinement. Appointment times are made at the mother's convenience and, where possible, to coincide with the infant's awake time. For the home control group, in order to control the Hawthorne Effect, the same length of visit is made, problems, if any, are identified and appropriate action is taken. In addition, for the 50% of the sample in the home stimulation program, a teaching module is used to help the infant's caretaker anticipate his development and appropriate toys are also provided each month.

Since 1970 new data about how to help parents maximize the potential of premature infants have become available. Two home programs (Scarr-Salapatek and Williams, 1972; Wittenberg, 1971) for low birth weight infants have demonstrated that monthly visits during the first year of life can bring experimental infants' developmental status towards standardized norms whereas control groups remained a standard deviation below the norms. The teaching modules for this project were devised using correspondence with and writings by Sandra Scarr-Salapatek, Institute of Child Development, University

of Minnesota; Burton White, Director Pre-School Project, Harvard University, and Ira I. Gordon, Director, Institute for Development of Human Resources, University of Florida. Toys called "Playtentials" specifically created and tested in Burton White's laboratory were used in this study. These toys are no longer available commercially.

The teaching module for each developmental stage was specified. The public health nurse utilized the prepared module for teaching the infant's caretaker; she also demonstrated the use of the appropriate age toy. This mediator-model which involves parents or other primary care givers actively and intimately in the infant's program is believed by experts to be far superior to programs where health professionals give the program directly to the baby (Ramsden 1977).

The investigator accompanies the public health nurse at the initial visit a few days after discharge and then at visits during the 3rd, 5th, and 7th chronological months in order to independently rate, along with the public health nurse, the subject on a second instrument — the Flint Infant Security Scale (Flint, 1959).

At 9 and 18 months from the infant's mother's expected date of confinement a graduate of the Institute of Child Study who is unaware of the subject's group assignment accompanies the public health nurse and investigator to the subject's home to administer a third instrument, the Bayley Scales of Infant Development (Bayley, 1969). During these visits the investigator and the public health nurse again independently rate the subject on the Flint Infant Security Scale.

Instruments. The Rosenblith Scale (Rosenblith, 1961) is used to assess the predischarge behavioral repertoire of each subject. The scale assesses motor strength and co-ordination as well as vision and hearing function.

The Flint Infant Security Scale assesses the subject's willingness to accept dependence, that is, his trust in the adults in his environment as well as his capability of putting forth efforts to explore and learn as he develops.

The Bayley Scales of Infant Development (BSID) were designed for both clinical and research use (Bayley, 1969, p. iii). Forty-five hundred infant examinations have contributed to the standardization of the Scales (Bayley, 1969, p. iii). The 1969 edition of the BSID were standardized on 1262 children distributed comparably among 14 age groups between 2 and 30 months.

There are 3 complementary parts to the BSID: (a) The Mental Scale — "The Mental Scale is designed to assess sensory-perceptual abilities...; the early acquisition of 'object constancy'...; vocalization...; and . . . abstract thinking. Results . . . are expressed as a standard score, the MDI, or Mental Development Index" (Bayley, 1969, p. 3); (b) The Motor Scale — "The Motor Scale is designed to . . . measure . . . the degree of control of the body, co-ordination of the larger muscles and finer manipulatory skills of the hands and fingers . . . . Results . . . are expressed as a standard score, the PDI, or Psychomotor Development Index" (Bayley, 1969, p. 3); and (c) The Infant Behavior Record (IBR) — The IBR assesses "The child's attitudes, interests, emotions, energy, activity, and tendencies to approach or withdraw from stimulation" (Bayley, 1969, p. 4). Both specific observations and qualitative judgements by the tester are required (Bayley, 1969, p. 23).

In the standardization sample, stratification was used to control sex, ethnic group, urban-rural, and education of head of the household in each of the 14 age groups. For children between 2 to 15 months a limit of 4 days on either side of the desired age was applied (Bayley, 1969, p. 7). Between 18 and 30 months $\pm$ 1 week was allowed. The same criteria for choice of time of test was used in this study. Bayley tested children who were 'normal', lived at home, and only one child per family was tested. More than one child per family will be tested in this study as twins and subsequent pre-term siblings are included.

The MDI and PDI raw scores have standard score equivalents ranging from 50 to 150 with a mean value of 100 and a standard deviation of 16 (Bayley, 1969, p. 15). The indexes derived from the MDI and PDI are stated to establish the child's current status, not to necessarily predict later abilities (Bayley, 1969, p. 4). The Infant Behavior Record section was standardized on approximately 700 children below 15 months and on the entire BSID standardized sample above 15 months. All materials for testing are housed in a standard test kit. Average testing time is 45 minutes (Bayley, 1969, p. 24).

Validity and Reliability Data on The Three Instruments Selected to Assess Infant Development. Validity and reliability data on the Rosenblith Scale (Graham, 1956; Rosenblith, 1961), the Flint Infant Security Scale (Flint, 1974), and the Bayley Scales of Infant Development (Bayley, 1969), have been established.

EVENTUAL STATISTICAL PLAN FOR DATA ANALYSIS — DEPENDENT VARIABLES

1.Rosenblith scales. Since females are known to have more rapid development than males, two-way analysis of variance (sex by treatment group) will be used to assess the development of the 3 hospital groups at the time of discharge. The two components of the maturation score, motor strength and co-ordination (tactile-adaptive), will be subjected to two-way analysis of variance as well as their additive sum (designated maturation score). Similarly, the other dimensions on the Rosenblith scale, muscle tension score, auditory score, vision score, and the combined sensory score (auditory plus vision score) each will be subjected to two-way analysis of variance.

2. Flint Infant Security Scale. Multivariate analysis will be used, as a need for trend analysis over the 5 assessments (at 3, 5, 7, 9, 18 months of age) in both sexes among treatment groups is anticipated.

3. The Bayley Scales of Infant Development. A three-way analysis of variance (treatment, by date, by sex) analysis of variance will be used to assess differences among the 6 groups' mental and motor scores on The Bayley Scales which are obtained at 9 and 18 months from the infant's mother's expected date of confinement. The correlation between the 9 and 18 months scores will also be assessed. For the behavior record section of the Bayley 11 items are rated on a 5 point scale. If the obtained data are distributed across the scale they will be treated as internal level data. If the scores' distribution requires, ordinal statistics (such as the medium test) will be used or, if the data indicates a nominal level statistic is required, the Chi-Square test will be used.

PRELIMINARY RESULTS

The results to be presented are tentative due to the small sample size; the unequal N in each group does not meet the assumption underlying the analysis of variance; and time constraints have permitted limited approaches to even what data is available. With such small subgroups one usually does not expect to attain statistically significant results.

The sample. The preliminary sample examined consisted of 17 boys and 18 girls. Twenty-six were Caucasian, 3 were East Indian, 3 were Black, 2 were Filipino, and 1 was Indonesian. Ten of the 26 parents in the Caucasian group were born outside of Canada — in Portugal (1), England (1), Yugoslavia (1), Italy (2), Greece (2), Russia (1), France (1), and Spain (1). The mean gestational age of the sample at birth, which did not differ among the 3 hospital groups, was 234.5 days or 33½ weeks of gestation. Two-thirds of

the sample were born between 5 and 8 weeks early. The mean weight of the sample at birth, which did not differ among the groups, was 1716 grams (3 lbs. 12½ oz.). Two-thirds of the sample weighed between 1466 grams (3 lbs. 3 oz) and 1866 grams (4 lbs. 3 oz.).

The sample took 11 to 12 days to return to their birth weight. This return to birth weight corresponds to the Dancis (1948, p. 571) curve for the average birth weight of the sample. The Rosenblith predischarge test was performed, on the average, 4 weeks after birth. The average gestational age of the sample at this time, which did not differ among groups, was 263 days or 37½ weeks. Two-thirds of the sample were tested between 36 and 39 gestational weeks.

Results on the Rosenblith Scale. 1. Motor Score. The motor score is derived from the following items: the ability of the infant to move his head when placed face down on his crib, the strength of his hand grasp, the ability to elicit a right-left-right crawl sequence when he is prone, and the vigor of his reaction to a cotton ball or cellophane placed over his nares. The total possible score is 9. Rosenblith (1975) reported for 202 infants at 37-39 weeks a mean motor score of 4.55± 1.97. The mean motor score for this sample, which did not differ among groups, was similar — 4.69.

2. Tactile-Adaptive Score. This is derived from the following items: the ability of the infant to shake his head in an attempt to avoid the cotton batten ball or cellophane sheet over his nares and the persistence he shows during 3 trials. The total possible score is 9. Rosenblith (1975) reported a mean tactile adaptative score of 6.54± 1.36 for 202 infants between 37 and 39 weeks. The mean score for this sample, which did not differ among the three groups, was 7.95.

The motor and tactile-adaptive scales are summed to provide a general maturation score out of 18. Rosenblith reported for 202 infants between 27 and 39 weeks a mean maturation score of 10.87± 2.86. The mean score for this sample, which did not differ among groups, was 12.54.

3. Auditory score. Auditory response to and localization of sound produced by a two-seed rattle and a bicycle bell are observed and rated. The maximum score possible is 5. The average highest score for this sample, which did not differ among the groups, was 4.73.

4. Visual score. Vision is assessed by shaking a shiny bicycle bell in front of the baby's eyes, obtaining fixation and then trying to have the infant pursue it horizontally and, if possible, vertically. The maximum score the infant can achieve is 10. The average score for this sample, which did not differ among the groups, was 7.94.

Table 1. Means and Standard Deviations of Mental Development Index (MDI) Scores on The Bayley Scales of Infant Development for Chronological Age at Nine Months from Mother's Expected Date of Confinement for Subjects Exposed to Six Different Stimulation Programs.

		MDI Scores			
Type of		For chonological age*		For 9 months from EDC**	
Stimulation program	*n*	Mean	Standard Deviation	Mean	Standard Deviation
Control-control	9	82.44	20.04	104.56	28.23
Control-Stimulation	6	81.33	12.36	109.17	16.63
Sequential-control	5	73.20	16.36	92.00	21.08
Sequential-stimulation	6	74.33	15.96	87.50	16.48
Alternate-control	5	62.20	9.18	81.00	15.73
Alternate-stimulation	4	66.75	11.53	86.00	21.09
Total	35	74.86	16.18	95.14	22.31

*F = 1.52 (5,29); n.s.
**F = 1.62 (5,29); n.s.

5. Comprehensive muscle tone. The infant is rated on a continuum from flaccid scored as 0 to marked tension scored as 9. The average score for this sample, which did not differ among the groups, was 5.17.

In summary, there were no statistical differences among the groups at discharge as assessed by the Rosenblith test. The alternate group had higher scores in the area of general maturation; the sequential group, in sensory functioning and muscle tone areas.

Results on the Flint Infant Security Scale. The Flint Infant Security Scale in the standardized sample showed the greatest number of scores in secure infants between +.33 and +.42. The full-term secure infants averaged a score of +.40 consistently throughout the first year (Flint, 1959). The scores of this sample of pre-term infants, which did not differ significantly among the groups at any of the 5 test times, show they are not as secure as the standardized sample of full-term infants. At 3 months chronological age this sample's mean score was .31, at 5 and 7 months the score did increase to .33 but the 9 month mean score fell to .29 and the 19 month score fell even lower-to .27.

Results on The Bayley Scales of Infant Development. 1. Mental scale. The mental scale has a standardized norm of 100 and a standard deviation of 16. The average chronological age score for mental development at 9 months from the expected date of confinement (EDC), which did not differ among the groups, was approximately 75 with 2/3 of the sample scores falling between 59 and 91 (see

Table 2. Means and Standard Deviations of Mental Development Index (MDI) Scores on the Bayley Scales of Infant Development for Chronological Age at Eighteen Months from Mother's Expected Date of Confinement for Subjects Exposed to Six Different Stimulation Programs.

	MDI Scores				
Type of stimulation program	*n*	For chronological age* Mean	Standard Deviation	for 18 months from EDC** Mean	Standard Deviation
Control-control	9	87.78	15.61	98.78	15.40
Control-stimulation	6	103.67	18.04	117.33	17.96
Sequential-control	5	86.20	8.67	97.60	8.32
Sequential-stimulation	6	98.00	15.35	107.67	17.23
Alternate-control	5	98.60	12.64	109.40	16.38
Alternate-simulation	4	88.50	21.67	101.00	23.79
Total	35	93.66	15.94	106.03	17.19

*F = 1.25 (5,29) n.s.
**F = 1.25 (5,29) n.s.

Table 1). In comparison with his chronological age peer, the average subject in this sample at a chronological age of 10½ months, falls in the bottom 1/6th of his age group. By late in their first year this sample of 35 pre-term infants had not caught up with their chronological peers. However, their adjusted scores, which did not differ among the groups, averaged 95, and 2/3 of the sample's scores fell between 73 and 117. The sample is below the standardized norm of 100 but if one uses the adjusted scores, as Lubchenco (1978) recommends as the indicator for risk, the sample mean falls only 5 points below the norm.

At 18 months from their mother's date of confinement there is a higher mean mental score for chronological age for the sample than there was at 9 months. The average mental score is now 94 — an average increase of 19 points. When corrected for prematurity the average score for the group increases to 106. Neither the adjusted nor chronological scores differed among the six groups (see Table 2).

2. Motor scale. Motor development for chronological age at 9 months from EDC was better than mental development at 9 months from EDC for this sample. The average motor score for chronological age, which did not differ among the three groups, was approximately 90 with 2/3 of the sample scoring between 70 and 108 (see Table 3). In comparison with their chronological peers this preterm sample is within a standard deviation of the norm of 100 for motor development at 9 months from their mothers' EDC. The sample's average adjusted motor score at 9 months is 110 and 2/3

Table 3. Means and Standard Deviations of Physical Development Index (PDI) Scores on The Bayley Scales of Infant Development for Chronological Age at Nine Months from Mother's Expected Date of Confinement for Subjects Exposed to Six Different Stimulation Programs.

Type of stimulation program	n	PDI Scores for chronological age* Mean	Standard Deviation	for 9 months from EDC** Mean	Standard Deviation
Control-control	9	97.44	22.02	117.67	23.55
Control-stimulation	6	93.50	19.31	118.83	24.58
Sequential-control	5	86.80	22.23	105.00	25.09
Sequential-stimulation	6	88.83	12.54	105.50	14.53
Alternate-control	5	74.80	8.41	95.00	11.09
Alternate-stimulation	4	88.75	22.59	111.75	21.41
Total	35	89.54	18.88	110.06	21.20

*F = 1.00 (5,29) n.s.
**F = 1.07 (5,29) n.s.

of the sample's adjusted scores fell between 89 and 131. The preterm infants in this sample are catching up faster in motor than in mental development during their first year of life.

At 19½ months after birth, motor development for this sample, which did not differ among the groups, is at 99 — i.e., virtually at the norm of 100 (see Table 4). For gestational age the motor adjusted mean score of 107 matches the mental adjusted mean score of 106. Intellectual and motor development of this sample seems not only caught up to that of their full-term counterparts at 19½ months from birth but, at this stage, their mental and motor development now appear to parallel one another.

3. The Infant Behavior Record. Sociability of these infants was judged from three perspectives — to all persons present at the test, to the strange examiner and to the infant's own mother. No significant differences were found among the groups at either 9 or 18 months. The infant was responsive some of the time to persons present at 9 months but, in general, at 18 months had continual interest in persons present. Bayley (1969), in contrast, found a decrease in responsiveness to persons at 18 months. At 9 and 18 months the infant was rated as accepting of the examiner whereas he was, not surprisingly, rated as friendly to his mother. At 18 months the three home stimulation groups consistently evidenced a higher mean score for all dimensions of sociability; the combined hospital and home experimental groups also had a similar pattern at 9 months.

Table 4. Means and Standard Deviations of Physical Development Index Scores on The Bayley Scales of Infant Development for Chronological Age at Eighteen Months from Mother's Expected Date of Confinement for Subjects Exposed to Six Different Stimulation Programs.

Type of stimulation program	PDI Scores for chronological age*			For 18 months from EDC**	
	n	Mean	Standard Deviation	Mean	Standard Deviation
Control-control	9	95.00	19.50	103.00	18.36
Control-stimulation	6	95.00	17.64	103.17	16.14
Sequential-control	5	83.60	19.27	91.20	17.82
Sequential-stimulation	6	115.83	18.80	123.00	18.51
Alternate-control	5	108.40	13.58	115.60	14.98
Alternate-stimulation	4	97.50	12.50	106.25	12.85
Total	35	99.14	19.28	106.94	18.56

*F = 2.29 (5,29) n.s.
**F = 2.36 (5,29) n.s.

Cooperativeness, fearfulness, and happiness of the infants were considered interpersonal behaviors. At 9 and 18 months the subjects accepted the test materials and were neither cooperative nor resistant to the tester. At 9 months subjects assigned to the home stimulation program from the two hospital experimental groups consistently were more cooperative than their control counterparts. At 9 and 18 months the majority of the sample had some slight vigilance and restrained behavior in the first few minutes. However, the alternate-control group was significantly more fearful at 9 months than the other groups. This group also had the lowest Flint score at 9 months chronological age. At both 9 and 18 months all home stimulation groups were consistently less fearful than the groups assigned to the home control program. At 9 and 18 months the subject might become upset but recovered fairly easily and appeared moderately happy and contented. Again the home stimulation assigned subjects from the experimental groups were consistently happier than their control counterparts.

No significant differences among the groups were found at either 9 or 18 months in behaviors which make demands on the subject such as goal directedness, attention span, and endurance. The first two of these behaviors developed over time. At 9 months although the infants made a few attempts at a goal and attended to a toy they could be distracted; at 18 months they were fairly persistant in their efforts and had moderate attention to each new toy, person, or situation. At 9 and 18 months the subjects had adequate tolerance for

most of the test, becoming restless only towards the end. The 18 months test takes longer as more applicable items are tried. The increased time may be reflected in the small decrement in the mean score from 5.94 at 9 months to 5.23 at 18 months for the item 'endurance'. Again the home stimulation assigned subjects had consistently higher mean scores for the three behaviors considered demanding than their control counterparts.

There were no significant differences in the bodily behaviors of body tone, body movements and reactivity to stimulation at 9 months among the groups. At 18 months the alternate-stimulation group was significantly tenser than the control-control group. However, in general, tenseness decreased from 9 to 18 months, whereas bodily movements increased so that the subject was in action much of the test period at 18 months. No subject was rated as hyperactive. Reactivity to stimuli increased between 9 and 18 months so that the child was more quickly alert to changes in the test materials and situations. The three home stimulation groups were consistently more responsive to stimuli than their counterpart groups.

In general both responsiveness to objects and manipulation of objects increased with age. At 9 months the infants lost interest in the toy or material after a brief reaction. At 18 months there was a sustained interest in each test material presented. At 9 months the alternate-stimulation group scored significantly higher than the sequential control group in responsiveness to toys and test materials. The home stimulation assigned subjects from the experimental groups at both 9 and 18 months demonstrated greater responsiveness to and manipulation of toys.

No significant differences in the sensory areas of interest occurred among the groups at 9 or 18 months. At both 9 and 18 months the highest area of sensory interest displayed was looking. In general, looking, listening, vocalizing, and banging scores all increased slightly from 9 to 18 months.

A significantly-higher energy level was present in the alternate-stimulation and sequential-stimulation groups than in the control-control group at 18 months. Energy level was also rated as higher in these two groups at 9 months but did not achieve statistical significance. For their age, energy levels and coordination of sample and control groups were well within the normal range.

DISCUSSION

At the conclusion of the hospital stimulation programs all subjects were assessed for general maturation and sensory functioning. No significant differences were found among the groups. In comparison

to Rosenblith's (1975) data on general maturation in pre-term infants of comparable gestational age, this sample's scores are higher on both the motor and tactile-adaptive items and hence total maturation score. Katz (1971) and Neal (1967) used the Rosenblith test after auditory and vestibular hospital stimulation programs, respectively, for pre-term infants. They found significant differences among their experimental and control groups. The scores on the motor item for their experimental groups were 5.38 and 5.69 respectively, slightly higher than the mean of 4.69 obtained in the current sample. Only 3 of the 35 subjects in the current sample were Black whereas Neal (1967, p. 35) reported 40% of her sample as non-white; Katz (1970, p. 48) had a 60% Black sample. Bayley (1969, p. 11) reported that Black children scored significantly higher on her motor scale until 14 months of age. The composition of the current sample may account for the differences in scores.

Tactile-adaptive scores in this sample were comparable to Katz's (1970, p. 49) and Neal's (1967, p. 37) experimental groups' scores. Malloy (1975, p. 60) did not report the component parts of the maturation score but has a total mean sample score, identical to this sample. The subjects in her sample were exposed to only music or only speech, not to a combined auditory program.

Highest hearing score mean in the current example (a mean of 4.73) was again comparable to Katz's (1970, p. 40) and Neal's (1967, p. 53) experimental groups. Malloy's (1975, p. 62) total sample mean was much lower — 2.27. A possible reason for the lower hearing scores in Malloy's sample was the fact that 45% of her sample had the ototoxic drug Kanamycin administered to them for an average of 8.36 days (Chapman, 1975, p. 198).

Vision scores in this sample (a mean of 7.94) are considerably higher than in Katz's (1970, p. 40) (a mean of 6.54) and Malloy's (1975, p. 64) (a mean of 5.23). Neal's (1967) results on vision were scored differently and cannot be compared. A possible explanation is that the current sample is the latest sample and more discriminating use of oxygen has been achieved. All the current sample were checked for Retrolental Fibroplasia (RLF) prior to discharge and not one subject had evidence of RLF.

The final score on the Rosenblith relates to muscle tension. Katz (1970, p. 43) found her experimental subjects scored significantly higher than her control group on muscle tension (a mean of 5.02). Malloy's (1975, p. 66) speech group, when conceptual age at the end of stimulation was controlled, had significantly higher muscle tension than the control group (a mean of 5.24 versus 4.92). The current

sample's experimental groups have similar scores to these previous investigators' experimental groups (5.17).

All Katz's (1970) experimental group were rated as normal tension (5). In both Malloy's and the current sample approximately 85% of the controls were rated 5 whereas only 63-67% of the experimentals were rated 5. More subjects in the experimental groups in the latter studies were rated above 5 and had increased muscle tone. Rosenblith (1968, p. 324) found that neonates rated tense on their initial exam differ from those rated as normal on only one of the criteria she evaluated at 8 months — their activity level was higher. No differences in fine or gross motor or physical or mental or socio-emotional development was found.

However, "a marked discrepancy in neonatal muscle tone between the upper and lower halves of the body (with upper hypotonic) is associated with a poor prognosis for almost all eight month criteria" (Rosenblith, 1973, p. 31). The only two subjects in the current sample who had a marked discrepancy between upper and lower halves of the body and who were rated as mixed were in the hospital control group.

The post-discharge psychosocial evaluation of the sample as demonstrated on the Flint Infant Security Scale raises concerns. Security of these infants (who have spent an average of over 4 weeks in hospital after birth) is lower than full-term infants at 3 months. At 5 and 7 months security begins to increase up to the full-term scores but after the child has gone through the period of "making strange" at 9 months his/her scores fall and are still low in the second year. The emotional dimension of these pre-term infants needs further study.

Mental and motor development at 9 and 18 months of age as assessed on The Bayley Scales of Infant Development did not differ significantly among the 6 groups. The control group had the highest mental and motor scores at 9 months from their mother's expected date of confinement. Sixty percent of the parents of the hospital control subjects were in professions, whereas only 27 and 22 percent, respectively, of the hospital sequential and alternate groups' parents were of this socioeconomic level. Previous research has shown that the social class of parents is a good predictor of subsequent I.Q. and that lower class premature infants have a greater chance of mental subnormality than upper class premature infants (Hindley, 1971, p. 475; Birch and others, 1970, pp. 140-141). Since assignment to groups is at random this problem of non-comparability of social class among groups should resolve as the sample size becomes larger.

The control-control group was the only group whose corrected age mental score decreased between 9 and 18 months. Hunt and Rhodes' (1977, p. 208) sample who had no planned program (like this study's control-control group) also had lower corrected mental scores at 24 than at 12 months. In Ryan's (1976) sample of disadvantaged toddlers both control and experimental quotients declined after 12 months of age. His experimental group had a home stimulation program but it did not commence until after 6 months of age. Perhaps 6 months of age is too late to begin home stimulation programs for infants known to be at risk either developmentally and/or socioeconomically.

Other than the control group, the corrected age mental scores for this sample are higher at 18 months than they were at 9 months. On the other hand, for 4 of the 6 groups corrected motor scores were lower at 18 months than at 9 months. The sample's average chronological age motor score did rise between 9 and 18 months so perhaps there is over-correction in the adjusted scores at 9 months.

The findings on the Infant Behavior Record at 9 and 18 months from the subjects' mothers' expected date of confinement were compared with the modal values of the standardization sample on each item at 10 and 18 chronological months (Bayley, 1969, pp. 156-7 and 162-3).

At 9 months the sample's scores in responsiveness to mother, activity level, and looking and listening were comparable to the standardization sample of full-term infants. This sample of premature infants, on average, had a higher level of tension and fear. One could postulate the observed difference is related to some long-term effect of the initial mother-infant separation. The premature sample were rated as more cooperative at both 9 and 18 months than their full-term counterparts were. Demanding behaviors were scored lower than for the full-term sample as were social responsiveness to persons, production of sounds and alertness to stimuli. One might ask whether these infants are more comfortable as passive acceptors than as initiators of interaction.

At 18 months, they were still banging, liked toys more and were both more active and more responsive to persons than their full-term counterparts.

The only statistically-significant findings to date on The Bayley Scales of Infant Development are on the Invant Behavior Record. One group, the alternate-control, was more fearful at 9 months than the other groups. However, in the standardization sample 1/5 of the eight-month-olds had similar scores and this finding may be due to the small N in this group.

Another group, the alternate group with the home stimulation program, was the most interested in toys at 9 months; at 18 months they were rated as more energetic and tenser than other subjects in the sample. One could ask whether this group of behaviours might reflect the concept of motivation.

It is interesting to note that the mean scores of the hospital experimental groups assigned to a home stimulation program are usually higher than their counterparts assigned to the home control program. Conversely, although there are a few items where the control hospital group assigned to a home stimulation program have higher mean scores than the control-control group the same consistent pattern is not seen.

Do in-hospital interventions create a potential for a pre-term infant to better utilize the opportunities offered in a home stimulation program? The home stimulation program stopped 9 months prior to the 18 month developmental assessment. Yet, subjects started on an intervention program in hospital which continued until 9 months from their mothers' expected date of confinement still had higher mean scores on many of the items on The Infant Behavior Record than the other hospital control and/or home control group subjects 9 months after discontinuation of the combined hospital and home stimulation program.

The Ypsilanti Perry Preschool Project showed that the group receiving a preschool program, after its discontinuation, had I.Q. scores again equivalent to the control group (Weikart, 1977, pp. 1-8). However, throughout the first 8 years of school their academic achievement became increasingly greater than the controls, that is, with the same level of I.Q. they succeeded better in the real world. Similarly, Skeels (1966) reported, in a group of 13 adults who had had interventions as children a quarter of a century earlier, profound improvements over their controls in life achievement in terms of employment status and lifetime earnings.

SUMMARY

In summary a preliminary look has been taken at the sample's prehospital discharge status, as measured by the Rosenblith Scale; the security level of the pre-term infant during the first and second year of development, as measured on The Flint Infant Security Scale; and The Bayley Scales of Infant Development have been used to assess, at both 9 and 18 months from their mother's expected date of confinement the sample's mental, motor, and behavioral development.

The first specific question this research sought to answer was "when, if ever, do pre-term infants catch up?" (Hunt and Rhodes, 1977).

At hospital discharge the general maturation of these pre-term infants is, not surprisingly, weak on the motor dimension but adequate for protective movements in response to interference with their airway. Sensory functioning is excellent with high scores in both hearing and visual modalities.

The security level of the pre-term infant as measured in this study is low throughout the first year compared to that of their full-term peers. Moreover, the one assessment of this sample's level of security during the second year shows a further decline in their self-trust and other trust.

At 9 months from their mothers' date of expected confinement these pre-term infants are not caught up to their chronological peers in mental or motor development; they are catching up faster in motor than mental development at that age. Socially these 9 months infants had a higher level of tension and fear than their full-term counterparts.

At 18 months from their mother's expected date of confinement this sample had caught up in both mental and motor development, moreover the development in both areas was now parallel, with the mental no longer behind the motor. Their behaviors at this time reflected increased sociability although in some emotional areas they still scored lower than the full-term sample.

The second question this research attempted to answer was "Do planned stimulation programs influence the long-term development of pre-term infants?"

The answer is tentative at best, but to date the indication is that the effect is on a motivational dimension of behavior; the hospital experimental groups seemed able to capitalize better on the opportunities afforded them in a home stimulation program than either those who had only the hospital program or those who had a home stimulation program without a hospital stimulation program. Moreover, the effect on behavior had not faded 9 months after discontinuation of the program for the groups who had a combined hospital and home stimulation program for the first 10 months of life. Whether or not these tentative answers will change has yet to be discovered.

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Les effets de la baisse de mortalité chez les prématurés sur leurs risques futurs de morbidité: Etude préliminaire des résultats à long terme de programmes de stimulation pour les prématurés

Le prématuré présente des risques à la fois de mortalité et de morbidité. Ses contorsions contribuent à la perte de poids et son environnement extra-utérin ne contient pas les stimuli structurés afférents, à modalités multiples, qui frappent le cerveau en développement dans l'utérus. Le son est la modalité la plus efficace en ce qui a trait à une baisse de la motilité accompagnée d'un accroissement de l'activité corticale. Nous avions prévu que des sujets exposés à des sons structurés pendant 5 à 10 minutes, au milieu de leur période d'alimentation, devraient, lorsque nés à 37 semaines, faire preuve d'un degré de développement plus élevé à la sortie de l'hôpital; si, de plus, les sujets étaient soumis à un programme de stimulation à domicile, leur développement ultérieur devrait également présenter une certaine amélioration. L'échantillon cible se compose de 216 sujets; ce rapport ne traite que des résultats préliminaires portant sur les 35 premiers sujets. Les sujets d'expérience ont été divisés en trois groupes distincts, sur la base d'une affectation stratifiée effectuée au hasard. Dans le premier groupe, les prématurés ont été soumis à un programme dit "d'audition séquentielle" au cours duquel on leur a fait entendre la Berceuse de Brahms durant la première moitié de leur hospitalisation, pour y substituer un enregistrement de la voix de leur mère pendant la seconde moitié; dans le second groupe, les prématurés ont suivi un programme dit "alternatif", lors duquel ils entendaient, successivement et durant le même nombre de minutes, la Berceuse de Brahms et la voix de leur mère, au milieu de chacune de leurs périodes d'alimentation. Le troisième groupe a servi d'échantillon témoin. Les premières constatations semblent indiquer qu'un programme combiné — stimulation à l'hôpital/stimulation à domicile — offre de meilleurs résultats qu'un seul de ces deux processus ou qu'aucun processus de stimulation.

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Advantages of the Nurse-Patient Contract

JANET HARRIS*

Various authors have reported advantages of establishing a nursing contract with the patient and/or the family (Blair, 1971; Forrest, 1975; Sloan and Schommer, 1975). Practical, professional and philosophical considerations account for the increasing attention on contracts in recent studies.

PRACTICAL CONSIDERATIONS

A contract is defined as "an agreement between two parties for the doing or not doing of some definite thing" (Parsons, 1972). Since both nurse and patient are involved in establishing the terms of the contract, the goals and expectations of both parties become apparent. Patients often have ideas that differ markedly from those held by professionals (Friedson, 1960). The nursing contract can help clarify these differences and clear up incorrect assumptions on both sides (Maluccio and Marlow, 1974; Parsons, 1972; Pincus and Minahan, 1973: 178). During interactions between nurse and patient, each party can refer back to the original terms of the contract for clarification and direction.

Rosenstock's studies of health behaviour draw attention to the futility of considering the patient a passive recipient of care. "It is worth remembering that the patient is an active participant in dealing with his illness and will take what he regards as appropriate steps within his own life framework" (Rosenstock, 1975).

Once the goal or goals of the contract have been mutually established, the nurse and patient share a sense of purpose. Ultimate achievement of the goal(s) enhances the morale of both parties (Blair, 1972).

Finally, there is evidence that the patient who is involved in planning, goal-setting, and decision-making is more likely to internalize the new health behaviour (Kalisch, 1975). Internalization, as opposed to compliance, results in the most permanent change (Dyer, 1973; Green, 1976).

PROFESSIONAL CONSIDERATIONS

Once the terms and goals of the contract have been established they can be summarized on the patient's record, thus enhancing continuity of nursing care and communication with other members of the health team (Davis and Woodcock, 1971).

* The author recently completed studies towards the M.Sc.N. at the University of Toronto.

Blair (1971) believes the contract has potential for making better use of the nurse's time and energy. By involving the patient in discussion and clarification of mutual goals, the nurse can more quickly and validly determine what needs the patient perceives and what services she can provide. Furthermore, the requisite time limits for each contract encourage mutual evaluation when the contract expires. At this time the contract can be renegotiated or terminated and this process aids the nurse in evaluating her performance.

Finally, professional accountability is an issue of high priority in nursing. To be truly accountable, we must first define nursing's competencies, establish nursing's domain and "demonstrate to ourselves and others nursing's unique contribution to patient care" (Mass and colleagues, 1975). Gortner (1974) urges nurses to make explicit the outcomes for which we will be held accountable. The use of the nurse-patient contract may well advance the fulfilment of these aims. Certainly, the contract can facilitate the identification and measurement of nursing activities.

PHILOSOPHICAL CONSIDERATIONS

The philosophy of nursing embraces two basic tenets: a professional commitment to optimal health care for the patient and/or family, and an ethical commitment to the personal integrity and autonomy of each individual and family.

These two tenets are not always compatible; indeed, they may be mutually exclusive. For example, a public health nurse working without an established contract may assess unresolved or potential problems requiring care which the patient and/or family decline. Should the nurse pursue health care goals or respect the individual's right to self-determination? This philosophical dilemma could be alleviated, if not avoided, within the framework of a nurse-patient contract. In the author's experience, goals of mutual concern can usually be identified. Once these are agreed upon, a relationship which facilitates further intervention can evolve.

> If we really believe in (patient) autonomy, if we believe we are assisting the patient to cope with the problems and not solving them for him, then it follows that he should have a collaborative role when it is possible (Little and Carnevali, 1969: 187).

In support of this belief the nursing contract promotes patients' autonomy, involvement and responsibility in their own health care. More important from a philosophical standpoint, the contract permits patients to exercise their right to self-determination (Forrest, 1975)

and affirms patients' ability to solve their own problems (Sloan and Schommer, 1975) while allowing nurses to fulfil their professional responsibilities.

TYPES OF NURSE-PATIENT CONTRACTS

The following four-part classification by Blake and Mouton (1976: 450-55) echoes various modes of intervention commonly used by health professionals.

Acceptant Contract: In an atmosphere free of judgments, the patient is helped to sort out problems in a self-reliant manner. The intention of the acceptant contract is to establish a helping relationship. (The author has found techniques of active and passive listening and supportive counselling effective in this mode).

Catalytic Contract: The patient is assisted in collecting further data with which to test and reinterpret his perceptions. The patient is not told what to do, but may arrive at a better awareness of the problem and how to handle it through exposure to new information or new techniques of problem-solving.

> . . . . . the nurse can fulfil her responsibility to the patient by providing him with the necessary information which will enable him to make a sound decision on his own. He should be informed of the consequences of each alternative open to him (Lewis, 1976).

Confrontation Contract: The patient is challenged to re-examine his thinking and assumptions and to select new more effective actions. This contract may lead to threatened reactions.

Prescriptive Contract: The prescriptive contract is frequently seen in medical practice and may occasionally be used by nurses in crisis or emergency situations. In this mode the patient is told what to do to rectify the situation. The prescriptive contract involves issuing prescriptions and recommendations.

Contracts will vary according to the nature of the problem and the terms acceptable to both nurse and patient. The type of contract and the mode of intervention may change as circumstances change.

CONCLUSIONS

When viewed in the light of practical, professional and philosophical considerations, the advantages of the nurse-patient contract become apparent. These theoretical advantages and the various types of contracts need to be investigated further through empirical research. If the value of the contract is confirmed by research, the implications for nursing practice and nursing education are far-reaching.

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Avantage du contrat infirmière-client

Plusieurs des avantages théoriques du contrat infirmière-client sont décrits ici. Ce genre de contrat facilite la pratique de l'infirmière car il fait ressortir les buts et les attentes des deux parties; ceci permet de découvrir des objectifs communs. Les contrats contribuent à la réalisation des buts professionnels de l'infirmière, tels que la responsabilité des soins infirmiers et leur évaluation; en effet, les contrats favorisent l'identification et la mesure des interventions de l'infirmière. Parmi les considérations philosophiques, citons l'accent placé sur la participation des clients à leurs propres soins et leur responsabilité à cet égard. En fait, le contrat représente une affirmation de l'autonomie du client. On peut classer les contrats comme des modes d'intervention acceptants, catalytiques, de confrontation, ou de prescription. L'auteur recommande que des recherches soient conduites pour confirmer la valeur du contrat infirmière-client.

Using the Generation Gap to Ease Changes in Life Style

JOSEPHINE REDDICK
Lecturer, School of Nursing
Queen's University

This paper examines the relationship which developed between first-year nursing students and some elderly individuals in a nursing home. It is not intended to be a detailed research report, but a discussion of some observations made which would be interesting to investigate further, later.

The first-year nursing students who visited the elderly in nursing homes obviously found it an enjoyable experience. This may have been due to satisfactory completion of a first-time "clinical" contact. However, in talking with the elderly and with the students, it became apparent that it was more than that. In fact, they had a number of experiences in common — this being contrary to the commonly-held view that the young have little to share with the old.

Over a number of years, the realization of such a similarity prompted the author to distribute a questionnaire to study the feelings of both groups when faced with a major change in life-style. A convenience sample of twelve individuals in each group was selected. The elderly satisfied these criteria:

— They had been admitted to the nursing home during the previous year.
— They were admitted from their own homes, where they had been living independently.
— In the nursing home, they were living in double rooms and required only minimal care.

The students had recently entered university and were living in double rooms in a women's residence, having left their parents' homes. These were the criteria for students' inclusion in the study.

The objective of the study was to find out what feelings were shared about leaving well-established ways of life and long-term family ties and friendships, and what anxieties or pleasurable anticipation was common to both groups. The questionnaire was given to the elderly by interviews in the clients' rooms and it was given to the students in a private room.

The ten questions dealt with:

1. Feelings prior to the change in life-style.
2. Feelings after the change occurred.

3. Concerns about leaving old associates.
4. Establishing new associates.
5. Feelings about sharing a room with a stranger.
6. Keeping or disposing of personal belongings.
7. Maintenance of privacy.
8. Maintenance of independence.
9. Maintenance of individuality.
10. Financial status.

Some experiences were shared by many of the respondents and sometimes a dichotomy of feelings about them appeared. On reflection, the feelings engendered ranged along continua of happiness-sadness and gain-loss, with some shifting back and forth.

The students expressed a mixture of sadness and enthusiasm about the major move they had planned to make as they thought back to their last weeks at home. Some had realized much more clearly than others that their move was an irreversible step and that "nothing would ever be quite the same again". They said it was inevitable that old friendships would wane, but families would still be there. As one student wrote, "It was my first major time of being away from family and hometown, an area that is so familiar and full of memories." The move was eased by the students' need to get away from home: "I was leaving to do something I wanted to do. It was a new life I was going to and it was exciting."

The elderly expressed only sad feelings about their recent moves. They, too, had given up ways of life which had lasted many years, and in which some had been close to their families. There were, as well, long-time associations which had to be left behind. But for the elderly, the move did not have the promise of "more to come" after it was made. It would be the final move of lifetime, one fraught with sadness, rebellion and a dreadful inevitability. They knew the next change would be death, but feared death less then they feared the loss of independence.

Because the elderly were experiencing this loss, they were acutely aware of the importance to the students of their gain in independence. The elderly could appreciate fully the joy of new-found freedom, albeit with ambivalence about leaving home. Through their visits with the young people, they could assuage vicariously their own feelings of sadness and loss. The elderly could, by virtue of their own lifelong experiences, perceive and share in the students' joy.

The actual move into residence evoked various responses from the students ranging from enthusiasm to depression; two felt deserted

by their families. The reaction to sharing a room was positive for nearly all, as this was found to be a good way to get to know other people. Many had shared a room at home, and all but one student were more eager than apprehensive; one was finding the experience a severe strain on her coping ability.

The older group viewed sharing a room with less apparent concern and with some resignation. Their other concerns about the move were greater at this time. Once nursing home residence had become established, room arrangements tended to increase in importance.

The choice of personal belongings to fit into "half a room" was viewed with some anxiety plus a considerable amount of humour by the young. Trying to decide on "their favourite things" had been a difficulty. For the elderly, the problem had been solved fairly well some time before, often by giving valued possessions to family members. They enjoyed the student discussions on the topic and all were in sympathy with each other over choices that had had to be made.

The elderly were supportive of the students who said that their rooms now belonged to a brother or sister. They perceived just how real a loss it was, a poignant reminder that change had come to stay.

Problems of financial arrangements were of considerable magnitude to the elderly. In most cases they gave their pensions to the nursing home, receiving a small amount back. This, they felt, was a very real threat to the maintenance of their independence and management of their own affairs. The students, however, felt pleasure and pride in being more free to manage their own finances. These greatly opposed experiences drew the groups closer, each being very aware of the other's gains and losses.

Early in their university experience the students were more concerned with maintaining their individuality and developing new relationships. The students felt strongly it should be "easier to be oneself" at university, since there was a greater diversity of people, and people with whom the newcomers had no previous shared experiences. However, the students expressed some anxiety — concerns over "new people and new ways" and the ability to establish new behaviours and interactions.

On entering the nursing home, the loss of individuality was of less concern to the elderly than the loss of privacy and decision-making ability. Most of them had a good sense of self which they did not feel was seriously threatened at that time. In contrast to the students, their earlier associations made while at home were of importance in maintaining their self-concepts. After a longer time in the nursing home they did begin to suffer from increased concern over maintaining their sense of individuality and worth.

These two groups at different ends of the age continuum revealed a similarity of feelings and experience in some areas which led to mutual enjoyment of each other's company. As has so often happened in similar situations, each group expressed delight in having gained as it were, a grand-parent or a granddaughter. In life, joy and sadness are often interwoven, and for the elderly and the young these could be shared, sometimes easing the sorrow. We are aware that a "burden shared is often eased", and perhaps we should take more constructive steps to promote the sharing of tension which is felt by old and young at such crucial times in their lives. Into such 'clinical' interactions as these can go a needed expression of loving and caring.

Comment se servir du fossé entre générations pour faciliter les changements dans le style de vie

L'auteur a observé les relations s'établissant entre des étudiantes de première année en sciences infirmières ayant quitté leur famille pour étudier à l'université et des clients d'un certain âge partis de chez eux pour vivre en foyer. L'auteur discute informellement des similitudes et différences identifiées au sujet des inquiétudes et des sentiments de ces deux groupes. Le déplacement considéré comme une expérience commune permet aux jeunes et aux plus vieux de prendre conscience de leurs sentiments au sujet des diverses implications se situent notamment au niveau des changements dans leur façon de vivre, de leurs anciennes et nouvelles amitiés, de la sauvegarde de leur identité et de leur individualité ainsi que de leurs biens et de leur situation financière.

Deviance and Education for Leadership

LETTIE TURNER
Associate Professor, Faculty of Nursing
University of Toronto

> Direction is the primal tension of a human soul which moves it to choose and realize this and no other out of the infinity of possibilities .....
>
> .....
>
> The man of direction does not possess the world yet stands in its love; for he realizes all being in its reality. He knows no security, yet he is never unsure; for he possesses steadfastly that before which all security appears vain and empty: direction and meaning. (Buber, 1964, pp. 56 and 94).

Confronted with profound change, nursing must look within its ranks for direction and meaning and choose its pathway out of the innumerable possibilities. Nursing is in need of a movement forward and a reinvigoration of its caring, independent role. This venture will entail risk-taking for the pace-setters, or innovators, who will need to deal with change as a continuous process, having a will to change purposefully and the reality to respond to the immediacy of need.

Nurse educators have always been aware of the discrepancies between the approach to care and nursing intervention as fostered within students, and the type and quality of care which graduate practitioners are in a position to provide.

Graduate practitioners express frustration at not being able to practise nursing, as they have come to define it, within the structure of the hospital or health agency. Because the system forces graduates into a different approach, they cease to have a good feeling about themselves and their role. The result of this frustration is expressed in various ways: frequent transfers between agency and hospital; withdrawal from hospitals to positions in education or community health agencies, or in fields other than nursing; psychological withdrawal resulting in apathy, lower productivity, anger, and so on.

We must view this situation as a serious failure of our educational efforts. Nurse educators are caught in a dilemma. They know that they cannot educate to the status quo, that is, nursing as it is widely practised; at the same time, they are aware that their approach produces nurses who are deviant to the prevalent norms of care as it is practised.

This paper will focus on showing the student nurse that her deviance is something to be valued, that it has a positive component, and that it can be used to make a positive contribution to the system. Some consideration of the role of the deviant in society, and how society controls its deviants is necessary. We can use this knowledge to give the student the armour, both internal and external, to protect herself in situations where she will be defined largely in terms of the deviant reaction. Deviance for our purposes, then, is seen as an attitude fostering flexibility, adaptability, continuous innovation and innovative non-conformity. Being creative means in a sense to be deviant, as it is a move away from the norm.

ROLE OF THE DEVIANT IN SOCIETY

Behaviour, including deviant behaviour, can only be understood in light of the values that give it meaning and the institutions that provide channels for the achievement of these values. A study of the values of nursing and of organizations within which nurses practise can give us some indication of the problem areas.

Generally, the specified values of the hospital — preserving life, combatting illness, protecting the community, training personnel, doing research — are easily assimilated to the corresponding values of individual organization members, as they are also expressions of general cultural values in the society.

The hierarchy of these values, however, depends upon the particular perspectives of the various members and groups of the organization and the community. Discrepancies may and do develop. These may lead to conflict among members of the organization and with the outside community. They tend to result in a multiplicity of conflicting official and unofficial goals or values, each with its own special adherents. The amount of power each of these groups wields (we might identify these groups as the board of directors representing the community, line or administrative authority, and professional groups) will influence procedural values affecting such things as budget, staffing and allocations, which will in turn affect the type of care provided.

We observe that an established system tends to become rigid, with adherence to written and unwritten rules and regulations to ensure the continuity of the system. The system also imposes patterns of social control on its members to ensure their commitment. But change, mainly technological, is occurring at a rapid rate, so rapid in fact that we can be aware of it, often in spite of the organization. Therefore, we can assume most organizations can accommodate some varying degree of change without collapse of the system.

As stated previously, change requires deviants or innovators. Whenever someone is different from the rest of the group, for that moments she is deviant. A deviant response forces others to do something; that is, to react to the challenge. Being deviant increases the person's concern about how others will treat her. When a member deviates markedly from group standards, the remaining members of the group bring pressure to bear on the deviant to bring her back to conformity. This concern, of itself, serves as a determinant of behaviour. Further, people have a need to compare themselves with others, that is, with those similar to themselves. "Because of the reward in being considered normal, almost all persons who are in a position to pass will do so on some occasion by intent." (Goffman, 1963, p. 74). This phenomenon has been observed and documented by Reisman (1950) in our society. But an individual is not just the role or identity that society thrusts upon her; when the individual no longer confuses herself with the definition of herself that others have given her, at this point she becomes a unified self. Yet we are faced with the continual need of an experiential transaction with other individuals in order to "confirm ourselves", in Buber's terms. For the inmost growth of the self is not accomplished, as people like to suppose today, in man's relation to himself, but in the relation between the one and the other, between men, that is pre-eminently in the mutuality of making present in his own self by the other together with the mutuality of acceptance, of affirmation and confirmation. . . . The human needs confirmation, because man as man needs it." (Buber, 1965, p. 71).

APPLICATION TO NURSING EDUCATION

How can this philosophy and its implications be integrated into our teaching and made supportive to the graduate when she finds herself confronted with demands for conformity in her work conditions?

Perhaps we may consider six approaches: *Preparative,* in sharing certain values and interests, as students need the support of others, both their peers and their teachers in the development and continuation of the role of deviance. Praise, encouragement and stimulation are helpful in sustaining creativeness and change. *Counteractive,* in having students confront the administrative and organizational system from the beginning, instead of protecting them from it, with the support of faculty in working through the difficulties that arise. The same problem-solving method of approach as students use in planning intervention with patients could be used. *Reflective,* in

providing guidance and assistance in internalizing the positive feelings that accompany being deviant, so that deviance becomes a treasured identity. *Prospective,* in guiding the student to seek the means of taking a greater part in the definition of her own role by knowing and utilizing sources of information, by exercising her leadership capacities in seeking positions of responsibility, power and influence. *Interpretative,* in being helpful in the student's development as a person: such self-examination aims to enable the student to be more spontaneous and to participate in experiences. This aspect of education directs the person's attentiveness or involvement to being congruent within herself and also in her dealings with others. Moustakes (1967) states that we cannot be bound by any system whether social or intellectual; instead we must continue to be real within ourselves and to those with whom we interact. Lastly, *Nurturant,* an approach encompassing and forming an umbrella over the other aspects, in providing enrichment of the mind through caring, for and about, which signifies investing part of oneself. "Respect for one's own integrity and uniqueness, love for and understanding of one's own self, cannot be separated from respect and love and understanding for another individual." (Fromm, 1956, p. 49).

CONCLUSION

Dealing with emotional responses can be facilitated through group learning and peer support. Teachers in faculties of nursing can help prepare their students by the use of some anticipatory guidance as indicated in this paper. By actively confronting and dealing with their own conflicts, the new graduates will through self-integration have developed some armour to protect themselves in the role of deviance.

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DEVIANCE AND EDUCATION FOR LEADERSHIP: A RESPONSE

Myrtle Crawford
Assistant Dean, College of Nursing
University of Saskatchewan

I can identify with the author's argument that teachers in faculties of nursing can and should prepare their students to face a work situation different from the ideal they have been taught. She adds, "New graduates will through self-integration have developed some armor to protect themselves in the role of deviance". It is difficult to discern how teachers are to help their students or how the self-integration process is to go on.

The author has interesting and important things to say, but stops developing them before full understanding on the reader's part is possible. Perhaps she left some provocative statements undeveloped so a debate could be started.

I accept the definition of deviance as interpreted in the article but found it necessary to remind myself of it repeatedly as I read. I found it difficult, as well to equate deviance and creativity. While the author sees deviance as a special type of non-conformity, the distinction between the two is not completely clear to me.

I was disappointed that the theme of leadership which figures heavily in the title was not further developed, and would have liked to think further about how the nurse who exhibits deviance from the norm can lead others effectively.

The influence of a faculty member as a role model has considerable impact on student behaviour — she is copied if the students find her behaviour relevant or rejected if she does not seem to "practice what she preaches". What happens when a teacher talks deviant behaviour but herself conforms to the established pattern? How does this contribute to developing the so-necessary armor?

Some writers whose works shed light on this subject are Marlene Kramer *(Reality Shock)*, John Gardner *(Leadership)* and Erich Fromm *(Escape From Freedom)*. I believe their viewpoints could have clarified this discussion.

I wonder what most of us are doing right now. Are we sending a double message to our students — "Talk and theorize about being different, a change agent, but in my class learn to follow my rules"? How many of us have the courage to let our students, while they are students, really upset the system?

DEVIANCE AND EDUCATION FOR LEADERSHIP: A RESPONSE

Evelyn Malowany
Director of Nursing, Montreal Children's Hospital

The following points in response to the article "Deviance and Education for Leadership" were raised in discussing this paper with members of the staff of the Montreal Children's Hospital.

1) Nursing managers as well as nursing educators are concerned with the process of delivery of nursing care which has useful outcomes for clients. At the Montreal Children's Hospital we are attempting to shift our energies from a concentration on pathology and weakness to finding ways to help families recognize, utilize and develop their strengths. In terms of directions for nursing, we are excited by the emphasis on health and health-producing behaviors being studied in the Research Unit of McGill University's School of Nursing.

2) We have spent considerable time this past year observing nursing as practiced by recently-graduated baccalaureate nurses. In addition, we have developed a number of approaches to assist these young nurses to consolidate their learning in the course of providing service to the client. We now have unit-based, university-educated teachers who are assisting staff to develop their skills in the nursing of children. As well, an increased number of baccalaureate nurses has been hired in the past two years.

Bi-weekly meetings of our nursing teachers and our education consultant, an associate professor of nursing at McGill, are being held. We feel that these encounters, carried out in a spirit of enquiry, will promote the acquisition of skill in staff development. Our education consultant also teaches the final nursing course in McGill's B.Sc.N. program. She assists students to diagnose the factors influencing the patient situation and to select priorities based on patient's needs, time, energy, system resources and predictability of outcomes. Students in her course explore concepts such as decision-making and accountability as they care for a group of patients in a hospital ward. We have found that the communication between this university teacher and our agency staff development personnel allows for the exchange of information which frequently influences future encounters with their respective groups.

3) As managers and educators, we must question the assumptions upon which we operate. It is necessary to gather evidence in a systematic and continuous way in order to ensure that we are

cognizant of the "reality" in various situations. It appears that student nurses as well as staff nurses and others experience periods of feeling "good" and "not-so-good" about their ability to intervene effectively with individuals requiring nursing care. We have recently employed two nurses with research skills, for senior management positions. It is our intention to carry out research into nursing situations in order to understand better the constellation of variables which operate to produce useful outcomes for patients. Such outcomes do not necessarily occur only when a university-prepared nurse is in the picture.

4) Our deliberations around the concepts of leadership and innovative behaviors and how to develop these vital commodities force us to conclude that these concepts remain poorly understood. Perhaps future research into right and left brain function will help us understand the variables which operate to produce innovation. Should these variables be capable of manipulation and development, we might focus more productively on educating specifically for leadership which will produce change.

5) Those of us who studied the author's proposals felt that focusing on the development and refining of problem-solving skills with all nurses in our setting would be a more effective way to influence the development of leaders than would educating for deviance. We find that our energies are frequently dissipated by emphasising our differences (degree vs. diploma preparation, unionized vs. management nurses) rather than exploring ways to work cooperatively for the patient's benefit. As evidence of increased cooperation, the faculty of the School of Nursing at McGill and selected nurses from five university-affiliated hospitals are currently developing a system of joint appointments to both hospital and university settings. One can hope that innovation will result from these new relationships.

The author's paper provided my staff and me a welcome opportunity to explore the many issues she has raised.

Education vers le leadership: Une question de déviance?

Face à de profonds changements, la profession d'infirmière se doit de chercher dans ses rangs mêmes de nouvelles orientations et significations afin de choisir sa propre voie parmi d'innombrables possibilités. Tout changement appelle des déviants ou des innovateurs. Une réaction déviante force autrui à faire quelque chose, c'est-à-dire à relever le défi. Dans l'article, la déviance consiste en une attitude génératrice de souplesse, de capacité d'adaptation, d'innovation constante et de non conformité novatrice. Le fait de créer est déjà une

forme de déviance car toute création s'écarte de la norme. Les infirmières fraîchement émoulues de l'Université se perçoivent souvent comme déviantes, ce qui entraîne conflits et frustrations. Les professeurs de sciences infirmières peuvent préparer leurs étudiantes à cette éventualité grâce à une orientation par anticipation. Ils peuvent utiliser une approche éducative de "soutien" comprenant l'éloge, la stimulation et l'apprentissage par l'expérience pour aider leurs étudiantes à faire face positivement et à régler leurs conflits, la nouvelle diplômée se sentira plus unifiée intérieurement et donc mieux protégée pour exercer son rôle déviant.

Réponse de Myrtle Crawford. L'auteur aurait tout intérêt à développer son argumentation. En effet, comment l'infirmière qui dévie de la norme peut-elle en diriger d'autres efficacement? Qu'arrive-t-il quand un professeur parle de comportement déviant tout en se conformant lui-même à la norme établie? Les enseignants permettent-ils réellement aux étudiants de bouleverser le système durant leurs études?

Réponse de Evelyn Malowany. En tant que directrice du service de soins infirmiers d'un grand hôpital, l'auteur croit que pour former des leaders, le fait d'apprendre à toutes les infirmières à résoudre des problèmes est de beaucoup supérieur à celui d'encourager la déviance. L'auteur décrit certaines innovations ayant été mises en oeuvre à l'Hôpital de Montréal pour les enfants.

Specifying Affective Behavioral Indicators in Nursing

ROBERT RUBECK* AND JULIA QUIRING*

It is becoming increasingly common to find teaching and learning objectives classified in cognitive (knowing) and performance domains. The knowledge, comprehension and application levels of the cognitive domain appear with great frequency in nursing curriculum objectives. With the introduction of a behavioral emphasis, motor skills are being analyzed and specific behaviors identified for many skills. This kind of specification has greatly facilitated the measurement of learning achievement in both of these general learning domains.

However, in the affective (feelings, emotions) domain this same specification and rigor in the measurement of learning does not usually occur. Measurement of the behaviors in this domain is complicated since both verbal and non-verbal learning are involved. In the past we were satisfied with using rather global phrases for affective objectives such as "assists patient to cope with stress", "uses therapeutic touch in nursing care", and "develops a nursing ethic". In a few cases elaborate attempts have been made to measure some aspects of affective learning, such as values consistent with nursing behavior. In one instance nursing students were shown the film "Mrs. Reynolds Needs a Nurse" while their galvanic skin responses were simultaneously measured. Though such a technique does measure individual variations of learning in the affective domain it is not practical other than in experimental settings.

To facilitate a practical approach to the measurement of affective objectives, this paper presents a model which can serve as a guide in developing the objective and in specifying both the verbal and non-verbal indicators of the achievement of that objective. Two examples of nursing associated with the affective domain are given to illustrate the use of the model: the first on dealing with approaching death and the second on learning therapeutic touch.

AFFECTIVE DOMAIN IN GENERAL AND IN NURSING

The first step in developing measurable affective objectives is to classify behaviors in the affective domain. In the terms used by

* At the Faculty of Nursing, University of British Columbia, Robert Rubeck was Assistant Professor and instructional specialist and Julia Quiring was Associate Professor when this article was written.

TABLE 1 — COMPARISON OF AFFECTIVE TERMS.

Affective Domain Terms	*General Terms*	*Nursing Terms*
Receiving	Asks, Describes, Identifies, Locates	Observing, Noting.
Responding	Answers, Discusses, Presents	Reflecting, Supporting.
Valuing	Differentiates, Explains, Forms	Committing, Internalizing
Organization	Adheres, Arranges, Combines	Planning, Setting priorities, Coping.
Value Complex	Discriminates, Displays	Intervening, Demonstrating, (repertoire of nursing behaviors)

Krathwohl, et al. (1956) the first column of Table I sets forth behavior levels in the affective domain. The second column shows terms commonly used to characterize each level; and the last column specifies some common nursing terms appropriate for each level. Identifying descriptive words is useful in that it gives us a working vocabulary for describing behavior.

Let us use an example of a nurse with a patient in stress to illustrate this classification. The nurse must first note or observe the patient behavior — level 1 of the affective domain. Then a nurse might begin to interact with the patient by reflecting/supporting certain of the behavioral manifestations of stress — level 2. The nurse may begin to develop some degree of combined or internalization of the values associated with these behaviors — level 3. Planning, setting priorities and determining ways of coping with the stress would be part of the organization stage — level 4. When a given repertoire of nursing behaviors has become part of his/her value complex the nurse can selectively choose to use one or another intervention according to evidence of need — level 5.

It is apparent that the affective domain necessitates learning on both verbal and non-verbal levels. Values are shown in both verbal and emotional responses. Thus objectives need to include both levels. Rubeck's Model for Non-Verbal and Verbal Assessment of Affective Learning (1975) can serve as a guide in specifying objective indicators for both levels. This model is represented by six basic steps:

1. State the rationale
2. State goals
   —Organize goals

3. List behavior
   —Organize within goal categories
4. Write instructional objective (affective)
5. Formulate indicators
   a. Verbal
   b. Non-verbal
6. Evaluate
   —Reuse.

USING THE MODEL.

Two situations illustrate how nursing content can be related to the model. One situation deals with dying patients; the other illustrates the model applied to learning some affective aspects of theraputic touch.

Situation 1. Approaching Death

A graduate student brought the following situation to her instructor, requesting help in dealing with her own and her patient's feelings.

> Patient Bill N. was 27 years old with a wife and two children. Until about six weeks ago, he had been working as a logger. Following a cold he developed a urinary infection which quickly became a severe case of glomerular nephritis. When the student met him, he had been having peritoneal dialysis with only palliative results. One conversation with the nursing student was as follows:
>
> P. I'm not going to get to go home!
>
> N. Not going to go home?
>
> P. They tell me my kidneys are really bad. They finally got that report back. The doc says I've only got a couple of months unless they can get me on that kidney machine. They say my chances are not good.
>
> N. That's quite some news.
>
> P. I guess doctors must have to be pretty impersonal. They can't have feelings and tell people this kind of news all the time. It would be too hard on them. I've just gotta get on that kidney machine. They say though, that because of my eyes, I'm not a very good candidate. People on the machines are only supposed to have a kidney problem and be able to be rehabilitated with the help of the machine. They can't just let a fellow die though, can they? If I knew I couldn't get on, I might just as well eat myself to death and die right now.

Students who must work with dying patients should have some specific objectives in the affective domain. It is imperative that instructors have teaching objectives and ways of measuring student

behavior and progress in responding to sensitive and emotional situations such as approaching death. Using the model, an instructor can state objectives and identify indicators of progress. The model is applied to one possible objective here:

Model Applied to Approaching Death Situations

I. Rationale

Nursing students must be able to interact with patients facing imminent death.

II. Goal

The nursing student will be comfortable when interacting with a patient who has just been told he has only a short time (few weeks) to live.

III. Behavior Indicators

Comments about death
Talks with patients about death
Talks with patient's family about death
Requests assignment to patient approaching death
Shares personal feelings regarding death
Talks with minister, priest, chaplain regarding religious aspects of death
Talks with staff about death
Reads professional and non-professional literature on dying
Presents conference on dying patient's perspective.

IV. Affective Objective

Student will comfortably and appropriately continue a patient care assignment, interacting and caring for at least one patient until his death.

V. Affective Indicators

Verbal	*Attends*	*Non-Verbal*
Engages in conversation with dying patient.		Arranges conversation so topic of death can be discussed openly.
	Responds	
Discusses dying experience with patient.		Enters room of dying patient.

Verbal		*Non-verbal*
	Controls	
Discusses subject of death when opening occurs.		Observes patient and perceptively guides conversation to and from topic of death, responding to patient cues such as tears or anger.
	Includes	
Brings related understanding of information regarding death to patient.		Takes patient to visit other patients approaching death.
Assists patient to participate in group discussing dying.		May take patient to cemetery or mausoleum for visit, depending on patient need.
	Supports	
Speaks out about dying in positive way		Allows patient to pick time and amount of discussion desired on death
	Perseveres	
Continues to work with patient till death		Voluntarily requests assignment to another patient approaching death.

Situation 2. Therapeutic Touch

Another area involving affective learning relates to developing and using the sense of touch. Hall (1966) has suggested that there are different areas related to personal space which affect touch. He has identified an intimate zone defined as the space within arm's length. This space, he notes, is usually reserved for lovemaking, comforting, and protecting. It is also the area into which the nursing touch must penetrate. Durr (1971) suggested that ". . . nursing activities such as bathing, massaging, positioning, and administering medications have been seen primarily in terms of their immediate, tangible effects. The tendency has been to ignore the communicative function of touch and closeness. . . ". Krieger (1975) is currently attempting to explore the effects of therapeutic touch.

Much of the beginning nursing student's learning related to touch is happenstance. While the student is unconsciously aware of the

usual taboos of touch and space proximity, certain nursing activities will immediately force the student to violate these taboos. At the same time the student is asked to discriminate between various sensations conveyed by touch including pain, temperature, erotic touch, and therapeutic touch — including massage, percussion, and palpation.

In first nursing experiences, these variations are difficult for the student to differentiate. The student usually attempts to learn the differences by "gingerly" touching the patient with a washcloth when bathing. Usually the instructor modifies this behavior by encouraging the student to "rub briskly to stimulate circulation." Some patients attempt to help the student learn aspects of therapeutic touch by rebounding from an icy hand starting a backrub with a startled grimace and jokingly commenting, "cold hands — warm heart."

Specifying behaviors in the affective domain would facilitate learning to therapeutically touch patients.

Model Applied to Therapeutic Touch

I. Rationale

The act of touch is an integral part of nursing intervention and must be used judiciously between nurse and patient, health team and patient, and health team and nurse as a fundamental mechanic of communication, and as an important means of communicating emotion and ideas (Barnett, 1972).

II. Goal

The student will be able to meaningfully and therapeutically touch another person.

III. Behaviors

Comfort
Massage
Percussion
Palpation
Therapeutically touch all ages of both sexes.

IV. Affective Objective

During nursing experiences the student will freely and comfortably touch a patient in a therapeutic manner.

V. Affective Indicators

Verbal	*Non-Verbal*
Attends	
Asks a question about touch.	Observes another nurse performing a nursing procedure involving touch.

Verbal		*Non-Verbal*
	Responds	
Discusses various types and responses to touch.		Experiments with subjective responses of patients to varied types of touch.
	Controls	
During learning experience, requests to perform a procedure involving touch.		Correctly performs a procedure involving touch, e.g,. taking pulse.
	Includes	
In daily conversation discusses effects of touch.		Uses touch freely as a means of non-verbal communication in therapeutic and non-therapeutic situations.
	Supports	
Carefully differentiates between kinds of touch and types of responses.		Selects touch frequently and appropriately as an effective method of communication.
	Perseveres	
Teaches another about therapeutic use of touch.		Continues to use touch in situations when it is appropriate even though patient might exhibit initial reluctance.

Evaluation of the achievement of the objective is the final step. A simple frequency count may be the easiest objective measure. If the objective has eight verbal indicators and six non-verbal indicators and the learner evidences ten of the fourteen possible indicators, a level can be established. The mean for one group might be eight, and for another, six or ten. It is apparent that some indicators necessitate long-term evaluation and will require weeks, months or years to assess adequately.

Many other examples of nursing learning could be classified in the affective domain. Measuring the development of values and related nursing-valued responses requires diligent specification. Identifying

indicators of behaviours that exemplify internationalization of these values is essential for measurement of values inherent in learning the *art* of nursing.

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SPECIFYING AFFECTIVE BEHAVIORAL INDICATORS IN NURSING: A RESPONSE

Dorothy Pringle*

Quiring and Rubeck address an important yet underdeveloped aspect of nursing education: the specification and measurement of learning in affective areas. Unfortunately, I do not find that the model presented helps expand my ability to construct affective objectives, for several reasons.

First, not enough information is provided about the model to enable the reader to apply it satisfactorily; for example, no criteria are described for including statements under each category. The examples relied upon to convey this information are not sufficient for me. Rubeck's original article (1975) on the model offered different criteria than this paper does.

Second, and more important, the conceptual basis for this model is not clear. I felt there was an implied relationship with Krathwohl, Bloom and Masia's *Taxonomy* in the affective sphere (1956), but Rubeck does not refer to this material in his original work. Nevertheless, the lower end of the continuum in the *Taxonomy* (receiving, responding, valuing, p. 37) is congruent with Rubeck's indicator categories (attends, responds, controls, includes, supports, perseveres) and by reviewing the rationale for selecting these terms in the

* Dorothy Pringle, formerly Director of Laurentian University's School of Nursing, is now studying at the University of Illinois.

Taxonomy (pp. 24-38) it is possible to appreciate the affective implication of Rubeck's indicators. The higher level *Taxonomy* categories (organization, characterization of a value complex, p. 37) are not represented. If Rubeck did not utilize the *Taxonomy* to generate aspects of his model, it is not clear why he selected his categories.

Third, I do not believe the authors' examples of affective indicators are necessarily evidence of affective learning. Several indicators require a knowledge of theory and practice principles and may be no more than a measure of the application of this knowledge; e.g. "discusses dying experience with patient", "discusses various types and responses to touch", "correctly performs a procedure involving touch". In most cases an observer could assume affective learning had occurred, but this could not be guaranteed because the whole issue of the motive underlying the behavior has not been addressed. I find the *Taxonomy* to be superior to this model both for defining objectives and for suggesting methods of testing for their achievement.

My final major concern is the method suggested for evaluating the effectiveness of affective learning. Simply counting up the number of indicators present is an approach which fails to account for the relative importance of various objectives and time. Some objectives must be achieved; others are relatively marginal to students' essential learning.

Several other features of this paper give rise to what may be picayune concerns, but ones which nonetheless affect my appreciation of the model. 1) The paper seems to imply that both verbal and non-verbal behaviors are involved only in affective spheres. Verbal and non-verbal behavior complicate objective setting in cognitive and psychomotor spheres as well. 2) The sequencing of verbal and non-verbal indicators in the examples is out of order and does not achieve Rubeck's own intent (1975, p. 30) that indicators be "incremental steps leading to . . . the behavior desired." 3) The affective objective in both examples includes the term "comfortably", yet there are no indicators that address the achievement of this aspect of the objective.

In conclusion, a model that specifies only affective objectives for a learning experience seems inappropriate for use at this time in nursing education, as would be a model that discusses only cognitive or only psychomotor learning. What we as educators need is a model that helps us to identify the interrelationship of cognitive and affective learning so both can be adequately defined for students' learning.

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Vers une précision des indicateurs de comportement dans le domaine affectif en sciences infirmières

Dans l'enseignement des sciences infirmières, on formule souvent des objectifs d'apprentissage dans les domaines cognitif (connaître) et moteur. Cependant, les comportements dans le domaine affectif (sentiments, émotions) sont plus difficiles à préciser. Pour faciliter une méthode pratique de mesure des objectifs d'ordre affectif, les auteurs présentent un modèle en six étapes. On peut utiliser ce modèle comme guide pour élaborer un objectif et spécifier le comportement verbal ainsi que le non verbal indiquant l'atteinte de cet objectif. Le modèle est ensuite appliqué à deux situations de sciences infirmières ayant trait au domaine affectif, l'une se rapportant à l'approche de la mort, l'autre à l'apprentissage du toucher thérapeutique.

Réponse de Dorothy Pringle. On a décélé plusieurs difficultés dans cet exposé. On ne peut considérer les indicateurs d'ordre affectif comme une preuve d'apprentissage de cette nature sans parler des motifs du comportement observé. La base conceptuelle du modèle n'est pas claire et l'on ne dispose pas d'informations suffisantes pour permettre au lecteur de l'appliquer. Ce dont les éducateurs ont besoin, c'est d'un modèle qui les aide à comprendre les rapports entre l'apprentissage cognitif et affectif.

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