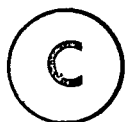


THE EFFECTS OF LEARNING AND INSTRUCTIONAL
STYLE CONGRUENCE IN AN ADULT EDUCATION
LEARNING ENVIRONMENT



by

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ABSTRACT

In recent years there has been a significant trend away from 'instructor-centred' and towards 'student-centred' instructional styles. While the re-evaluation of the role of an instructor has caused controversy in the teaching profession, researchers have been unable to provide conclusive evidence as to the effect of different instructional styles. This lack of conclusive evidence probably results from interactions between various learner and instructor characteristics that influence learner outcomes. This study was developed to investigate whether congruence between the instructor and adult learners' attitudes towards learning and instruction was related to learner participation and satisfaction with the learning experience, and with the instructor's evaluation of learner performance. The three hypotheses developed were that:

1. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner satisfaction.
2. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner persistence.
3. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with the instructor's perception of learner's learning achievement.

No instruments were available that would measure learning and instructional style or learner's satisfaction therefore two measures were developed. These measures were developed in concert with a number of expert judges, who checked the instruments for clarity of expression and content consistency. A factor analysis was performed prior to and during the study. All items loaded significantly and in the same direction on the first unrotated factor. It would appear that both indices were unidimensional. A research instrument was designed to collect participant and instructor socio-economic data; this instrument incorporated the two indices mentioned above. The reliability of the entire instrument was checked through a test-retest design by repeated applications on the same population. Unreliable items were deleted.

The data required to test the hypotheses were collected at two adult education centres operated by Vancouver Community College. The sample consisted of 38 classes with 638 participants selected at random from a total of 84 classes offered at the Langara and Eric Hamber centres of Vancouver Community College.

None of the three hypotheses were confirmed. The discrepancy between instructor's and learner's attitudes towards learning and instruction appeared to be less important than the attitude of either the participant or the instructor towards learning and instruction. In particular there were strong positive correlations between learner satisfaction and both learner and instructor Learning and Instructional Style Index scores considered independently

of each other, but when considered as discrepancy scores, the significance of the correlation was greatly diminished. Similarly, it appeared that learner persistence was related to the learner's and the instructor's attitude toward learning and not to the difference in attitude between them. The hypothesized relationship between learner achievement and learner-instructor learning and instructional style congruence was rejected. However, it would appear that these variables were correlated and that the calculation of the measure of congruence disguised the significance of this relationship.

Regression equations were generated to identify variables that predict learning and instructional style, learner persistence, and learner achievement. Variables that related to the instructor's socio-economic status and various measures of instructor and learner previous educational experience were the most powerful predictors of learning and instructional style, learner satisfaction, learner persistence, and learner achievement.

The method through which the measure of instructor-learner congruence was derived may disguise an otherwise significant correlation. In this study, both actual (arithmetic) and discrepancy differences were recorded. As a result, it was possible to identify some instructor-learner congruence relationships which otherwise would not have been observed. These effects may have confounded the work of previous researchers who used only one measure of congruence and a statistical procedure that required a linear solution. Future

studies which attempt to further unravel the complex learner-instructor relationships using the notion of congruence should anticipate and seek to identify these curvi-linear relationships.

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CHAPTER ONE

INTRODUCTION

In 1919 the British Ministry of Re-Construction Report (Waller, 1956) cited the need for education to be universal and lifelong. Despite the fervour of the authors of this report the notion of lifelong education remained dormant until revived at UNESCO's Second World Conference on Adult Education (Montreal, 1960). It has since been vociferously endorsed at other world conferences (Tokyo, 1972; Nairobi, 1976) and has emerged as the 'master concept' guiding the transformation of education systems throughout the world. Central to the concept of lifelong education are the notions that: education does not terminate at the end of formal schooling but continues throughout an individual's life; education encompasses all formal and informal patterns of learning and therefore should be totally integrated; as lifelong learning is universal in nature it represents the democratization of education (Dave, 1975).

The influential Faure Report (1972, p. 181) noted that for the concept of lifelong education to be translated into formal operations, barriers impeding access to institutions must be dismantled. The report recommended that "education institutions and means must be multiplied (and) made

more accessible". According to Faure (1972, p. 185) "education should be dispensed and acquired through a multiplicity of means".

As clarified at the Second World Conference on Adult Education (Montreal, 1960) and conceptually developed by Faure (1972), and O.E.C.D. (1973, 1975) and others, democratization requires the erosion of barriers which impede participation (particularly by people in the lower socio-economic groups) and the involvement of learners in the adult education process. Clientele surveys and participation research (e.g. Boshier, 1971; Dickinson, 1969; Hanna, 1965; Johnstone and Rivera, 1965; London, 1963; Verner and Newberry, 1958) all show that, at present, institutional forms of adult education largely attract an elite. The first element of democratization requires this situation to be remedied; socio-economic disparities in participation must be removed. The second element of democratization calls for the involvement of learners in the programme planning and instructional processes. According to Knowles (1970) adults are self-directed, have a broad experiential base, are problem-oriented and learn in response to the presence of immediate needs and problems. Adults cannot be treated as "empty vessels"; their experience constitutes an important resource for planning and instruction.

When translated into adult education operations, demands for democratization have become associated with calls for de-institutionalization (Illich, 1970) and the desire to create educational opportunities congruent with the life

circumstances of potential participants. The Faure Report, major overseas investigations concerning adult education (e.g. Russell, 1973; Simmonds, 1972) as well as provincial studies in Canada (e.g. Alberta, 1972; British Columbia, 1974; Ontario, 1972) all speak of the need to create flexible and diverse learning opportunities for adults congruent with their life circumstances and needs.

The focus of this study is on instruction, the second major step in the adult education process. As applied to instruction, democratization requires the creation of "adult-oriented" environments within which the instructor will behave in a manner congruent with the needs and expectations of learners.

CONGRUENCE

The need to create "congruent" learning environments is axiomatic and implied in contemporary and historical literature describing fundamental concepts of adult education (Bryson, 1936; Knowles, 1970; Lindeman, 1926). In adult education research it is applied to programme planning (Peters and Boshier, 1976), and the design and management of instruction (Knowles, 1970) and the study of dropout (Boshier, 1973).

The notion of congruence has been employed to facilitate understanding, prediction and control of a broad range of phenomena. Notable applications of congruence theory have

occurred in the study of personality and psychotherapy (Rogers, 1959), attitude-change (McGuire, 1968; Simons, *et al*, 1970), cognitive dissonance (Festinger, 1957) and inter-personal attraction (Lott and Lott, 1965; Secord and Backman, 1964). It has been applied in educational settings to explain learner satisfaction (e.g. Pervin, 1960) and dropout (Boshier, 1973).

Basic to the notion of congruence is the fact that human beings behave in ways that maximize psychological stability and minimize instability. Thus, in Lecky's (1945) personality theory it is suggested that the human organism is faced with the need to keep internal perceptions consistent with experience; in Rogers (1959) theory considerable importance is ascribed to the human penchant for internal consistency. It is contended that the self/other and self/ideal-self congruence is a measure of adjustment; the greater the congruence the better the adjustment. Attitude change researchers have demonstrated that a willingness to change attitudes varies with the extent to which the information 'source' is congruent with the 'receiver'. Similarly, in Murray's (1938) personality theory, adjustment is portrayed as a function of the degree of consonance between 'needs' and 'environmental press'.

A direct application of congruence theory to an adult education problem was reported by Boshier (1971) and amplified later (Boshier, 1977; 1978). Boshier has variously argued that non-participation in adult education occurs because of 'incongruences' between institutions and potential participants. Dropout, he argues, occurs because some participants feel

incongruent in some institutions. Incongruence makes participants vulnerable to the effects of 'mediating' variables (e.g. transport or weather difficulties) which 'trigger' dropout. The hypothesized relationships investigated by Boshier were neatly captured by Cronbach (1957) who suggested that for each person there is an optimal environment and for each environment an optimal person.

Boshier suggested there were basically four congruence states which have particular relevance in learner persistence or dropout behaviours: intra-self, self-other student, self-lecturer or self-other congruence. Participant-environment matching is supposed to reduce incongruence and incongruence induced dropout. Therefore, an instructor should adopt a 'style' congruent with the learner's preferred learning style. However most instructors adopt an instructional style based on their own development history and experience both as a learner and instructor (Oswald, 1971), so 'chance' congruence may be reflected in learner behaviours such as attendance, satisfaction and learning achievement.

Congruence has also been used by Quastel (1979) to explain an apparent correlation between job satisfaction and the presence or absence of training needs. Quastel showed that community mental health workers with 'high' needs for training were significantly more dissatisfied with their jobs than those with 'low' needs for training. She argued that mental health workers with high training needs felt incongruent in their work situations and were thus

dissatisfied. In Quastel's study, 'congruence' was not measured directly; it was merely a hypothetical construct invoked to account for a correlation between training need and job satisfaction.

PURPOSES OF THE PRESENT STUDY

Despite the work of Boshier (1973) and the large number of authors whose contributions were reviewed by Verner and Davis (1964) dropout from adult education remains an intransigent problem. Furthermore, there is little in previous work which reveals relationships between congruence states, as variously defined, and other crucial adult education variables such as learner satisfaction and achievement. Congruence has powerful effects on attitude change, personality, organizational behaviour and perception but its impact on important adult education processes remains largely unexplored.

The task of this study is to build on earlier work linking congruence to adult education dropout, learner satisfaction and learner achievement, and concerns the effects of congruence as they operate during the instructional phase of the adult education process. The study concerns the extent to which congruence between instructor and learner attitudes towards learning and instruction is related to learner persistence, learner satisfaction and the instructor's evaluation of the learner achievement.

It is assumed that Lewin's (1935) formulation concerning person — environment interactions is correct. Lewin (1935) suggested that behaviour was a function of personality and the environment or $B = f(p.E)$. The model proposed for this study is basically an extension of Lewin's and can be stated as: persistence behaviour (P), learner satisfaction (S) or learner achievement (A) will be a function of personality congruence (P_C); that is, intra-self (C_{S-S}), self-other learner (C_{S-O}), and self-instructor (C_{S-I}), congruence; and congruence between instructors (T_I) and learners (T_L) attitudes towards learning and instruction (E). Expressed as an equation, the model suggests that:

$$P \text{ or } S \text{ or } A = f \left\{ \left[P_C = f(C_{S-S}, C_{C-O}, C_{S-I}) \right], E_{T_I}, T_L \right\}$$

This view of the implications of congruence gives rise to a number of theoretical units and propositions describing variable interactions some of which constituted the basis of this study.

PLAN OF THE STUDY

The work conducted for this study is reported in five chapters. In Chapter 2 the literature survey and hypotheses are reported. The development of the research instrument is described in Chapter 3. The population selected, sampling procedures, data collection and research design

adopted are discussed in Chapter 4. The data analysis and results are reported in Chapter 5. Finally, the conclusions are presented and the study is summarized in Chapter 6. The immediate task is to review literature relevant to the problem.

CHAPTER TWO

SURVEY OF THE LITERATURE

This review was reduced to manageable proportions, through the following strategies: a) computer-assisted searches of the ERIC Information System were conducted with 200 items identified as meeting the requirements of the Key-word matrix; b) a computer assisted search of the bibliographic data bases held by the Institute for Behavioural Research at New York University, which included Psychological Abstracts from 1970 to 1975 and Social Science Journals from 1968; some 150 items were identified; c) recent and relevant reviews of the literature were sought; d) major contributors to the area of study were other entry points to the literature; and e) studies based on pre-adult populations were largely ignored.

Literature in the following categories was reviewed. Adult education in the context of lifelong learning, where the need for expanded learning opportunities for adults is noted; the instruction of adults, in which the literature on instructional and learning styles is discussed; congruence, in which the relevance of congruence in attitude change, opinion leadership and communication is noted; the application of the notion of congruence as applied to adult education is discussed in the section titled congruence and education;

finally the hypotheses selected for the study are presented.

ADULT EDUCATION IN THE CONTEXT OF LIFELONG EDUCATION

The rate of change in contemporary society appears to be accelerating. While futurists may have different expectations of what is to come, there appears to be agreement that all individuals will be required to learn a host of new skills (Toffler, 1971, 1972). Further, whatever the future holds, it is clear that at present society is experiencing an 'information explosion'. Kahn and Wiener (1967) suggested that there was about 100 times as much to know in 1967 as was available in the year 1900, and that by the end of this century, there will be 1,000 times as much. The traditional chronological separation between the acquisition of knowledge in school and adulthood is no longer valid, as more and more adults discover they need to be learning continuously to upgrade present skills or to develop new ones. The Faure Report "Learning To Be" recognized that adults will require increased access to learning opportunities and suggested that as:

"education is and will be more and more a primordial need for each individual, then not only must we develop, enrich and multiply the school and the university, we must also transcend it by broadening the educational functions to the dimensions of society as a whole" (1972, p. 161).

A 'learning society' has been touted as a state that

will be achieved when principles of lifelong learning (or education) are fully implemented. Although the literature is confused it appears that lifelong learning represents a set of philosophical beliefs or principles while lifelong or recurrent education (or education permanente) label machinery employed to ensure the education of people from cradle to grave. All education involves learning but not all learning involves education. In literature emanating from UNESCO (e.g. Dave, 1975, 1976) and the O.E.C.D. (1973, 1975) adult education is portrayed as only one element of a lifelong education system. However, despite semantic and conceptual difficulties nearly all writers agree that education should be spread out over an individual's lifetime and not concentrated into the first 25 years. Each adult lives under different circumstances so a variety of educational approaches may be required to ensure that potential participants are not denied access to learning by reason of their geographic location, work cycle, cost or previous educational level. Recently UNESCO member states reinforced their commitment to an egalitarian and pluralistic approach to lifelong learning by emphasising that adult education:

"should be adapted to the actual conditions of everyday life and work and take into account the personal characteristics of adult learners, their age, family, social, occupational or residential background and the way in which these interrelate" (1976 Recommendation 3.e).

In the past adult education was considered a marginal educational enterprise (Clark, 1958) in comparison with the education of children. This may explain the paucity of

research pertaining to the education of adults despite significant participant populations, which for instance in British Columbia, may be at least as large as the grade school population and probably considerably larger [Dickinson, *et al*, (1973), pp. 13-26]. If UNESCO's recommendations pertaining to lifelong education are to be implemented, and educational opportunities increased and diversified, more research will be required to ensure the effective utilization of resources allocated for the education of adults.

Adults learn through a variety of activities and in diverse settings. Little suggests that adult learning occurs in four basic situations. An adult:

"may learn spontaneously as a chance event occurs in his environment (fortuitious learning); he may wish to learn and pursue this desire (intentional learning); he may systematically design and manage his own learning (education by self); or he may call upon the services of a person or institution to design and manage the learning situation for him (education directed by others)" (1978, p. 4).

Adults thus learn in the natural societal and the formal instructional setting (Jensen, 1964). Learning in the natural societal setting may occur through reading, television, conversation or such like. While these everyday activities may provide excellent learning opportunities, few adults learn enough in such a setting to satisfy individual or societal needs for continuous learning. Much learning in the natural societal setting occurs as a result of chance. The formal instructional setting comes into being when an educational

agent designs a sequence of events to help adults learn.

Verner and Booth (1964), Dickinson (1973a) and Boshier (1978) all note that adult education involves two major processes: program planning and instruction (evaluation is an integral part of both). During the program planning phase needs are diagnosed, program goals developed and methods chosen. Knowles (1970) and Houle (1972) do not make a major distinction between program planning and instruction but the writers cited above argue that instructional design begins when program goals are translated into instructional objectives. For followers of Gagné (1965) the next step is to analyse instructional objectives into their component learning tasks. The instructor will subsequently select techniques suitable for the execution of the learning tasks.

As most educational institutions have more or less specific terms of reference, adult educators can only respond to a defined spectrum of learner needs. Methods (Verner, 1959) adopted to organize learners may also be institutionally prescribed. Therefore, unless adult learners are able to identify programs congruent with their life circumstances, they will be denied access to learning opportunities. Even though a suitable program can be identified the learning tasks, instructional techniques, or teaching 'style' adopted may not be appropriate for the learner. The Task Force on the Community College in British Columbia appeared to acknowledge that no one teaching style was appropriate for all adult learners and recommended that:

"Community Colleges should encourage and foster a wide variety of teaching styles and instructional methods so that the traditional and outmoded master-pupil concept of learning may be replaced by a more cooperative, more democratic approach ..." (1974, p. 11).

Adult education has traditionally been more flexible and involved in the diagnosis of learner-needs than has pre-adult education. Indeed, the stress on needs diagnosis and a concern for the democratic arrangement of educational environments is evident in early (Bryson, 1936; Lindeman, 1926) and contemporary adult education literature (Boyle and Jahns, 1970; Kidd, 1973). Although much remains to be done the "democratization" of adult education at the programme planning level has been accomplished (at least conceptually) but there is scant evidence of its adoption at the instructional level. Indeed, casual observation suggests that much adult instruction resembles the 'teaching' of children. Much so-called adult education is little more than youth education for adults because the instructional techniques employed and the teaching styles chosen are child-oriented. Principles of adult education are widely applied during the program planning process but not universally adhered to during the instruction of adults. It was this kind of situation which Stock bemoaned when noting that:

"Researchers making a positive contribution to the general theory of teaching have been few and far between. This partly has been due to the inconclusive nature of many of the studies, and partly due to the denigration of 'teaching' as compared to the notion of 'learning'" (1974, p. 115).

Adult educators have been slow to develop instructional theory indigenous to their field. Thus scholars writing on the subject of adult "learning" or "instruction" (e.g. Kidd, 1973) often resort to a discussion of theories developed to facilitate understanding of child education. If adult education is to occur within the context of lifelong education it will be necessary to construct conceptual and operational bridges which link learning and instructional theory. Difficulties associated with translating learning theory into instructional procedures led Snelbecker (1974) to coin the term psycho-educational design and partially account for the fact adult instruction often resembles child education. Thus it is necessary to examine literature concerning assumptions which have particular relevance to the instruction of adults.

INSTRUCTION OF ADULTS

Although there are instructional theories peculiarly relevant to adult education (e.g. Gagné and Briggs, 1974) these are not widely employed in the field. However, as Kreitlow (1972) and others note there has been a persistent stress on the need to create an optimal inter-personal "climate" in adult instruction settings. Indeed, during the third epoch of the adult education movement identified by Cotton (1968) 'group dynamics' and 'adult education' were almost synonymous. The

emphasis on group dynamics gave rise to considerable controversy within the adult education movement but today a rapprochement is still evident. The need to treat participants as adults is probably most explicit in the work of Knowles (1970) who has listed major 'technological implications' for adult instruction which stem from the four characteristics of the adult learner.

Knowles (1970) adopted the European term andragogy to distinguish the "art and science of helping adults learn" from pedagogy "which is the science of teaching". Knowles suggests that andragogical behaviours are particularly appropriate for instructors of adults. He identified a number of behaviours which, when exhibited by instructors, are likely to reflect their attitude towards participants and instruction. The andragogical instructor acts primarily as a facilitator and resource manager, assisting the adult learner through the learning process (see Fig. 1). Therefore, Knowles' andragogical instructor resembles Lippitt and White's (1943) 'democratic', or Liveright's (1959) 'group-oriented' leader, and his pedagogical instructor parallels their 'autocratic' or 'content-oriented' leaders. Instructors with these different leadership styles are likely to behave differently in the classroom. The andragogical, democratic or group-centred instructor's behaviour is likely to emphasize student participation, student-student interaction, instructor warmth and acceptance, and group determination of goals - a style which has been classified by various authors as student-centred,

Fig. 1

A COMPARISON OF ASSUMPTIONS AND PROCESSES OF PEDAGOGY AND ANDRAGOGY

Assumptions			Process Elements		
	Pedagogy	Andragogy		Pedagogy	Andragogy
Self-concept	Dependency	Increasing self-directiveness	Climate	Authority-oriented Formal Competitive	Mutuality Respectful Collaborative Informal
Experience	Of little worth	Learners are a rich resource for learning	Planning	By teacher	Mechanism for mutual planning
Readiness	Biological development Social Pressure	Developmental tasks of social roles	Diagnosis of needs	By teacher	Mutual self-diagnosis
Orientation to learning	Subject centered	Problem centered	Design	Logic of the subject matter — Content units	Sequenced in terms of readiness — Problem units
			Activities	Transmittal techniques	Experiential techniques (inquiry)
			Evaluation	By teacher	Mutual re-diagnosis of needs — Mutual measurement of program

Source: Knowles (1973), p. 45.

indirect, integrative, inclusive, democratic, permissive or participative (Solomon, Bezdek and Rosenberg, 1963). The pedagogical, autocratic, content-oriented instructor's behaviour is likely to emphasize instructor talk, interaction between instructor and students, instructor determination of goals, restricted topic-relevant discussions - a style classified as instructor-centred, direct, dominative, preclusive or autocratic.

Although Adult Education has published an increasing number of experimental research projects (Dickinson and Rusnell, 1971) there has been a lack of studies investigating the impact of various 'instructional styles' on participant behaviour. Researchers concerned with pre-adult education populations have made more determined efforts to ascertain the impact of 'style' but even in highly-controlled child-oriented environments the results are inconclusive. Thus in a literature review, Solomon, Bezdek and Rosenberg (1963) note that the results of experimental comparisons of instructional style have been inconsistent; some studies favour student-centred (Flanders, 1960) and others favour instructor-centred (Gvetszkow, Kelly and McKeachie, 1954) styles as reflected by increases in student knowledge. Despite a great deal of research no single approach has been identified as the best means to optimize learning. Indeed, if a study can be found that acclaims a 'teaching style or technique', another can usually be found that denounces it (Heath and Nielson, 1974). Much confusion can be attributed to research methodologies employed as most experimental studies demand an artificially created environment designed specifically to meet the needs of the experiment. This environment is often difficult or impossible to reproduce in the field. Heath and Nielson (1974) conclude that the current state of research on the relation between behaviour and student achievement can not offer an empirical basis for teacher training because of sterile operational definitions of both teaching and achievement and weak

research designs. Further, they suggest that teaching style effects are likely to be trivial in comparison with well documented, strong associations between achievement and socio-economic status. Heath and Nielson pessimistically conclude that future research would constitute an inappropriate allocation of resources as the major determinant of student performance is socio-economic status and that can not be manipulated very easily by an educator. In another review of research strategies with particular emphasis on the part-time teacher of adults, Stock (1974) laments the inconclusive nature of research on teaching styles and learning but says more work is mandatory.

In these reviews and elsewhere, researchers have expressed dissatisfaction with conflicting conclusions derived from inappropriate or incomplete theory. Getzels and Thelen (1960) suggested that one important and little understood area of instruction was the interaction between the instructor and learner personalities and that this 'idiographic dimension' should be considered in any instructional environment.

Many studies of teaching styles have resulted in contradictory conclusions (Lamke, 1951; Schmid, 1950; Singh, 1965). However it is likely that many studies were contradictory because they portrayed 'style' variables as having separate effects divorced from those of environmental variables. The explanatory power of variables investigated might have been enhanced if researchers had more regard to

person/environment and person/person interactions. This need for an interactive approach is implicit in views promulgated by writers such as Hunt (1971; 1975). It is likely that each individual has a learning style determined by past experience, motives for learning, personality and socio-economic status. Andragogy embodies assumptions and processes that are supposed to be good for all adults. However, there is little evidence that all adults have the same learning or instructional style preferences. Rather, the notion of congruence suggests that learners will be most satisfied with instructional arrangements compatible with learning style preferences. The most satisfied learners (least likely to drop-out) should be those who have found an instructor who "fits" their preferred learning style. In this situation what is desired is a 'good-fit' between learners and instructors. The participant's learning style and the instructor's 'teaching' style should be congruent.

CONGRUENCE

The notion of congruence has been used to explain and predict attitude change and individual preference. Terms such as balance, equilibrium, consistency or dissonance describe various aspects of congruent or incongruent systems. Cronbach (1957) suggested that there was an ideal environment for each individual, so it would be reasonable to expect that

if individuals were not located within their ideal environment, they would be uncomfortable and attempt to resolve or reduce discomfort. Physical, emotional or psychological environments may be crucial to an individual's well being. Festinger (1957) showed that when individuals experience an incongruent psychological state ('cognitive dissonance') they are uncomfortable and will attempt to avoid or resolve the situation as quickly as possible. Osgood and Tannenbaum (1967, p. 302) considering attitude change, noted that "changes in evaluation (attitude) are always in the direction of increased congruity with the existing frame of reference". Further, they recognized that during any communication process between individuals, there is a "complex series of interactions among the characteristics of the source and the receiver as well as between the receiver and the message".

When considering factors that effect an individual's credibility and persuasiveness, Simons, Berkowitz and Moyer suggest that:

"from studies of opinion leaders it would appear that the 'ideal' communicator is basically similar to his audience, the differences tending in the direction of greater credibility" (1970, p. 11).

Relevant similarities are more effective in facilitating attitude change than 'irrelevant similarities'. Dissimilarity between source and receiver can enhance change if the dissimilarity emphasizes the credibility of the source, such as higher professional status. Similar conclusions were reached by Travers (1970) when considering human information

processing. He considered the capacity of an individual's perceptual system to process information. He suggested that this capacity was determined by the physiological and physiological limits within each individual and the environment and noted that where there is a high degree of congruence between individuals, communications will be enhanced.

CONGRUENCE AND EDUCATION

It has been shown that individuals in a broad array of settings strive to maintain internal psychological stability. The human penchant for self-consistency, congruence, consonance, stability, balance, equilibrium or homeostatsis has been thoroughly investigated. Rogers (1959) noted the presence of intra-self congruence (harmony within oneself) and self/other congruence (harmony between oneself and others).

Adult education occurring in the formal instructional setting involves interactions between an instructor and a learner. Knowles (1970) has highlighted the need to create an adult 'climate' and Gagne (1965) has emphasized the importance of optimal 'conditions' for adult learning. Thus Verner and Davison (1971), when discussing psychological factors cite aspects of the physical environment and 'emotional atmosphere' as determinants of instructional outcomes. However, until the late 1960's most discussion focussed on the effects of single variables. Recently the importance of person/envirom-

ment and person/person interactions in adult instruction has been recognized. Much of this recognition flowed from 'interactionist' views which changed the shape of psychology throughout the 1960's and 1970's (Cronbach, 1957; Heider, 1961; Hunt, 1971; 1975; McKeachie, 1974; Proshansky, *et al*, 1967; Rogers-Warren and Warren, 1977; Stern, 1970). Typical of a pre-adult education study stemming from person/person interactions was that of Solomon, Bezdek and Rosenberg (1963) who investigated ways in which teacher behaviour interact with student characteristics to influence learner outcomes. Class size, age, sex and occupational status were shown to interact to varying degrees with various instructor-style factors. They recommended that further studies be conducted with personality measures to extend the range of variables likely to interact with teacher behaviour. They apparently failed to recognize that the differences between instructor and learner may have been contributing to this interaction rather than instructor or learner characteristics alone. However, ten years later, when Randhawa and Fu (1973) also considered the effects of classroom environment on learning, they recognized the importance of learner/instructor interaction. They suggested that the developmental history of class members, their sex, personality, socio-economic status, previous knowledge level and other variables would interact with the classroom environment and affect learning outcomes. In conclusion, they recommended that further research on the teaching-learning process should consider interactions between personal characteristics and

environmental variables. Secord and Backman (1965) noted that individuals attempt to maintain congruence between themselves, their perceived selves, and their relationships with other individuals. Incongruent individuals are unlikely to be selected as friends, and less likely than congruent individuals to be able to bring about a change in the attitude or behaviour of an individual especially if the change is also perceived as being incongruent. Therefore incongruence between instructor and learner should adversely affect learning outcomes.

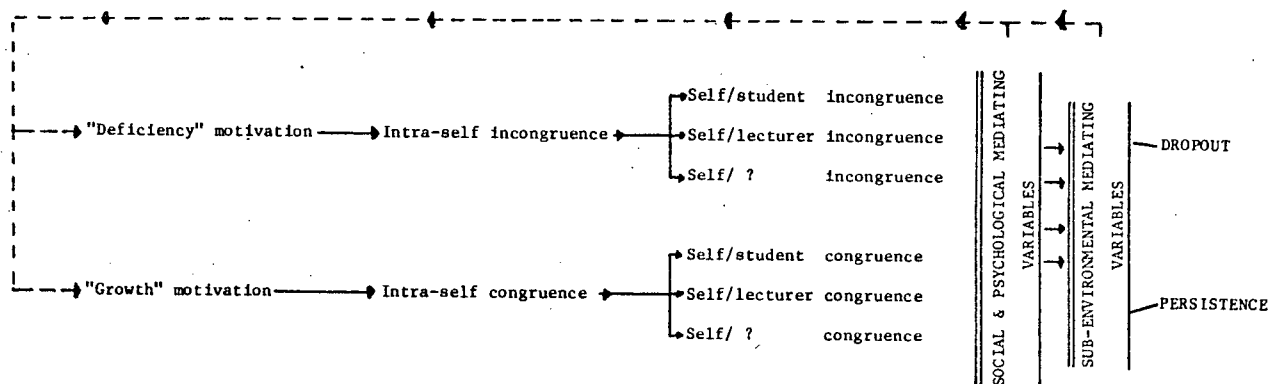
Studies that simply seek to identify learner and instructor behaviours or socio-economic characteristics, which correlate with various instructional outcomes are likely to result in trivial or conflicting conclusions, unless the extent to which there is congruence between the instructor and the learner is considered.

The congruence notion was applied to adult education by Boshier (1973; 1977) who tried to explain participation and dropout behaviour. Boshier suggested that intra-self and self/other congruence states interact with motives for participation and "mediating" variables to determine dropout from adult education classes occurring in institutional settings. His model (Fig. 2) suggested that deficiency-motivated [in Maslow's (1954) sense] participants were more likely to manifest intra-self incongruence and higher levels of incongruence between themselves and other crucial people (such as the other participants and the instructor) than were growth motivated

participants. Boshier portrayed congruence as a psychological state of imbalance which makes the participant vulnerable to the effects of "mediating" variables such as adverse weather and transport difficulties. It is these mediating variables which trigger the incongruence states which impel people to drop out. Boshier (1978) has argued that non-participation results from a perceived incongruence between potential participants and adult education institutions. He explains the non-participation behaviour of people from the lower socio-economic groups by observing that most adult education institutions are consciously middle-class and employ physical and psychological environments widely discrepant with the preferences and experiences of 'lower-class' participants.

Fig. 2

MODEL TO EXPLAIN DROPOUT FROM ADULT EDUCATION INSTITUTIONS



Model detailing hypothesized relationships between motive for attendance, congruence, mediating variables and dropout from adult education.

Socio-economic and personality differences among participants and their instructor are sources of Boshier's self-student and self-lecture incongruence. As noted earlier, incongruent individuals are unlikely to be selected as friends, and are not as effective as congruent individuals in effecting attitudinal or behavioural changes (Secord and Backman, 1965). Alam and Wright (1968) in a study of night school dropouts noted that the extent to which participants 'felt at home in the class' or 'got to know' other students discriminated between dropouts and persisters, with significantly fewer dropouts reporting they 'got on well with the instructor' or with other students. Similarly Boshier (1973), when considering both intra- and inter-personal congruence, noted that dropping-out was strongly associated with student/educational environment incongruence.

The physical setting in which education occurs is usually fixed. Apart from voicing objections there is little the instructor can do to bring about change. Similarly once the instructor has been hired and students registered, there is little that can be done to influence the extent to which congruence occurs between instructor and learner with respect to their socio-economic or personality characteristics.

However, instructors may exercise some control over variables influencing the instructor/learner interaction. Hall (1970) conducted a study on a college population to explore the effects of teacher/student congruence on student learning and noted that the overall discrepancy scores were

inversely correlated with learning which suggested that congruence between the learner's learning style and the instructor's teaching style should enhance learning. It is likely that congruence between the instructor's teaching style and the learner's learning style would result in favourable learning outcomes as reflected in learner attendance, expressed satisfaction with the course and in learning achievement. Where the instructor adopts an instructional style congruent with the learner's preferred learning style, the learner is likely to feel satisfied and secure within the learning environment and therefore attend regularly. However if the instructional and learning styles are incongruent, the learner would feel less satisfied and secure and would be more likely to dropout. Similarly where learning styles are congruent with the instructor's teaching style learners will adopt roles consistent with instructor expectations. Therefore the instructor is likely to evaluate their learning achievement more positively than would be the case should their learning style be inconsistent with the instructor's expectations of a learner. Casual observation of adult instruction and the foregoing review of literature suggest it is possible to classify crucial variables (influencing learner outcomes) within the four quadrants displayed in Fig. 3.

Static variables are those which are 'fixed' and there is little that can be done by the adult educator to change an individual's 'score'. On the other hand dynamic variables are those variables which may change if the

Fig. 3

VARIABLE CLASSIFICATION

	Static Variables	Dynamic Variables
Single variables	1. e.g. Age Sex Years previous Education Occupation Income	2. e.g. Learners Preferred Learning Style Instructors Teaching Style
Double variables (congruence) - "goodness of fit"	3. e.g. Discrepancy between Learner/Instructor - Age - Years previous Education - Occupation - Income	4. e.g. Discrepancy between Learner/Instructor "style" preference

individual is exposed to appropriate environments. Dynamic variables are likely to be 'learned responses' and reflect an individual's attitudes or values. Each individual's responses may be considered alone in any analysis (as 'single' variables) or may be compared with other individuals' responses and the difference (double or congruence variables) in response be considered as a variable in subsequent analyses.

Quadrant 1 contains single relatively stable variables known to influence learner outcomes. The effects of these variables are habitually investigated in clientele surveys (e. g. Johnstone and Rivera, 1965) and are known to be associated with instructional outcomes.

Quadrant 2 contains "dynamic" single variables.

These variables may be changed though experience, training or peer group pressure. Irrespective of the goodness-of-fit between learner and instructor, learner's preferences and instructor's preferences are likely associated with instructional out-comes. Whether or not these single variables have greater or less predictive utility than "congruence" variables remains to be seen.

Quadrant 3 contains static double-variables (congruence). These are derived by determining the extent of difference between the instructor and learner for each static and single variable.

Quadrant 4 contains dynamic double-variables (congruence). These also result from measuring the difference between instructor and learner with respect to their scores on the dynamic, single variable.

Although congruence has potentially powerful effects on the instructional process there is scant literature which reveals the relative power of the static or dynamic variables described above. If static variables (e.g. age, sex, years of schooling, occupation, income) account for most of the variance in learning outcomes (which in this study were learner satisfaction, persistence and learner achievement) then adult educators might need to use these variables to 'match' learners with instructors. However, if 'static' congruences account for less variance than the 'dynamic' congruence states it may be necessary to 'match' learners and instructors on the basis of their preferred styles. If both

types of congruence states account for similar amounts of variance the administrative implications become difficult.

PRESENT STUDY

The present study was primarily structured to examine the relationship between learner/instructor congruence (as manifested by a discrepancy score indexing a difference in 'preferred' style) and three dependent variables: learner satisfaction, learner persistence and learner achievement. Formal hypotheses developed for the study concern relationships between learner/instructor congruence and these three dependent variables.

The notion of 'matching' learners and instructors (on the basis of static or dynamic variables) requires that variables determining learning style preference also be revealed. Literature such as that provided by Knowles (1970) suggests that all learners prefer andragogical environments; this belief may or may not be correct, but in this study will be investigated through generating a regression equation. In this equation preferred learning style will be the dependent variable; all other available variables (including learner/instructor discrepancy scores) will be independent. An effort will also be made to further clarify the antecedents of learner/instructor congruence states. This will also be accomplished through regression analysis. The three hypotheses

concern purported relationships between learner/instructor discrepancies and three dependent variables. If bi-variate relationships between discrepancy scores and learner satisfaction, persistence or achievement are insignificant or account for small amounts of variance further regression analyses will be conducted. These will clarify the nature of variables interactions and the place of learner/instructor discrepancies in those interactions which explain the dependent variables - learner satisfaction, persistence and achievement. The analysis will be structured so as to compare the relative impact of static and dynamic congruence states on learner satisfaction, persistence and achievement.

HYPOTHESES

As noted, congruence between learners' learning style and their instructor's instructional style should be positively correlated with learning, achievement, learner satisfaction and learner persistence. Therefore the dependent variable selected for this study was a measure of congruence between the instructor's and learner's attitude towards learning and instruction. Congruence was calculated as the discrepancy between instructor and learner scores on the same scale. A high discrepancy score would indicate high incongruence, while a zero discrepancy score would indicate congruence.

For hypotheses testing purposes independent variables were participant scores on a learner satisfaction index, learner persistence (as indicated by their attendance record) and the grade awarded the learner (as an indication of the instructor's perception of each participant's learning achievement).

The hypotheses developed for this study were as follows:

1. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner satisfaction.
2. Discrepancy scores between instructor and learner's attitude towards learning and

instruction will be negatively correlated with learner persistence.

3. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with the instructor's perception of learner's learning achievement.

CHAPTER THREE

INSTRUMENTATION

Operational measures of "learner satisfaction" and "learning and instructional style" were required to test the hypotheses developed for this study. Instruments designed for this study were composed of three discrete components. One instrument provided for the collection of basic socio-economic data, another consisted of an index to measure learner satisfaction with the class, and the remaining section was an index to measure the respondent's preferred learning and instructional style.

SOCIO-ECONOMIC DATA

The instrument designed to collect instructor (Appendix D) and student (Appendix E) socio-economic data was developed with reference to other studies, including Census of Canada information. Sample Questions and coding categories were presented to a panel of six expert judges at the Adult Education Research Centre at the University of British Columbia. The judges were either faculty members or graduate students in the department. The judges examined the instrument

for clarity of expression and ease of completion. The questions were revised and again circulated among the judges until it was agreed that information to be collected and the style of question would provide data that could be used to test the study's hypotheses. The total instrument was completed twice with an interval of one week between applications by an undergraduate class so an indication of the instrument's reliability could be obtained. The reliability of the instrument was measured by comparing the results of each application of the instrument, to identify whether or not the results differed. A student's *t*-test was performed on each pair of items using the correlated pairs formulas of student's *t*. If the scores on an item differed significantly, the item was considered unreliable and deleted from the instrument. The class was most concerned that the information be confidential. To ensure this, the students themselves created their own identification numbers which they used on both instruments. Twenty-two students completed the instrument twice. However, only six completed the socio-economic data twice, but these did provide identical information on both occasions.

LEARNER SATISFACTION INDEX

It was hypothesized that congruence between learners and instructors would be positively correlated with learner satisfaction. Evaluative instruments are common in the

literature but most are constructed for a particular program or content area. Some developed for instructor evaluation appear to be valid and reliable. They are generally developed to evaluate full-time school or college programs and unlikely to be of much use for the evaluation of classes for part-time adult learners. Most programs evaluated use some form of "happiness index" constructed by the evaluator on an *ad hoc* basis and consequently have little reliability or validity.

For this study a Likert-type scale was constructed using the following procedures.

1. A group of graduate students and faculty members in the Adult Education Department at the University of British Columbia suggested a pool of items that indicated whether the respondent 'liked' or was 'satisfied' with the preparation, organization and presentation of instruction and with the instructor.
2. Thirty-seven statements were developed following an editing of these items.
3. A panel of graduate students and faculty members judged the statements for clarity and lack of ambiguity to ensure that each statement clearly represented a single concept.
4. A first draft of the index was developed. The scaling format required participants to respond to each statement and indicate by circling the appropriate number of a 9 point Likert scale

the extent to which they agreed or disagreed with the statement

	Strongly Disagree			Neutral			Strongly Agree		
e.g. Class Time is	1	2	3	4	5	6	7	8	9
often wasted.									

A 9 point scale was selected for the instrument as it was considered that neither a five nor seven point scale would allow sufficient variance among responses. As it was possible that respondents could be ambivalent towards some statements, an odd number scale was selected to allow a neutral response.

The index was tested on a sample population of summer school students in the Department of Adult Education and participants in adult education classes at Vancouver Technical School, a night school centre operated jointly by Vancouver School Board and Vancouver Community College. These respondents were asked not to identify themselves. The instruments were administered by someone other than the regular class instructors in an attempt to maintain confidentiality. The total sample consisted of 139 participants of whom 132 provided appropriately completed instruments and 7 either failed to understand the instructions or missed the second page. These were excluded from the analyses.

5. The data were factor analysed. So that an estimate of total scale score can be computed by simply summing a respondent's item scores, all items should load in the same direction on the first unrotated factor. Therefore, those items which failed to load significantly on the first unrotated factor were discarded. In total, sixteen items were discarded. The remaining 21 were scrutinized to ensure they represented single concept statements. To ensure a balance between positive and negative statements, the final version of the instrument included ten negatively worded statements (agreement with which indicated dissatisfaction with the learning event) while agreement with the remaining eleven indicated a positive attitude towards the event. The order in which statements appeared was randomized with the aid of a table of random numbers.

Learner Satisfaction Index Reliability

As described earlier, the full research instrument was completed on two occasions by 22 participants in an undergraduate class. The differences between responses on the two applications of the test were calculated and t values computed using the paired comparison formula for student's t which takes

into account the correlation between the pairs of scores. If the test items were reliable, it was assumed that there should be no significant differences between the two instrument applications of an individual's responses to each statement. Therefore the t test should not indicate a statistically significant difference. A .05 level of significance was selected, so the t -value had to be greater than 2.08 to indicate a significant difference on a 'two-tailed' test. It was considered that one week between applications should be sufficient time for the respondents to forget their previous responses but insufficient time for their attitudes to have changed significantly. Nevertheless, it is possible that some historical error was introduced, which would account for an indeterminable amount of variance. As can be seen from Table 1, there were no significant differences between scores on each application of the instrument for all statements except #9 'The course is too superficial' and #12 'I think the instructor has a comprehensive knowledge of the subject'. The differences in scores between applications were significant in those two cases and so the items were considered unreliable and discarded. The final version of the index to measure learner satisfaction consisted of nineteen statements cast on a 9 point Likert Scale (see Appendix E).

Learner Satisfaction Index Validity

It was difficult to establish the validity of the

TABLE 1

UNROTATED FACTOR LOADINGS AND TEST RE-TEST
RELIABILITY OF LEARNER SATISFACTION INDEX

Statement	Unrotated Factor Loading <i>df</i> =131	<i>t</i> Value	<i>t</i> <i>prob</i> <i>df</i> =21
1. The instructor is seldom well prepared for class	.66	1.51	.14
2. The instructor is enthusiastic	.66	0.33	.75
3. I am rather disappointed with this course	.56	0.72	.47
4. This is one of the poorest courses I have taken	.72	-1.27	.22
5. I am not learning anything new	.44	-1.31	.21
6. This course is helping me personally	.55	-1.11	.28
7. The instructor created a bad learning environment	.77	0.00	1.00
8. The instructor cares about my progress in the courses	.78	0.00	.95
9. The course is too superficial	.45	-2.49	.02
10. Class time is often wasted	.52	0.87	.40
11. I think the instructor enjoys teaching	.72	1.36	.30
12. I think the instructor has a comprehensive knowledge of the subject	.63	2.63	.02
13. The instructor established good rapport with everybody in the class	.63	1.65	.11
14. I think the instructor has tried to teach me what I wanted to learn	.52	-0.37	.72
15. The instructor is helpful	.78	-0.65	.52
16. I have no respect for the instructor	.78	-0.00	1.00
17. The instructor never has time to help individuals	.47	0.79	0.44
18. I think we all had a chance to contribute to the selection of objectives for this course	.47	-0.21	0.84
19. The instructor encourages people to express their ideas	.59	0.53	0.63
20. I regret taking this course	.70	1.10	0.28
21. Overall I would rate this course as very good	.70	-1.16	0.26

$t > 2.08, \quad p < .05$

Learner Satisfaction Index. As no valid and reliable comparable indices for use with adult participants were available, it was not possible to obtain an estimate of the instrument's concurrent validity (Dick and Hagerty, 1971) prior to the implementation of the study. Therefore, it was recognized that an indication of the validity of the Learner Satisfaction Index would have to be sought during the collection and analysis of the data. An attempt was made to identify observable behaviour which would indicate whether or not the participant was satisfied with the learning event. Attendance in adult education programs is optional, and many classes in the study were non-credit, thus it seemed reasonable to expect a positive correlation between a learner's satisfaction with a class and attendance. The observed correlation between the Learner Satisfaction Index scores and attendance during the study was statistically significant ($r = .11$, $df = 519$, $p < .006$). Further, trainers of adult educators might hope that there should be a significant correlation between the amount of training in adult education received by an instructor and the resultant learner satisfaction with an event taught by the instructor. The correlation observed in this study between whether or not an instructor had received any instruction in adult education and the participants Learner Satisfaction Index was statistically significant ($r = .16$, $df = 592$, $p < .001$). It was also contended that the methodology of the test development itself would contribute to the face validity of the resultant index. The panel of experts judged each item for

clarity of expression and content in an attempt to ensure it would indicate the respondent's satisfaction with a learning event. While these indicators are not exhaustive measures of validity, it would appear from the statistical significance of the observed correlations that the Learner Satisfaction Index scores may be considered to provide a measure of learner satisfaction with a learning event.

LEARNING AND INSTRUCTIONAL STYLE INDEX (LISI)

A number of studies have tested whether particular learning environments are appropriate for particular personality types or conceptual levels (e.g. Ampene, 1973; Borger, 1969; Crew, 1968; Gill, 1973; Hill, 1969; Hunt, 1971; Leuder, 1972; Murphy, 1969, Procaccini, 1971; Santmire, 1970). Instruments developed for this type of study were not considered appropriate for adults participating in part-time learning activities. For this study, an instrument was required that could measure the extent to which part-time adult participants preferred their instructors to assume a 'student-centred' or 'instructor-centred' approach to instruction. Therefore, a Likert-type scale was constructed using the following¹

¹ It should be noted Drs. Boshier and Fielding contributed significantly to the development of LISI.

procedures.

1. Seventy-four items representing 'andragogical', or 'pedagogical' attitudes towards learning and instruction were generated through 'brainstorming', reference to the literature and other scales.
2. Four faculty members and graduate students of adult education checked the statements for clarity and lack of ambiguity to ensure that each statement was clearly and simply worded.
3. Each statement was typed on a separate 3 x 5 card. A group of seventeen judges was conscripted from the faculty and graduate students in adult education. Each judge independently sorted the statements into the following five groups; those where agreement with the statement would indicate a 'Highly Andragogical', 'Andragogical', 'Pedagogical' or 'Highly Pedagogical' attitude towards instruction and learning. Those items which they were unable to sort into any one of these categories were considered neutral. Items which some judges sorted as pedagogical and others as andragogical were discarded, as were those judged to be neutral. In all, 64 statements remained following this sorting processes. These were examined and edited by the judges for clarity of expression.

4. The first draft of the index was completed by 205 night school participants at Vancouver Technical School, Vancouver Vocational Institute, participants in Weekend Seminars and in U.B.C. summer school programs.
5. Data were analyzed as follows:
 - a) Means, standard deviation and frequency distributions were calculated for each item. Some items discarded had nearly all responses at either end of the scale; it appeared they represented 'motherhood' statements and were therefore not likely to discriminate among respondents holding different attitudes towards learning and instruction.
 - b) Data were factor analyzed in an attempt to further reduce the number of items. Items which did not load significantly on the first unrotated factor were discarded. Items loading significantly on more than one factor were also discarded. Twenty-two items were initially discarded and the data were then re-factored. A further cycle was completed during which another ten items were discarded, leaving twenty items for the final version of the index (see Appendix E). Several items were retained even though they did not load above .3 because in the view of the judges,

these statements should be 'good indications' of learning or instructional style.

6. To determine whether the Learning and Instructional Style Index could be completed by a population similar to the target group and the accompanying instructions understood, it was tested on a further 75 participants in classes at Vancouver Technical School and Vancouver Vocational Institute. Care was taken to ensure that these participants had not participated in the earlier stages of the instrument development. Sixty-five participants completed all items. Respondents unable to complete the instrument were largely non-English speaking students in a vocational upgrading class. There was no evidence on those forms that were completed to indicate that the respondents had difficulty understanding the instructions or the phrasing of the statements, providing that the respondents were proficient in English.
7. The instructors' version of the test was constructed using the same statements re-written in the first person rather than third person. It was considered that this change would not alter the factor structure of the modified version (see Appendix D).

Learning and Instructional Style Index Reliability

As described earlier, the complete research instrument was completed on two occasions by the same 22 students enrolled in an undergraduate class. Student's t -tests were computed on the differences between the responses on each application of the test. The paired comparison formula for Student's t was used which takes into account the correlations between the pairs of scores.

There were no significant differences between scores on each application of the instrument except for #2 'Allows questions only at the end of class', #5 'Changes lesson plans to meet the needs of individual participants', #16 'Never admits making a mistake in front of the whole class', and #19 'Covers all the material in a course curriculum'. The obtained t values for these four statements indicated that differences in scores between applications of the instrument were significant in these four cases. These four unreliable items were discarded. The final version of the index consisted of sixteen statements cast on a 9 point Likert Scale (see Appendix E).

Learning and Instructional Style Index Validity

Indicators of Learner and Instructional Style Index (LISI) validity were not easy to select. The index development methodology was designed to ensure there were a number of opportunities for the seventeen expert judges to make subjective evaluations of the instrument's face validity. As no

TABLE 2
UNROTATED FACTOR LOADINGS AND TEST RE-TEST
RELIABILITY OF LEARNING AND INSTRUCTIONAL
STYLE INDEX (LISI)

A good Instructor:	Unrotated Factor Loading df=204	t Value	t Prob. df=21
1. Creates a formal classroom atmosphere	.57	1.0	.32
2. Allows questions only at the end of class	.43	2.55	.03
3. Lets participants set their own objectives	.13	1.14	.26
4. Discourages adult students from using his/her first name	.39	0.55	.59
5. Changes lesson plans to meet the needs of individual participants	.52	2.4	.02
6. Is the absolute authority on course content	.63	1.39	.17
7. Sets definite standards of behaviour in his/her class	.48	0.70	.49
8. Discourages questions because they can lead the class off the topic	.32	1.16	.87
9. Conducts class around the needs and skills of each participant	.11	1.56	.13
10. Make it clear he/she is the authority in the class	.62	0.15	.88
11. Discourages participants from chatting during class time	.37	0.25	.80
12. Develops an informal classroom atmosphere	.68	0.15	.88
13. Lets students set course goals	.21	0.24	.81
14. Preserves law and order in the classroom	.46	1.94	.06
15. Is the only subject expert in the classroom	.52	1.6	.12
16. Never admits making a mistake in front of the whole class	.54	2.88	.01
17. Lets the participants decide what they want to learn	.52	0.27	.78
18. Encourages general class discussions	.32	0.93	.36
19. Covers all the material in a course curriculum	.39	4.31	.01
20. Uses participants as 'contact experts' whenever possible	.52	0.49	.62
t > 2.08 p < .05			

comparable valid and reliable indices were available, it was not possible to obtain measures of LISI validity prior to the data collection phase of the study. It was recognized that indications of the Learner and Instructional Style Index validity would be sought during the implementation of the study. Previous research suggested that there would be a negative correlation between a respondent's age and LISI score because older adults feel more comfortable in structured learning environments. In this study there was a significant negative relationship between LISI and age, suggesting that older respondents preferred more structure or teacher-centred activities in their 'preferred learning environments' than did their younger peers ($r = -.29$, $df = 627$, $p < .001$). It might also be hypothesized that individuals with a great deal of post-secondary educational experience would be more willing to accept responsibility for their learning, and would therefore prefer a student-centred environment and so gain high LISI scores while those respondents with less previous learning experience would prefer more structured environments and therefore have lower LISI scores. This hypothesized positive correlation between highest educational achievement and LISI score was observed to be statistically significant in the same population ($r = .17$, $df = 634$, $p < .001$).

These indicators of construct validity are not exhaustive but the lack of other instruments precluded any cross-scale reliability or validity checks with other measures of learning style. Nevertheless the face validity and

correlations between LISI and age and years of post-secondary education and the test, retest reliability were considered to be sufficient to indicate that LISI would provide a valid and reliable measure of a learner's preferred learning style.

CHAPTER FOUR

STUDY DESIGN AND MANAGEMENT

The hypotheses were tested using data collected from randomly selected participants and instructors in two Vancouver Community College night school centres during the 1975 fall term. As the intent of this study was to identify whether or not congruence in normal adult education classroom is associated with learner persistence, learner satisfaction and instructor evaluation of the learner, a correlational design was selected. In this chapter, the design, organization, implementation and limitations of the study are described.

POPULATION

The study population was drawn from a community college continuing education program which included classes in vocational, technical and academic subjects as well as general interest courses. This study involved general interest and business administration classes in the night school program administered by Vancouver Community College, Community Education Services, at the Langara and Eric Hamber Centres in the fall term in 1975.

The total enrollment in general interest courses at Langara Campus was 6,081 in 184 courses during the 1975/76 year, of which 1,762 registrations were received in 48 general interest courses for an average class enrollment of 36 participants during the fall term. The Business Administration program at Eric Hamber had a total of 2,761 enrollments in 129 courses in the 1975/76 year with 1,114 registrations in 45 courses for an average class enrollment of 24 during the fall term.¹ The Langara program included short classes with very high enrollments, such as film evenings, which account for the higher average class size in the Langara program.

As some participants may have registered in more than one course, the enrollment total is likely to exceed the total number of individual participants. In addition, the courses varied in length from one to fifty sessions. It was considered that the effects of incongruence would not be identified in classes with fewer than ten sessions. Further, there is a noticeable drop in attendance after the Christmas vacation in classes that continue over both fall and winter terms. This post-vacation dropout may or may not be indicative of incongruence. Nevertheless, to reduce the influence of 'historical error' and to simplify the management of the study, the specific population for this study was defined as:

Instructors and participants in general interest
and Business Administration courses of between

¹ Enrollment Statistics obtained through personal correspondence with V.C.C.

20 and 40 hours duration offered at the Langara and Eric Hamber Campuses by Vancouver Community College during the fall term of 1975.

SAMPLE

A random sample was drawn from the total population. To ensure randomness, all 39 classes at Langara and 45 classes at Hamber that met the criteria for inclusion in the population were assigned a number and 44 were drawn without replacement using a table of random numbers. As a result, 23 classes were drawn from Langara and 21 from Hamber. Three Langara instructors refused to participate in the study, so the final sample of general interest classes at Langara consisted of 20 classes and 255 participants with an average class enrollment of 12.7 per class, or slightly more than 50 percent of the total population.

Of the 21 classes selected from the Hamber program, two classes were cancelled and one instructor refused to participate. Another instructor permitted his class to participate but refused to do so himself, so data on this class are included in the descriptive sections of the analysis only. The final sample from Eric Hamber consisted of eighteen classes and instructors and 385 participants, for an average class enrollment of 21.3 participants per class. The difference between the sample average class enrollments and the reported average class enrollments, in particular for the Langara program, is a consequence of the reporting procedure

adopted at both Langara and Hamber. A series of individual seminars or film sessions are scheduled as a 'class'. Registrations in each session were summed to calculate the total class enrollment. Thus a series of ten seminars, with ten participants enrolled in each seminar, would be recorded as one class with 100 participants, thus significantly raising the 'average' class size. These 'classes' were excluded from the population sampled for this study.

EMPIRICAL INDICATORS

The following indicators were used to test the hypotheses developed for this study.

Learner persistence was defined as the number of hours of class attended by the participant as a proportion of the total number of available hours of instruction. This information was obtained from class registers. To check the accuracy of these registers, the researcher conducted unobtrusive headcounts on randomly selected classes at random times throughout the study period. These were later compared with register entries. No discrepancies were noted.

Congruency between Instructor and Participant Attitudes towards Instruction was measured with the Learning and

Instructional Style Index (LISI). A total index

score was calculated for each respondent by summing individual item scores and dividing by the number of items completed. Congruency between instructors and each participant was indicated by the extent to which there was agreement between their total LISI scores.

Participant Satisfaction was measured on the Learner's Satisfaction Index (LSI). A total index score was calculated by summing individual item scores and dividing by the number of items completed.

Instructor's perception of Learner's Learning Achievement.

At the conclusion of the course, the instructors were asked to evaluate and rank each student's 'learning achievement' in the class. Rank in class was used as the measure of the instructor's perception of the Learner's Learning Achievement.

DATA COLLECTION

Once classes to be included had been identified, their instructors received a letter from the centre administrator introducing and endorsing the study (Appendix A). At the second class all instructors received a letter from the researcher enlisting cooperation and detailing the extent to

which participation would involve extra record-keeping (Appendix B). Instructors were required to indicate whether they were willing to participate in the study by completing and returning a signed copy of the letter as it was felt that the instructors would be more likely to fulfil their commitment to the study if they agreed in a quasi-formal manner to participate. In addition, the researcher met each instructor and outlined information they would be required to provide and to explain steps taken to ensure confidentiality.

One instructor in the Langara general interest program did not agree to participate since he felt his class would be unsuitable for the study; another teaching two classes did not wish to participate for personal reasons. At Eric Hamber, two instructors expressed reservations, one refused to participate and the other allowed his class to participate but refused to do so himself. All other instructors ($n = 37$) at both centres expressed their willingness to participate.

Instructors received an informal note during the third class session asking them to indicate to their students that the next class session would be interrupted while the research instruments were administered. It was felt that adult participants would be more likely to cooperate if they had been forewarned. During the administration of the instrument there were no overt displays of displeasure, and all participants completed the instrument. Missing data was excluded 'pairwise' from the analysis.

At Vancouver Community College very few registrations for Community Education Services classes are accepted after the third class session. After the third session student registration forms and class registers were collected for each class in the sample and a list made of all participants. Each name in the list was allocated a four part identification number, indicating the centre, night of class, class number and student number. Class sets of the research instrument were prepared. Each one was personalized with the participant's name on the instruction page and identified with the code number on the instrument itself. Instructor instruments were identified in a similar fashion.

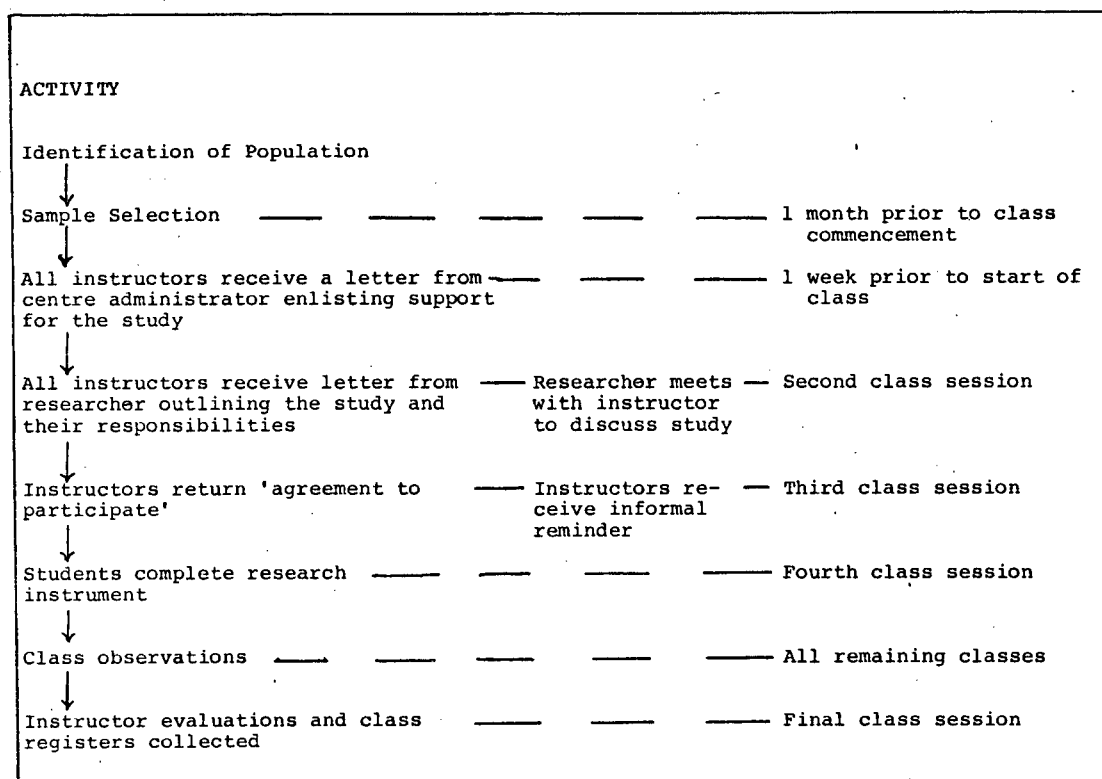
The research instruments were completed during the fourth class session. The researcher personally administered the data collection at the Langara centre for the general interest classes, while the Head Teacher at the Eric Hamber centre supervised the data collection from the sample of Business Administration classes. As participants received their instruments, they were asked to remove the instruction page, which was identified with their name, and to note that their name did not appear on the instrument itself.

There were 407 participants registered in the twenty classes in the general interest sample of whom 255 were present on data collection nights. Although there were 529 registered participants in the sample of eighteen Business Administration classes, 385 were present to complete the instrument. This apparent high rate of absentism (31%) by the

fourth week of classes is probably due to class transfers or withdrawals not yet reflected by changes in the registration cards. As course goals become apparent during the first few classes, participants tend to sort themselves into a class that appears congruent with their needs and interests. It was felt that this sorting out process did not indicate personality or instructional style incongruence, but reflected the class selection process at V.C.C. where registration was done on the first night of class with very little counselling assistance.

Fig. 4

STUDY DATA COLLECTION AND ORGANIZATION CHART



Attendance patterns were noted for all classes at random to check the reliability of attendance records maintained by the instructors. At the end of the class, instructors provided the researcher with attendance records and their subjective ranking of each participant's learning achievement. All but one instructor in the Business Administration program at Eric Hamber provided usable data. Six instructors in the general interest courses at Langara did not provide all the data required. Data for these classes are included wherever possible in the analysis.

DATA CODING

All the information collected for the study was recorded where possible both as raw score and coded data, and keypunched at the U.B.C. Computing Centre. A simple tabulation of each variable was conducted to check for obvious keypunching errors. The Blishen Socio-Economic Index of occupations was used to record the respondents' present occupation or previous occupation if they were presently unemployed or had retired and the occupation of the spouse. Some respondents gave occupations or descriptions of their occupation which did not appear in the Blishen index. They were considered by two judges and awarded the Blishen code considered to reflect more accurately the duties and responsibilities of the position described. These coding decisions

are shown in Appendix C.

LIMITATIONS OF THE STUDY

In any field of study there are problems resulting from a lack of control, which may increase the variance due to error and thereby reduce the likelihood of identifying significant relationships.

The population identified for the study was restricted to participants in night school programs of between 20 and 40 hours duration in an urban area at a particular point in time.

The propositions identified for this study could be tested through the application of a great many empirical indicators. This study is restricted to a limited number of those indicators and the validity of the study's results is dependent upon the instruments used to measure the constructs. Therefore, the results are generalizable only to the sample population and only for the instrument used. Further, a number of hypothesized congruence effects were not verified. It may be wrong to conclude that congruence is of no significance, since an alternative hypothesis would be that the instruments selected were inappropriate or insufficiently precise and so were unable to identify existing significant relationships. While these problems are true of all studies, attention is drawn to these issues to ensure that future researchers are cognizant of this study's limitations.

CHAPTER FIVE

RESULTS

The primary purpose of this study was to determine whether congruence between the learner's preferred learning style and instructor's teaching style is associated with learner satisfaction, persistence and learning achievement. Previous research on congruence has indicated that interpersonal incongruence may also influence various outcomes of instruction.

This chapter presents results of the data analysis. There were three phases to the analysis. The first involved the computation of the Learner and Instructional Style Index (LISI) scores, Learners Satisfaction Index scores, and discrepancy scores. The second was the analysis of socio-economic data collected to compare and contrast the Hamber and Langara participants. The hypotheses were then tested and a series of regression equations generated to examine the extent to which single and double (congruence) variables predict learner satisfaction, persistence and achievement.

DATA ANALYSIS PHASE ONE

The initial development of the two indices constructed

for this study was described in an earlier section. These indices were re-examined and retested with the data collected during the study to determine whether or not a similar factor structure could still be observed. LISI and Learner Satisfaction Index scores were then computed. To test the hypotheses that congruency between the instructors and their students would be correlated with 'rating of participant achievement', 'attendance', and 'student satisfaction', a measure of 'congruence' was required. The measure of congruence adopted was the difference between the instructor and learner scores for each variable, so the greater the difference between these scores, the greater the incongruence between the learner and instructor. In Phase One of the data analysis Learning and Instructional Style Index, Learner Satisfaction Index and discrepancy scores were calculated. The process and the results are reported in this section.

Calculation of Learning and Instructional Style Index Scores

A measure of the learner's preferred learning style was obtained through the application of the Learning and Instructional Style Index (LISI) completed by 638 participants. The Learning and Instructional Style Index was designed so that once the positively and negatively scored statements were all coded in the same direction, a respondent's total score could be obtained by summing across all items. The resultant total score would be valid only if the index proved to be unidimensional with all items loading in the same direction on

the first unrotated factor. This had been the case during development of the Learning and Instructional Style Index. Nevertheless, the instrument was again factor analysed to check whether or not the factor structure observed during the instrument's development remained in effect with the data collected during the implementation phase of this study.

As can be seen from Table 3, the factor structure observed during the instrument's development was repeated with all items loading significantly in the same direction on the first unrotated factor ($n = 638$). Therefore, a respondent's Learning and Instructional Style Index score was derived by calculating the mean value of the responses to the items. The mean rather than the sum of scores was used as several respondents did not respond to all the items on the instruments. Summing the scores would therefore bias the data in favour of those who responded to every item. For example, consider two respondents both indicating strong positive attitudes toward all the items to which they respond on the index. However one respondent missed two items, and therefore has a lower total item score than the other. This difference cannot be attributed to a difference in attitude and so would increase the variance due to error in any subsequent analysis. However, if each total score were divided by the number of items that each respondent had completed, both would have the same index score, and this source of error is removed. It was considered that using the mean would be preferable to deleting respondents who did not respond to every item from the analysis. The resultant

TABLE 3
COMPARISON OF THE UNROTATED FACTOR LOADINGS
OBSERVED DURING THE DEVELOPMENT AND FINAL
APPLICATION OF LEARNING AND INSTRUCTIONAL
STYLE INDEX (LISI)

A Good Instructor:	Unrotated Factor Loading	
	Final Application df=637	Instrument Development df=204
1. Creates a formal classroom atmosphere	.45	.57
2. Lets participants set their own objectives	.29	.13
3. Discourages adult students from using his/her first name	.37	.39
4. Is the absolute authority on course content	.45	.63
5. Sets definite standards of behaviour in his/her class	.50	.43
6. Discourages questions because they can lead the class off the topic	.43	.32
7. Conducts the class around the needs and skills of each participant	.21	.11
8. Makes it clear he/she is the authority in the class	.55	.62
9. Discourages participants from chatting during class time	.33	.37
10. Develops an informal classroom atmosphere	.38	.68
11. Lets students set course goals	.38	.21
12. Preserves law and order in the classroom	.48	.46
13. Is the only subject expert in the classroom	.47	.52
14. Lets the participants decide what they want to learn	.31	.52
15. Encourages general class discussions	.26	.32
16. Uses participants as 'content experts' whenever possible	.20	.52
Eigenvalue	2.60	3.66
Percentage variance accounted for	47.1%	20.40%

LISI scores had a mean of 6.02 and a standard deviation of 0.94.

Calculation of Learner Satisfaction Index Scores

In all, 635 participants completed the Learner Satisfaction Index. As with the Learning and Instructional Style Index, the Learner Satisfaction Index was developed so that when positively and negatively phrased items were coded in the same direction, a respondent's Learner Satisfaction Index score could be calculated by summing item responses. Responses to this index were factor analysed to check the factor structure revealed during the instrument's development. All items loaded significantly on the first unrotated factor. This indicated that the scale was unidimensional, and a total score could be obtained by summing items. As several respondents had not responded to all items on the index, summing the item scores without compensating for missing responses would not provide an appropriate total Learner Satisfaction Index score. Therefore, the Learner Satisfaction Index score of each respondent was computed as the mean score of the items completed. The resultant Learner Satisfaction Index scores had a mean of 7.43 and a standard deviation of 0.98.

Calculation of Congruence Indicators

Instructor-participant congruence scores were calculated as the absolute difference or discrepancy between the instructor's score and the student's score on the same

TABLE 4

COMPARISON OF UNROTATED FACTOR LOADINGS
OBSERVED DURING THE DEVELOPMENT AND FINAL
APPLICATION OF THE LEARNER SATISFACTION
INDEX

	Unrotated Factor Loading	
	Final Application <i>df</i> =635	Instrument Development <i>df</i> =131
1. The instructor is seldom well prepared for class	.29	.66
2. The instructor is enthusiastic	.42	.60
3. I am rather disappointed with this course	.71	.56
4. This is one of the poorest courses I have taken	.63	.72
5. I am not learning anything new	.51	.43
6. This course is helping me personally	.35	.55
7. The instructor created a bad learning environment	.48	.77
8. The instructor cares about my progress in the course	.43	.78
9. Classtime is often wasted	.52	.55
10. I think the instructor enjoys teaching	.56	.72
11. The instructor established good rapport with everybody in the class	.64	.63
12. I think the instructor has tried to teach me what I wanted to learn	.70	.52
13. The instructor is helpful	.74	.78
14. I have no respect for this instructor	.57	.78
15. The instructor never has time to help individuals	.45	.47
16. I think we all had a chance to contribute to the selection of objectives for this course	.26	.47
17. The instructor encourages people to express their ideas	.45	.59
18. I regret taking this course	.52	.70
19. Overall I would rate this course as very good	.60	.70
Eigenvalue	5.33	12.36
Percentage of the variance accounted for	67.9%	33.4%

variable. For example the discrepancy score for age between a 25 year old participant and his 47 year old instructor would be $25 - 47 = 22$; that is, there is a difference, or a discrepancy of 22 between the instructor's and the student's responses to the variable 'age'.

Discrepancy scores were calculated for the following variables: age, years of high school, highest educational achievement, sex, number of children, years of full-time and part-time post-secondary education, Blishen rating of present occupation, income, total family income, and Learner and Instructional Style Index score. If either the participant or the instructor had failed to respond to the variable in question, the discrepancy score was not calculated and the response recorded as missing data. These discrepancy scores indicate the magnitude of the incongruence and not the direction in which the incongruence occurs. This method of indicating congruence between instructor and participant scores was selected since according to the study's hypotheses, it is the magnitude of the incongruence itself that should dictate observed behaviours. If the discrepancy scores were shown as actual arithmetic differences, including positives or negatives to show the direction of the incongruence, the calculation of the means would be misleading. For example, the mean of a +10 and -10 actual difference score would be zero, indicating that overall responses were congruent with those of the instructor. In fact there was incongruence as the mean of the magnitude of the discrepancy between these two participants

and their instructor is '10'. In addition to the 'discrepancy score' value for each variable, the actual (or arithmetic) difference was also calculated and recorded to assist in the interpretation of the results.

DATA ANALYSIS PHASE TWO

In this section the socio-economic data is presented to compare characteristics of instructors and participants in the Eric Hamber and Langara samples. These data are provided to assist in the interpretation of differences between groups with respect to the congruence effects discussed in later sections of this chapter. In addition, these data were included as independent variables in regression analyses to determine the extent to which these socio-economic characteristics could predict learner satisfaction, learner persistence, and instructor evaluation of student performance. To simplify the reporting procedure, the socio-economic description of the instructors is presented separately from that of the participants.

Socio-Economic Characteristics of Instructors

Of the twenty instructors at Langara and nineteen at Eric Hamber who expressed a willingness to cooperate in the study, nineteen at Langara and eighteen at Eric Hamber

completed the socio-economic section of the research instrument.

The average age of the Hamber instructors was 47.3 years and their ages ranged from 26 to 67 years. All Hamber instructors were male, while eleven of the 21 Langara instructors were female. The Langara instructors tended to be younger than their Hamber counterparts as their ages ranged from 23 to 53 years with a mean of 37.7 years old. These differences are not unexpected as the Hamber program provides instruction in managerial or professional subject areas. The faculty are recruited from successful and experienced practitioners in the business community, which is male dominated. While those who teach general interest programs at Langara offer instruction in a particular skill or subject area in which they are knowledgeable, their expertise is not necessarily age or sex biased.

There would appear to be some differences between the instructors of the two samples with regard to their previous educational experience. The highest educational achievement ranged from one Langara instructor who reported completing less than grade ten, to six at Langara and seven at Hamber who had completed a university degree as well as some other tertiary qualification. Two Hamber instructors only completed eight years in high school, while the others had completed at least 12 years of school. In addition, seven had received some full-time post-secondary training, three of whom had studied full-time for more than five years. As might

be expected of individuals with professional or managerial occupations, the majority (72 per cent) had made a significant commitment to part-time training. Five had studied part-time for more than five years, six for four years and the remainder had studied part-time for three years. The Langara instructors had a stronger and more traditional academic training. Eleven (61 per cent) had completed at least two years full-time, seven of whom had studied full-time for at least five years. Ten had studied part-time, and five of these had done so for at least five years. The difference in educational backgrounds reflects their working milieu. Instructors in the Hamber program in business, where experience plus part-time learning has been an accepted model for personal advancement in industry, have less traditional full-time education and more part-time training 'on the job', while instructors at Langara do not reflect the same management development pattern of training.

There were some differences between these groups of instructors with respect to their occupational status as measured by the Blishen index; 76 per cent of the Hamber instructors who reported their present occupations were rated 60.00 or above on the Blishen index, while only 22 per cent of the Langara instructors had occupations of similar status. The spouses of eight Langara instructors had occupations rated 70.00 or over compared with only two Hamber spouses. These differences are most likely due to the fact that all the Hamber instructors were male with managerial or professional occupations, while more than half of the Langara instructors

were female. This sex bias among the instructors should be compensated for when the variable 'Gross Family Income' is examined. Hamber instructors' Gross Family Incomes were significantly higher than their Langara counterparts. Forty-three per cent of the Langara instructors reported gross family incomes of less than \$17,000, and only three reported gross family incomes in excess of \$25,000, while half the Hamber instructors reported gross family incomes in excess of \$25,000 and none of them received less than \$17,000.

Overall it appeared that the Langara faculty had more formal training in instruction than the Hamber faculty as five Langara instructors had teaching certificates and seven had participated in some training in the teaching of adults, two of whom had received diplomas or had completed a certificate program. None of the Hamber faculty had any formal teacher training, and only five reported participating in any courses on teaching adults, none of which were part of a credit program.

Socio-Economic Characteristics of Participants

There were 254 adults enrolled in twenty classes held at Langara and 384 in nineteen classes at the Eric Hamber centre. In this section the socio-economic characteristics of these participants are described and compared so as to assist in the interpretation of the congruency effects noted in the later sections of this chapter. Only those variables where the differences in distribution were statistically

significant are discussed.

Of the 634 participants who completed the socio-economic section of the research instrument, 348 (54.9 per cent) were male and 286 (45.1 per cent) female. There was a statistically significant difference in the distribution of participants by sex and program centre ($\chi^2 = 49.9$, $df = 633$, $p < .0001$). Nearly two-thirds of those enrolled at Langara were women (62.4 per cent) while two-thirds (66.4 per cent) of those enrolled at Eric Hamber were men. This difference was expected as the program emphasis at each centre differs. The Hamber program provides training in Managerial Skills and therefore attracts individuals with managerial aspirations, the majority of whom are male, while women are the most usual participants in a general interest program such as that offered at Langara. Four participants at Langara were sixteen years old and two were 73, and the mean age for Langara participants was 34.9 and the median was 29.5. The youngest participant in the Hamber program was seventeen and the oldest 61 years old. The mean age for Hamber participants was 32.1 years and median 30.2 years old. Once again these differences can be ascribed to the differences in program type, with the Hamber program appealing to a narrower age range of individuals at the start of their managerial careers.

These were also statistically significant differences between participants at Hamber and Langara with respect to their "highest educational achievement", and the number of years completed of full-time and part-time post-secondary

training. At both centres, the highest educational achievement reported by participants ranged from no formal schooling to those with a university degree plus some other tertiary qualification. However it would seem that the general level of education was higher for students enrolled in the Langara program as more than 60 per cent of the Langara participants reported they had completed more than grade 12, compared with 47 per cent of those enrolled in the Hamber program ($p < .0001$). Of the 99 participants at Langara who had some full-time post-secondary training, 29.3 per cent had completed only one year and 20.2 per cent reported completing more than five years of full-time post-secondary education. In addition, 75 Langara participants reported receiving some post-secondary training on a part-time basis, with 35 completing one or two years part-time and 31 completing four or more years of part-time training.

There were 111 participants at Eric Hamber who reported completing some full-time post-secondary training, 63 of whom had completed one or two years and 35 had completed four years or more. In addition, all participants in the Hamber program were enrolled in a part-time certificate program, and 143 had completed at least one year of part-time post-secondary study, 36 of whom had completed more than four years of part-time study.

Occupations reported by participants were coded according to the Blishen occupational index and those ratings ranged from Labourers, Transportation except Railway (index

#27.72) to Professors and College Principals (index #76.01). As would be expected there was a significant positive correlation ($r = .32$, $df = 505$, $p < .001$) between highest educational achievement and the Blishen index rating of the respondent's present occupation, therefore as participants in the Langara program had more formal post-secondary training it is not surprising that they scored higher ratings on the Blishen index. The mean Blishen score for Langara participants was 49.40 (median = 49.56) compared with a mean of 47.27 and a median of 46.95 for Hamber participants. In addition, there was a significant positive correlation between highest educational achievement and personal income ($r = .13$, $df = 595$, $p < .001$) and gross family income ($r = .07$, $df = 568$, $p < .03$). However this correlation was not strong enough to discriminate between the Hamber and Langara populations.

Langara participants tended to be younger than their Hamber counterparts, therefore it seems likely that they would be at an earlier stage in their career paths and would not be enjoying the maximum emoluments for the positions they hold. The Hamber participants were older, would be expected to have longer employment histories, and therefore more likely to receive higher salaries. Therefore, despite significant differences between the two groups with respect to ratings on the Blishen Index, and obvious correlations between the Blishen ratings and income levels, as the Langara participants had not yet maximized their earning potential, their actual income levels did not differ significantly from their Hamber

counterparts.

Participant-Instructor Incongruence

Recall that in Fig. 3 a distinction was drawn between the effects of single and double (congruence) variables which were classified as being static (e.g. age) or dynamic (e.g. preferred "style"). Variables classified in quadrants 3 and 4 of Fig. 3 required the calculation of discrepancy scores. These were calculated to provide a measure of magnitude of the incongruence between participants and their instructors. The larger the discrepancy score the greater the degree of incongruence. These scores were calculated by subtracting the instructor's score from the participant's score, therefore, when interpreting actual difference scores, a negative number indicated that the instructor had a higher score than the student for that characteristic.

The situation can be illustrated as follows:

Instructor Jones was 63 years old. Participant Smith was 40 years old. Thus the age-discrepancy score, which has no regard to sign (i.e. whether the participant or the instructor is older or younger) was 23. The "actual-difference" score, which has regard to the sign (i.e. the direction of the difference) was -23 indicating that the instructor was 23 years older than participant Jones.

Instructor Jones	AGE Participant Smith	DISCREPANCY ("CONGRUENCE") SCORE	ACTUAL DIFFERENCE SCORE
63 yrs.	40 yrs.	23 yrs.	-23 yrs.

Table 5 presents discrepancy scores for variables shown in quadrant 3 of Fig. 3. Also shown are Learning and Instructional Style Index discrepancy scores classified in quadrant 4 of Fig. 3.

Instructors tended to be older than the participants, but the age differences ranged considerably. Two participants were 47 years younger than their instructors, and one participant was 50 years older. The actual difference mean was -10.39 years with a standard deviation of 16.93, while the discrepancy score mean was 16.25. In general, the instructors had more educational qualifications than their participants. Actual differences ranged from -7 to 5 with a mean of -1.73 (S.D. 1.89), while the discrepancy score mean was 2.11 on the ordinal scale of highest educational achievement. This indicated that the average of the absolute difference between participant's and their instructor's scores of educational achievement was 2.11 on the scale. Instructors tended to have higher 'highest educational achievement' scores and thus more years of full-time and part-time training than the participants. However, there was considerable variance in these scores, from 114 cases where the instructor had at least five years more full-time post-secondary training than did the participant,

to ten participants who had five years more than their instructor. The actual mean was -1.59, which indicates that on average the instructors had received 1.59 more years of full-time training than their students, while the average of discrepancy scores was 2.11. There was a similar range reported for years of part-time post-secondary training, with 93 participants reporting at least five years training less than their instructor and nine participants reported five years more part-time training than did their instructor. The actual mean difference in number of years part-time post-secondary training was -1.99 years while the mean discrepancy score was 2.56 years. As the instructors tended to be older and had more education, they also tended to achieve higher Blishen ratings of their occupations. The difference in Blishen ratings ranged from -45.98 to 25.86 with an actual mean discrepancy score of 14.30. There was a similar trend noted with respect to the differences in income levels. One participant reported earning \$25,000 less than the instructor, and one reported earning between \$20,000 and \$25,000 more than the instructor. The actual mean difference was -2.31 points on the scale which would indicate that on average the instructors earned about \$4,000 more than the participants. The mean discrepancy score was 3.71, which indicates that the average total discrepancy among instructors and participants was 3.71 points on the scale, or between \$6,000 and \$8,000.

The extent to which there was congruence between the instructor's and participant's attitudes towards learning,

TABLE 5

COMPARISON OF ACTUAL MEAN DIFFERENCES AND DISCREPANCY SCORE
MEANS BETWEEN PARTICIPANTS AND THEIR INSTRUCTORS

Variable	<i>n</i>	Range	Actual Mean	Discrepancy Score Mean
Age	594	-47 to 50	-10.39	16.23
Highest Educational Achievement	602	- 7 to 5	- 1.73	2.11
Number of Children	554	- 5 to 7	- 0.92	1.79
Yrs. Full-Time Post-Secondary	441	- 5 to 5	- 1.59	2.40
Yrs. Part-Time Post-Secondary	469	- 5 to 5	- 1.99	2.56
Blishen Rating of Occupation	455	-45.98 to 25.86	-12.95	14.30
Personal Income	567	-12 to 11	- 2.31	3.71
Total Family Income	508	-12 to 10	- 3.20	4.32
LISI	605	-1.24 to 3.29	- 0.42	1.12

and instruction was defined as the discrepancy between instructor and participant LISI scores. These differences ranged from -4.24 to 3.29. The mean difference was -.43, which indicates that the instructors achieved higher scores on LISI than did their participants. The mean discrepancy score was 1.12, which indicates that on average the magnitude of difference among participant's and their instructor's LISI scores was 1.12 points on the 9 point LISI scale. These data suggest that instructors reported a slightly greater preference for student-centred instructional styles than did

their participants.

DATA ANALYSIS PHASE THREE

There were three hypotheses proposed for this study and these are examined in the following sections; Learner Satisfaction and Learning and Instructional Style Incongruence, Learner Persistence and Learning and Instructional Style Incongruence, Learning Achievement and Learning and Instructional Style Incongruence.

Learner Satisfaction and Learning and Instructional Style Incongruence

The first hypothesis suggested that:

"Discrepancy scores between instructor and learner attitude towards learning and instruction will be negatively correlated with learner satisfaction".

This hypothesis was investigated by correlating LISI discrepancy scores with Learner Satisfaction Index scores. Although a significant negative correlation was expected none resulted so the hypothesis was rejected. The correlation (Pearson product-moment) between LISI discrepancy scores and Learner Satisfaction Index scores was .04 which was not significant.

There was a significant positive correlation between Learner Satisfaction Index scores and both the instructor's

($r = .13$, $df = 601$, $p < .001$) and participant's ($r = .11$, $df = 634$, $p < .003$) LISI scores. Thus it would appear that high LISI scores by either instructors or participants, which would indicate preferences for student-centred teaching styles, are positively associated with satisfaction with the class. As instructors tended to have higher LISI scores than their students when discrepancy scores were calculated, participants with high LISI scores would have lower discrepancy scores. This negative relationship between learners LISI scores and the LISI discrepancy scores was statistically significant ($r = -0.249$, $df = 604$, $p < .001$). Thus learners with high LISI scores have low discrepancy scores (and are well satisfied with their learning experience) while those with low LISI scores have larger discrepancy scores (and are less satisfied). There was also a negative correlation between Learner Satisfaction Index and LISI actual difference scores. While this relationship was not statistically significant, it might suggest that learners who recorded higher LISI scores than their instructors were less satisfied with the learning experience than were participants who achieved lower LISI scores than their instructor. The hypothesis that congruence between the learner's preferred learning style and the instructor's teaching style would result in increased Learner Satisfaction was not confirmed.

Clearly there were a number of factors influencing and confounding the hypothesized relationship. The correlations suggest that learners who prefer student-centred

TABLE 6

PEARSON'S CORRELATION COEFFICIENTS: INSTRUCTOR, LEARNER, AND
DISCREPANCY LISI SCORES AND LEARNER SATISFACTION INDEX

	LSI	Learners LSI	Instructors LSI	LSI Discrepancy
Learners LSI	.11***			
Instructors LSI	.13**	-0.04*		
LSI Discrepancy	.04*	-0.25**	0.22**	
LSI Actual Difference	.02*	0.73**	-0.72**	-0.33**

* $df = 602$, $p > .1$

** $df = 602$, $p < .001$

*** $df = 635$, $p < .003$

environments are not likely to enjoy an authoritarian instructor, while learners who indicate they prefer an instructor-centred environment may be well satisfied by a student-centred instructor. The correlation matrix produced during the test of Hypothesis One revealed a large number of correlations between Learner Satisfaction Index scores and variables shown in all quadrants of Fig. 3. The matrix also contained a large number of apparently significant inter-correlations so it was not clear if variables (other than LSI scores) had multiple or partial effects on learner satisfaction. In an effort to unravel the complex variable interactions which explain learner satisfaction it was decided to employ a regression equation with Learner Satisfaction Index scores as the dependent and all other available measures (quadrant 1-4) as independent variables. In addition, other regression analyses

were performed in order to identify whether or not socio-economic congruence or incongruence between Learner and Instructor could also be confounding the hypothesized relationship between Learning and Instructional Style discrepancy scores and Learner Satisfaction.

First a stepwise regression analysis was conducted with learners LISI score (quadrant 2) as the dependent variable and all the learners socio-economic variables independent (quadrant 1). The following four variables: highest educational achievement, age, attendance and years high school completed, were selected during the first four steps and together produced an r of .412, while all the socio-economic variables considered together increased the r^2 value by only

TABLE 7

SUMMARY OF REGRESSION ANALYSIS TO PREDICT LEARNERS PREFERRED LEARNING AND INSTRUCTIONAL STYLE - LISI SCORE DEPENDENT VARIABLE

	Multiple r	r^2	Beta
Highest Educational Achievement	0.25	0.063	0.22
Age	0.34	0.112	-0.19
Attendance	0.37	0.149	-0.16
Years High School Completed	0.41	0.170	0.15
Analysis of Variance: Regression Against Residual $F = 6.28$, $p < .001$			

0.0189 for a total r^2 value of 0.1885. Table 7 shows that participants with the greatest preference for student-centred learning and instructional styles had higher levels of educational achievement, were younger, attended less, and had completed more years of schooling than participants who preferred more instructor-centred learning and instructional styles.

The regression analysis with LISI discrepancy scores (quadrant 4) as the dependent variable and all variables in quadrants 1-3 resulted in a similar set of socio-economic variables being identified as predictors of LISI discrepancy scores (Table 8). Instructor's income, highest educational achievement discrepancy scores, instructor's age, years full-time post-secondary training and income discrepancy were the

TABLE 8

SUMMARY OF REGRESSION ANALYSIS: LISI DISCREPANCY SCORE DEPENDENT
VARIABLE

	Quadrant	Multiple r	r^2	Beta
Instructor's Personal Income	1	0.33	0.108	-0.35
Highest Educational Achievement Discrepancy Score	3	0.43	0.188	0.37
Instructor's Age	1	0.47	0.222	-0.30
Years Full-Time Post-Sec. Training	1	0.49	0.241	0.17
Personal Income Discrepancy	3	0.51	0.261	0.15
Analysis of Variance: Regression Against Residual $F = 8.62$, $p < .001$				

variables selected during the first five steps of the analysis. Together they produce an r of 0.51 ($r^2 = 0.26$). Learners Satisfaction Index score was not included in the equation until step 29. It would seem that these socio-economic characteristics (quadrant 1) and differences (quadrant 3) are more powerful predictors of LISI and LISI discrepancy scores than is Learner Satisfaction score.

As it seemed likely that participants personal characteristics may also predict Learner Satisfaction Index scores, another regression analysis was conducted with Learner Satisfaction Index score as the dependent variable. The 33 variables produced a multiple r of .61 and accounted

TABLE 9

SUMMARY OF REGRESSION ANALYSIS: LEARNER SATISFACTION INDEX SCORE

DEPENDENT VARIABLE

	Quadrant	Multiple r	r^2	Beta
Instructors Total Personal Income	1	.17	.03	1.42
Attendance Score	1	.26	.06	.07
Years Full-Time Post-Sec. Training	1	.31	.09	-0.09
Years Part-Time Post-Sec. Training	1	.35	.13	.19
Instructors Occupation	1	.38	.14	-1.87
Instructors LISI Score	3	.41	.17	1.99
Analysis of Variance: Regression Against Residual $F = 4.05$, $p < .001$				

for 37 per cent of the variance on Learner Satisfaction Index scores. The instructor variables of personal income, occupation and LISI score, with learner variables of attendance, years full-time and years part-time post-secondary training produced a multiple r of .41 and accounted for 17 per cent of the variance in Learner Satisfaction Index scores. While various instructor and learner characteristics were moderately powerful predictors of both LISI and Learner Satisfaction Index scores, Learner Satisfaction Index scores did not appear to predict LISI incongruence to the extent that could be expected from previous research.

Learner Persistence and Learning and Instructional Style

Incongruence

The second hypothesis proposed that:

"Discrepancy scores between instructor and learner attitude towards learning and instruction will be negatively correlated with learner persistence".

As some classes were ten and others thirteen sessions long, attendance score was expressed as the number of classes attended as a percentage of the total number of classes. The hypothesized negative relationship between LISI discrepancy scores and attendance was observed ($r = -.06$, $df = 490$, $.05 < p < .10$). Significance at the .05 level was not obtained so the hypothesis was rejected. However it could also have been hypothesized that in a student-centred learning environment there would be less emphasis and importance attributed to

attendance in class, and therefore there would be a negative relationship between attendance and positive attitude towards student-centred learning environment. A statistically significant correlation was observed between attendance scores and both learners LISI score ($r = -.12, n = 521, p < .003$) and instructors LISI scores ($r = -.16, n = 490, p < .001$). Therefore, learners who indicated that they preferred a student-centred learning environment attended class less than those students who obtained low LISI scores. Further, it would seem that learners enrolled in classes taught by instructors who created an instructor-centred learning environment, attended more frequently than participants enrolled in classes taught by instructors with high LISI scores. However, as these statistically significant relationships were not observed to the same degree when the LISI discrepancy scores were calculated, it would seem that the formula used to measure the congruence between instructor and student attitude towards learning and instructional style introduced error that decreased the significance of the correlation. For instance, in any one class it would be expected that participants with high LISI scores would attend less regularly than would participants with low LISI scores. Further, participants with high LISI scores enrolled in a class taught by an instructor with low LISI scores would have high discrepancy scores and low attendance. While students with high LISI scores enrolled in a class taught by an instructor with high LISI scores would have low discrepancy scores (and low attendance) and vice versa. It

was the intent of this study to identify whether or not congruence *per se* between instructors and learners would effect attendance. While a negative relationship was observed, incongruence between learners and their instructor with respect to learning and instructional style was less related to attendance than their individual preferences with respect to learning and instructional style.

To identify the socio-economic characteristics that may assist in predicting the participants' attendance in class, a regression analysis was conducted with attendance score the dependent variable, and the student, instructor and discrepancy socio-economic variables independent (quadrants 1-4). As can be seen in Table 11, instructors' rating of participants' learning achievement, instructor's income, years of high school completed and discrepancy in age, together accounted for 57 per cent of the variance in attendance score with the instructors rating of participants' learning achievement alone

TABLE 10

PEARSON'S CORRELATION COEFFICIENTS: ATTENDANCE SCORE WITH
INSTRUCTOR, LEARNER AND DISCREPANCY LISI SCORES

	Learner LISI	Instructor LISI	LISI Discrepancy	LISI Actual Difference
Attendance Score	-.12*	-.16**	-.06***	.01***

* $df = 521$, $p < .003$; ** $df = 490$, $p < .001$; *** not significant

TABLE 11

SUMMARY OF REGRESSION ANALYSIS: ATTENDANCE SCORE DEPENDENT
VARIABLE

	Quadrant	Multiple r	r^2	Beta
Rating of Student Achievement	2	.64	.41	.51
Instructors Personal Income	1	.69	.48	.48
Years High School Completed	1	.73	.53	-.21
Age Discrepancy Score	3	.75	.57	.24
Analysis of Variance: Regression Against Residual Variance				
$F = 40.14, p < .0001$				

accounting for 41 per cent of the variance. This suggests that learners who attend classes frequently are more favourably evaluated by their instructor than are those who do not. Instructors would appear to have favoured those participants they saw most frequently, or that attendance in class contributed directly to the 'marks' awarded. The other variables included in the regression equation; instructor's personal income, years high school completed and age discrepancy score may be related to the degree of congruence between the learner and instructor. For instance, instructors' income was included during the second step of the regression. Participants attended class more regularly when taught by a high income instructor, perhaps because income provided an indication of status which the participants respect. This finding was consistent with those of Simons, Berkowitz and Moyer (1970) who noted that relevant dissimilarities that enhance the

'credibility of the source such as professional status' would facilitate attitude change. It is interesting to note that LISI discrepancy score was included in the regression equation during step six (multiple r .78) and Learner Satisfaction Index score on step nine (multiple r .81).

Learning Achievement and Learning and Instructional Style Incongruence

The third hypothesis suggested that:

"Discrepancy scores between instructor and learner attitudes towards learning and instruction will be negatively correlated with the instructor's perception of the learner's learning achievement".

Therefore LISI discrepancy scores should be negatively correlated with the mark awarded the student by the instructor, expressed as a percentage and referred to as 'learning score'. It should be noted that learning score was a subjective measure derived by requesting instructors to evaluate and rank each participant's learning achievement, and may not accurately reflect the participant's actual achievement. The correlation between LISI discrepancy and the instructor's evaluation of the student was not statistically significant ($r = -.005$, $df = 494$, $p < .49$) and therefore this hypothesis was not confirmed.

This hypothesis should not be rejected altogether as there was a statistically significant negative correlation between learning score and LISI actual difference scores ($r = -.12$, $df = 494$, $p < .003$). This would suggest that when

the participant LISI scores were higher than that of the instructor, the instructor did not award a high learning score, while when the instructor's LISI score was higher than that of the participant, participants were awarded high learning scores. Therefore it would appear that the direction of the incongruence and not just the magnitude of the incongruence in LISI scores may be an additional factor influencing the instructor's appraisal of learner's performance. Further, there was no significant relationship observed between the learner's LISI and learning scores ($r = -.02$, $df = 525$, $p < .33$) so it would seem that a learner's preferred learning style was not related to the instructor's evaluation of the learner. However, there was a statistically significant correlation between instructors' LISI scores and learning scores ($r = .17$, $n = 495$, $p < .001$), which would suggest that student-centred instructors tended to rate their participants more favourably than did their more traditional teacher-centred colleagues.

TABLE 12

PEARSON'S CORRELATION COEFFICIENTS: ... LEARNING SCORE WITH
LEARNER, INSTRUCTOR AND DISCREPANCY LISI SCORES

	Learner LISI	Instructor LISI	Discrepancy LISI	LISI Actual Difference
Learning Score	0.02*	.17***	-.00*	-.12**
* not significant; ** $df = 495$, $p < .003$; *** $df = 495$, $p < .001$				

TABLE 13

SUMMARY OF REGRESSION ANALYSIS: LEARNING SCORE DEPENDENT
VARIABLE

	Quadrant	Multiple r	r^2	Beta
Attendance Score	1	.64	.41	.73
Age Discrepancy	3	.67	.44	-.29
Years Part-Time Post-Sec. Discrepancy	3	.68	.47	.08
Years High School Completed	1	.70	.49	.13
Highest Educational Achievement Discrepancy	3	.71	.51	-.13
Analysis of Variance: Regression Against Residual $F = 25.36$, $p < .001$				

It was also noted that instructors favourably rate those learners who attend class most regularly, as there was a significant correlation between attendance and learning score ($r = .49$, $n = 503$, $p < .001$). Satisfied students (higher Learner Satisfaction Index scores) were themselves rated favourably by the instructor ($r = .20$, $df = 524$, $p < .001$).

As it seemed that instructor-learner congruence with respect to learning and instructional style was not the only factor which determined instructor's rating of student achievement a regression analysis was conducted to identify variables predicting learning score (Table 13). Attendance score, age, and years of part-time post-secondary training discrepancy scores, years high school completed, and highest educational achievement discrepancy score accounted for 51 per cent of

the variance (multiple r .71), of which attendance score alone accounted for 41 per cent of the variance. It is notable that there was a significant negative correlation between age discrepancy and learning score ($r = -.15$, $df = 486$, $p < .001$), but no significant difference between actual difference in ages and learning score ($r = .05$, $df = 486$, $p < .12$). Thus instructors rated learners who were the same age as themselves more favourably than those who were either younger or older.

CHAPTER SIX

CONCLUSIONS, RECOMMENDATIONS AND SUMMARY

This concluding chapter is divided into two major sections: 1) Conclusions and Recommendations, and 2) Summary. In the first section the conclusions that can be drawn from this study are presented and discussed, as are the implications and recommendations for future research. In the second section the purpose, methodology and results are briefly reiterated.

CONCLUSIONS AND RECOMMENDATIONS

The first conclusions that are presented concern instruments developed for this study. The second set of conclusions presented concern the influence of learning and instructional style congruence on learner satisfaction, learner persistence and learner achievement.

Instrumentation

There were three components to the research instrument developed to collect the data for this study; learner satisfaction index, learning and instructional style index, and a socio-economic questionnaire.

The procedure adopted to develop the Learner

Satisfaction Index and the Learning and Instructional Style Index (LISI) was designed to ensure the face validity of these indices as a number of expert judges contributed to the selection and phrasing of the items. Both these Likert-type instruments appeared to be unidimensional with respect to the first unrotated factor (see Tables 1, 2, 3, 4), therefore, it was concluded that a total index score could be obtained by summing the scores on the individual items. Other indicators of the validity of these instruments were sought during the data collection phase of the study. The significant correlation between Learner's Satisfaction Index and Learner Attendance ($r = .11$, $df = 519$, $p < .006$) is offered as an indication of the validity of the Learner's Satisfaction Index, it is likely that unsatisfied adults will attend class less frequently than those who are pleased with their learning experience. There was a significant negative correlation between LISI and Learner's age ($r = .29$, $df = 627$, $p < .001$), and between LISI and highest educational achievement ($r = .17$, $df = 634$, $p < .001$). Both these relationships provide positive indications of LISI validity.

The reliability of both indices and the socio-economic section of the research instrument was checked by the test-retest method on a sample from another population prior to implementation of the study. All unreliable items were deleted.

The procedures adopted during the development of the research instrument to ensure its validity and reliability and

the subsequent observations are by no means exhaustive; nevertheless, it was concluded that the reliability and validity of the instrument and the two indices therein was sufficient to test the hypotheses developed for this study.

There are few valid and reliable research instruments in the field of adult education and the development of such instruments should be a research priority. In particular, an instrument that can measure an instructor's teaching style without requiring time consuming classroom observation would be most useful, both for researchers and program administrators. The learning and instructional style index should be developed further and more evidence sought as to its validity and reliability to determine whether instructor teaching style can be predicted from LISI score.

Learner Satisfaction

The first hypothesis stated that:

"Discrepancy score between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner satisfaction".

This hypothesis was rejected. It seems likely that this hypothesis was not confirmed as a result of interactions between LISI scores and learner satisfaction. There were significant positive correlations between learner satisfaction and both learner's and instructor's LISI scores. This would suggest that learners who prefer student-centred environments rated their instructors more favourably than those who prefer to be directed by the instructor. Instructors with high LISI

scores (which indicate that they have a positive attitude toward student-centred instruction) generally had more satisfied participants than did instructors who assumed a more traditional instructional role as indicated by low LISI scores. It is likely that the method adopted to measure congruence (discrepancy score) between instructor's and learner's LISI scores confounded these individually significant relationships. For instance, consider the effects of the following learner-instructor pairs with an instructor who has a high LISI: a learner with a high LISI score, which is associated with high learner satisfaction, would have a low measure of instructor-learner incongruence; while a learner with a low LISI score, associated with low learner satisfaction, would have a high measure of instructor-learner incongruence. However, if the instructor had a low LISI score, the situation is reversed; the learner with high LISI, which is still associated with high satisfaction scores, now has a high measure of learner-instructor LISI incongruence while the low LISI scoring learner has low incongruence, but still has a low measure of learner satisfaction.

It would seem that the hypothesis that there should be a simple relationship between instructor-learner LISI congruence and learner satisfaction is appropriately rejected; however, it may be wrong to conclude that there is no relationship between learner's LISI scores, instructors' LISI scores and the magnitude of the incongruence between these scores and the extent to which learners express their satisfaction with

the learning event. Future studies of the effects of instructor student learning instructional style congruence on learner satisfaction should attempt to identify whether or not there is a significant interactive effect that confounded the analysis and whether the direction of the incongruence is a factor that contributed to the rejection of the first hypothesis.

In addition, the positive relationship between instructor LISI scores and learner satisfaction deserves further investigation to determine whether instructors LISI scores can be used to predict learner satisfaction. If this is the case, this index would prove useful in the selection of instructors.

Learner Persistence

The second hypothesis stated that:

"Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner persistence".

This hypothesis was rejected. It would seem that for an adult population with a comparatively short term commitment to adult education, either the instructor's attitude toward the role of instruction or the learner's preferred learning style is more likely to be reflected in attendance or persistence patterns, than the difference between instructors and learners. It is possible that the average length of these courses was insufficient for the effects of incongruence between the instructor and the learner to be reflected in the learner's attendance. It is also possible that a similar set

of confounding factors exists for this hypothesis as was described for the first hypothesis. Both the learners' and instructors' LISI scores were negatively correlated with attendance scores. This indicates that learners who indicate a preference for learner-centred environments or are prepared to accept the responsibility for their own learning, place less emphasis on classroom learning and are therefore less likely to attend class regularly. Similarly, instructors who adopt a learner-centred instructional style place less emphasis on class attendance than instructors who perceive the instructional role in a more traditional manner and expect participants to attend class regularly. However, for each instructor there will be a range of learner LISI scores, so where an instructor has a high LISI score, students with high LISI scores will have low incongruence and low attendance scores while if the instructor had a low LISI score for the same learner LISI score, there would be a high measure of incongruence and low attendance. As this hypothesis was not verified, future studies should be conducted to identify whether the length of the course is a factor in influencing the persistence decision of the individual experiencing incongruence. Congruence between learner and instructor LISI scores did not account for variations in learner attendance as significantly as individual LISI scores. Future studies should examine whether the length of the course is a factor in influencing the persistence decision of the individual experiencing incongruence or whether there are various interactive effects such as the direction

of the incongruence confounding the significance of the relationship between the measure of learner-instructor incongruence and learner attendance.

Learner Achievement

The third hypothesis stated that:

"Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with the instructor's perception of learner's learning achievement".

When instructor-learner incongruence was calculated as the discrepancy between their LISI scores, there was no significant correlation with learning score and the hypothesis was rejected. However, when the incongruence was measured as the actual difference between learners' and instructors' LISI scores there was a significant negative correlation between this measure of congruence and learning score. Therefore it can be concluded that the magnitude of the incongruence between learners' and instructors' LISI scores *per se* was not significantly related to the instructor's subjective evaluation of the participant's learning achievement. However the instructor's rating of the participant was significantly influenced by the direction of the LISI incongruence between them. Instructors rated the learning of learners with lower LISI scores than themselves higher than they rated the learning achievement of learners with higher LISI scores than themselves. This could be as a result of the fact that instructors rated most favourably those learners who attend class most

regularly and as was noted, LISI score and attendance were inversely correlated. On the other hand, the instructor in rating more favourably those students who have lower LISI may be responding to the fact that learners with a preference for instructor-centred learning are likely to be more respectful of the instructor (or servile) than learners who prefer to accept more of the responsibility for their learning. This study has shown that there was a significant relationship between the instructor's rating of student achievement and instructor-learner incongruence with respect to learning and instructional style. However as was indicated above, there remain other hypotheses that need to be examined before the nature of this relationship can be totally revealed.

INFLUENCE OF SOCIO-ECONOMIC CHARACTERISTICS

Regression equations were generated to identify variables that predict LISI scores, learner satisfaction, learner persistence, and learner achievements. The conclusions drawn from these analyses were presented in the following sections; predictors of LISI score, predictors of learner satisfaction index score, predictors of learner persistence, and predictors of learner achievement.

Predictors of LISI scores

The variables identified through the regression analysis as predictors of learner's LISI score with all

learner characteristics (Fig. 3, quadrants 1,3) independent were: highest educational achievement, age, attendance, and years high school completed (see Table 7). Individuals who were experienced learners were prepared to accept responsibility for their own learning so would not feel the need to attend frequently and preferred student-centred environments. These attitudes were also associated with younger learners.

Similarly when LISI discrepancy score (Fig. 3, quadrant 4) was dependent (see Table 8), the instructor variables of income and age, learner's full-time post-secondary experience and two measures of learner-instructor congruence (highest educational achievement and income) were selected during the first five steps of the regression equation. Thus youth and previous educational experience, especially at the post-secondary level is associated with high LISI scores which indicates a preference for learner-centred environments. How can adult educators minimize learner-instructor incongruence with respect to learning and instructional style? One possibility might involve matching individuals whose educational backgrounds and ages are similar to that of their learners. Instructors might also become conversant with a variety of instructional styles and adopt an appropriate style for any particular group of learners. However, these recommendations are tentative and tenuous and need to be investigated in subsequent research.

Predictors of Learner Satisfaction Index Score

Socio-economic variables were identified through the regression equation as predictors of learner satisfaction with the addition of instructor's LISI score (see Table 9). Variables related to the socio-economic status of the instructor (income, occupation) were included.

Predictors of Learner Persistence

Learner achievement alone accounted for 41 per cent of the variance in attendance. Learner achievement with the single variables, instructors income and years of high school completed, and the double (congruence) variable age discrepancy, accounted for 75 per cent of the variance in persistence (see Table 11).

The instructor's income and age appear to be related to learner persistence. As noted earlier, older instructors (and therefore more highly paid) preferred instructor-centred environments in which regular attendance is usually required. The regression analysis supports this view.

Predictors of Learning Achievement

The previous regression analysis identified the most powerful predictor of attendance as learner achievement (learning score). So conversely, when predicting learner achievement, it would be expected that attendance score would be its most powerful predictor. This was the case.

Attendance accounted for 64 per cent of the variance in learning scores. The single variable, years high school completed, and the double (congruence) variables age, years part-time post-secondary training, and highest educational achievement discrepancy scores together with attendance accounted for 71 per cent of the variance in learning score (see Table 13). Tentatively, it appears that a learner who wishes to be awarded a high grade might consider selecting a class taught by an instructor whose age and highest educational achievement is similar to his own, but whose experience with respect to part-time learning is different. Once such an instructor has been identified, of course, the learner must attend class at every opportunity.

While learner-instructor congruence was not related to learner persistence or satisfaction to the extent to which the literature suggested, learner-instructor congruence does appear to effect the instructor's rating of learner achievement. All previous studies which relied on one measure of congruence may have failed to identify significant relationships which were disguised by the method of measuring congruence. For instance, the relationship between instructor's rating of learner's learning achievement and their difference in age was not statistically significant when the actual difference in age was correlated with learner's score ($r = .05$, $df = 486$, $p < .12$). However the correlation between learning

score and age discrepancy was statistically significant ($r = -.15$, $df = 486$, $p < .001$). This would suggest that there is a curvi-linear relationship between instructor's rating of learner achievement and learner-instructor congruence with respect to age. Instructors rated learners who were the same age as themselves more favourably than those learners who were either younger or older than themselves. Another example of the confounding effect introduced when measuring congruence is observed in the relationship between the instructor's rating of learner achievement (learning score) and learning and instructional style congruence. The hypothesized relationship between learning score and LISI discrepancy was not observed ($r = -.005$, $df = 494$, $p < .49$). However, the actual difference in learner and instructor scores on LISI was negatively correlated with learner achievement ($r = -.12$, $df = 494$, $p < .003$). Thus learners with lower LISI scores than their instructor received more recognition for their learning achievement than did learners whose LISI scores exceeded those of their instructors.

It is likely that previous researchers who relied solely on either the discrepancy score correlations or actual difference score correlations may have failed to identify significant relationships and erroneously rejected or confirmed hypotheses on the basis of Pearson correlation procedures. It would seem that in future research on interpersonal congruency effects, researchers must recognize that the method of calculating incongruence may disguise significant correlations

and so should consider statistical procedures that will allow these curvi-linear relationships to be exposed.

SUMMARY

In recent years there has been a significant trend away from "instructor-centred" and towards "student-centred" instructional styles. While the re-evaluation of the role of an instructor has caused controversy in the teaching profession, researchers have been unable to provide conclusive evidence as to the effect of different instructional styles. This lack of conclusive evidence probably results from interactions between various learner and instructor characteristics that influence learner outcomes. Researchers have attempted to identify personality and environmental factors that may affect learning outcomes. This study was developed to investigate whether congruence between the instructor and adult learners' attitudes towards learning and instruction was related to learner participation and satisfaction with the learning experience, and with the instructor's evaluation of student performance. The three hypotheses developed were that:

1. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated

with learner satisfaction.

2. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with learner persistence.
3. Discrepancy scores between instructor and learner's attitude towards learning and instruction will be negatively correlated with the instructor's perception of learner's learning achievement.

There were no instruments available that would measure learning and instructional style or learner's satisfaction therefore two measures were developed. Both of these measures were developed in concert with a number of expert judges, who checked the instruments for clarity of expression and content consistency. A factor analysis was performed prior to and during the study. All items loaded significantly and in the same direction on the first unrotated factor. It would appear that both indices were unidimensional. A research instrument was designed to collect participant and instructor socio-economic data; this instrument incorporated the two indices mentioned above. The reliability of the entire instrument was checked through a test-retest design by repeated applications on the same population. Unreliable items were deleted.

The data required to test the hypotheses were collected at two adult education centres operated by Vancouver

Community College. The sample consisted of 38 classes with 638 participants selected at random from a total of 84 classes offered at the Langara and Eric Hamber centres of Vancouver Community College during the fall term in 1975.

None of the three hypotheses were confirmed. The discrepancy between instructor's and learner attitudes towards learning and instruction appears to be less important than the attitude of either the participant or the instructor towards learning and instruction. In particular there were strong positive correlations between learner satisfaction and both learner and instructor LISI scores considered independently of each other, but when considered as discrepancy scores, the significance of the correlation was greatly diminished. Similarly, it appeared that learner persistence was related to the learner's and the instructor's attitude toward learning and not to the difference in attitude between them. The hypothesized relationship between learner achievement and learner-instructor learning and instructional style congruence was rejected. However, it would appear that these variables were correlated and that the calculation of the measure of congruence disguised the significance of this relationship.

Regression equations were generated to identify variables that predict learning and instructional style, learner persistence, and learner achievement. Variables that related to the instructor's socio-economic status and various measures of instructor and learner previous educational experience were the most powerful predictors of learning and

instructional style, learner satisfaction, learner persistence, and learner achievement.

The method through which the measure of instructor-learner congruence was derived may disguise an otherwise significant correlation. In this study, both actual (arithmetic) and discrepancy differences were recorded. As a result, it was possible to identify some instructor-learner congruence relationships which would not otherwise have been observed. These effects may have confounded the work of previous researchers who used only one measure of congruence and a statistical procedure that required a linear solution. Future studies which attempt to further unravel the complex learner-instructor relationships using the notion of congruence should expect and seek to identify these curvi-linear relationships.

REFERENCES

- Alam, M., and E. N. Wright. A Study of Night School Dropout. A Schedule 10 Project. Toronto: Board of Education Press, 1968.
- Alberta. A Future of Choices. A Choice of Futures. Edmonton: Queen's Printer, 1972.
- Ampene, E. R. "Teaching Styles in Adult Basic Education." in Griffith, ed. Literacy Discussion. Adult Basic Education 11. International Institute for Adult Literacy Methods, September 1973, Vol. 3, No. 3, pp. 191-205.
- Borger, V. "The Predictive Association Between the Ego-Stage and Group-Relevant Aspects of Personality and Learner Satisfaction and Learner Achievement on the Basis of the Degree of Congruence in Teacher-Student Dyads in Adult Learning Groups." Unpublished Ph.D. dissertation, Wisconsin University, 1969.
- Boshier, R. "An Instrument and Conceptual Model for the Prediction and Diagnosis of Dropout from Educational Institutions." Wellington: Department of University Extension, Victoria University of Wellington, 1971.
- . "A Psychological Study of Adult Education Participation and Dropout." Unpublished Ph.D. dissertation, Victoria University of Wellington, New Zealand, 1973a.
- . "Educational Participation and Dropout: A Theoretical Model." Adult Education. Summer, 1973b, Vol. 23, No. 4, pp. 255-283.
- . "Motivational Orientations Re-visited: Life-Space Motives and the Education Participation Scale." Adult Education. 1977, Vol. 17, No. 2, pp. 89-115.
- . "A Conceptual and Methodological Perspective Concerning Research on Participation in Adult Education." Unpublished monograph based on a speech given to the Graduate Colloquium, Department of Secondary and Adult Education, Northern Illinois University, DeKalb, Illinois, March 17, 1978.
- Boyle, P. G., and I. R. Jahns. "Program Development and Evaluation." in R. M. Smith, G. F. Aker, and J. R. Kidd, eds. Handbook of Adult Education. New York: MacMillan, 1970, pp. 59-74.

- British Columbia. Towards the Learning Society. Report on the Task Force on the Community College in British Columbia. Victoria: (Research and Development Division, Department of Education) Queen's Printer, August, 1974.
- Bryson, L. Adult Education. New York: American Book Company, 1936.
- Clark, B. The Marginality of Adult Education. Chicago: Center for the Liberal Education for Adults, 1958.
- Cotton, W. E. On Behalf of Adult Education. A Historical Examination of the Supporting Literature. Boston: Center for the Study of Liberal Education for Adults, 1968.
- Crew, J. L. "An Investigation of Personality Profile Congruence Between Pupils and Teacher as a Predictor of Course Achievement." Unpublished Ph.D. dissertation, University of Maryland, 1968.
- Cronbach, L. J. "The Two Disciplines of Scientific Psychology." American Psychologist. 1957, No. 12, pp. 671-684.
- Dave, R. H. Lifelong Education and School Curriculum. U. I. E. No. 1. Hamburg: UNESCO - Institute for Education, 1973.
- Dave, R. H., ed. Reflections on Lifelong Education and the School. U. I. E. No. 3, Hamburg: UNESCO - Institute for Education, 1975.
- . Foundations of Lifelong Education. Oxford: Pergamon Press, 1976.
- Dick, Walter, and Nancy Hagerty. Topics in Measurement: Reliability and Validity. New York: McGraw-Hill, 1971.
- Dickinson, G., ed. Adult Education in British Columbia. Vancouver: Adult Education Research Centre, Faculty of Education, University of British Columbia, 1973.
- . Teaching Adults, A Handbook for Instructors. Toronto: New Press, 1973a.
- Dickinson, G., and D. Rusnell. "A Content Analysis of Adult Education." Adult Education. 1971, Vol. 21, No. 3, pp. 177-185.
- Dickinson, G., and C. Verner. Community Structure and Participation in Adult Education. Vancouver: Faculty of Education, University of British Columbia, 1969.
- Dubin, R. Theory Building. New York: Free Press, 1969.

- Duncan, S., and D. W. Fiske. Fact-to-Fact Interaction: Research, Methods and Theory. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1977.
- Faure, E. (Chairman). Learning To Be, the World of Education Today and Tomorrow. The Report of the International Commission on the Development of Education: Paris, UNESCO, 1972.
- Festinger, L. A Theory of Cognitive Dissonance. Evanston, Illinois: Row, Peterson, 1957.
- Flanders, N. A. Teacher Influence, Pupil Attitudes and Achievement. Final Report. Minnesota: Cooperative Residential Project No. 397, University of Minnesota, 1960.
- Gagné, R. M. The Conditions of Learning. New York: Holt, Rinehart and Winston, 1965.
- Gagné, R. M., and L. J. Briggs. Principles of Instructional Design. New York: Holt, Rinehart and Winston, 1974.
- Getzels, J. W., and H. A. Thelen. "The Classroom Group as a Unique Social System." in B. Nelson, ed. The Fifty-Ninth Yearbook of the National Society for the Study of Education, Chicago. Chicago: University of Chicago Press, 1960, pp. 53-83.
- Getzels, J. W., and E. G. Guba. "Personality and Teacher Effectiveness: A Problem in Theoretical Research." Journal of Educational Psychology. 1955, No. 3, pp. 336-344.
- Gill, K. F. "An Investigation of Congruent and Incongruent Value Systems Between College Students and Teachers as it Affects Student Evaluation." Unpublished Ed.D. dissertation, Northern Illinois University, 1973.
- Gill, M. P. Relationship Between Pattern of Achievement and Self-Ideal Congruence. U.S., Educational Resources Information Center, ERIC Document ED 047 329, February 1971.
- Glaser, B. G., and A. Strauss. The Discovery of Grounded Theory: Strategies for Qualitative Research. Chicago: Aldine Publishing, 1967.
- Gordon, I. J., ed. Criteria for Theories of Instruction. Washington, D.C.: Association for Supervision and Curriculum Development, 1968.
- Gvetzhow, H., E. L. Kelly, and W. McKeachie. "An Experimental Comparison of Recitation Discussion and Tutorial Methods

- in College Teaching." Journal of Educational Psychology. 1954, Vol. 45, pp. 193-209.
- Hall, D. T. "The Effect of Teacher-Student Congruence Upon Student Learning in College Classes." Journal of Educational Psychology. 1970, Vol. 61, pp. 205-213.
- Hanna, I. "Adult Education Students." Rewley House Papers, Oxford Delegacy for Extra Mural Studies, 1965-1966, pp. 14-43.
- Heath, R. W., and M. A. Nielson. "The Review Basis for Performance-Based Teacher Education." Review of Educational Research. Fall 1974, Vol. 44, No. 4, pp. 463-484.
- Heider, F. The Psychology of Interpersonal Relations. New York: Wiley and Sons, 1961.
- Hill, L. E. "A Study of Levels of Conceptual Functioning and their Relationship to Student Achievement and Student Perception of Teachers." Unpublished Ed.D. dissertation, Syracuse University, 1969.
- Houle, C. O. The Design of Education. San Francisco: Jossey-Bass, 1972.
- Hunt, D. E. Matching Models in Education: The Coordination of Teaching Methods with Student Characteristics. Toronto: The Ontario Institute of Studies in Education, 1971.
- , "The B-F-E Paradigm for Theory, Research and Practice." Canadian Psychological Review. July 1975, Vol. 16, No. 3, pp. 185-197.
- Illich, I. De-Schooling Society. New York: Harper and Row, 1970.
- Jensen, G. "How Adult Education Borrows and Reformulates Knowledge of other Disciplines." Adult Education: Outlines of an Emerging Field of University Study. Edited by G. Jensen, A. A. Liveright and W. C. Hallenbeck. Washington, D. C.: Adult Education Association of the U.S.A., 1964, pp. 105-111.
- Johnstone, J. W. C., and R. J. Rivera. Volunteers for Learning. A Study of the Educational Pursuits of American Adults. Chicago: Aldine Publishing, 1965.
- Kahn, H., and A. J. Wiener. The Year 2000, A Framework for Speculation on the next Thirty-Three Years. New York: MacMillan, 1967.
- Kidd, J. R. How Adults Learn. New York: Association Press, 1973.

- . Learning and Society. Toronto: Canadian Association for Adult Education, 1963.
- Knowles, M. S. The Modern Practice of Adult Education: Andragogy Versus Pedagogy. New York: Association Press, 1970.
- . "Issues in Adult Learning Psychology." Prasar. October 1973, Vol. 1, No. 5. Jaipur, India: Department of Adult Education, University of Rajasthan.
- Kreitlow, B. W. "Theories of Adult Learning." in C. Klevins, ed. Materials and Methods in Adult Education. New York: Klevens Publications Inc., 1972, pp. 233-240.
- Lamke, T. A. "Personality and Teaching Success." Journal of Experimental Education. 1951, Vol. 20, pp. 217-259.
- Lecky, P. Self Consistency: A Theory of Personality. New York: Island Press, 1945.
- Leuder, E. J. A Study of the Predictive Association Between Congruency Measures Based on Work-Emotionality Theory and the Achievement and Satisfaction in Adult Instructional Groups. U.S., Educational Resources Information Center, ERIC Document ED 060 424, April 1972.
- Levine, M. A Cognitive Theory of Learning. New Jersey: Lawrence Erlbaum Associates, 1975.
- Lewin, K. A Dynamic Theory of Personality. New York: McGraw-Hill, 1935.
- Lindeman, E. The Meaning of Adult Education. New York: New Republic Inc., 1926 (Republished in Montreal by Harvest House Ltd., 1961).
- Lippitt, R., and R. K. White. "The 'Social Climate' of Children's Groups." in R. G. Barker, J. S. Kounin, and H. F. Wright, eds. Child Behaviour and Development. New York: McGraw-Hill, 1943, pp. 485-508.
- Little, D. "Adult Learning and Education: A Conceptual Model." A Paper presented to the Adult Education Research Conference, San Antonio, Texas, April 1978.
- Liveright, A. A. Strategies of Leadership in Conducting Adult Education Programs. New York: Harper and Row, 1959.
- London, J., R. Wenkert, and W. O. Hagstrom. Attitudes Towards Adult Education by Social Class. Report on Project #1017. Berkeley: Survey Research Center, University of California Press, December 1963.

- Lott, J. A., and B. E. Lott. "Group Cohesiveness as Interpersonal Attraction: A Review of Relationships with Antecedent and Consequent Variables." Psychological Bulletin. 1965, Vol. 64, No. 4, pp. 259-309.
- McGuire, W. J. "The Nature of Attitudes and Attitude Change." in G. Lindzey, and E. Aronson, eds. The Handbook of Social Psychology. Reading, Massachusetts: Addison-Wesley, 1968, Vol. 3, pp. 136-314.
- McKeachie, W. J. "Instructional Psychology." Annual Review of Psychology. 1974, Vol. 25, pp. 161-194.
- Maslow, A. H. Motivation and Personality. New York: Harper and Row, 1954.
- Murphy, P. D. "Conceptual Systems and Teaching Styles." Unpublished Ph.D. dissertation, University of Minnesota, 1969.
- Murray, H. A. Explorations in Personality. New York: Oxford University Press, 1938.
- Nie, N. H., C. H. Hall, J. G. Jenkins, K. Steinbrenner, and D. H. Brent. Statistical Package for the Social Science. 2d. ed. New York: McGraw-Hill, 1975.
- O. E. C. D. Recurrent Education: A Strategy for Lifelong Learning. Paris: Organization for Economic Cooperation and Development, 1973.
- O. E. C. D. Recurrent Education: Trends and Issues. Paris: Organization for Economic Cooperation and Development, 1975.
- Ontario. The Learning Society. Report of the Commission on Post-Secondary Education in Ontario. Toronto: Ministry of Government Services, 1972.
- Osgood, C. E., and P. H. Tannenbaum. "The Principle of Congruity in the Prediction of Attitude Change." in M. Fishbein, ed. Readings in Attitude Theory and Measurement. New York: Wiley and Sons, 1967, pp. 301-311.
- Oswald, R. C. "Conceptual Level as a Determinant of Teacher Behaviour and Attitudes in a Non-Structured Type of Learning Activity." Unpublished Ed.D. dissertation, Syracuse University, 1971.
- Pervin, L. A. "Performance and Satisfaction as a Function of Individual Environment Fit." Psychological Bulletin. 1960, Vol. 57, pp. 403-415.

- Peters, J. M., and R. Boshier. "Adult Needs, Interests and Motives." in C. Klevens, ed. Materials and Methods in Continuing Education. New York: Klevens Publications, 1976, pp. 197-212.
- Procaccini, J. "A Study of the Relationship of the Congruence of Ideological Systems of Teachers and Principles and Teacher Ratings of Principals' Effectiveness." Unpublished Ph.D. dissertation, The Catholic University of America, 1971.
- Proshansky, H. M., W. H. Ittelson, and L. G. Rivlin, eds. Environmental Psychology: Man and His Physical Setting. New York: Holt, Rinehart and Winston, 1967.
- Quastel, L. "Need For Training and Job Satisfaction in Community Mental Health Workers." Unpublished M.A. thesis, University of British Columbia, 1979.
- Randhawa, B. S., and L. L. W. Fu. "Assessment and Effect of Some Classroom Environment Variables." Review of Educational Research. 1973, Vol. 43, No. 3, pp. 303-321.
- Rogers, C. R. "A Theory of Therapy, Personality, and Interpersonal Relationships, as Developed in the Client-Centered Framework," in S. Koch, ed. Psychology: A Study of Science. New York: McGraw-Hill, 1959, pp. 184-256.
- Rogers-Warren, A., and S. F. Warren, eds. Ecological Perspectives in Behaviour Analysis. Baltimore: University Park Press, 1977.
- Russell, Sir Lionel (Chairman). Adult Education: A Plan for Development. Great Britain: Secretary of State for Education and Science, 1973.
- Santmire, T. E. "An Investigation of the Role of Student Conceptual Level and Teacher Radiated Environment in Achievement." Unpublished Ed.D. dissertation, University of Rochester, 1970.
- Schmid, J. "Factor Analysis of Prospective Teacher's Differences." Journal of Experimental Education. 1950, Vol. 18, pp. 287-320.
- Secord, P. F., and C. F. Backman. "An Interpersonal Approach to Personality." in Maher, ed. Progress in Experimental Personality Research. 1970, Vol. 2, pp. 91-125.
- Simmonds, E. J. (Chairman). Lifelong Education. Wellington: New Zealand National Commission for UNESCO, October, 1972.
- Simons, H. W., N. N. Berkowitz, and R. J. Moyer. "Similarity Credibility, and Attitude Change: A Review and a Theory." Psychological Bulletin. 1979, Vol. 73, No. 1, pp. 1-16.

- Singh, A. H. "Interests, Values and Personality Traits of Students Specializing in Different Fields of Study in University." Unpublished M. A. thesis, University of London, England, 1965.
- Snelbecker, G. E. Learning Theory, Instructional Theory, and Psychoeducational Design. New York: McGraw-Hill, 1974.
- Solomon, D., and H. L. Miller. Exploration in Teaching Styles. Report of Preliminary Investigations and Development of Categories. Chicago: Center for the Study of Liberal Education for Adults, 1961.
- Solomon, D., William E. Bezdek, and Larry Rosenberg. Teaching Styles and Learning. Chicago: Center for the Study of Liberal Education for Adults, 1963.
- Stern, G. G. People in Context. New York: Wiley, 1970.
- Stock, A. K. "Teaching Styles and Learning-Research Strategies and Models, with Special Reference to the Part-Time Teacher of Adults." Studies in Adult Education. October 1974, Vol. 6, No. 2, pp. 115-124.
- Toffler, A. Future Shock. New York: Bantam, 1971.
- Learning for Tomorrow. The Role of the Future in Education. New York: Random House, 1972.
- Travers, Robert M. W. Man's Information System. Scranton, Pennsylvania: Chandler, 1970.
- UNESCO. World Conference on Adult Education, Montreal, August 21-31, 1960: Final Report. Paris: UNESCO, 1960.
- Third World Conference on Adult Education, Tokyo, 1972: Final Report. Paris: UNESCO, 1972.
- Recommendation on the Development of Adult Education. Adopted by the General Conference of UNESCO at its 19th Session, Nairobi, October 26 - November 30, 1976. Paris: UNESCO, 1976.
- Verner, C. "A Conceptual Scheme for the Identification and Classification of Processes." Adult Education Theory and Method. Washington: Adult Education Association, February, 1959.
- Verner, C., and A. Booth. Adult Education. New York: Centre for Applied Research In Education, 1964.
- Verner, C., and G. S. Davis, Jr. "Completions and Drop-Outs: A Review of Research." Adult Education. Spring 1964, Vol. 14, pp. 157-176.

Verner, C., and C. V. Davison. Psychological Factors in Adult Learning and Instruction. Florida: Research Information Processing Center, Department of Adult Education, Florida State University, 1971.

Verner, C., and J. S. Newberry, Jr. "The Nature of Adult Participation." Adult Education. Summer 1958, Vol. 7, pp. 208-222.

Waller, R. D. A Design For Democracy. New York: Association Press, 1956.

Whaley, R. W. "Pressures from Exponential Increases in Knowledge." in G. Kerry Smith, ed. Current Issues in Higher Education 1965. Washington, D. C.: Association of Higher Education, 1965, pp. 107-111.

Blishen Codes of Atypical Job Titles

Respondents Description of Jobs	Blishen Occupation Category	Index #
Operations Manager	Services to Business Management	67.28
"Assistant" printing shop, Handle Accounting, various other duties, some computer work	Clerical occupations	42.98
Payroll clerk - B.C. Long- shoremen	Clerical occupations	42.98
Secretary/Translator: English/French	Clerical occupations	42.98
Soils Technician & Draftsman	Draftsman	57.82
Swimming Instructor - part-time (previous job coded)	not coded	
Dental Assistant	Nursing Assistants or Aides	32.14
Temporary Secretary	Clerical occupations	42.98
Full-time Manager & Owner of Log Scaling Business with 12 employees	Owners & Managers Forestry & Logging	44.00
Senior Clerk, Accounting	Clerical occupations	42.98
Manager of Tow Operation in charge of 7 staff - Inbound & Outbound traffic	Office Manager	60.42
Technician for B.C. Tel Microwave Department	Radio & Television Equip- ment Operators	51.51
Secretary to 2 men: Manager & Ass. Manager, Credit Union	Stenographer	51.96
President of Holding Company	Owners & Managers, Miscel- laneous Manufacturing Com- panies	58.29

Labourer - involved in Welding, Sawing, Drilling and general assembly of aluminium doors for commercial institutions	Metalworking occupations	30.60
Bank Teller	Bookkeeper & Cashier	49.55
Community Worker	Social Welfare Worker	55.62
Scaler - sort parcels in Warehouse	Warehousemen & Freight Handlers	29.18
Yardmen/Trainmen with C.N.R.	Labourers Railway Transport	28.03
Manager & Supervision of 8 floor office block, responsible for heat, maintenance, cleaning & hiring of cleaning staff, leasing, etc.	Owners & Managers Miscellaneous Services	45.48
In training as Cytotechnologists with Cancer control agency of B.C.	Medical & Dental Technician	48.74
Clinical Laboratory Technician	Medical & Dental Technician	48.74

Research Instrument (Instructor's version)

Scores on negative LSI and LISI items, marked with an asterix (*), are reversed when calculating total index score, that is a 9 score on item one is recorded as a 1.

What is your instructional style? We all teach in a different way so there are no right or wrong answers!

Please examine each statement and circle the number that most nearly represents your AGREEMENT or DISAGREEMENT with the statement.

	Strongly Disagree	1	2	3	4	Neutral	5	6	7	8	9	Strongly Agree
1. I create a formal classroom atmosphere		1	2	3	4	5	6	7	8	9	*	
2. I let participants set their own objectives		1	2	3	4	5	6	7	8	9		
3. I discourage adult students from using my first name		1	2	3	4	5	6	7	8	9	*	
4. I am the absolute authority on course content		1	2	3	4	5	6	7	8	9	*	
5. I set definite standards of behaviour in my class		1	2	3	4	5	6	7	8	9	*	
6. I discourage questions because they can lead the class off the topic		1	2	3	4	5	6	7	8	9	*	
7. I conduct classes around the needs and skills of each participant		1	2	3	4	5	6	7	8	9		
8. I make it clear I am the authority in the class		1	2	3	4	5	6	7	8	9	*	
9. I discourage participants from chatting during class time		1	2	3	4	5	6	7	8	9	*	
10. I develop an informal classroom atmosphere		1	2	3	4	5	6	7	8	9		
11. I let students set course goals		1	2	3	4	5	6	7	8	9		
12. I preserve 'Law and Order' in the classroom		1	2	3	4	5	6	7	8	9	*	
13. I am the only subject expert in the classroom		1	2	3	4	5	6	7	8	9	*	
14. I let the participants decide what they want to learn		1	2	3	4	5	6	7	8	9		
15. I encourage general class discussions		1	2	3	4	5	6	7	8	9		
16. I use participants as 'content experts' whenever possible		1	2	3	4	5	6	7	8	9		

REMEMBER THAT YOUR RESPONSES ARE
CONFIDENTIAL

For Office
use only.

1. What is your sex ☐ Male ☐ Female
2. What is your age? ☐ Years
3. Number of children ☐

(Write none if you do not
have any children).

4. What is the highest education qualification
you hold? (Check one box only).

- ☐ No formal education.
☐ Completed elementary school only.
☐ Completed Grade 10 or 11 (but not 12).
☐ Grade 12 or foreign equivalent.
☐ Post secondary or trade qualification only.
(e.g. Vocational School Diploma, Journeymans
qualification, Business Diploma, etc.)
☐ Part of University degree or diploma.
☐ University degree or diploma only.
☐ University degree or diploma and some other
tertiary qualification (e.g. B.A. and
Journeymans certificate).

5. List here all the formal educational qualifi-
cations you have. (Please write them out in
full as initials are hard to identify).

1. _____
2. _____
3. _____
4. _____

6. Check below the total number of years of formal education you have completed.

HIGH SCHOOL OR EQUIVALENT

☐ 8 years

☐ 9 years

☐ 10 years

☐ 11 years

☐ 12 years

☐ 13 years

POST SECONDARY SCHOOLING OR TRAINING

Full Time Part Time

☐ ☐ 1 year

☐ ☐ 2 years

☐ ☐ 3 years

☐ ☐ 4 years

☐ ☐ 5 years or more.

Write here the name of the institution(s) where you received post secondary education.

7. If you are working for a salary or wages exactly what kind of work do you do? (Please be specific as to your work and status in the organization, e.g. Foreman supervising 13 men in a trucking firm: Sales assistant in a small hardware store: Executive Secretary to the President of a manufacturing company with 500 employees).

If you are retired, involved in household duties or are not working please write N.A. (not applicable) and go on to the next question.

8. If you are NOT currently working for salary or wages please note here the kind of work you did prior to your marriage, retirement, etc. (Please be very specific as to your work and status in the organization.)

9. If your spouse is working for salary or wage what kind of work does he/she do. (Please be very specific).

10. In the box below write the letter which represents your gross (personal) income category. Do not count your spouses' income or income earner by other members of your family.

A	Nil		A
B	\$5000 or under		B
C	\$5001 - 7000		C
D	\$7001 - 9000		D
E	\$9001 - 11,000		E
F	\$11,001 - 13,000		F
G	\$13,001 - 15,000		G
H	\$15,001 - 17,000		H
I	\$17,001 - 19,000		I
J	\$19,001 - 21,000		J
K	\$21,001 - 23,000		K
L	\$23,001 - 25,000		L
M	Over 25,000		M

Category

11. In the box below write the letter which represents your gross family income (i.e. your income and your spouses income).

If you are the only person in your family working for wages or salary your answers to this question will be the same as your answer to the previous question.

A	Nil		A
B	\$5000 or under		B
C	\$5001 - 7000		C
D	\$7001 - 9000		D
E	\$9001 - 11,000		E
F	\$11,001 - 13,000		F
G	\$13,001 - 15,000		G
H	\$15,001 - 17,000		H
I	\$17,001 - 19,000		I
J	\$19,001 - 21,000		J
K	\$21,001 - 23,000		K
L	\$23,001 - 25,000		L
M	Over 25,000		M

Category

REMEMBER YOUR NAME IS NOT REQUIRED
ON THIS QUESTIONNAIRE

12. Do you have a teaching certificate?

If 'YES', please give details _____

13. Have you ever taken courses on teaching adults?

If 'YES', please five details:

[illegible]

Research Instrument (Learner's version)

Scores on negative LSI and LISI items, marked with an asteris (*), are reversed when calculating total index score, that is a 9 score on item one is recorded as a 1.

DO NOT WRITE YOUR NAME ON THIS SHEET

Category No.

This section will attempt to identify your "ideal" instructor, and the type of learning 'environment' you prefer.

There are no right or wrong answers!

Please examine each statement and circle the number that most nearly represents your AGREEMENT or DISAGREEMENT with the statement.

A GOOD INSTRUCTOR:	Strongly								Strongly
	Disagree								Agree
1. Creates a formal classroom atmosphere	1	2	3	4	5	6	7	8	9*
2. Lets participants set their own objectives	1	2	3	4	5	6	7	8	9
3. Discourages adult students from using his/her first name	1	2	3	4	5	6	7	8	9*
4. Is the absolute authority on course content	1	2	3	4	5	6	7	8	9*
5. Sets definite standards of behaviour in his/her class	1	2	3	4	5	6	7	8	9*
6. Discourages questions because they can lead the class off the topic	1	2	3	4	5	6	7	8	9*
7. Conducts classes around the needs and skills of each participant	1	2	3	4	5	6	7	8	9
8. Makes it clear he is the authority in the class	1	2	3	4	5	6	7	8	9*
9. Discourages participants from chatting during class time	1	2	3	4	5	6	7	8	9*
10. Develops an informal classroom atmosphere	1	2	3	4	5	6	7	8	9
11. Lets students set course goals	1	2	3	4	5	6	7	8	9
12. Preserves 'Law and Order' in the classroom	1	2	3	4	5	6	7	8	9*
13. Is the only subject expert in the class-room	1	2	3	4	5	6	7	8	9*
14. Lets the participants decide what they want to learn	1	2	3	4	5	6	7	8	9
15. Encourages general class discussions	1	2	3	4	5	6	7	8	9
16. Uses participants as 'content experts' whenever possible	1	2	3	4	5	6	7	8	9

1.2.9.

1.	The instructor is seldom well prepared for class	1	2	3	4	5	6	7	8	9	*
2.	The instructor is enthusiastic	1	2	3	4	5	6	7	8	9	
3.	I am rather disappointed with this course	1	2	3	4	5	6	7	8	9	*
4.	This is one of the poorest courses I have taken	1	2	3	4	5	6	7	8	9	*
5.	I am not learning anything new	1	2	3	4	5	6	7	8	9	*
6.	This course is helping me personally	1	2	3	4	5	6	7	8	9	
7.	The instructor created a bad learning environment	1	2	3	4	5	6	7	8	9	*
8.	The instructor cares about my progress in the course	1	2	3	4	5	6	7	8	9	
9.	Class time is often wasted	1	2	3	4	5	6	7	8	9	*
10.	I think the instructor enjoys teaching	1	2	3	4	5	6	7	8	9	
11.	The instructor has established good rapport with everybody in the class	1	2	3	4	5	6	7	8	9	
12.	I think the instructor has tried to teach me what I wanted to learn	1	2	3	4	5	6	7	8	9	
13.	The instructor is helpful	1	2	3	4	5	6	7	8	9	
14.	I have no respect for this instructor	1	2	3	4	5	6	7	8	9	*
15.	The instructor never has time to help individuals	1	2	3	4	5	6	7	8	9	*
16.	I think we all have a chance to contribute to the selection of the objectives for this course	1	2	3	4	5	6	7	8	9	
17.	The instructor encourages people to express their ideas	1	2	3	4	5	6	7	8	9	
18.	I regret taking this course	1	2	3	4	5	6	7	8	9	*
19.	Over all I would rate this course as very good	1	2	3	4	5	6	7	8	9	

REMEMBER THAT YOUR RESPONSES ARE
CONFIDENTIAL

For Office
use only.

1. What is your sex ☐ Male ☐ Female
2. What is your age? ☐ Years
3. Number of children ☐
(Write none if you do not
have any children).

4. What is the highest education qualification
you hold? (Check one box only).

- ☐ No formal education.
- ☐ Completed elementary school only.
- ☐ Completed Grade 10 or 11 (but not 12).
- ☐ Grade 12 or foreign equivalent.
- ☐ Post secondary or trade qualification only.
(e.g. Vocational School Diploma, Journeymans
qualification, Business Diploma, etc.)
- ☐ Part of University degree or diploma.
- ☐ University degree or diploma only.
- ☐ University degree or diploma and some other
tertiary qualification (e.g. B.A. and
Journeymans certificate).

5. List here all the formal educational qualifi-
cations you have. (Please write them out in
full as initials are hard to identify).

1. _____
2. _____
3. _____
4. _____

6. Check below the total number of years of formal education you have completed.

HIGH SCHOOL OR EQUIVALENT

☐ 8 years

☐ 9 years

☐ 10 years

☐ 11 years

☐ 12 years

☐ 13 years

POST SECONDARY SCHOOLING OR TRAINING

Full Time Part Time

☐ ☐ 1 year

☐ ☐ 2 years

☐ ☐ 3 years

☐ ☐ 4 years

☐ ☐ 5 years or more.

Write here the name of the institution(s) where you received post secondary education.

7. If you are working for a salary or wages exactly what kind of work do you do? (Please be specific as to your work and status in the organization, e.g. Foreman supervising 13 men in a trucking firm: Sales assistant in a small hardware store: Executive Secretary to the President of a manufacturing company with 500 employees).

If you are retired, involved in household duties or are not working please write N.A. (not applicable) and go on to the next question.

8. If you are NOT currently working for salary or wages please note here the kind of work you did prior to your marriage, retirement, etc. (Please be very specific as to your work and status in the organization.)
-
-
-

9. If your spouse is working for salary or wage what kind of work does he/she do. (Please be very specific).

10. In the box below write the letter which represents your gross (personal) income category. Do not count your spouses' income or income earner by other members of your family.

A	Nil	A
B	\$5000 or under	B
C	\$5001 - 7000	C
D	\$7001 - 9000	D
E	\$9001 - 11,000	E
F	\$11,001 - 13,000	F
G	\$13,001 - 15,000	G
H	\$15,001 - 17,000	H
I	\$17,001 - 19,000	I
J	\$19,001 - 21,000	J
K	\$21,001 - 23,000	K
L	\$23,001 - 25,000	L
M	Over 25,000	M

Category

11. In the box below write the letter which represents your gross family income (i.e. your income and your spouses income).

If you are the only person in your family working for wages or salary your answers to this question will be the same as your answer to the previous question.

A	Nil	A
B	\$5000 or under	B
C	\$5001 - 7000	C
D	\$7001 - 9000	D
E	\$9001 - 11,000	E
F	\$11,001 - 13,000	F
G	\$13,001 - 15,000	G
H	\$15,001 - 17,000	H
I	\$17,001 - 19,000	I
J	\$19,001 - 21,000	J
K	\$21,001 - 23,000	K
L	\$23,001 - 25,000	L
M	over 25,000	M

Category