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THE EFFECT OF BI-MODALITY ON THE FUNCTIONAL
ADAPTABILITY OF OLDER ADULTS

by
Simon Davis

A Thesis
submitted to the Faculty of Graduate Studies
through the Faculty of
Human Kinetics in Partial Fulfillment of
the requirements for the Degree of
Master of Human Kinetics at
The University of Windsor

Windsor, Ontario, Canada
1983

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level of bi-modality and PADL total score ($p < .05$).

The results of this study indicate that the concept of bi-modality facilitates greater functional adaptability, as measured by PADL, in older adults, and should therefore be promoted in order to maintain independent living.

DEDICATION

I would like to dedicate this thesis to my parents and family for their continued love and support, to all my friends, and to Martha Jill for making me smile.

ACKNOWLEDGEMENTS

I would like to express my appreciation to the members of my committee, whose careful reading of both the proposal and the final draft assisted in changing the ellipticity.

To Dr. James Duthie, I proffer special thanks for his sagacity and counsel, and the inspiration to obviate the barriers to eclecticism.

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CHAPTER I

PURPOSE OF THE STUDY

Increasing age demands conventionally that individuals make adjustments in physical and mental capabilities, in order to compensate for predictable decline. The purpose of this study is to investigate how older adults maintain independent living when confronted with such age related decrements, by examining the relationship between the degree of behavioural adaptability or flexibility and the level of independence maintained by each subject.

Individuals display behavioural adaptability by demonstrating the willingness to accept their own limitations, thereby facilitating the engagement of various forms of external assistance (community services, technological aids). The individual who avails him/herself of various supportive measures and agencies, increases an ability to compensate for various deficiencies and thus maintain independent, although modified, living.

From a theoretical perspective, an attempt will be made to discover the effect of 'bi-modality' on an individual's adaptability/flexibility, and thus independence. This research will demonstrate whether bi-modal individuals display significantly higher levels of functional adaptability, and are therefore better able to maintain a higher level of independent living than low bi-modals (comprised of both high internals and high externals).

II. JUSTIFICATION OF THE STUDY

From a demographic perspective, Canadian society is experiencing structural changes. The percentage of adults over the age of sixty-five years is expected to increase in both absolute number and percentage of the total population, for the period 1980 until the end of the century (Statistics Canada, 1976), (see Appendix A). Changes in the age structure will inevitably produce repercussions on community services such as health. Demand on such services will increase, posing severe financial problems, (Science Council of Canada, 1976), (see Appendix B).

According to the Science Council of Canada (1976), Canada has chosen to devote the majority of 'medical resources' to the treatment of acute illnesses, neglecting as a result the feasibility of developing a well structured, preventative care programme. The overwhelming emphasis has been on institutional settings for the older adult, with health care programmes designed to remove the individual from the community rather than assist with supportive in-home services.

Rapidly escalating costs in the provision of health services for the older adult has, as an expedience, necessitated a reappraisal of the current policy and attitudes towards the increasing number of older adults. Solutions are complicated by the existence of widespread 'ageism' (Palmore, 1982) which includes negative stereotypes and attitudes, both of paramount importance in the quality of life of older adults in our society.

In order to escape from the stigma and myths attached to aging, we must attempt to understand the true meaning of aging and the practical implications. Selye (1956) has emphasized that true aging is determined by the total amount of wear and tear to which the body has been exposed,

a factor which lacks homogeneity. The alternative would be to encourage a de-emphasis of chronological age and concentrate on more realistic measures, based on a recognition of wide individual differences and requirements.

On a practical level, recent research has been conducted to assess the impact and effect of institutionalization, and to develop alternatives. A study by Kraus et al (1976) examined the process of institutionalization in Kingston, Ontario, discovering that in 50 percent of the cases physicians were the first to suggest entry into an institution, and were the major decision maker in 25 percent of the cases reviewed (193). Over 20 percent of the institutional applicants were independently assessed by the researchers and found to be suitable for continued independent living, provided they received a reasonable amount of community assistance. Conflict also existed over the reasons given for seeking admission, applicants and family members frequently citing 'excessive burden' as a major cause, whilst the physicians attributed need for admittance to increasing frailty and general old age.

A similar study carried out in Rhode Island (Scitovsky & Nelda, 1975) revealed that despite a majority of patients displaying a relatively low need for institutional care, very few were recommended for a return to the community. Aside from the financial cost of institutionalization, prolonged exposure to such an environment can produce the behavioural manifestation of learned helplessness (Seligman, 1975), where individuals learn to accept that they lack control, and as a result display apathy, depression and indifference.

In an attempt to examine alternatives to institutionalization, the Triage Health Care System (Hodgson & Quinn, 1980) was formed in the

Connecticut area, designed to examine the feasibility, cost and effectiveness of a client/consumer centered model for an alternative health care delivery system. The service was based upon the specific needs of, and the integration with, the individual's personal and community support system. In assessing the impact of the programme (1976 to 1979), client moral was found to be important in stabilizing the health status of the older adult, and in maintaining maximum levels of independent functioning. The study revealed significantly positive shifts in attitude, with the initial assessment figure of Triage clients perceiving their health status as good increasing from 41 to 50 percent.

Accepting the inadequacies of institutions necessitates implementing additional research in order to assess and examine whether the needs and requirements of the elderly population are actually being met. Detailed information is required to explain the differences between older adults who remain functionally independent and those who are relocated in institutions, or who are assessed as being 'at-risk' of institutionalization.

Acknowledging that chronological age alone cannot explain the wide differences in older adult's ability to live independently, this thesis will examine three groups of older adults in order to discover the relationship between their level of bi-modality (individual believes that control results from a combination of personal factors, such as ability and effort, and environmental factors, such as fate or chance), and functional adaptability (as measured by adaptability test battery). If, as hypothesised, bi-modality produces the highest degree of functional adaptability, the practical implications involve promoting bi-modality in order to maintain functional independence and to reduce the level of institutionalization and the concomitant limitations (financial,

social and psychological).

III. THE PROBLEM

Statement of the Problem: To discover whether bi-modal older adults display significantly more functional adaptability than low bi-modals (high internals and high externals). Sub-problems involved examining whether high internality and high externality decreased functional adaptability, and whether functional adaptability and bi-modality increase functional independence in the older adult.

IV. DEFINITION OF TERMS

all
Locus of Control: A concept used to explain whether an individual believes the relationship between behaviour and reinforcement to be *dependent* contingent upon his/her own *(internal)* ability or to external factors such as fate or chance.

and
Internal Locus of Control (Internality): A locus of control which attributes the relationship between behaviour and reinforcement to be *dependent* contingent upon the individual's own ability.

External Locus of Control (Externality): A locus of control which attributes the relationship between behaviour to be contingent upon environmental factors.

also
Bi-Modal Locus of Control (Bi-modality): A dual-dimensional locus of

control whereby individuals attribute the relationship between behaviour and reinforcement to be ^{dependent} contingent upon an interaction between ability (internality) and environment (externality), as measured by the Trent Attribution Profile (TAP).

Functional Capacity: An individual's ability to perform basic activities essential to daily living, such as preparing food and telephoning.

Functional Independence: Exists when an individual's functional capacity is sufficient to facilitate living at home, maintaining a standard which is acceptable to physicians and referral agencies.

Functional Adaptability: Is the ^{ability} propensity of the individual to modify his/her own behaviour, as a response to age related decrements in ability, in order to maintain functional capacity and functional independence.

Older Adult: Any individual over the chronological age of sixty-five years.

Independent Older Adult: Older adult who is living alone and coping with the demands.

High-Risk Older Adult: Older adult in danger of becoming institutionalized, because they can no longer cope with their deficiencies, in the estimation of others.

Institutionalized Older Adult: Older adults living in a home organized by the community or the private sector.

Performance Activities of Daily Living (PADL): An instrument designed to measure the ability of subjects to perform daily tasks, being used in this study to assess adaptability.

V. HYPOTHESES

H1 = Older adults with a bi-modal locus of control will display significantly more functional adaptability than low bi-modals.

H2 = Bi-modals will obtain significantly higher scores on PADL than non-bi-modals.

H3 = Bi-modals will have the highest representation in the independent group of older adults.

H4 = Independent subjects will achieve significantly higher scores on PADL than the institutionalized group of subjects.

H5 = Internals and externals will have the highest representation in the high-risk group of older adults.

H6 = Chronological age does not determine performance on PADL.

VI. DELIMITATIONS *- making a list of the subjects*

1. The test group for this study was comprised of forty-five older adults from the Windsor area. Subjects were evenly represented from

the three groups: independent, high-risk and institutionalized, which were roughly matched according to age.

I. Response Reliability of Subjects

As all the subjects in this study were over sixty-five years of age, response reliability was taken into account through:

a) Instructional clarity: clear, precise instructions were given to the subjects in order to prevent confusion and misinterpretation.

b) Visual clarity: instructions presented visually were always clear and bold.

c) Length of tests: as motivation was an important factor, all the tests employed were short in duration.

2. Test Scoring

a) As some of the tests involved self-report, considerable care was taken to relax the subjects and to convince them that there were no right or wrong answers/replies.

b) tests requiring subjective assessment on the part of the experimenter (e.g. PADL), were independently assessed in order to increase reliability. Standardized instructions also facilitated measurement and assessment.

CHAPTER II

REVIEW OF LITERATURE

The concept of internal-external locus of control (I-E), has been developed from social learning theory (Rotter 1954), as part of our attempt to explain human behaviour in relatively complex social situations. Social learning theory is based upon the interaction between the individual and a meaningful environment, with the emphasis being upon learned behaviour. However this behaviour, as emphasized by Phares (1966), has both general and specific determinants, is purposeful and goal directed, and involves a striving to attain or avoid certain aspects of the environment. * Actual behaviour is determined by the importance of goals or reinforcement, and more importantly the expectancy that these goals will occur.

Social learning theory suggests that an inability to control or predict in situations prevents individuals from generalizing expectancies or experiences from the past. An expectancy is the probability that a particular reinforcement will occur as a function of a specific behaviour in a specific situation (Rotter 1954). Thus increasing experience does not necessarily result in individuals expecting an increase in their ability to cope with the situation or the environment. * In an aversive situation the individual may have a low expectancy, which may produce increased anxiety and therefore a lower level of performance.

* Learning theory describes how choices are made by individuals from the array of potential behaviours open to them. Phares (1976)

suggests that in unfamiliar situations generalized expectancies will be more important in determining their expectancy than will specific expectancies based on prior experience in that situation.

Conversely, in familiar situations specific expectancies will be the primary determinants.

Within social learning theory, locus of control is concerned with the individual's generalized beliefs about whether they exert influence or control over the occurrence of rewards, or whether various outside forces exert that control. Thus learning and performance in specific situations is different when the subjects believe that they control the contingency between behaviour and reinforcement, and when they perceive that they lack control. As Rotter (1966) states:

"When a reinforcement is perceived by the subject as following some action of his own, but not being entirely contingent upon his action, then in our culture it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him we have labeled this belief as external control. If the person perceives that the event is contingent upon his own behaviour, or his own relatively permanent characteristics, we have termed this a belief in internal control."

Lefcourt (1967) however, has stated that the generalized

expectancy of internal versus external control is not the result of simply acknowledging success and failure, but more importantly the causal interpretation. Weiner (1979) stresses that two separate causal dimensions exist; locus of control and locus of causality. The causality dimension is concerned with the source of causality, (whether in you or the environment), whereas the control dimension is concerned with the extent of the individual's mastery over the causal factors. Weiner (1981) suggests that these two dimensions are frequently orthogonal, such as in the case of physical handicap where there exists the perception of internal causality and external control.

Whereas Rotter (1966) believes that the perception of internal control is based upon a perfect contingency between behaviour and outcome, Wong (1982) and Weiner (1981) emphasize that such perception depends on more than a simple behaviour-outcome contingency. Wong cites the example of the authoritarian society where the question of internal control is confounded by the idea of survival, which is entirely dependent upon complying with externally imposed rules. Wong also maintains that external causality does not imply absence of internal control. Locus of causality would appear to involve the assignment of causality to various loci, and locus of control would involve the assignment of responsibility.

Locus of control is conceptually different to locus of causality, regardless of the behavioural instrumentality. Wong (1982) believes that the perception of internal control occurs when one assumes full responsibility for outcome, even though externally caused. Conversely, perceived external control occurs when the responsibility for outcome

rests elsewhere, regardless of whether it is the direct consequence of one's own behaviour. Bi-modality, the central tenet of this thesis, occurs with the perception of dual-control, responsibility for an outcome being shared by individuals and external sources.

Older adults, faced with age-related decrements in ability (real and irreversible), may attribute the cause to uncontrollable internal factors, although control of outcome (continued independent living), can be maintained providing the individual is willing to seek assistance.

From a conceptual perspective, any purposeful examination of the locus of control construct requires the distinction to be made between the controllability of cause and controllability of outcome. Weiner (1979) perceives control as a causal dimension along with other dimensions such as causality. Once an individual has attributed an outcome to a certain cause, the dimensional properties of the cause must be identified (controllable or uncontrollable). The control dimension is concerned with the perceived controllability/uncontrollability of the cause, rather than the outcome. Perceived controllability of cause according to Wong (1982), is not necessarily positively related to perceived controllability of outcome. For example ability, considered an uncontrollable, dispositional causal factor, enhances control over outcomes, whereas carelessness, considered controllable, decreases the likelihood of gaining control. Thus causal ascriptions, whether perceived as controllable or not, would appear to have no direct bearing on perceived controllability of outcome, the individual possessing the potential to be instrumental.

Previous research, already referenced, suggests that the concept of locus of control is concerned with perceived controllability of

outcome rather than cause of outcome. From the perspective of older adults we must distinguish between the concept of control and coping. Rothbaum, Weisz and Snyder (1982) distinguish between the idea of primary control (direct behavioural control to change world to fit needs) and secondary control (change oneself to fit world). Wong (1982) is unhappy with the use of the word control, and equates secondary control with the concept of 'coping'. Control implies efficacy (imagined or real), the individual having the perception and actuality of having the capability to effect changes in one's environment. Coping suggests the attempt to achieve efficacy (successful or not).

From the older adult perspective, coping strategies may provide a wide range of responses which assist the individual to adapt to demanding situations. The older adult, faced with age related decrements in ability, may facilitate continued control of a dual nature, through behavioural flexibility and coping mechanisms. Lazarus, Averill, and Opton (1974) emphasize that only certain types of coping are conducive to the perception and actuality of control. Instrumental coping, according to Miller (1979), is the most conducive to control as it produces changes in the situation to produce desirable outcomes, constituting a form of behavioural control.

Thus perception of control involves more than causal attribution and coping strategies. Perceived control is primarily concerned with the assessment of efficacy or competence over a situation, and locus of control is concerned with the source of attribution and hence the attribution of responsibility. Older adults, high in internality, would not only perceive but desire more personal control than externals, believing themselves more capable. The practical repercussions of

this perceived and desired efficacy involve the individual ignoring offers of assistance, (community help, health facilities, social help), which they believe are unnecessary and constitute a threat to their control and independence. Bi-modal individuals, perceiving responsibility for outcomes to be shared, will display coping strategies and dual control, recognising their limitation. In practical terms these individuals will avail themselves of technological devices, such as hearing aids, and financial assistance, in order to maintain a high level of perceived and actual control. This is adaptive behaviour in these circumstances.

Only in recent years has the study of locus of control been applied to elderly populations (Reid, Haas and Hawkins, 1977). Results are similar to those reported for other age groups, with internal locus of control beliefs (perceived) being associated with a higher level of psychological adjustment. Zeigler and Reid (1979), researching with elderly subjects, found that both community residents and hospitalized patients revealed desired control being negatively correlated with depression, and positively correlated with health, knowledge of services and use of services. Desired control was also significantly correlated with four or five indices of psychological adjustment.

Both Nehrke (1977) and Palmore (1977) conducted research with older adults and the locus of control construct, their results revealing internal control being associated with higher life satisfaction and positive self-concept. Positive self-concept was found to be positively related to life satisfaction. Nehrke (1980) related self-concept, life satisfaction and locus of control with Erikson's (1963) concept of ego integrity versus despair. According to Erikson, a resolution of this

crisis results in the individual accepting and valuing themselves, their lives and their situation, being less afraid of death, less defensive and/or anxious, and more able to cope with change. Erikson found such individuals to be characterized by a positive self-concept, high life satisfaction and an internal locus of control. A failure to resolve this crisis produces low self-concept, a low level of life satisfaction, manifested under an external locus of control.

Nehrke (1980) produced research data which revealed significant age differences on measures of life satisfaction, self-concept and locus of control, producing a marked effect on the resolution of ego integrity versus despair. Older institutionalized individuals demonstrated higher levels of positive self-concept, life satisfaction, internality, and were more advanced in the resolution of the crisis. Nehrke would argue against the stereotypic idea of institutions being dull, blunting institutions which facilitate withdrawal and depression, instead he suggests that they may well have a positive impact on the resolution of the ego integrity versus despair crisis.

*Erikson (1973) and Nehrke (1980) both stress the positive role that institutions can play with regards to self-concept, life satisfaction and locus of control. An underlying assumption of their work is that internality should be encouraged in order to facilitate and promote psychological well-being and adjustment with old age. Internals are considered superior over externals in their efforts at coping with and gaining a measure of control over the environment, their own behaviour and their lives (Rotter 1966). The result of being more attentive to the environment (cues) enables the internal individual to acquire more information and enables a more efficient retention and utilization of

such information (Phares 1976). Internals have been found more likely to resist outside influence (Odell 1959, Lefcourt 1969, Crown & Liverant 1963), being able to withstand pressure and persuasion, and display greater cognitive activity (Lefcourt 1971). If these behavioural 'advantages' are applied in a social context, internals would display significantly more independence and more reliance on their own ability and judgements (less easily influenced).

Promoting internality often assumes the bi-polarity of the locus construct (Rotter 1966, O'Brien 1981), whereas recent researchers advocate viewing this concept as multi-dimensional (Wong 1982). Despite the apparent advantages of internality, ignoring the external component may have serious negative consequences (Gilbert and Mangelsdorff 1979). These two researchers examined the effect of the perception of personal control on reactions to stressful events. Their results revealed high internals reporting higher stress than low internals or moderate internals (as measured by Levenson's I.P.C. Scale, 1972), when they were confronted with similarly difficult life events. High internals, in comparison with non-client controls, reported lower self-esteem, higher stress and less control over recent events.

Wong (1982) suggests that the extremes of the locus of control construct reflect the illusion of control in high internals, and pessimistic controllees in the case of externals. The introduction of realism, as opposed to idealism, facilitates a degree of compatibility between realistic externals and a belief in personal efficacy. In order to avoid the extremes of the locus of control, and to incorporate the dual dimensionality of this concept, Wong advocates the development and application of a bi-modal category. This bi-modal

category displays greater adaptive potential and greater realism than either high internality or high externality.

Controllers (high internals) are by definition frequently seen as aggressive and domineering, experiencing great stress and anxiety in subservient roles (Glass 1977), which advocates of internality suggest will frustrate their need/desire for control. Older adults, high in internality, may view the offer of external assistance, vital in order to maintain their independence as social, physiological and psychological attributes begin to degenerate, as a threat to their autonomy. Failure to avail themselves of external assistance may accelerate the degenerative process, reducing functional independence to a level which requires institutionalization.

Research carried out by Glass (1977) has revealed a relationship between a high controlling disposition and coronary heart disease. Glass found that 'controllers' exhibited Type A behaviour, defined by Friedman and Rosenam (1974) as:

"an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less time."

Such a behaviour pattern, according to Glass, represents a strong tendency to cope with stress by means of behavioural control. The result of extended exposure to uncontrollability will produce a perception of non-contingency between responses and outcomes, resulting in cessation of efforts to control. Glass and Singer (1972) suggest the reason for this behavioural change is that 'A's' are assumed to experience lack of control over stressors as more threatening than

individuals with 'B' type characteristics, who in general are less ambitious and achievement orientated, displaying a more relaxed disposition. This perception of uncontrollability may transfer to subsequent task situations where it appears as learned helplessness (Seligman 1975), or the 'give up' syndrome (Engel 1967).

Learned helplessness is produced when response outcome has become independent of subject response. Seligman's learned helplessness model (1975) is based upon the assumption that individuals are usually aware of the contingency between their responses and the outcomes of those actions. Exposure to experiences of sustained non-contingency between action and outcome will eventually produce apathetic or highly depressed behaviour. Frequently the individual perceives response outcome as not under personal control, regardless of the reality of that perception (Solomon 1982). The constellation of response deficits following a learned helplessness experience has been proposed as similar to clinical depression. Rehm (1977), utilizing his self-concept model, suggests that with learned helplessness there is a "lessening of cues for self-reinforcement, manifested as passivity". Research conducted by Roth et al (1980) and Roszensky et al (1977), suggests that with increasing levels of depression there are marked decreases in self-reward and increases in self-punishment. Learned helplessness is therefore an extreme form of behaviour, representing a low level of self-concept and motivation, which in older adults virtually guarantees the need for institutionalization.

Conceptually learned helplessness can be seen as the behavioural outcome of either extreme externality or internality. Whereas an external attributes responsibility for many outcomes to external

factors (Rotter 1966), learned helplessness is the result of continuously experiencing the non-contingency between action and outcome (Seligman 1975). In the case of internals, learned helplessness may indicate the breakdown suggested by Glass (1977). Traumatic and highly stressful life events, which for this thesis constitute the aging process, may find the internal individual unable and unwilling to adapt. Exposure to events beyond the internal's control, constitutes a new experience, the behavioural response representing renewed attempts to assert autonomy and independent control, however impractical. Faced with an array of problems, which have no frame of reference and cannot be remedied on an individual basis, the highly internal person will likely reveal many of the behavioural characteristics suggested by Glass.

We can conclude that internals frequently display type 'A' behaviour, which results in an elevated threshold of responsivity for cues with a high degree of uncontrollability (Glass 1977). This elevated threshold, which results in enhanced efforts at control, produces a greater vulnerability to helplessness after extended experience with uncontrollable stressors. Conversely, bi-modals appear to display greater flexibility and problem solving potential in a stressful situation (Wong 1982). Such flexibility/adaptability would engage external assistance in order to overcome obstacles/problems, or the inevitable losses and deficiencies of increasing age, without feeling their autonomy or independence was being threatened.

Workman and Brehm (1975) incorporated the limitations of high internality into their theory of psychological reactance. The theory claims that the degree of reactance (motivational arousal used to restore freedoms if threatened or eliminated, Brehm 1966), is highly

dependent upon the expectations of freedom (higher with internals), and implications for other freedoms (more relevant to internals). Brehm and Workman conclude that "emphasis on personal causation may be dangerous when individuals are faced with truly uncontrollable situations". Working on the research of Miller and Ross (1975), who stated that individuals are motivated to view themselves positively and avoid self-attributions which reflect negatively on their self-esteem, we can assume that individuals who attribute failure to exert effective control to their own shortcomings, will react more intensely than those making external attributions (Workman and Brehm 1975). Wong (1982) claims that internals will display greater inflexibility, reduced behavioural adaptation potential, and greater behavioural rigidity when faced with uncontrollable situations. Such entrenchment, when faced with difficult problems, is the result of their belief and expectancy that they should be able to control the situation.

Uncontrollable situations, and stress in general, are to some extent inevitable throughout all life stages. Selye (1976) suggests that no one can live without experiencing some degree of stress all the time, stress in Selye's opinion constituting a basic component of life itself, believing that "an organism without stress is lifeless". However, stress will have a varying effect on different individuals (Selye 1976, Lazarus 1976), depending on personal characteristics. Lazarus suggests that an individual's perception of a threat, in a potentially anxiety-arousing situation, is mediated by the belief in their own ability to exert control over potential threats, feelings of stress being proportional to the expectancy of control. Researchers such as Selye and Lazarus suggest that high internals, with a high

expectancy of control, will be less vulnerable to stress providing they maintain a high level of expectancy and actual control. Internal individuals, when exposed to uncontrollable events, will find this situation highly stressful as they have less relevant experience to relate to, and will resort to inflexible behaviour in an attempt to regain or maintain control (Glass 1977).

Coleman (1973), in studying the effects of life stress on individuals, illustrates the resultant maladaptive and inflexible behaviour. The main manifestations recorded by Coleman include; hyper-irritability, disturbed interpersonal relationships, and ego-defence orientated reactions which included emotional insulation and detachment. These components of maladaptive behaviour, produced in all of us as a result of stress, may have a significant effect on an older adult's ability to compensate for age induced decrements in performance, by drastically reducing any tendency to seek or accept assistance of all types.

The behavioural limitations of high internality are accentuated with older adults, who should be displaying greater behavioural flexibility in order to compensate for age related deficiencies. Along these lines, Statts (1972) is in agreement with earlier research by Strickland and Shaffer (1971), which revealed a highly significant correlation between age and internal choices. Statts, working with three age groups (5-15, 16-25, 46-60), reported that the increase in internality up to the age of sixty was significant. Interpretation of these results may suggest that people become more effective in securing reinforcement and have cognizance of this effectiveness, or that this reflects an increase in behavioural inflexibility, external ascription being perceived as an indication of lack of capability and thus a threat to their autonomy

and freedom.

Internals manifesting behavioural inflexibility, were examined in a study by Lipp et al (1968). The responses of disabled (internal and external) subjects and normal subjects (internal and external) to tachistoscopically presented studies of disabled and non-disabled people, indicated that the externally disabled subjects were less denying of disability than an internally controlled subject. Internal subjects can be assumed to perceive disability as a greater threat than externals.

The limitations and inherent weaknesses of a unidimensional locus of control, with emphasis on internality, predicates a dual-dimensional approach. Wong (1982) stresses that high internals frequently have an illusion of control, are susceptible to stress if exposed to prolonged uncontrollability, and are behaviourally inflexible. Bi-modals are adaptive, agreeable to collective decision making and shared control/responsibility. A bi-modal individual will perceive partial dependence as a supplement (necessity) rather than a substitute for personal control. The concept of bi-modality will therefore have a direct application to older adults who require some degree of external assistance in order to maintain their independence. A high degree of autonomy is thus preserved while motivation, expectation and positive self-concept are maintained intact. Such components of personality are essential if individuals are to avoid learned helplessness, apathy and depression.

Therapy and assistance for the older adult will be greatly facilitated by the introduction and application of the bi-modal perspective. The concept of internality has been fostered in therapeutic circles, for reasons outlined previously, based on assumptions which bi-modality

may prove erroneous. Researchers, such as Mitchell et al (1975), have demonstrated that the environment must be altered depending on the individual's locus of control. External retirees were found to be more satisfied with a structured, directive environment (institutions), internals being more satisfied with environments which were participative and provided opportunities for self-directed activities. However, an environment facilitating a bi-modal form of behaviour may prove to be the most beneficial and relevant to older adults. As a dual dimensional concept, bi-modality, if encouraged within the environment of older adults, can assist internal individuals by making them more flexible and willing to share responsibility, and externals by encouraging them to make decisions and accept responsibility; when their own efforts are

Accepting the importance attached to the locus of control concept this control concept in others. As Phares (1976) and others have indicated, an individual's behaviour is far from static and in fact changes as a person encounters new experiences which lead to changes in the individual's expectancies, or in the value attached to particular reinforcements. This research intends to demonstrate that bi-modality is a more desirable disposition/or attribute in older adults than internality, and should be recognized and encouraged in order to maintain functional adaptability, and thus independence in older adults.

CHAPTER III

INSTRUMENTS AND METHODOLOGY

A. INSTRUMENTS

I. SELECTION AND CONSTRUCTION

Test instruments have been selected in order to obtain information from a randomly selected group of older adults. Test data will consist of: (1) locus of control information and (2) adaptability information.

II. LOCUS OF CONTROL INSTRUMENT

Bi-Modality - Trent Attribution Profile (TAP)

The TAP (Wong 1982), is a measure of locus of control based on Weiner's (1971) model of causal attribution. Weiner's model identifies two prominent causal dimensions of attribution: locus of control (internal versus external) and stability (stable versus unstable). Major causal factors in the achievement domain are considered to be; ability, effort, task difficulty and luck, classified according to the two dimensional scheme (ability is internal and stable, effort is internal and unstable). Stable and unstable refer to the degree of consistency inherent in the causal factors, ability being innate and constant, whereas effort fluctuates considerably, depending upon individual characteristics such as motivation and ambition.

Weiner's (1971) model also incorporates separate measures for success

and failure in order to allow for hedonic bias (Ross, 1977), the phenomenon that success is attributed to internal causes and failure to external causes. Attribution bias of self versus other perspectives on the attribution of causality is also included in the model. This facility recognizes that attributions for one's own behaviour tend to be more situational (external), whilst attributions for other people tend to be more dispositional (internal), (Jones & Nisbett, 1972).

Thus TAP is based on two dimensions (locus of control/stability), with separate measures for success and failure. A profile is developed about an individual's causal beliefs under four conditions: self-success; self-failure; other-success; and other-failure. Each of these four conditions is related to three different life domains: academic; social; and financial. Wong (1978) generated the profile items by using the following criteria: (1) both success and failure should be related to common life situation; (2) these situations should be achievement-related but not limited to academic situations; (3) other-orientation should be presented in general terms, e.g., 'others', 'a person', or 'an individual'. The profile consists of twelve items representing twelve different conditions (three common life situations, two different outcomes in success and failure and two different orientations in self and others). (see Appendix C)

The TAP was selected for this study for the following reasons:

- 1) Provides a measure of bi-modality, internality and externality for each older adult. Unlike Rotter's locus of control scale (1954) which yields only a global score of internality, the TAP provides scores on internality, externality and facilitates the calculation of a bi-modal score. The profile is based on the assumption that the locus of

control concept is dual-dimensional, not bi-polar as suggested by Rotter's I-E scale (1954). Extensive information is provided on attributional elements, attribution dimensions, plus the magnitude of hedonic and self-other biases.

ii) The test-retest reliability and the validity of the TAP have been found to be high (Wong et al, 1978). In all four attribution elements the reliability coefficients of total rating scores in TAP were of the same magnitude as those associated with the I-E scale (Rotter, 1966). Dependent t-tests failed to reveal any significant statistical differences between test and retest in all attribution ratings in the TAP. Significant correlations were found between the I-E scale and the internal attribution elements of the profile, offering strong evidence for the validity of this test instrument.

iii) Logistically the TAP avoids the forced choice format, and is therefore easier for older adults to interpret. The subject only has to respond to twelve items, and the scale is therefore suitable for use by older adults with reduced attention spans.

III. ADAPTABILITY MEASURES

In order to obtain a measure of adaptability two instruments were used: 1) Performance Activities of Daily Living (PADL) and Social Interest Scale (SIS).

Performance Activities of Daily Living

The PADL test used in this study is a modified version of the test devised by Kuriansky et al (1976). This test is an objective and direct method of measuring functional ability in older adults, and thus

has the advantage of minimizing the interference, on the measurement of functional capacity, of subjective aspects of an individual's condition. Subjects are required to demonstrate their ability to perform basic tasks which are considered essential for functional independence, (e.g. telephoning and preparing food). (see Appendix D)

The PADL was selected for the following reasons:

- i) Provides an objective measure of functional ability, avoiding the inherent weaknesses of self-report. Kuriansky et al (1976) found a low level of accordance between self-report and actual level of performance, 59% of subjects evaluating their physical performance as either higher (28%) or lower (31%) than the test recorded.
- ii) Displays high concurrent validity between test results and informant reports, psychiatric diagnosis and physical condition. Predictive validity has been higher than patient or informant reports (as tested against disposition or mortality after three months of hospitalization), (Kuriansky et al, 1976).
- iii) High level of 'ecological validity' (Rabbitt, 1982), which in the case of older adults is particularly important. Rabbitt claims that older adults must be familiar with the requirements of the test in order to ensure reliable results. Rabbitt concludes that ecological validity is frequently more important than primary cognitive deficits in the explanation of performance differences between age groups.

Social Interest Scale (SIS)

The Social Interest Scale (SIS) is a self-report measure designed to assess an individual's interest in the welfare of others, (Crandall, 1975). The instrument requires the subject to make a number of choices concerning which of two values he/she considers to be more important.

Each pair of values includes one closely related to social qualities and one less relevant. (see Appendix E)

Social interest was the key construct in the psychology of Alfred Adler. As Adler (1956) noted, social interest is a social feeling, and more than a feeling: 'an evaluative attitude towards life', which is expressed through empathic understanding. Adler's concept has been given various interpretations (Bickard & Ford, 1976), although in the broadest sense the index involves an affirmative attitude towards all humanity, (Adler, 1959, p.46). In Adler's most concise definition, social interest means: 'feeling with the whole,....under the aspect of eternity, striving for a form of community which must be thought of as everlasting, as it could be thought of if mankind had reached the goal of perfection', (Ansbacher, 1973, pp. 34-35).

Ansbacher's (1968) preference for defining social interest as: 'an interest in the interests of mankind', (1968, p.148), provides the basis for Crandall's approach. Whilst considerable debate exists over the interpretation of Adler's concept, (Bickard & Ford, 1976), a basic tenet of individual psychology is that social interest is a prerequisite for psychological adjustment and well-being, (Crandall & Putnam, 1975). Measures of social interest have shown positive correlations with various indicators of well-being, and two studies, (Crandall, 1975 & Crandall & Putnam, 1975), have indicated that the relations are genuine and not to be accounted for merely in terms of social desirability response sets.

Crandall and Kytonen (1978) found that a significant relationship between social interest and psychological well-being does not occur until after adolescence, with significant correlations occurring earlier in women. Crandall suggests that future research should seek further

evidence of the importance of social interest for well-being in older men. From the perspective of older adults, social interest would appear to be an important factor in their adaptability potential. Accepting Bickard and Ford's (1976) conclusion that 'man as socius', (refers to man's capability of relating to and interacting with others), is the most appropriate explication of Adler's concept, we can justify the inclusion of the social interest scale in the measure of adaptability. From a theoretical perspective, we could hypothesize that bi-modal individuals will reveal higher correlations with the SIS than high internals or high externals, (low bi-modals). Social interaction, indicative of bi-modals and high social interest, would intuitively be low in high internals, who are preoccupied with the self, and high externals, who believe social involvement is futile due to 'powerful others'.

The SIS was selected for the following reason:

The scale provides a measure of the individual's interest in other people, indicative therefore of their desire/potential for social interaction, and thus an important component of their adaptability level. Dolen and Bearison (1982), in extensive research with older adults and the concept of social interaction and cognition, concluded that the positive and significant relationships found between levels of social interaction and social cognition suggest that levels of social interaction were a more reliable predictor of cognitive decline than age. They reported that age by itself did not predict levels of cognitive functioning in the elderly.

Adler (1956) consistently associates social interest with courage and independence, believing that desirable education should promote growth of social interest, at the same time developing a greater

independence from the opinion of other people. In Adler's model the mentally healthy person cooperates for a better future for all and thus gains the independence and courage to fight present evils. The element of cooperation, whilst benefiting society as a whole, also increases the independence of the individual. Intuitively, one can expect Wong's (1982) bi-modals to register high social interest scores, reflecting their adaptability and willingness to cooperate, whilst maintaining a high level of independence.

B. METHODOLOGY

I. RESEARCH DESIGN

The research design for this study involved an examination of the correlational relationship between the independent and dependent variables. In this design, older adults from three functional groups (independent, high-risk and institutionalized), were randomly assigned to the test procedures.

Delineation of the Variables:

Independent variable: Level of bi-modality (level 3, 2, or 1).

Dependent variable: Level of adaptability (PADL score & SIS score).

II. SUBJECTS

Forty-eight older adults were selected for this study, sixteen in each group (independent, high-risk and institutionalized). Subjects had to fulfil certain criteria before being eligible for random

selection: (1) sixty-five years of age and higher; (2) ambulatory; (3) basic senses intact; (4) free from psychotropic (personality changing) drugs, and (5) volunteered to participate.

All subjects were from the Windsor, Ontario region:

o Community-Independent - from the list of volunteers, fifteen subjects were randomly selected for participation.

o High-Risk - various referral agencies in the Windsor area were contacted with a view to obtaining subjects for the study. Referral agencies deal with individuals who are on waiting lists for institutions, and/or who satisfy the criteria for institutionalization, having been assessed by a physician and referral agency. From the names supplied, fourteen were randomly selected for the study.

o Institutionalized - individuals were selected from lodges and rest homes in the Windsor area. Supervisors, within the various institutions, indicated the subjects who satisfied the selection criteria, sixteen being randomly selected.

All subjects were provided with a written and verbal outline of the study, and all completed an informed consent sheet.

III. COLLECTION OF THE DATA AND TESTING PROCEDURE

Subjects selected for this study were randomly assigned numbers and test days. The testing was carried out over a twelve day period, during which time the subjects were assessed on the following measures, among measures:

1) Bi-Modality - Trent Attribution Profile (TAP)

The test was administered on an individual basis, with each of the

twelve items printed on large (6" by 4') white card, in bold black type (see Appendix C). Each subject was asked to circle a number (range I to 5) for each of the four statements per item (twelve). The respondents were asked to rate the relative importance of each of the four explanations for each of the twelve items, using any number only once per item. The scoring scale and an example for scoring were permanently visible to the subjects, who completed each item card in turn.

Scoring: Using the TAP data sheet (see Appendix G), subject scores were transferred directly from the completed item cards. From the range of detailed profiles obtained, individuals were termed bi-modal provided they obtained the necessary score in internality and externality. The necessary score for bi-modality in both dimensions was set at half a standard deviation from the mean. The standard deviation from the mean was chosen to calculate the limits of bi-modality, as the mean is regarded as an appropriate measure of central location for interval and ratio variables. In practical situations the arithmetic mean is usually preferred to either the median or mode, being rigorously defined, easily calculated and readily amenable to algebraic treatment, providing a better estimate of the corresponding population parameter. (Ferguson, 1976, pp. 54-55).

The mean score for internality was 92.4, with the half a standard deviation range of plus or minus 3.7. Internality scores had to fall within 88.7 to 96.1 to satisfy necessary condition A. The mean score for externality was 64.2, with half a standard deviation range of plus or minus 4.0. Externality scores had to fall within 60.1 to 68.1 to satisfy necessary condition B.

So far, norms for older adult performances on the TAP are unavailable.

Based on the assumption that the population sample is normally distributed, the standard deviation was used to calculate bi-modality. A sufficient score for a bi-modal classification demanded necessary scores in both condition A (internality) and condition B (externality). Bi-modals were given a score of 3 (see Appendix H), individuals with only one of the necessary scores were given a score of 2 (see Appendix I), and subjects without either of the necessary scores were given a score of 1 (see Appendix J).

ii) Performance Activities of Daily Living (PADL)

The seven activities included in the PADL battery were systematically laid out in a large room, each activity being clearly labelled, with large instruction cards adjacent to each piece of equipment being used. The subjects completed the testing on an individual basis, emphasis being being placed on relaxing the subject and stressing that the time taken to complete the activities was unimportant.

Standardized verbal instructions were presented before testing commenced, outlining the requirements. Each subject was asked to work through the activities in numerical sequence (1 through 7), only beginning when the instruction 'please start' was given. As each activity station was sectioned into three parts (based on the degree of difficulty), subjects were asked to work through the cards in numerical order (1, 2, 3), the card numbers being clearly visible on the top left-hand corner.

Scoring: The activities were grouped into five main scoring sections: home maintenance, telephoning, basic intelligence (financial, time-telling and the correct interpretation of precisely worded instructions), transfer of liquids and food preparation. Each activity station had three levels of difficulty, and each level was sectioned into components, (see Appendix D).

Scores for each component were: two (for a perfect performance); one (for a performance requiring assistance); or zero (failure to perform correctly). Data was collected by an independent observer, using a Datamyte I000 (data collector for behavioural research). A time component for each activity station was included, based on the elapsed time from the 'please start' instruction until the third card had been completed. The range of scores for each activity station was: (i) 0-38; (ii) 0-30; (iii) 0-36; (iv) 40-42; and (v) 0-38, producing a total score range of 0 to 184 for each subject.

iii) Social Interest Scale (SIS)

Each subject was required to complete the SIS (see Appendix E), selecting the preferred quality from each pairing. The test was administered on an individual basis, with each subject indicating their choice by writing the appropriate number (1 or 2) on the line provided. Scoring: From the 24 pairings, nine 'fillers' were removed from the scoring procedure. The remaining 15 pairings were scored by allocating one point for each 'correct' choice made. The total points range for the SIS runs from zero (minimum) to fifteen (maximum).

All the data collected from the experimental testing sessions was transferred onto an IBM 3031 computer for statistical analysis.

iv) Internality and Externality.

The TAP provided raw scores on both internality and externality, facilitating the formation of two groups for each dimension.

Using the range of half a standard deviation, plus or minus from the mean, internality and externality scores were divided into two groups.

The mean score for internality was 92.4, with the half a standard deviation range of plus or minus 3.7. Internality scores falling within

the range of 88.7 to 96.1 constituted level 1 internals, those falling outside this range constituting level 2 internals. Level 2 internals were further sub-divided into scores above the standard deviation range (2A), and scores below the standard deviation range (2B).

The mean score for externality was 64.2, with half a standard deviation range of plus or minus 4.0. Externality scores falling within the range of 60.1 to 68.1 constituted level 1 externals, those falling outside this range constituting level 2 externals. Level 2 externals were further sub-divided into scores above the standard deviation range (2A), and scores below the standard deviation range (2B).

IV. ANALYSIS OF THE DATA.

The analysis of the data involved the following statistical procedure: To determine the significance of the differences between bi-modality score (3 = bi-modal, 2 = one necessary condition, 1 = external or internal), and the performance on the tests.

The statistical analyses were performed through using the Statistical Analysis System (SAS) programme, and the Bio-Medical Computer Programme (BMDP), on the University of Windsor IBM 3031 computer.


Analysis of Differences

The SAS sub-programme ANOVA was run in order to discover levels of significance for differences between groups, and within groups, for

Scheffe, H. The analysis of variance. New York: John Wiley & Sons, Inc, 1959.

all combinations of variables. To examine the linearity between level of bi-modality and performance, a planned comparison for linear trend was performed using an analysis of variance. A further measure of linearity involved the calculation of frequency tables, using the BMDP programme for measures of association.

To determine the significance of the difference between the mean responses and scores between two groups, paired groups were compared on all variables by the use of t-tests. The SAS sub-programme T-TEST was used in order to compare paired samples on the dependent variables. The SAS sub-programme GLM (General Linear Model), was used to analyze any covariance. Analysis of covariance combines some of the features of regression and analysis of variance. Typically, a continuous variable (the covariate), is introduced into the model of an analysis of variance experiment.

The SAS sub-programme PROC FREQ was included in the statistical programme to produce frequency tables showing the distribution of variable values. The resultant chi-square statistic indicated whether the variables under examination are dependent or independent of each other. Setting the alpha level at 0.05, the null hypothesis that the two variables under examination are independent, can be rejected if the resultant chi-square value is less than 0.05. 

Steel, R. G. W., & Torrie, J. H. Principles and procedures of statistics. New York: McGraw-Hill Book Company, 1950.

Anderson, T. W. An introduction to multivariate statistical analysis. New York: John Wiley & Sons, Inc, 1952.

Additional t-tests were conducted through the SAS sub-programme PROC t-TEST to examine the differences between level of internality and performance on PADL, and level of externality and performance on PADL.

Measures of Correlation

In order to examine the correlation between all the variables under review, the SAS sub-programme PROC CORR was used to produce Pearson Moment Correlation figures for all combinations of test variables.

Goodman, L., & Kruskal, W. Measures of association for cross-classifications. Journal of American Statistical Association, 1954, 69, 732-764.

Ferguson, G. A. Statistical analysis in psychology and education (4th ed.). New York: McGraw-Hill Book Company, 1960.

CHAPTER IV

RESULTS

Results in this chapter are organized according to the significance (theoretical and practical) of the relationships and variables under consideration, and the type of statistical analysis selected for their interpretation.

I. Functional Group and PADL Total Score.

In an attempt to establish whether a significant relationship existed between functional group (X, Y or Z) membership and PADL total, an analysis of variance was performed. Using Duncan's Multiple Range Test, total score differences between functional groups X and Z (independent living and institutionalized older adults) proved significant, the independent group obtaining higher scores.

Whilst significant differences do not exist between functional groups and bi-modality level, the differences recorded between functional groups X and Z suggests that independent group subjects (X) are the most competent in the performance of daily activities. Intuitively obvious, this significance provides a cross validation of the PADL test battery. (Table 1)

Analysis of covariance was performed in order to examine the effect of chronological age on any relationship obtained. Age was found to covary significantly (0.004) with PADL total score (Table 1). The significance of age as a covariate suggests that a chronological component might be introduced to the concept of adaptability as measured by PADL.

TABLE 1

Performance Activities of Daily Living (PADL)
and Functional Group: Mean Differences
with Age Covaried

<u>Functional Group</u>	<u>Mean PADL Score</u>	<u>S Numbers</u>
X	164.5*	15
Y	157.3	14
Z	149.3	16

*(diff $x/2 \rho < .05$)

Covariance Between Age and PADL Score

<u>F Value</u>	<u>Probability > F</u>	<u>n</u>
12.98	0.004*	39

($\rho < .01$)

However to check this, contingency tables were constructed to determine whether PADL total score increased or decreased linearly with age.

Chronological age in the sample was sorted into four intervals ($65 < \text{age} < 73 = \text{age 1}$; $73 < \text{age} < 81 = \text{age 2}$; $81 < \text{age} < 89 = \text{age 4}$; and $89 < \text{age} < 107 = \text{age 4}$), to facilitate the construction of contingency tables. A significant relationship was only found between PADL total score and chronological age in the range 73 to 81. The chi-square test produced a significance probability of 0.002, indicating that performance on PADL does not increase or decrease linearly with age in our sample. With age level 2 registering the highest scores on PADL, it is concluded that PADL performance is not dependent on chronological age.

II. Levels of Bi-Modality and Variables.

To discover whether any levels of bi-modality were related to performance on PADL, t-tests were performed.

Mean differences were found between the three bi-modality levels and PADL score, the differences failing to achieve significance (Table 2). A marginally significant difference was found between levels 3 (bi-modals) and 1 (internal or external) on the PADL total score, at the $p < 0.05$ level, (from the total PADL score the significance obtained was 0.056). Bi-modal individuals (level 3) achieve higher performance on the PADL instrument, indicating that adaptability, as measured by task performance, is higher in bi-modal individuals (Table 3). Further t-tests were then carried out to discover whether differences existed between levels of bi-modality and performance on individual PADL items. Significant differences ($p < .05$) were found between the performance of subjects at bi-modality levels 1 and 3 on PADL items one (.03) and PADL item three (.04), (Table 4). That bi-modals (level

TABLE 2

Bi-Modality Level and Average Performance
Activity of Daily Living Score (PADL)

<u>Bi-Modality</u>	<u>Mean PADL Score</u>
Level 3 (Fulfilling condition A & B)	164.0
Level 2 (Fulfilling either condition A or B)	157.0
Level 1 (Fulfilling neither conditions)	151.0

TABLE 3

Bi-Modality Levels 1 and 3: Differences on Performance
Activities of Daily Living (PADL)

Bi-Modality Level	n	\bar{X}	Min	Max	T	Prob > T
1	14	151.8	111	174	-2.01	0.056*
3	9	164.8	151	184		

*($p < .05$)

TABLE 4

Bi-Modality Levels 1 and 3: Differences on Performance
Activities of Daily Living (PADL) Items One and Three

<u>Bi-Modality Level</u>	<u>PADL Item One</u>					
	<u>n</u>	<u>\bar{X}</u>	<u>Max</u>	<u>Min</u>	<u>T</u>	<u>Prob > T </u>
1	14	32.7	38	23	-2.32	0.032*
3	9	36.2	38	32		

* ($p < .05$)

<u>Bi-Modality Level</u>	<u>PADL Item Three</u>					
	<u>n</u>	<u>\bar{X}</u>	<u>Max</u>	<u>Min</u>	<u>T</u>	<u>Prob > T </u>
1	14	26.4	36	16	-2.22	0.038*
3	9	31.2	36	24		

* ($p < .05$)

3), were superior to level 1 bi-modals, who were either internals or externals, on two PADL items (1 and 3), is of considerable theoretical and practical importance.

III. Bi-Modality and the Dependent Variables.

An examination of the main effect used the SAS sub-programme ANOVA to analyze the variance between bi-modality scores (3, 2, or 1) and the adaptability variables. The adaptability variables included the Performance Activities of Daily Living (PADL), and the Social Interest Scale (SIS). An analysis of variance failed to show any significant differences between the three levels of bi-modality. However when t-tests were conducted between bi-modality levels 3 and 1, a significant difference was obtained (see section II).

To discover whether linearity existed between level of bi-modality and PADL performance, a planned comparison for linear trend was performed, using analysis of variance. A resultant F value (3.15) proved significant at the $p=.10$ level (exceeding the critical value of 2.84), revealing linearity between bi-modality level and performance on PADL. Additional evidence for linearity was provided by the chi square for the regression coefficient ($p=.04$), greater than the alpha level of (.05), and thus we fail to reject the null hypothesis that there is linear trend.

IV. Level of Bi-Modality and Trent Attribution Profile (TAP) Components.

In order to establish whether significant differences existed between level of bi-modality and the sixteen components of the TAP (see Appendix L), t-tests were executed with significance levels set at the .05 level.

Significant differences were found between bi-modality levels 2 and 3 and the 'self-failure internal' component of the TAP (see Table 5).

TABLE 5

Bi-Modality Levels: Differences on Trent
Attribution Profile (TAP) Components

TAP Component Self-Failure Internal (n = 31)

<u>Bi-Modality Level</u>	<u>n</u>	<u>\bar{X}</u>	<u>Min</u>	<u>Max</u>	<u>T</u>	<u>Prob > T </u>
2	22	21.5	17	27	2.39	0.029*
3	9	19.0	14	22		

*($p < .05$)

TAP Component Other Success External (n = 31)

<u>Bi-Modality Level</u>	<u>n</u>	<u>\bar{X}</u>	<u>Min</u>	<u>Max</u>	<u>T</u>	<u>Prob > T </u>
2	22	15.4	12.0	21.0	2.55	0.028*
3	9	13.1	10.0	17.0		

*($p < .05$)

TAP Component Other Success Stable (n = 36).

<u>Bi-Modality Level</u>	<u>n</u>	<u>\bar{X}</u>	<u>Min</u>	<u>Max</u>	<u>T</u>	<u>Prob > T </u>
1	14	17.8	15.0	19.0	3.11	0.003*
2	22	19.8	15.0	24.0		

*($p < .05$)

Level 2 bi-modals attribute more importance to internal factors (ability and effort) when examining self-failure ($p = .03$) than level 3 bi-modals.

Significant differences were found between bi-modal levels 2 and 3 and the 'other success external' component of the TAP ($p = .03$), (Table 5). The more bi-modal (level 3) and adaptable the individual, the higher the recognition that other's success is a result of a combination of individual ability and external factors.

Bi-modal levels 1 and 2 revealed highly significant differences ($p < .01$) on the TAP component of 'other's success stable', (Table 5). The higher adaptability of level 2 bi-modals recognizes that the success achieved by others is dependent upon stable factors (ability and task difficulty) to a greater extent than level 1 bi-modals.

V. Social Interest Scale (SIS).

Analysis of variance failed to reveal any significant differences between SIS and the variables: functional group, age, PADL total and level of bi-modality.

VI. Correlations between Variables.

The correlations between all combinations of variables were analyzed using the SAS sub-programme PROC CORR.

Coefficients produced between PADL total score and individual test items, for the three levels of bi-modality, support the reliability of the PADL test battery (high correlations), except for test item five. The low correlations of .14 and .42, for bi-modality levels 3 and 2 respectively, suggest that the item is less reliable for predicting the the overall performance on PADL for bi-modality levels 2 and 3, (Table 6).

Coefficients produced when correlating SIS with variables: functional

TABLE 6
Correlations Between Performance Activities of Daily
Living (PADL) Total and Items by
Level of Bi-Modality

Bi-Modality Level	1	2	<u>PADL Items</u>		
			3	4	5
PADL Total					
2	.84	.61	.85	.81	.42
1	.85	.83	.82	.71	.71
3	.57	.59	.59	.85	.14

group, sex, age and PADL total were low, suggesting a large amount of error variance in SIS scores. Introducing the individual PADL items into the correlation produced low negative coefficients in all cases for bi-modality levels 1 and 2, and in two cases for level 3, which was the only group to produce a positive (low) correlation between PADL total and SIS.

Scores on internality and externality were correlated with: PADL total, SIS, age and functional group. The coefficients produced were low (+.1 to -.1), again indicating the low degree of systematic variance in the SIS measure.

VII. Level of Internality/Externality and PADL.

To discover whether individual scores on internality and externality were related to performance on PADL, t-tests were conducted. No significant differences were found between internality levels 1 and 2, 1 and 2A, or 1 and 2B, and PADL performance at the .05 level.

A significant difference ($p = .04$) was found between level 1 externals on PADL item 3, level 1 obtaining the higher PADL scores. Significance was also obtained between externality levels 1 and 2B on PADL total score ($p = .04$), and PADL item 3 ($p = .03$), level 1 externals obtaining the higher PADL scores. No significance was found between externality levels 1 and 2A.

CHAPTER V

SUMMARY AND CONCLUSIONS

I. SUMMARY

This study was an investigation into the relationship between bi-modality and adaptability in a group of older adults. Specifically the study was designed to discover whether older adults classified as bi-modal (level 3) performed significantly better on measures of adaptability than individuals with a lower bi-modality rating (levels 1 and 2). The older adults were from three distinct groups: community independent, high risk of institutionalization and institutionalized.

The Trent Attribution Profile (TAP) was the instrument used to assess each subject's level of bi-modality (1, 2 or 3). Adaptability was measured by performance on two instruments: Performance Activities of Daily Living (PADL, a test battery measuring performance on five daily tasks), and the Social Interest Scale (SIS, instrument used to measure individual levels of social concern/interest).

II. CONCLUSIONS

The results obtained from the statistical analysis, whilst not providing conclusive support for the main hypothesis, suggest that bi-modal individuals are more adaptable, especially on the PADL battery. The significant differences obtained between bi-modality levels 1 and 3 on the PADL total score provides strong support for the concept of bi-modality, especially with older adults. Item three on the PADL test battery, in providing the highest level of systematic variance,

necessitated a degree of content analysis in order to explain the differences obtained.

The third item on the test makes task demands on the individual which differ from the other four activities; the component parts of item three require a higher level of application and awareness of task requirements. Bi-modals are prepared for the demands of this test item through acknowledging their limitations, the manifestations of which can be identified in the following ways:

- i. Recognising their own limitations reduces the expectancy or need for success. The reduced pressure to achieve facilitates a more relaxed and flexible approach to the problem. Thus bi-modals are displaying characteristics of type 'B' behaviour (Glass 1977).
- ii. The bi-modal individual is prepared to question their own accuracy and will therefore be more disposed to check a response. On the PADL tasks, bi-modal individuals were identified by their careful reading of the instructions (repeated in several instances) for the signatures, checking the money totals, and carefully examining the clock faces.
- iii. Bi-modals are not afraid to seek assistance in order to achieve a desired outcome, and thus were prepared to ask questions during the testing session if unsure.
- iv. Adaptable individuals (level 3) are prepared to take sufficient time to ensure that they understand the task requirements, re-reading the instructions if necessary or seeking external assistance. The time component, introduced as a covariate, failed to reveal significance, indicative that bi-modals do not achieve success on PADL by simply being quicker. A clear understanding of task demand (involving experimenter assistance) and careful task response are only achieved if time is not

the main concern. Level 1 bi-modals (internals and externals), are either indifferent to their level of performance (externals), or they are unwilling to admit to their limitations and therefore rush their response.

Level 2 bi-modals can be considered intermediary (only satisfy one of the necessary criteria), and therefore obscure the significance between bi-modality (all levels) and performance on PADL.

{ The linearity obtained between the three levels of bi-modality and performance on PADL provides additional support for the validity of bi-modality. } Level 2 bi-modals (satisfy 1 necessary condition) locate linearly between level 3 bi-modals (satisfy both necessary conditions) and level 1 bi-modals (satisfy neither conditions), indicating that higher PADL scores are obtained with increasing bi-modality. X

Conversely, individuals with a bi-modality rating of 1 were less willing to question their own response, avoiding experimenter assistance. Mistakes were frequently made as a result of being reluctant to re-examine task demand and task response, and failing to ask the experimenter for clarification. These findings agree with Odell (1959) and Lefcourt (1969), who found internals more likely to resist outside influences.

{ The mean differences which exist between levels of bi-modality and performance on PADL, whilst not significant, suggest a higher level of adaptability in level 3 bi-modals. Statistical significance may be obtained by using a larger sample size or increasing the sensitivity of the PADL instrument.

Significant differences obtained between bi-modality level and the TAP components also indicate the bi-modal individual's greater adaptability. The response for 'other people' suggests that bi-modals (level-

3) acknowledge that the success obtained by others is due to internal as well as external factors. Adaptability, as a total concept, recognizes the ability of others without feeling that our own capability is being threatened or compared. The less adaptable a person the higher the probability of the perception that success achieved by others is due to factors which do not reflect on the individual (luck, fate etcetera).

• Level 3 bi-modals scored significantly lower on the attribution of 'self-failure internal' than level 2 bi-modals, indicative of their higher adaptability. • The bi-modal individual recognizes that 'self-failure' can be the result of a combination of internal and external factors. • Level 3 bi-modals, as the most adaptable, will accept that self-failings can be the result of external factors such as fate, chance or powerful others. • Perceiving external factors as being instrumental in 'self-failure' engenders a flexible approach to attribution, and illustrates the idea of a realism component (Wong 1982) in bi-modals. • Freedom or control is not threatened through this recognition, whereas less adaptable individuals attach significantly more attribution to the internal aspects of self-failure in order to maintain the illusion of control.

The significant differences obtained between level 2 and level 1 bi-modals on 'other-success stable' supports the contention that more adaptable individuals (level 2) are willing to accept that success in others frequently results from a combination of stable (task demand and ability) and unstable (luck and effort) factors.

The attributional beliefs of level 1 bi-modals (least adaptable) contradict the idea of situational versus dispositional bias (Jones & Nisbett, 1972), which suggests that personal success is often attributed

to situational factors (external), whereas other success is the result of personal characteristics/dispositions (internal). Less adaptable individuals would appear reluctant to attribute other peoples' success to internal factors, feeling less threatened with the belief that external factors are instrumental in the success level of others. Internality may well be perceived from an individual perspective, facilitating the recognition of external factors in the attribution of other peoples' success. Thus greater behavioural adaptability is reflected in the propensity of the individual to accept that internal factors are applicable to both the 'self' and 'other' perspective.

The significant differences revealed by the statistical analysis (see tables 1, 3 and 4) provides considerable support for the hypotheses. Without being conclusive, the directional/conceptual consistency of the differences in functional groups promotes the idea of behavioural adaptability, and thus performance, in bi-modal individuals. From the perspective of functional group, despite a lack of significance between functional group and level of bi-modality, (80% of X subjects fall in level 3 or 2, 64% of Y subjects fall in level 3 or 2, and 62% of Z subjects fall in level 3 or 2), the numerical superiority of X subjects achieves significance when an analysis of variance was run between bi-modal levels 3 and 1 on PADL total score. The statistical significance of the differences found between bi-modal levels 3 and 1 on PADL total score, emphasizes that bi-modality results in higher performance on PADL, and suggests that the X category contains individuals who are more adaptable (numerical advantage not significant), and who attain a higher score.

The lack of significance between levels of internality and PADL

scores provides further support for the relevance of the bi-modality concept. The single dimension of internality does not predict level of performance on PADL, as opposed to bi-modality, high internals do not perform significantly better than low internals.

The significance obtained between level 1 (middle range) and level 2A (high) externals, supports Seligman's (1975) model of learned helplessness which suggests that externals may display behavioural apathy and indifference, reflected in lower performance levels. Thus, based on these results, high internality inhibits performance on PADL, and therefore justifies the inclusion of the necessary condition for externality in the development of the bi-modal (level 3) profile. level of performance.

Bi-modality appears to be a pervasive disposition, stronger than a trait, effecting the personality and behaviour of an individual. Bi-modality level is predictive of performance on on PADL, higher scores being obtained by bi-modals (level 3) as a result of the ability to recognize their limitations, accepting assistance when required.

The Social Interest Scale failed to provide any significant correlations (negative or positive) between any combination of variables. One may hypothesize that as social interest is presumed to facilitate adjustment (Crandall 1981), significant differences would exist between the groups of older adults under examination. Despite the reported reliability and validity of the SIS (Crandall 1981), older adults perhaps present a unique challenge. The inherent limitations of self-report when combined with an age factor may place the reliability of the data in question. For this study the results on the SIS failed

to provide systematic differences between subjects, and do not predict performance on PADL, or membership of functional group.

Crandall stresses that individuals registering high levels of social interest have a more balanced perspective, and cope better with problem areas of life, characteristics one would associate with adaptable bi-modals. Despite the lack of statistical support provided by this data for the theoretical and empirical literature, the concept of social interest may still provide important information on the differences between groups of older adults. In order to examine these possible differences, it may be expedient to modify the SIS in order to meet the specific limitations of older adults.

Significant differences with age as the independent variable were only obtained when covaried with PADL (age group 73 to 81), which is somewhat counter intuitive and contrary to the literature. Nehrke (1980) reported significant differences between age and locus of control, with older adults displaying higher levels of internality and consequently life satisfaction and positive self-concept. Strickland and Shaffer (1971) and Statts (1972), both found age to be correlated with internality (positive), although for this research revealed low correlations between locus of control and age, suggesting that behaviourally, increased age does not automatically produce changes in the older adult's perspective/ attribution. However before such an assumption could be made with confidence, a longitudinal study would have to be conducted with a larger group of older adults.

The results emphasize that chronological age is a poor predictor of performance on Activities of Daily Living, providing considerable support for the instrumental value of concepts such as adaptability. With age

level 2 (73-81) performing significantly better on PADL than the other age levels, chronological age should be replaced with 'functional age' when attempting to explain differences between older adults. In general these results are supportive of the literature which promotes the idea of bi-modality being the more desirable attribute (Wong 1982), especially in the case of older adults. There is reason to believe that the results of this research should provide the catalyst for a more extensive and longitudinal study on the relationship between older adults and bi-modality.

Subject performance on PADL indicates the behavioural limitations of internals and externals, suggesting the need for the objective assessment of older adults, avoiding self-report measures. Internals may believe/perceive a higher functional ability than is feasible, and externals view the demise of previously successful internals as support for their behavioural indifference/apathy. The PADL battery demonstrates the effectiveness of objective testing in distinguishing between the functional ability of older adults.

III. RECOMMENDATIONS

Conceptually, bi-modality is a recent development at the personality disposition level, and as a result empirical research is limited, especially in the field of gerontology. The findings of this study promote the utility of bi-modality, and will hopefully provide the ^{impetus} for more extensive research. From the results obtained, the following recommendations are made:

- (1) Based on the research findings, bi-modality should be encouraged and developed in older adults to facilitate increased behavioural

adaptability. Reality re-training and efforts to promote personal competence may have an effect here.

(2) Based on these results, there are institutionalized individuals who could live independently if provided with basic community services and minimal life support.

(3) The PADL test battery should be modified to assist in the identification of competence differences between individuals and groups. Care must be taken not to introduce activities which cause stress or anxiety for the subject, and therefore 'easy' activities may remain as 'filler' items. Modifications will move away from perfunctory activities, of little 'ecological significance' (Rabbit 1982) for the older adult, to activities requiring a higher level of care and precision, providing individuals with the opportunity to seek experimenter assistance evidenced in item 3 of PADL). The complexity of the task should be increased to a point where success, while easily obtainable, requires a minimal, but essential, level of assistance.

(4) The next study should incorporate a longitudinal approach, to facilitate an examination of variable changes over time.

(5) The SIS should be modified to reduce the limitations of self-report, devising a more subtle method of assessing an individual's level of social interest. The element of choosing between alternatives is not readily differentiated by older adults, explaining the lack of variance obtained through the test. Measures of adjustment could be introduced as additional variables (life satisfaction for example), in a correlational analysis.

(6) The concept of bi-modality and adaptability should have immediate relevance to the educational field, exposing individuals to practical

examples of bi-modality, in all learning situations. The emphasis on competition should be replaced by cooperation, manifested in group sessions based on the interaction of ideas, thus maximizing individual potential and producing a higher level of productivity. From the therapeutic perspective, older adults will find bi-modality easier to adopt if they have been exposed to the fundamentals earlier in life.

(7) Whereas educating people into the idea of bi-modality is a long term process, immediate short term planning should be designed to expose older adults to the practical elements of bi-modality. Therapy sessions, whether on an individual or group basis, must break down the resistance to seeking assistance found in internals, and the indifference and apathy in externals. Community services must be expanded in order to provide each individual with the support necessary to combat the deficiencies of old age, reducing the level of institutionalization and maintaining independent living.

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APPENDIX A

DEMOGRAPHICS AND PROJECTIONS

CANADA'S ELDERLY POPULATION
(millions)

Figures

	<u>1976</u>	<u>2001</u>
65 ⁺	2,002	3,462
Total Population	22,992	30,980

Growth (1976-2001)

	<u>Number</u>	<u>% Increase</u>
65 ⁺	1,460	72.9
Total Population	7,988	34.7

Percentage of Population

65 ⁺	1976	=	8
	2001	=	11.9

(Source: Statistics Canada, 1976).

APPENDIX B

COST OF ELDERLY CARE

COST OF 'CHRONIC CARE FOR ELDERLY

Chronic Illness

65⁺ 1976: 75% of the population afflicted with some pain
of chronic illness.

Patient Days in Hospital

1976 8% of population = 35% of all patient days.
2001 11.9% of population = 46% of all patient days.

1974 to 1984: Demand on hospital beds will increase by 14,000

Extra Cost = \$550 million

(Source: Science Council of Canada, 1976)

APPENDIX C

TRENT ATTRIBUTION PROFILE RESPONSE SHEETS .

Instructions: For each of the following statements please rate the importance of each of the five reasons according to your judgement.

Please circle the appropriate number, using any number only once per item.

Note that: 5 means extremely or most important
 4 means very important
 3 means fairly important
 2 means a little bit or slightly important
 1 means not at all important

For example, consider the following item:

One's height is the result of: Nutrituion _____ 1 2 ③ 4 5
 Exercise _____ 1 2 3 ④ 5
 Parent's Height _____ 1 2 3 4 ⑤

Thus, if you beleve that parent's height is very important you would circle number 5; if you believe that exercise is somewhat important you would circle number 4; and so on

1. Most scientific inventions are the result of:

a) Chance Happenings	1	2	3	4	5
b) The Inventor's intelligence	1	2	3	4	5
c) Easy, routine scientific work	1	2	3	4	5
d) Much time and effort by the inventor	1	2	3	4	5

2. My good marks in school were due to:

a) Easy marking by the teacher	1	2	3	4	5
b) Hard work on my part	1	2	3	4	5
c) Good luck	1	2	3	4	5
d) My academic skills	1	2	3	4	5

3. When a person is popular, it is because:

a) Of lucky breaks	1	2	3	4	5
b) He or she tried hard	1	2	3	4	5
c) Of their social skills	1	2	3	4	5
d) It's easy to be popular	1	2	3	4	5

4. When I did not do well in a class in school, it was because:

a) I didn't try hard enough	1	2	3	4	5
b) The teacher was very demanding	1	2	3	4	5
c) Of my lack of skills in that subject area	1	2	3	4	5
d) of unlucky breaks	1	2	3	4	5

5. If my financial situation were to get worse, it would probably be due to:
- | | | | | | |
|----------------------------|---|---|---|---|---|
| a) Difficult circumstances | 1 | 2 | 3 | 4 | 5 |
| b) My poor judgement | 1 | 2 | 3 | 4 | 5 |
| c) Unlucky breaks | 1 | 2 | 3 | 4 | 5 |
| d) My lack of effort | 1 | 2 | 3 | 4 | 5 |
6. When people fail school, it is because of:
- | | | | | | |
|------------------------------------|---|---|---|---|---|
| a) Lack of academic skills | 1 | 2 | 3 | 4 | 5 |
| b) Bad breaks | 1 | 2 | 3 | 4 | 5 |
| c) Lack of effort | 1 | 2 | 3 | 4 | 5 |
| d) Harsh judgements by the teacher | 1 | 2 | 3 | 4 | 5 |
7. Most wealthy people are rich because:
- | | | | | | |
|-----------------------------------|---|---|---|---|---|
| a) Of their skill at making money | 1 | 2 | 3 | 4 | 5 |
| b) They worked very hard | 1 | 2 | 3 | 4 | 5 |
| c) Of lucky breaks | 1 | 2 | 3 | 4 | 5 |
| d) It's easy to make money | 1 | 2 | 3 | 4 | 5 |
8. When I have a good time at a party, it is because:
- | | | | | | |
|---------------------------------|---|---|---|---|---|
| a) It was a good party | 1 | 2 | 3 | 4 | 5 |
| b) I'm a good mixer | 1 | 2 | 3 | 4 | 5 |
| c) It was a lucky day | 1 | 2 | 3 | 4 | 5 |
| d) I make an effort to have fun | 1 | 2 | 3 | 4 | 5 |
9. My future financial successes will be because:
- | | | | | | |
|--------------------------------|---|---|---|---|---|
| a) Of hard work on my part | 1 | 2 | 3 | 4 | 5 |
| b) Of lucky breaks | 1 | 2 | 3 | 4 | 5 |
| c) Of my skill to make money | 1 | 2 | 3 | 4 | 5 |
| d) It's not hard to make money | 1 | 2 | 3 | 4 | 5 |
10. When people dislike me, it is usually because:
- | | | | | | |
|---|---|---|---|---|---|
| a) I don't try hard enough to be friendly | 1 | 2 | 3 | 4 | 5 |
| b) Luck isn't on my side | 1 | 2 | 3 | 4 | 5 |
| c) It's hard to be liked by everyone | 1 | 2 | 3 | 4 | 5 |
| d) I lack the social skills | 1 | 2 | 3 | 4 | 5 |

11. Most poor people have little because:

- | | | | | | |
|---|---|---|---|---|---|
| a) Of bad breaks | 1 | 2 | 3 | 4 | 5 |
| b) It's difficult to get ahead in the world | 1 | 2 | 3 | 4 | 5 |
| c) They don't work hard enough | 1 | 2 | 3 | 4 | 5 |
| d) Of lack of financial skills | 1 | 2 | 3 | 4 | 5 |

12. The fact that some people are not well-liked is because:

- | | | | | | |
|---|---|---|---|---|---|
| a) They don't know how to get along with others | 1 | 2 | 3 | 4 | 5 |
| b) It's hard to be popular | 1 | 2 | 3 | 4 | 5 |
| c) They don't try to be friendly | 1 | 2 | 3 | 4 | 5 |
| d) They have had bad breaks | 1 | 2 | 3 | 4 | 5 |

APPENDIX D

PERFORMANCE ACTIVITIES OF DAILY LIVING

INSTRUCTIONS AND SCORING

GENERAL INSTRUCTIONS

To be read to the subject before the testing session commences.

The following activities (seven) will be presented to you with either verbal instructions or written instructions (cards). When you are given instructions (verbally or on cards), you must work through the three parts of each activity one after the other (1, 2 than 3) without waiting for further instructions. Do not begin any activity until you hear the words 'please start'. Time is unimportant when performing these activities, work at your own speed.

Activities, each with 3 levels of difficulty.

Each level broken down into components.

Each component is scored on the following scale:

- 0 = not applicable/unable to perform
- 1 = requires assistance/performance less than perfect (i.e., spilling cordial)
- 2 = perfect performance

ACTIVITIES

	<u>1</u>	<u>2</u>	<u>3</u>	<u>TOTAL SCORE</u>	
				<u>Max.</u>	<u>Min.</u>
1. Maintenance	8	6	5	38	0
2. Dialing on phone	4	6	5	30	0
3. Financial	2	2	2	12	0
4. Signatures	2	2	2	12 36	0 0
5. Telling Time	2	2	2	12	0
6. Filling glass	6	8	7	42	0
7. Food preparation	6	7	6	38	0

Possible Range: 184 - 0

Activity 1: InstructionsMaintenanceCard 1

Please remove the light bulb from the socket and replace with the red bulb from the packet. Place the white bulb in the packet. Plug the cord into the wall socket, switch the light on and then off. Remove the cord from the socket, replace on the table and move directly on to Card 2.

Card 2

Please remove the washer from the screw unit, replacing with the spare washer. Re-attach the wing nut, leaving the old washer and the screw unit on the table. Move on to Card 3.

Card 3

Please remove the padlock from the ring using the key provided. Place the ring on the table and place the closed padlock and key on the hook provided.

Activity 1: ScoringMaintenance

Preparation: Light lead, 2 bulbs (1 red), screw, wing-nut and 2 washers, padlock, key, hook, instruction cards.

Instruction: Please read these instruction cards carefully. Carry out the the instructions on card 1, then move on to card 2 and card 3.

Performance:Card 1Rating

Reads instruction card	0	1	2
Remove light bulb from socket	0	1	2
Replaces bulb with red bulb from packet	0	1	2
Plugs lead into wall socket	0	1	2
Switches light on and off	0	1	2
Removes lead from socket	0	1	2
Places lead on table	0	1	2
Moves on to card 2	0	1	2

Card 2

Removes wing-nut from screw	0	1	2
Removes washer from screw	0	1	2
Places spare washer on screw	0	1	2
Replaces wing-nut on screw	0	1	2
Leaves complete screw unit and old washer on the table	0	1	2
Moves on to card 3.	0	1	2

Card 3

Picks up key and places in padlock	0	1	2
Turns key and opens padlock	0	1	2
Removes ring from padlock	0	1	2
Places ring on the table	0	1	2
Places closed padlock and key on the hook provided	0	1	2

Time Elapsed: from the 'please start' command until padlock placed on hook.

Activity 2: TelephoningCard 1

Please phone the following number: 253-9480. When you are connected, tell me what you hear and then replace the receiver. Once you have replaced the receiver, read Card 2.

Card 2

Please read these instructions carefully. After reading these instructions, simply say "READY" and I will give you a phone number. Write this number down and then dial. When you are connected, tell me what you hear and then replace the receiver. Once you have replaced the receiver, read Card 3.

Card 3

Please find the Via Rail number from the following list and write it down on the paper provided. Dial the number and ask how much the regular mid-week fare from Windsor to Toronto costs. Write the price down on the paper and replace the received.

Avis Rent-A-Car	9 258-2847
Budget Renting	9 258-4555
Dallas Concrete	9 735-2818
Devonshire Motel	9 966-1936
Fishers Flowers	9 253-7495
Nantais Sports	9 252-5705
Sam's Pizzeria	9 256-4993
Via Rail Canada	9 256-5511
Video Warehouse	9 944-2239
Whitehall Paint	9 257-1734
Window Care	9 948-3030
Wine and Malt Shop	9 252-9595

Activity 3: FinancialCard 1

Please select 37 cents (in any combination of coins) from the pile of loose change and place it on the red card. Move on to Card 2.

Card 2

Please select the total grocery bill from the loose change (in any combination of coins) and place the money on the blue card. Move on to card 3.

Grocery Bill:	Milk	\$1.09
	Eggs	\$1.30
	Bread	<u>\$.90</u>

Grocery Bill Total	\$3.29
--------------------	--------

Card 3

Please add up the grocery bill and select the total cost from the loose change and place the money on the white card. You may use the pencil and paper to assist you.

Grocery Bill:	Cheese	\$2.20
	Coffee	\$1.80
	Soup	\$.56
	Jelly	<u>\$.43</u>

Grocery Bill Total	\$
--------------------	----

Activity 3: ScoringFinancial

Preparation: Availability of 3 cards with instructions, pencil and paper, loose change, 3 coloured cards.

Instructions: Please read these 3 cards in turn (1, then 2, then 3), following the instructions carefully.

<u>Performance:</u>		<u>Rating</u>		
<u>Card 1</u>	37 cents selected from loose change	0	1	2
	37 cents placed on red card	0	1	2
<u>Card 2</u>	\$3.29 selected from loose change	0	1	2
	\$3.29 placed on blue card	0	1	2
<u>Card 3</u>	\$4.99 selected from loose change	0	1	2
	\$4.99 placed on white card	0	1	2

Time Elapsed: From 'please start' command until \$4.99 placed on white card.

Activity 4: InstructionsSignaturesCard 1

Please sign your normal signature on the dotted line provided below these instructions.

Card 2

Please read these instructions carefully. Once again we are asking you to provide us with your normal signature. We would like you to sign your normal signature on the solid line provided alongside the first usage of the word signature found in these instructions

Card 3

Please read these instructions carefully. We would like you to provide us with your normal signature. If you are a male would you please sign your normal signature on the line provided alongside the word carefully. If you are female please sign your normal signature on the line provided alongside the word side.

Activity 4: Scoring to Scoring

Signature

Preparation: One pen, 3 cards with instructions, pen holder.

Instructions: Please read these instruction cards carefully. Carry out the instructions on card 1, then move on to card 2 and card 3.

<u>Performance:</u>		<u>Rating</u>		
<u>Card 1</u>	Signature on the dotted line	0	1	2
	Moves on to card 2	0	1	2
<u>Card 2</u>	Signature on line by first use of word signature	0	1	2
<u>Card 3</u>	Signature on line provided for men (carefully) and women (side)	0	1	2
	Pen replaced in holder	0	1	2

Time Elapsed: From 'please start' command until pen replaced in holder.

Activity 5: Instructions and ScoringTelling the Time

Preparation: Place 3 clocks in a highly visible position (3 cards by the side), 1 pen and 1 pen holder.

Instructions: Please write the time indicated on the 3 clocks on the cards provided. Replace pen in the holder when you finish.

<u>Performance:</u>	<u>Rating</u>		
Large wall clock time	0	1	2
Moves on to clock 2	0	1	2
Small alarm clock time	0	1	2
Moves on to clock 3	0	1	2
Small wrist watch time	0	1	2
Replaces. pane in holder	0	1	2

Time Elapsed: From 'please start' command until pen replaced in holder.

Activity 6: InstructionsTransfer of LiquidsCard 1

Please fill glass 1 with water from the jug. Replace the jug on the mat and place the glass on drip-mat 1. Move on to Card 2.

Card 2

Pour one inch of cordial from the bottle into glass 2. Fill glass 2 with water from the jug. Replace the top on the cordial bottle. Place the jug on the mat and the glass on drip-mat 2. Move on to Card 3.

Card 3

Pour one tablespoonful of cordial into glass 3 and fill with water from the jug. Replace the top on the bottle, place the jug on the mat and the glass on drip-mat 3. Place the spoon on the plate.

Activity 6: ScoringTransfer of Liquids

Preparation: Large jug of water, 3 glasses, bottle of cordial with screw top, drip mats, tablespoon, jug mat.

Instructions: Please read these instruction cards carefully. Carry out the instructions on card 1, then move on to Card 2 and Card 3

<u>Performance:</u>		<u>Rating</u>		
<u>Card 1</u>	Reads instructions	0	1	2
	Picks up glass from table	0	1	2
	Fills glass from jug	0	1	2
	Replaced jug on mat	0	1	2
	Places glass on drip-mat 1	0	1	2
	Moves on to Card 2	0	1	2
<u>Card 2</u>	Reads instructions	0	1	2
	Removes top from bottle	0	1	2
	Pours 1 inch of cordial into glass	0	1	2
	Fills glass with water from jug	0	1	2
	Replaces top on bottle	0	1	2
	Replaced jug on mat	0	1	2
	Places glass on drip-mat 2	0	1	2
<u>Card 3</u>	Moves on to card 3	0	1	2
	Removes top from bottle	0	1	2
	Pours cordial into spoon (without spilling)	0	1	2
	Pours cordial into glass (without spilling)	0	1	2
	Places top on bottle	0	1	2
	Replaces jug on mat	0	1	2
	Places glass on drip-mat 3	0	1	2
	Places spoon on plate	0	1	2

Time Elapsed: From 'please start' command until spoon placed on plate (or any other item if spoon placed earlier).

Activity 7: InstructionsFood PreparationCard 1

Take one tangerine from the bowl provided. Peel the skin off, placing the tangerine on the plate and the peel on the saucer. Move on to Card 2.

Card 2

Open the margarine tub. Spread some margarine on the bread with the knife provided. Place the bread on the plate. Replace the lid on the margarine tub. Leave the knife on the plate and move on to Card 3.

Card 3

Peel the potato with the peeler and cut the potato in half with the knife. Place the potato in the saucepan and the knife and peelings into the bowl.

Activity 7: ScoringFood Preparation

Preparation: tangerines, bread, margarine tub, potatoes, peeler, knife, plates, saucer, bowls.

Instructions: Please read these instruction cards carefully. Carry out the instructions on Card 1, the move on to Card 2 and Card 3.

<u>Performance:</u>		<u>Rating</u>		
<u>Card 1</u>	Reads instruction card	0	1	2
	Takes tangerine from bowl	0	1	2
	Peels tangerine	0	1	2
	Places tangerine on plate	0	1	2
	Places peel on saucer	0	1	2
	Moves on to Card 2	0	1	2
<u>Card 2</u>	Reads instruction card	0	1	2
	Opens margarine tub	0	1	2
	Spreads margarine on bread with knife	0	1	2
	Places bread on plate	0	1	2
	Replaces lid on margarine	0	1	2
	Places knife on plate	0	1	2
<u>Card 3</u>	Moves on to Card 3	0	1	2
	Reads instructions and proceeds	0	1	2
	Peels potato with peeler	0	1	2
	Cuts potato into 2 pieces	0	1	2
	Places potato in saucepan	0	1	2
	Places peeler in bowl	0	1	2
	Places potato peel in bowl	0	1	2

Time Elapsed: From 'please start' command until knife and peeler placed in bowl.

APPENDIX E

SOCIAL INTEREST SCALE (S.I.S.) DATA SHEET

SOCIAL INTEREST SCALE

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Sex _____

Age _____

Below are a number of pairs of personal characteristics or traits. For each pair, choose the trait which you value more highly. In making each choice, ask yourself which of the traits in that pair you would rather possess as one of your own characteristics. For example, the first pair is "imaginative-rational." If you had to make a choice, which would you rather be? Write 1 or 2 on the line in front of the pair to indicate your choice.

Some of the traits will appear twice, but always in combination with a different other trait. No pairs will be repeated.

Be sure to choose one trait in each pair.

"I would rather be . . ."

_____ 1. imaginative
_____ 2. rational

_____ 1. helpful
_____ 2. quick-witted

_____ 1. neat
_____ 2. sympathetic

_____ 1. level-headed
_____ 2. efficient

_____ 1. intelligent
_____ 2. considerate

_____ 1. self-reliant
_____ 2. ambitious

_____ 1. respectful
_____ 2. original

_____ 1. creative
_____ 2. sensible

_____ 1. generous
_____ 2. individualistic

_____ 1. responsible
_____ 2. likable

_____ 1. capable
_____ 2. tolerant

_____ 1. trustworthy
_____ 2. wise

_____ 1. neat
_____ 2. logical

_____ 1. forgiving
_____ 2. gentle

_____ 1. efficient
_____ 2. respectful

_____ 1. practical
_____ 2. self-confident

_____ 1. alert
_____ 2. cooperative

_____ 1. imaginative
_____ 2. helpful

_____ 1. realistic
_____ 2. moral

_____ 1. popular
_____ 2. conscientious

_____ 1. considerate
_____ 2. wise

_____ 1. reasonable
_____ 2. quick-witted

_____ 1. sympathetic
_____ 2. individualistic

_____ 1. ambitious
_____ 2. patient

APPENDIX F

TRENT ATTRIBUTION PROFILE (T.A.P.) DATA SHEET

TRENT ATTRIBUTION PROFILE (T.A.P.) DATA SHEET

Subject #: _____ Sex: M F

Other test scores:

T.A.P. Question #	<u>ATTRIBUTION ELEMENTS</u>				<u>ATTRIBUTION DIMENSIONS</u>			
	Ability (A)	Effort (E)	Task Difficulty (TD)	Luck (L)	Inter- nality (A+E)	Exter- nality (TD+L)	Stability (A+TD)	Variability (E+L)
9.								
2.								
8.								
Self- Success								
5.								
4.								
10.								
Self- Failure								
7.								
1.								
3.								
Other- Success								
11.								
6.								
12.								
Other- Failure								
TOTAL								

APPENDIX G

PROFILE OF LEVEL 3 BI-MODAL

TRENT ATTRIBUTION PROFILE (T.A.P.) DATA SHEET

Subject #: _____ Sex: M F

Other test scores:

T.A.P. Question #	ATTRIBUTION ELEMENTS				ATTRIBUTION DIMENSIONS			
	Ability (A)	Effort (E)	Task Difficulty (TD)	Luck (L)	Inter- nality (A+E)	Exter- nality (TD+L)	Stability (A+TD)	Variability (E+L)
9.	2	5	1	4	7	5	3	9
2.	4	5	1	3	9	4	5	8
8.	3	5	4	2	8	6	7	7
Self- Success	9	15	6	9	24	15	15	24
5.	3	1	5	4	4	9	8	5
4.	4	5	2	1	9	3	6	6
10.	3	4	5	2	7	7	8	6
Self- Failure	10	10	12	7	20	19	22	17
7.	5	1	2	4	6	6	7	5
1.	5	4	3	2	9	5	8	6
3.	4	2	1	5	6	6	5	7
Other- Success	14	7	6	11	21	17	20	18
11.	4	5	3	2	9	5	7	7
6.	5	4	1	2	9	3	6	6
12.	5	4	3	2	9	5	8	6
Other- Failure	14	13	7	6	27	13	21	19
TOTAL	47	45	31	33	92	64	78	78

APPENDIX H

PROFILE OF LEVEL 2 BI-MODAL

TRENT ATTRIBUTION PROFILE (T.A.P.) DATA SHEET

Subject #: _____ Sex: M F

Other test scores:

T.A.P. Question #	ATTRIBUTION ELEMENTS				ATTRIBUTION DIMENSIONS			
	Ability (A)	Effort (E)	Task Difficulty (TD)	Luck (L)	Inter- nality (A+E)	Exter- nality (TD+L)	Stability (A+TD)	Variability (E+L)
9.	4	3	2	5	7	7	6	8
2.	4	5	2	3	9	5	6	8
8.	4	3	5	2	9	5	6	8
Self- Success	12	11	9	10	23	19	21	21
5.	4	2	5	3	6	8	9	5
4.	4	5	2	3	9	5	6	8
10.	2	4	5	3	6	8	7	7
Self- Failure	10	11	12	9	21	21	22	20
7.	5	4	2	3	9	5	7	7
1.	5	3	4	2	8	6	9	5
3.	5	4	2	3	9	5	7	7
Other- Success	15	11	8	8	26	16	23	19
11.	4	3	5	2	7	7	9	5
6.	5	4	2	3	9	5	7	7
12.	5	4	3	2	9	5	8	6
Other- Failure	14	11	10	7	25	17	24	18
TOTAL	51	44	39	34	95	73	90	78

APPENDIX I

PROFILE OF LEVEL 1 BI-MODAL

TRENT ATTRIBUTION PROFILE (T.A.P.) DATA SHEET

Subject #: _____ Sex: M F

Other test scores:

T.A.P. Question #	<u>ATTRIBUTION ELEMENTS</u>				<u>ATTRIBUTION DIMENSIONS</u>			
	Ability (A)	Effort (E)	Task Difficulty (TD)	Luck (L)	Inter- nality (A+E)	Exter- nality (TD+L)	Stability (A+TD)	Variability (E+L)
9.	3	5	1	4	8	5	4	9
2.	3	4	2	5	7	7	5	9
8.	4	2	5	3	6	8	9	5
Self- Success	10	11	8	12	21	20	18	23
5.	1	2	5	4	3	9	6	6
4.	4	5	1	3	9	4	5	8
10.	3	2	5	1	5	6	8	3
Self- Failure	8	9	11	8	17	19	19	17
7.	3	4	1	5	7	6	4	9
1.	5	3	4	2	8	6	9	5
3.	3	4	1	5	7	6	4	9
Other- Success	11	11	6	12	22	18	17	23
11.	2	3	4	5	5	9	6	8
6.	4	1	2	5	5	7	6	6
12.	3	4	2	5	7	7	5	9
Other- Failure	9	8	8	15	17	23	17	23
TOTAL	38	39	33	47	77	80	71	86

APPENDIX J

TRENT ATTRIBUTION PROFILE COMPONENTS

TRENT ATTRIBUTION PROFILE COMPONENTS

1. Self-Success Internal (SSI)
2. Self-Success External (SSE)
3. Self-Success Stable (SSS)
4. Self-Success Variable (SSV)
5. Self-Failure Internal (SFI)
6. Self-Failure External (SFE)
7. Self-Failure Stable (SFS)
8. Self-Failure Variable (SFV)
9. Other-Success External (OSE)
10. Other-Success External (OSE)
11. Other-Success Stable (OSS)
12. Other-Success Variable (OSV)
13. Other-Failure Internal (OFI)
14. Other-Failure External (OFE)
15. Other-Failure Stable (OFS)
16. Other-Failure Variable (OFV)

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