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THE DEVELOPMENT OF AN EMPIRICALLY-BASED
TYPOLOGY OF YOUNG OFFENDERS

David J. Simourd

March 1992

A Ph.D. dissertation submitted to the department of
Psychology, Carleton University, in partial fulfilment of
the degree of Doctor of Philosophy.

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The undersigned recommend to the Faculty of Graduate Studies
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submitted by

David John Simourd

in partial fulfillment of the requirements for
the degree of

Doctor of Philosophy

Thesis Supervisor

External Examiner

Chairperson

Department of Psychology

Carleton University

April 1992

Abstract

The two objectives of the present thesis were to, first, examine the utility of a risk/needs assessment instrument for use with young offenders and, second, to investigate whether an empirically-based typology of young offenders could be developed based on this risk/needs assessment instrument. The study involved a file-based assessment of Ontario Phase I young offenders using the Youth Level of Service Inventory (YLSI) (Andrews, Hoge, & Robinson, 1984). The subject sample was derived from consecutive admissions (N= 319) to the Toronto Juvenile Probation Offices and included (N= 256) males and (N= 63) females. The mean age of subjects was 15.1 years. There were several components to the study. First, a number of statistical analyses were performed to examine the normative distribution, internal consistency (e.g. Chronbach Alpha), and factor structure of the YLSI within the present sample. These results indicate the YLSI is a psychometrically sound assessment instrument for use with Phase I young offenders.

The second component of the thesis involved an examination of different risk levels on the YLSI for a variety of offence-based and outcome criteria variables. Overall, the results indicate that the YLSI clearly distinguished different risk levels of offenders, both for males and females, and showed a consistent pattern in which

higher scores were linked with a greater degree of maladjustment.

The third component of the thesis concerned the actual development of the typology through the use of hierarchical cluster analysis techniques. YLSI subtotal scores for the total sample, and males and females separately, were subjected to cluster analysis. These results indicated that a five-cluster solution for male subjects was the most interpretable and meaningful. The cluster solution for females, unfortunately, was restricted by the low number of subjects and could not be subjected to further analysis.

The fourth component comprised the replication and validation of cluster types. For the replication, the data were randomly split into two cross-validating samples and subjected to separate cluster analysis. This procedure yielded strong consistency between the profile patterns of the two cross-validating samples suggesting the cluster types were reliable. For cluster validation, comparisons between the five cluster types were made on a variety of offence based and other criterion related measures. The results of these analyses indicated the five cluster types were valid.

Overall, the results of the present thesis indicate that the YLSI is a useful instrument for use with young offenders. Moreover, the examination of risk levels on the YLSI appears particularly promising in this context. The

results also found that a reliable and valid empirical typology of young offenders could be developed based on the YLSI. The results were discussed in terms of the assessment, management and treatment of the different offender risk levels and types.

Acknowledgements

Having spent innumerable hours on this thesis I was looking forward to writing the acknowledgement section for two reasons. First, it means that my entire graduate training is actually coming to a close, a day I often thought would never come, and I can now look forward to applying my skills and knowledge in the "real world". The second reason for my enthusiasm with this section is that it provides me with an opportunity to thank all those who had helped me along the way. During the writing of this section, however, I came to realize that there are only a few occasions upon which a person can formally acknowledge those who have played a role in a person's career and personal development. Realizing this, I thought I would thank those who have been a big part of the thesis and also those who have had a significant influence on me to reach this point in my career and life.

There are two things to remember when proceeding through this section. First, get comfortable and be patient. In the process of trying to thank people I realized I was getting somewhat verbose. However, I am more intent on recognizing people's contributions to me than on simply saving space. Besides, hardly anyone reads these sections anyways. The second important point to remember is that there is no order of importance. People mentioned at the beginning are just as important as those mentioned at

the end. From my perspective, you are all very dear to me.

First and foremost I would like to thank Dr. Robert Hoge, my supervisor. I am especially grateful to Bob for providing me an opportunity for Ph.D. study. From joining the lab and getting office space, through the course-work, comprehensive exam, CPA presentations, and finally the thesis, you have shown strong encouragement, support, and guidance throughout. You have taught me how to be conscientious, diligent, and meticulous, as a scholar and, most important, how to have fun in the process. Without all of this, I probably would not have finished.

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(x)

Dedication

I would like to dedicate this thesis to my mother, Ann. In the many years I have spent in university, and in spite of your own ups and downs, you have always been there to offer support, guidance, encouragement, a few laughs, and a few tears. You have been a steady source of inspiration for me to succeed with all my studies, but particularly those of the Ph.D.. I look forward to spending time with you in the years ahead and give back some of the things you have given me. I think of you often and I hope that runny nose kid of your's who was always sick, turns out okay.

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THE DEVELOPMENT OF AN EMPIRICALLY-BASED TYPOLOGY OF YOUNG OFFENDERS

Since ancient philosophical propositions that the universe is composed of earth, air, fire, and water, and human temperaments were categorized as black bile, yellow bile, blood, and phlegm, the notion of classification has been of interest to both scientists and laypersons alike. Interest in taxonomies has stemmed from the postulate that sciences, such as psychology, are orderly and display uniformities that may be identified and stated (McKinney 1966). Moreover, "a field of study often has its beginnings in efforts at classification as a means of providing simple and parsimonious ways of comprehending large and varied masses of data" (Lorr, 1966, p. 195).

Within the correctional literature it is widely believed that criminal conduct is comprised of an extremely heterogeneous collection of behaviours and that no single theory can account for the diverse types of antisocial activity (Gibbons, 1975). Accordingly, researchers have focused on deriving typologies consisting of relatively homogeneous patterns of criminal conduct. These typologies are seen as providing valuable information about the etiological correlates and relevant treatment interventions for delinquent behaviour. From the early work of Lombroso in the late 1880's (see Wolfgang, 1960) through the "new generation" initiated by Hewitt and Jenkins (1946) numerous

typologies of offenders and their behaviour have been advanced. However, conceptual and practical problems have limited the usefulness of these endeavours. As such, an adequate typology of young offenders grounded in relevant psychological theory and developed through contemporary methodology has yet to emerge. The purpose of the proposed project is to address this issue.

Considerable enthusiasm towards the development of offender typologies was generated by the work of Hewitt and Jenkins (1946). Often considered the innovators of the "new generation" of typological schemes, these researchers were among the first to use sophisticated statistical procedures to develop a typology. Although some attempts (e.g. Quay, 1964) have been made to expand on the work of Hewitt and Jenkins (1946), the early promise shown by the empirical approach has not been matched by the development of adequate offender typologies. In fact, Kinch (1962) has argued that "few attempts have been made to take the typological orientation further than a briefly-articulated viewpoint" (p. 323). Some have suggested the lack of appropriate offender typologies may be related to a lack of understanding of the ways in which typologies can be utilized (Ferdinand, 1966). In an effort to establish a common knowledge base with respect to taxonomies, a brief presentation of the characteristic features of typologies will be made.

Overview of Typologies

We must begin with a discussion of the concepts of classification and typology. These terms are commonly used incorrectly within the typological literature. An example of this misuse is illustrated by Hood and Sparks (1970). Following a most eloquent description of the conceptual differences between classification and typology, these authors elect to cast aside the differences and use the terms interchangeably. Most confusing, however, is the fact that they contend that it is acceptable to do so. While some (Winch, 1947) have suggested the distinction between a classification and a typology may be definitional, these terms do in fact represent unique concepts.

Classification refers to any systematic ordering of phenomena into groups or types without regard to intrinsic characteristics of the phenomena classified (Achenbach, 1985). Winch (1947) regards classification as "forming classes, generally on a single variable, which are mutually exclusive and collectively exhaustive" (p. 69). Ferdinand (1966) goes further to indicate that "members of a class have relatively little in common with one another, and accordingly their membership in the same class indicates little about their nature" (p. 45). Gender serves as an excellent example to the concept of classification. Categorizing entities according to gender enables all units to be "classified" into one and only one group. The most

salient issue, however, is that units with a common feature are simply grouped according to that feature (e.g., males or females) with virtually no insights gained as to the nature of the members of either gender. A more contextually relevant example of a classification within the Canadian criminal justice system is the differentiation of adjudicated adult offenders on the basis of sentence length. Those with sentences of two years and greater are housed in Federal institutions while those with sentences of less than two years reside in Provincial institutions. Once again, this process results in the exclusive and exhaustive grouping of all offenders yet it allows for only vague inferences about the nature of individual members within each group.

A typology differs from a classification by categorizing individuals according to the intrinsic similarities and differences between cases assigned to groups (Achenbach, 1985). Moreover, a typology is typically driven by a rational theoretical framework which affords a more dynamic understanding of the nature of members within each group. Ferdinand (1966) describes the concept of a typology as that which "groups things that have something intrinsically in common, are distinguishable from one another but sufficiently similar to form a set, and tend to be concerned with the characteristics displayed by individuals and not with the relationships among disembodied

processes" (p. 43). Lorr (1983) describes a typology as clusters of explanatory concepts, with each type a construct inferred from a cluster. Examples of typologies can be found in such disciplines as botany and zoology. Here taxonomic groupings are constructed according to such factors as physical features, interbreeding, or hypothesized evolutionary relations to differentiate groups, or species. Overall, the typological approach groups phenomena in a meaningful way which offers considerable information regarding the nature of members from each group.

Within the typological literature, different styles of typologies have been described. Winch (1947) distinguishes between the heuristic and empirical typology. A heuristic typology is that which is derived deductively on the basis of a theoretical postulation. Constructing a typology of this nature simply requires the selection of certain salient features on the basis of an explicit or implicit theory and grouping individuals accordingly. Empirical typologies are derived inductively on the basis of actual patterns of behaviour. In this style of typology information pertinent to certain variables is amassed from a data sample and subjected to statistical analysis. Therefore, groups are formed on the basis of the interconnected nature of the variables. In effect, the empirical typology often reflects the patterns of behaviour of "real" people whereas the heuristic style may not necessarily do so (Ferdinand, 1966).

In addition to the heuristic and empirical typologies, Gibbons (1975) has distinguished typologies as being either causal or diagnostic. Causal typologies are those which attempt to examine those etiological factors inherent in patterns of criminal behaviour. The aim of the causal typology is heuristic; to understand the correlates of behavioural phenomena such that future research and theory can become more focused. Diagnostic typologies are designed to determine patterns of behaviour on the basis of common treatment and/or program planning interventions. This form of typology is much more pragmatic in that it goes beyond simply identifying theoretical relationships and has clinical and/or management applications.

There are at least two important issues that arise from Gibbon's (1975) distinction. First, despite different conceptual foci, typological schemes can be both causal and diagnostic. Gibbons (1975) contends his Role-Career typology is an example of such a typology. However, the typological literature is particularly sparse with respect to the causal-diagnostic form of typology. Furthermore, Megargee and Bohn (1979) suggest that the distinction between causal and diagnostic typologies may be moot. They point to the common occurrence in the literature of causal typologists who request research into the practical applications of their work while diagnostic typologists similarly hope

etiological processes relevant to their work may be established.

The second issue which arises from Gibbon's (1975) distinction concerns the use of typologies in actual practice. The application is typologies in applied settings are more commonly referred to as classification systems. Inherent in this concept is the notion of a diagnostic or decision making process. Evidence of this comes from the National Advisory Commission of Criminal Justice Standards and Goals (1973) conceptualization of classification system as; "a system or process by which agencies determine the differential care and handling of offenders" (p. 197). Within the correctional literature numerous classification systems based on a variety of factors have been reported. An example of a typology being developed for use as a classification system is that of Megargee and Bohn (1979). These researchers developed an empirical typology of incarcerated offenders based on personality profiles from scores on the Minnesota Multiphasic Personality Inventory. Management strategies (i.e., cell block placement, work duties, etc.) of inmates of a medium security correctional facility are subsequently assigned according to personality "type".

For a typological scheme to be useful in correctional psychology, particularly for use as a classification system, it must meet a number of requirements. The National

Advisory Commission on Criminal Justice Standards and Goals (1973) identifies five criteria that should be met: 1) implications regarding cause and treatment of offender behaviour, 2) should be objective and as standardized as possible, 3) should minimize the reliance on highly trained personnel, 4) should be applicable to all levels of the criminal justice system, and 5) classification should be simple and rapid enough for use in community-based interventions.

In addition to the pragmatic requirements of a typology outlined by the National Advisory Commission, Gibbons (1975) has proposed four, somewhat overlapping, criteria for a more theoretical evaluation of a typology. First, a typology must possess clarity and objectivity such that the method of typology construction is clearly identified and different users can apply the scheme to actual offenders. Second, the typology should be mutually exclusive whereby offenders fit into one and only one category. Third, it must be comprehensive with all or most of the subject population being grouped. Finally, the typology must be parsimonious with relatively few categories.

A general review of existing offender typologies will be made within the context of the evaluation criteria outlined above. Due to the great number and interrelated nature of many existing typologies, a representative selection will be described to illustrate different

approaches which have been used. In addition, although the main emphasis of the present proposal is on research of young offenders, both these and adult schemes will be examined. The rationale for this is twofold. First, some adult typologies represent significant contributions to the correctional typology literature. These "classics" must be presented because they have helped shape the offender typology literature. Second, with some typologies, particularly the heuristic style, it is often unclear whether the scheme applies to adults, young offenders, or both. Young offender typologies will be presented after a general correctional typology review.

Adult Typologies

Constitutional typologies. In the original version of his paper "L'Uomo delinquente" Cesare Lombroso (1876) presented the first typology of criminal offenders (see Wolfgang, 1960). With roots in Darwin's evolutionary theory, Lombroso's heuristic typology is based on the notion that deviant behaviour represents an atavistic regression to primitive human evolution. In this theory "it is implied the mentality of atavistic individuals are biological 'throwbacks' to an earlier stage of evolution and that the behaviour of these 'throwbacks' will inevitably be contrary to the rules and expectations of modern civilised society" (Wolfgang, 1960 p. 183). To Lombroso the criminal did not

simply represent a deviation from the norm, but rather, a subspecies of man with distinct mental and physical characteristics.

Linked to varying degrees of epilepsy and atavism, Lombroso differentiated five types of offenders. The epileptic criminal, although not born as a criminal, was genetically endowed with atavistic characteristics (e.g., impulsiveness, obscenity, sluggishness, etc.) making him extraordinarily susceptible to crime. The insane criminal was viewed as suffering from melancholia and monomania with the psychic disorder taking root in degenerative behaviour. The born criminal was regarded as the most deviant of all types being characterized most commonly by a lack of moral sense, and criminal subculture tendencies (e.g., use of criminal argot, use of tattooing, etc). The criminal by passion possesses certain epileptic features, namely impulsiveness, which when mixed with an intense emotional circumstance (e.g., love, anger, etc.) predisposes him to deviant behaviour. Lastly is the occasional criminal. The only type not linked with epilepsy and atavism, deviant behaviour in these individuals was seen as being tied to certain developmental conditions (e.g., poor parental socialization) which endears them to fall into crime for insignificant reasons.

Lombroso made an extraordinary effort to operationalize his typology. Using evidence from post-mortum examinations

and anthropometric studies of criminals and the insane, Lombroso operationalized his typology on the basis of certain physical stigmata. Moreover, the distinction between types was related to the number and nature of anomalies present. These included; skull size and shape deviations (e.g., small skull and retreating forehead), large jaw and cheekbone, unusual sized ears, and eye defects. In spite of the fact that subsequent research of his typology demonstrated that it was invalid (Goring, 1913), Lombroso's work represents an important historical force in the correctional typology literature.

Originally designed as a method for classifying personality temperament, Sheldon's body types (Sheldon, Stevens, & Tucker, 1940) represent a classic heuristic typology within the correctional literature. The influence of this approach is reflected by the fact that the Gluecks included a discussion of somatypes in their classic cross-sectional analysis of juvenile offenders (Glueck & Glueck, 1950). There are three characteristic body types according to this typology. The endomorph is a soft and round physique with temperamental qualities of comfort and desires for approval and affection. The mesomorph is a muscular physique susceptible to excitement, adventure, callousness and socially insensitivity. This type is most commonly linked with criminal conduct. The ectomorph physique is one of linearity and fragility with a temperament of

introversion, emotional control and restraint, and desire for privacy.

The popularity of Sheldon's typology appears to be linked more to its theoretical simplicity than anything else. While this typology continues to be frequently discussed in criminological textbooks, research on the validity of this typology for use in offender samples has been sparse. Moreover, body type is related to several factors (e.g., genetic endowment, prenatal, and postnatal care) such that the relationship between delinquent behaviour and body type is not particularly strong (Adams, 1981).

Offence-based typologies. In the search for schemes relevant to offender behaviour, researchers have constructed typologies based on actual criminal conduct. The four main areas examined in this regard are based on: type of current offence, repetitive crime patterns, degree of deviance from social norms, and criminal "careers".

Perhaps the most natural point for investigation are those typologies based on current offence. Due primarily to the objectivity and reliance on data (e.g., offence characteristics), this typological approach appears promising. Unfortunately, there are a number of problems with it. For instance, the plea bargaining process often distorts the offence conviction pattern. As well, the sheer

number of offence types make it difficult to maintain parsimony. The categorization of person, property, public, or morals/decency offences results in considerable within category heterogeneity. Similarly, attempts to describe sub-types of offences have not crystallized a clearer understanding of offence based typologies. For example, anywhere from 2 (Abrahamsen 1960) to 11 (Guttmacher, 1960) different sub-types of murderers have been reported. Overall, the main research findings of current offence typologies indicate considerable diversity among offenders convicted of identical offences (Megargee & Bohn, 1979).

Limitations with approaches based on current offence spawned research into typologies of repetitive criminal offence patterns. The work of Roebuck (1967) is most widely recognized as representative of this approach. His guiding framework consists of the frequency and recency of particular criminal offences within the total arrest history combined with the specific legal category of offence. His general scheme includes those with:

1) No repetitive pattern, less than three arrests, 2) Single pattern, high frequency of one kind of charge, 3) Multiple pattern, two or more single patterns, and, 4) Mixed pattern, three or more arrests but no pattern.

Roebuck (1967) has made an effort to validate his repetitive offence typology using a series of classification rules. A random selection of 400 incarcerated black

offenders were sorted on the basis of arrest history pattern and legal offence derived from institution files. Thirteen types were differentiated; 1) Mixed pattern (Jack-of-all-trades offender), 2) Double pattern of larceny and burglary, 3) Single pattern of narcotic drug laws, 4) Triple pattern of drunkenness, assault and larceny, 5) Double pattern of drunkenness and assault, 6) Single pattern of robbery, 7) No pattern, 8) Single pattern of gambling, 9) Single pattern of burglary, 10) Single pattern of sex offences, 11) Single pattern of fraud, 12) Single pattern of auto theft, and 13) Single pattern of forgery and counterfeiting.

Although frequently cited in the typological literature the work of Roebuck (1967) is limited in a number of ways. First, Hood and Sparks (1970) have questioned the objectivity of this approach by criticizing the classification rules as being arbitrary and inconsistent. Second, since only six of the thirteen types proposed have been fully described it is not clear whether it possesses completeness. Third, the original research is on a restricted sample (i.e., incarcerated black offenders), with no evidence available regarding generalizations to other samples. Finally, not only are a significant percentage of individuals unclassified, approximately 38% in Roebuck's data, but considerable variation between individuals of similar types limits the available etiological or diagnostic insights.

Criminal conduct typologies have also been developed based on the actual level of deviance inherent in the offence. Morris (1965) used the seriousness, deliberateness, and frequency of the current offence as an index of the offender's commitment to violation of norms. Five offender types were proposed corresponding to a continuum of deviance. From least to greatest deviance these are: 1) the technical offender, who unintentionally falls into crime; 2) the situational offender, who becomes involved in crime because of considerable provocation; 3) the pathological offender, whose behaviour is linked to physical, mental, or social inadequacies; 4) the avocational offender, mainly a prosocial citizen who involves crime with legitimate occupations; and 5) career offenders, who engage in crime as an occupation. Unfortunately, research has yet to establish the validity of this approach. Moreover, apparent difficulties meeting certain classification criteria (e.g. objectivity) have led some (Gibbons, 1965) to suggest this approach may be more useful for textbook criminology rather than applied classification.

Recognizing the shortcomings of schemes based on specific categories of illegal activity, researchers have pursued typologies which describe the criminal "career" of offenders. Although several popular versions have been advanced (Glaser, 1972; Clinard & Quinney, 1973) the most frequently discussed is that of Gibbons (1965). The

framework for this heuristic typology postulates that offenders proceed through sequential stages of deviant behaviour with different types of individuals existing at different points on the deviant continuum. Types of offenders are determined according to definitional (e.g., offence behaviour, interactional setting, self-concept, attitudes, and role career) and background dimensions (e.g., social class, contact with defining agencies, peer group relations, and family background).

In all, Gibbons (1965) describes nine types of juvenile and twenty-one types of adult offenders. The juvenile types include: 1) Predatory gang delinquent, 2) Conflict-gang delinquent, 3) Casual gang delinquent, 4) Casual delinquent, non-gang member, 5) Automobile thief-"joyrider", 6) Drug user-heroin, 7) Overly aggressive delinquent, 8) Female delinquent, and 9) Behaviour problem delinquent. The adult types include: 1) Professional thief, 2) Professional "heavy" criminal, 3) Semi-professional property offender, 4) Amateur shoplifter, 5) Naive cheque forger, 6) Automobile thief-"joyrider", 7) Property offender-"one-time loser", 8) White-collar criminal, 9) Embezzler, 10) Professional "fringe" violator, 11) Personal offender, "one-time loser", 12) Psychopathic assaultist, 13) Statutory rapist, 14) Aggressive rapist, 15) Violent sex offender, 16) Non-violent sex offender, 17) Incest offender, 18) Male

homosexual, 19) Organized crime offender, 20) Opiate addict, and 21) "Skid row" alcoholic.

Gibbons (1965) made an effort to develop his heuristic typology into a classification system by providing treatment recommendations for various types. In spite of these efforts, there exist several problems which limit its usefulness. Although Gibbons (1975) himself outlined parsimony as a criterion for typological endeavours, with nine juvenile and 21 adult types his typology is anything but. Furthermore, research into establishing the validity of the scheme has not been encouraging (Hartjen & Gibbons, 1969). When three probation officers independently grouped 655 cases from the California department of probation, only 312 could be classified. Of those not classified, 243 were judged not suitable for any type. Furthermore, only 17 of the 27 types were present, with 61% classified into only four types.

Sociological typologies. Researchers and theorists of a sociological persuasion have been well represented in the correctional literature (for an insightful discussion see Andrews, Bonta, & Wormith, 1990). Governed by the notion that social location, (e.g., socioeconomic status) can account for criminal conduct, it is not surprising that typologies of offenders have been developed around these

notions. The most common are those based on social class and subcultural norms.

One social class based juvenile offender typology described in the correctional literature is that of Ferdinand (1966). His heuristic typology discriminates among types on the basis of social class, the social structure of the delinquent group, and the degree of alienation from social norms. The six types from lowest to highest social class included; 1) Disorganized acting out, 2) Theft, 3) Fighting, 4) Criminal, 5) Aggressive exploitive, and 6) Mischievous indulgent. Although common among sociological typologists, this approach suffers from a number of flaws. For example, designed more for use as a heuristic device than practical application, there exists no validity research. Similarly, it is based on sociological factors which have been considered more at the theoretical, than the empirical, level of discussion in the correctional literature (Andrews, et. al, 1990). Consequently its use as an adequate classification system remains uncertain.

Subcultural norm based typologies have been described, with those focusing on adult male prison populations garnering the most attention. This approach is based on how inmates align themselves with the prison subculture as evidenced most commonly by their style of staff-inmate relations and/or commitment to the inmate code. Sykes (1958) presented the first such typology by delineating

types on the basis of three dimensions, with labels derived from inmate expressions used for the different types. The staff-inmate relation dimension resulted in three types: 1) "Right guy", or "Real con", 2) "Rat" or "Squealer", or 3) "Square John". The sexual behaviour dimension also resulted in three types: 1) "Wolf", 2) "Fag", or 3) "Punk" while six types were proposed for how the inmate passed his sentence: 1) "Rapo", 2) "Weakling", 3) "Ball buster", 4) "Tough", 5) "Gorilla", or 6) "Peddler".

Another popular typology which has used this approach comes from Schrag (1961). He proposed four types; 1) Antisocial, corresponding the "right guy", 2) Prosocial, corresponding to the "square John", 3) Pseudosocial, shifted loyalties to suit own interests, and 4) Asocial, continually rebellious with prison authorities. The noteworthy characteristic of Schrag's (1961) typology is that, although mainly a heuristic typology based on inmates of a particular prison, there exists evaluative research of those same prison inmates. Garabedian (1964) developed a 12 item self-report questionnaire, three questions each linked to a specific type, which dealt with attitudes toward self, others, and philosophy of life. From a sample of 345 inmates, approximately 66% were grouped exclusively into a single type. Derived types were also compared on a number of behavioural variables (e.g., criminal record, institutional behaviour, etc.). Despite presenting an

impressive array of data, statistical comparisons distinguishing types are incredibly vague, making precise conclusions difficult. However, the fact that this approach can be used only with an inmate population, cannot classify an inmate prior to entering prison, and that individuals may comprise more than one type, are major limitations.

Empirical typologies. Heuristic typologies such as those described above generally provide a theoretically relevant perspective of criminal conduct. Unfortunately, most have not undergone rigorous scientific examination. The lack of empirical verification of heuristic typologies serves as a major limitation of these schemes for use as classification systems in applied settings. Empirical typologies differ in this regard because they are derived inductively through the statistical analysis of objective data. With this approach statistical techniques reveal the associations among variables and identify individuals characterized by similar sets of scores (Megargee & Bohn, 1979). Although this approach may appear as atheoretical, theory plays a strong role both in the selection of relevant variables to be analysed and in the determination of types. Because of vagaries with certain multivariate statistical procedures the emergence of artifactual findings are possible. The interpretation of delineated types is often

determined by the match of these types to established theoretical principles.

The development of the electronic computer and sophisticated statistical software has played a significant role in the emergence of the empirical typology. Hewitt and Jenkins (1946) are considered pioneers in the development of empirical typologies using computers. Today, the availability of personal computers and statistical packages has created even greater opportunities for empirical typologies. However, technological advancements have allowed for the more convenient construction, and not necessarily a superior brand, of typology to be developed. As Megargee and Bohn (1979) indicate, "unless investigators take the time to establish reliability, cross-validate their systems, and determine the relationships of types to correctional criteria, they will lack both theoretical and practical relevance" (p. 59).

Empirical typologies have been developed through several multivariate statistical techniques applied to a variety of data samples. For example, Sinclair and Chapman (1973) used the non-parametric technique of association analysis to develop a typology of prison inmates. The essence of association analysis is that dichotomous attribute variables are continually split until all variables and cases in a data set have formed groups. For the Sinclair and Chapman (1973) study, forty-five

attribute variables collected on 1,009 first and second time offenders were subjected to association analysis which resulted in seven types. Labelled according to the defining attributes, these included:

- 1) "occasional delinquent" -under 30, less than three priors, and under 25 at first arrest, 2) "late delinquent" - same as #1 but over 25 at first arrest, 3) "professional delinquent" -under 30, more than three priors, planned offence, 4) "aggressive delinquent" -same as #3 but no planned offence, 5) "skilled employment status offenders" - over 30 with skilled employment, 6) "socially integrated unskilled offender" -over 30, unskilled, living at home, and 7) "socially inadequate offenders" -same as #6 but living away from home.

Although the typology developed by Sinclair and Chapman (1973) meets several of the evaluation criteria, (e.g., objective, reliable, comprehensive, economical) it does not provide information regarding cross-validation. It is unknown whether the derived types could be replicated. Similarly, the validity of this typology, particularly of a dynamic nature with respect to the aging of individuals, is unclear. Finally, it is possible that using a linear statistical approach, rather than this non-parametric technique, may provide a more comprehensive analysis of data.

Megargee MMPI-based typology. One empirical offender typology that has received considerable attention is that of Megargee's classification system (Megargee, 1977; Meyer & Megargee, 1977; Megargee & Bohn, 1977; Megargee & Dorhout, 1977). This is a personality typology of profile scores on the Minnesota Multiphasic Personality Inventory derived from a sample of U.S. federally incarcerated offenders. The main statistical approach was that of hierarchical profile analysis, a technique which represents a special case of multivariate analysis of variance (MANOVA).

Megargee's typology was developed in two phases. First, the MMPI profiles of three cross-validating samples of 100 inmates were subjected to hierarchical profile analysis. This process yielded 8 distinct groups in two samples and 9 groups in the third sample. Second, distinct groups from the each sample were matched and plotted. The Welsch (1948) MMPI coding system was then used to establish decision rules characteristic of 9 distinct types. Labelled with non-descriptive names these are: 1) "Able" (17% of sample) moderate elevations on scales 4 and 9, 2) "Baker" (4% of sample) moderate elevation on scale 4 and lower elevation on scale 2, 3) "Charlie" (9% of sample) marked elevations on scales 8, 6, and 4, 4) "Delta" (10% of sample) single elevated spike on scale 4, 5) "Easy" (7% of sample) moderate elevations on scales 3 and 4, 6) "Foxtrot" (8% of sample) prominent elevations on scales 9, 4, and 8, 7)

"George" (7% of sample) moderate elevations on scales 3 and 4, 8) "How" (13% of sample) typified by a generally elevated jagged profile, and 9) "Item" (19% of sample) characterized by absence of elevations.

The Megargee typology is perhaps one of the most well developed offender typological scheme reported in the correctional literature. In addition to meeting the necessary evaluation criteria for use as a classification system and providing suggestions for differential treatment, there is considerable cross validation with other samples (e.g., Booth & Howell, 1980; Edinger, 1979; and Louscher, Hosford, & Moss, 1983). As well, computerized scoring of MMPI profiles are available from the authors.

Unfortunately, there are limitations to this scheme. For example, research has cast doubt on the temporal consistency of the scheme (Simmons, Johnson, Gouvier, & Muzyczka, 1981) and the application to female offenders (Smith, Silber, & Karp, 1988). Kennedy (1986) has suggested the widest and most useful application of this approach may be restricted to the management of inmates within institutions. Perhaps most important, though, is that this typological scheme is based on personality features derived by the MMPI. Although this instrument has enjoyed a long history within the correctional literature it has been suggested (Knight, Rosenberg, & Schneider, 1985) this approach may be less than optimal as a discriminator of criminal conduct.

One of the most common statistical techniques used in the development of empirical offender typologies is that of cluster analysis. This approach has been used on both file-based and self-report data to derive both general typologies of offenders and those of specific classes of offenders. For example, an early study by Carlson (1972) sought to develop a general typology of adult inmates from a Canadian Provincial reformatory. In this study personality test scores, offence characteristics, background history, and adjustment to prison data of 287 Canadian prison inmates and 100 university students were subjected to a cluster analytic procedure. In all, 12 types emerged which were described according the personality dimensions and offence based variables inherent in each type.

In spite of the fact Carlson's (1972) attempt to develop an offender typology contains considerable methodological sophistication, there are limitations with his findings. One of the most apparent is his use of personality based variables. As has been criticized with other personality based typologies, measures of personality may not be the optimal discriminator of criminal conduct. Megargee and Bohn (1979) have criticized this typology for the lack of rules or operational definitions for classifying individuals, the high number of unclassified individuals, and the lack of implications for differential treatment.

A more thorough approach to the development of an empirical typology of offenders is a two-stage procedure in which a data set is first factor analyzed to establish structure, with the resultant factor scores serving as the basis for cluster analysis to derive profile types. In a recent example of this approach, Rosenberg and Knight (1988) sought to determine subtypes of male sexual offenders from a sample of 184 repeat sexual offenders (child molesters and rapists) incarcerated at a treatment centre for sexually dangerous persons. Clinical ratings of thirty-three file-based variables (e.g., offence history, family/ educational background, psychiatric reports, etc.) were subjected to factor analysis with a four factor solution (e.g., substance abuse, unsocial behaviour, life management, and impulsivity) being employed. Using the four factors as a base, cluster analysis of subjects scores were performed which yielded 12 profile types of sexual offenders. Although this study represents a fairly sophisticated methodological approach, several questions arise concerning reliability of data, the association of the four factors to criminal conduct, and the generalization to other samples.

Young Offender Typologies

The typological schemes presented to this point primarily reflect adult offender populations. Attention will now shift to an examination of those typologies

relevant to young offender populations. Two popular heuristic schemes will be presented first, followed by a discussion of empirically based typologies.

Conceptual-level matching model. The Conceptual-Level Matching Model is a theoretically derived taxonomic model which, in correctional applications, has been offered as a way to work with offenders based on a systematic understanding of how individuals interact with different environments (Reitsma-Street & Leschied, 1988). This approach represents the practical application of the original Conceptual Systems Theory developed by Harvey, Hunt, & Schroder (1961). Integrating Piaget's cognitive development theory, Erikson's notions of conflict resolution, and Lewin's theory that behaviour is guided by the integration of personality and environment, there are three main components of the conceptual-level matching model. A fourth principle has also been advanced which describes the process of altering conceptual levels, but this will not be discussed here.

The first component is the notion of conceptual level which is a generic trait estimating how people think, differentiate information, integrate and evaluate clues and arrive at solutions in response to conflict, ambiguity, stress, and expectations in interpersonal relations (Reitsma-Street & Leschied, 1988). Theoretically,

conceptual level is seen as a continuum of four types which individuals pass over time. Types labelled A and B represent the lower end and are characterized by rigid thinking, fear of conflict, authority and ambiguity with moods or rules influencing the evaluation of information. The higher levels of conceptual level, C and D, are characterized by flexible and independent thinking with evaluation criteria and complex responses being used to resolve conflict and/or ambiguity.

The second component of the conceptual-level model is the notion that environments vary in structure from low to high on the basis of such factors as staff and facility characteristics, style of communication, specific programs available, and general "atmosphere" of the setting. High structure environments are those that have rigid, simple, and clear rules with the primary role of staff being to ensure the strict adherence to those rules. At the other end, low structure environments have more flexible rule requirements with staff establishing relationships designed to enhance decision making rather than rule enforcement. Consistent with these environment characteristics, the third component of the conceptual-level model is the person-environment match. This refers to the notion that individuals across all conceptual levels are more comfortable, learn more successfully, and behave more appropriately, when person-environment are matched rather

than mismatched. Moreover, lower conceptual level individuals profit more from high structure environments whereas high conceptual level individuals profit more from low structure environments.

Assessment procedures for this model have focused on the individual and the environment. For the individual, Hunt, Butler, Noy, & Rosser (1978) developed the semi-projective approach of the Paragraph Completion Method (PCM). The PCM is comprised of six incomplete sentences (e.g. "When I am told what to do...", "When I am not sure...", etc.) which are scored from 0 to 3 on the "thoughtfulness" of the responses. Conceptual level is determined according to structural criteria reflecting the degree of differentiation, integration, and social interaction.

Unlike conceptual level assessment, the assessment of the environment is less sophisticated. In fact, Miller (1981) has indicated that there is a virtual absence of standard methods in this regard. Moos (1975) has attempted to fill this void with the development of the Moo's Correctional Institutions Environment Scale, but this instrument has been criticized (Wright & Boudouris, 1982) on psychometric grounds. Since a suitable instrument for assessing the environmental component of the conceptual-level model has not been developed, most formulate

environmental assessments according to the unique features of their particular setting.

Although a number of studies have established the validity of the conceptual level matching model within educational settings, only a small number of studies have examined the utility of this model on young offender populations. Brill (1978) used this model to compare 43 adolescent delinquents of a Quebec training school. He found that those with an appropriate person-environment match had significantly fewer runaways, problem behaviours, and referrals to adult court than those subjects who were mismatched. Similarly, Leschied, Jaffe, and Stone (1985) compared 60 juveniles (mean age 14.6 years) from secure detention or open detention settings. The results indicated that matched groups had significantly fewer institutional problems and fewer offences in a 3-month follow-up compared to mismatched groups regardless of whether they resided in secure or open detention.

The conceptual-level-matching model has attracted considerable attention in the management of young offenders, yet there are several difficulties with this approach. Given the heuristic nature of this system, skilled personnel are required for implementation. Also, the quantification of conceptual level through projective techniques and lack of adequate environmental assessment procedures raises concerns. Finally, while conceptual level may be a factor

in criminal conduct it may be more of an indirect relationship. Other, more directly linked factors of criminal conduct (e.g., antisocial attitudes, antisocial peer relations, etc.), may serve a stronger role in the development of young offender typologies.

Interpersonal maturity level (I-level). Another popular heuristic taxonomic scheme for young offenders is that of the I-Level or Interpersonal Maturity (Warren, 1966). An integration of developmental, Lewinian, psychoanalytic, and social perceptual perspectives, I-Level began as a general theory of personality development (Sullivan, Grant, & Grant, 1957). However, with the aim of developing community alternatives to the institutionalization of delinquent offenders, Marguerite Warren (formerly Grant) and her colleagues at the California Youth Authority developed the scheme into a treatment planning and evaluation tool of young offenders. Interpersonal maturity is conceptualized as a means for interpreting interactions with persons, environments, events, and oneself (Harris, 1988). Within the I-level model, development is conceived as a continuum with seven specific stages ranging from complete immaturity typical of young children up to a theoretical ideal of maturity which is rarely, if ever, achieved.

Warren (1966, 1969, 1976) contends that young offenders are restricted to maturity levels two to four. Moreover, recognizing that delinquents characteristically differ from non-delinquents, she refined the system and provided sub-types of offenders at different levels of maturity. I-level I_2 involves a primitive egocentric individual who relates to others in terms of what they can do for him/her. There are two sub-types at this level. The "Asocial Passive" type whines, complains and withdraws when frustrated while the "Asocial Aggressive" type is actively demanding and aggressive when thwarted. Individuals at I-level I_3 see the world in simplistic, power-oriented stereotypes and attempt to manipulate others to achieve their goals. There are three types at this level. The "Immature Conformist" blindly follows whomever has the power at the moment, the "Cultural Conformist" conforms to the rules of a delinquent peer group, and the "Manipulator" attempts to obtain power. For the I_4 maturity level individuals are concerned about status and respect and internalize a set of rules which allows them to relate to people and understand how their behaviour effects others. The four types at this level include the "Neurotic Acting-out" who misbehaves to avoid the anxiety of a negative self-image, the "Neurotic Anxious" who also experiences negative self-image but is more introspective and show signs of emotional disturbance, the "Cultural Identifier" who operates within a delinquent value

system, and the "Situational-emotional Reaction" type who acts out in response to a current crisis.

I-level classification is accomplished by one of two assessment methods. The original assessment was based on a semi-structured clinical interview. The open-ended question format focuses on such content areas as; current situation, delinquent behaviour, family, peers, school, self-descriptions, and future plans with the aim of determining how the individual perceives him/herself, significant others, and their environment. Overall judgments of the interview, first establish the I-level stage and then the subtype classification. The second assessment method is by the Jesness Inventory (Jesness, 1974). The 155 true-false items yield age-normed T-scores on eleven personality/attitude scales. Due to the complex nature of the scoring system, the early version required data to be computer scored, however, a hand scoring method now exists.

The vast majority of the evidence regarding the validity of the I-level system stems from a series of program evaluations of the California Youth Authority. Warren, Palmer and their colleagues developed a large scale differential treatment program known as the California Treatment Project which operated from the early 1960's to mid 1970's. Overall, the results of the treatment project varied from sample to sample with the experimental group faring better at times, showing no difference at others, and

at other times faring worse than the controls (Palmer, 1974; Warren, 1977). The general consensus was that these evaluations indicated that different types of delinquents exist and that they respond differentially to treatment. Other than these studies, the validity of the system has never been tested directly (Gibbon, 1970).

The I-level system has attracted a fair amount of attention in the young offender literature. Although this approach to categorizing young offenders shows strength with respect to treatment strategies, it does have its problems. In fact, many of the limitations of I-level parallel those of the conceptual-level-matching model, i.e., more heuristic than empirical, requires highly trained personnel for implementation, and there are concerns about the assessment procedures.

Hewitt and Jenkins empirical typology. While the heuristic young offender typologies have received considerable attention in the correctional literature, one of the most significant forces for typological schemes in general, and young offenders in particular, comes from the work of Hewitt and Jenkins (1946). In their seminal study, file-based data were gathered on 500 youths referred to a Michigan child guidance centre. Seventy-eight percent of the sample were males with an average age of approximately 12 years. The majority of cases were referred from school

and/or child welfare agencies with only 9% coming from juvenile court. Ninety-four behavioural attributes comprising such dimensions as demographics, family background, cognitive abilities, social environment, and education, were coded. With the elimination of certain variables of low frequency and/or redundancy, a final selection of 45 variables was intercorrelated manually using a computing diagram. Three distinct patterns emerged from this analysis. The "socialized delinquent" was characterized by bad companions, gang delinquency, cooperative stealing, and truancy from school. The "unsocialized aggressive" was characterized by assaultive tendencies, cruelty, starting fights, malicious mischief, defiance to authority, and inadequate guilt feelings. The "overinhibited" type consisted of shyness, seclusiveness, worry, sensitivity, and submissiveness. In addition to determining separate types, distinctive family patterns unique to each type were also found.

Quay's factorial derived typology. Herbert Quay (1964) sought to extend the findings of Hewitt and Jenkins (1946) by using more sophisticated statistical methods on a more homogeneous population. A sample of 115 incarcerated male young offenders with a mean age of 16.6 years were examined. Case records were examined by five parole officers who coded the file according to a 36-item checklist. The checklist

included several behavioural items from the Hewitt and Jenkins (1946) study and additional items hypothesized by Quay to be linked to delinquency. After eliminating items checked in less than 10% of cases, 29 items were intercorrelated and factor analysed.

Factor analysis yielded four factors which accounted for sixty-eight percent of the variance. Consistent with Hewitt and Jenkins' (1946) socialized delinquent, factor I reflected a psychologically "normal" group delinquency phenomena and was labelled "Socialized-substructural". Factor II reflected assaultive, defiant, irritable, and feelings of persecution tendencies and was labelled "Unsocialized-Psychopathic". This factor paralleled the unsocialized aggressive of Hewitt and Jenkins (1946). Factor III reflected an anxiety dimension consistent with the overinhibited child and was labelled "Disturbed-Neurotic". The weakest factor in terms of percentage variance accounted for reflects an inability to cope and incompetent-immature dimension. Factor IV was labelled "Inadequacy-Immaturity".

Although Quay's work on extending the approach of Hewitt and Jenkins (1946) has made a significant contribution to the young offender typology literature, there are at least two problems with this system. First, Quay considers the derived factors to represent dynamic dimensions with individuals positioned at various points on

the continuum at different times. This raises concerns regarding the temporal stability of factors which can make it difficult to group cases into mutually exclusive categories. The second problem lies in the assessment devices used for determining types. The most common instrument, the Behaviour Problem Checklist (Quay and Peterson, 1975), requires the administrator to have good case history information and an opportunity to become familiar with the subject. Both sources of information may vary from setting to setting.

MMPI-based juvenile typology. The widespread attention the Megargee-Bohn typology (Megargee & Bohn, 1979) has garnered in the classification of adult inmates, has lead to examinations of this approach for use with young offenders. Doren and Megargee (1980) classified the MMPI profiles of 215 adolescent male California probationers (mean age 16 years) according to the ten types of the Megargee-Bohn classification system. When the juvenile profile patterns were compared to the ten profile types characteristic of adult offenders reliable differences between the two distributions emerged. One consideration for these results was the use of adult MMPI norms on a sample of adolescents. However, the differences between the adolescent and adult distributions remained even when the K-corrected and non-K-corrected MMPI norms were used. The authors interpreted the

results in three specific ways. First, a comparison between probation adolescents and incarcerated adults on this typological approach may not be appropriate. Second, the norms by which the young offender MMPIs were classified may not adequately reflect the pattern of adolescent types. Finally, the suggestion that the MMPI-based typology cannot be properly applied to juvenile populations.

Other juvenile typologies. Rather than focus on the development of typologies of general young offender populations, recent taxonomic efforts have examined select sub-types of offenders. For example, Sas, Jaffe, and Reddon (1985) combined a clinical-rational and empirical typology of "dangerous" young offenders. In their study, 190 young offenders referred to a Canadian Family Court Clinic, half with criminal records for dangerous offences (e.g., physical harm perpetrated on another individual) were sorted into four groups on the basis of clinical rating of dangerousness (rated dangerous vs rated not dangerous) and criminal history (dangerous offence on record vs no dangerous offence). One important feature of this study was the comparison between groups on several variables with well established empirical relationships with delinquency. These included family background information, school related variables, behavioural symptoms, psychological assessment, court dispositions, and follow-up variables.

In this study, cluster analytic techniques were used as a validation procedure. That is, clinical ratings were used to establish hypothesized membership for the four groups while cluster analysis was used to statistically determine group membership. Chi-square analysis assessing the statistical difference between the hypothesized and cluster analysis groups indicated that members of each group shared more in common than with other groups. Although this typology is essentially a heuristic one, with empirical methods used in a confirmatory manner, it is contextually useful in that it demonstrates the range of methods in deriving typologies.

In another recent study, Cornell, Benedek, and Benedek (1987) sought to establish a typology of juvenile homicide offenders on the basis of circumstances of the offence and characteristics of the offender at the time of the offence. Mainly a heuristic endeavour, these authors used criminogenic variables to validate their typology. From the case records of a Michigan Forensic Psychiatry centre 72 adolescents (mean age 16.7 years) charged with homicide were examined. File-based information was used to form three groups. The "psychotic" group were those individuals whose behaviour was consistent with DSM-III psychopathological criteria. The "conflict" group evidenced interpersonal conflict (e.g., argument or dispute) with the victim. The

"crime" group were those who committed homicide during the course of other criminal behaviour.

Fifty-two background variables, some with established criminogenic links, clustered into 8 composite categories served as the validation of the clinical derived types. Hypothesizing that different background variables may play a greater role in deviant behaviour, the 8 composite variables were weighted on a rational basis with larger weights given to greater problems or dysfunction. These composite variables with weighting include; 1) Family dysfunction (.54), 2) Childhood problems (.58), 3) Criminal activity (.70), 4) Psychiatric history (.66), 5) School adjustment (.52), 6) Violence history (.44), 7) Substance abuse (.79), and 8) Stressful life events prior to offence (.36). Although there are a number of limitations with the approach of this study, statistical comparisons between the three groups and a cohort of non-homicide offenders established some validity for the typology.

In summary, in an effort to expand knowledge regarding the etiological correlates and/or differential treatment for criminal conduct numerous typological schemes have appeared in the correctional literature. Some represent a more theoretical, or heuristic style, whereas others have been derived empirically. Unfortunately, limitations with the existing young offender typologies has created a noticeable gap in the research literature. Perhaps the most apparent

limitation of this literature is the virtual omission of research on typologies of relatively early young offenders, those between 12 years and 16 years of age. While there exist typological systems of older young offenders (e.g., I-level, conceptual-level matching model, MMPI-based, etc.), there are a number of problems with these approaches which limit their application to the younger age group. Information bearing on the development of an empirically-based typology of early young offenders would be a significant contribution to the correctional literature.

Conceptual Framework

Criminological Theories of Delinquency

There exist a number of causative theories of antisocial behaviour within the correctional literature. Some of the more traditional theories of deviance are provided by mainstream criminology. For example, Anomie or strain theory (Merton, 1969) contends that crime is linked to lower class individuals because, while they maintain conventional aspirations of success, social structure barriers prevent these individuals from achieving these goals in legitimate ways. Crime for these individuals represents an unconventional means by which to achieve conventional goals. Subcultural theory (Cloward & Ohlin, 1980) postulates that a sub-section of the larger social structure, in particular the urban lower class, harbours attitudes, values, and beliefs which devalue conventional routes to success and, instead, prefer more hedonistic and destructive ones. Labelling theory (Schrag, 1971) contends that there exists no fundamental difference between delinquents and non-delinquents with the exception that the former have been formally processed by the legal system. Moreover, lower class ethnic males are seen as selectively processed in this regard. Finally, Control theory (Hirschi, 1980) contends that deviant behaviour exists within all individuals and that for lower class individuals there are

simply fewer inhibitory motivations for antisocial behaviour.

Without question, the theories of delinquency proposed by mainstream criminology have had a distinct presence within the correctional literature. However, while certainly identifying factors that contribute to delinquency, Andrews (1982) has suggested that these theories are somewhat narrow in scope and incomplete as explanations of antisocial conduct. The criticism that these theories are narrow may be traced to the predominant view within mainstream criminology that 'social location' is the central factor in crime and that person specific factors (e.g. biological and psychological) are irrelevant. Social location represents the notion that the roots of crime are buried deep in the political-economy and structure of the broader social system. The predominant theories of mainstream criminology are also seen as incomplete in that systematic research (Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1990) has convincingly demonstrated social location issues to be empirically unrelated to criminal behaviour. Moreover, this same research has shown that person specific factors, thought to be irrelevant by mainstream criminology, are quite strongly associated with antisocial behaviour.

The Psychology of Criminal Conduct

Another perspective of antisocial behaviour is that of the Psychology of Criminal Conduct (Andrews, Bonta, & Wormith, 1990). The main thrust of the psychology of criminal conduct is the examination, through empirical research, of the full range of differences within and between individuals that may account for variations in the rates of antisocial behaviour. Given the focus of mainstream criminology, as discussed above, the psychology of criminal conduct perspective appears quite distal to that of mainstream criminology. In fact, the notion that individual factors are relevant to criminal conduct is so foreign to mainstream criminology that Andrews and Wormith (1989) have described a movement within sectors of mainstream criminology to actively discount the propositions inherent in the psychology of criminal conduct.

In an effort to illustrate the differences between the two perspectives, Andrews et al., (1990) have compared the objectives and assumptions of each with respect to four main areas. One area of difference between the psychology of criminal conduct and mainstream criminology is the conceptual focus, or choice of dependent variables of each perspective. The psychology of criminal conduct is concerned with understanding individual variation in the criminal conduct (e.g., recidivism) whereas mainstream criminology focuses on aggregated crime rates, law and

order, and structural inequalities in the distribution of wealth and power. A second area of comparison between the two perspectives focuses on the mediators of antisocial behaviour, or choice of independent variables. The psychology of criminal conduct examines the full range of biological, personal, interpersonal, circumstantial, and cultural covariates of criminal conduct, while mainstream criminology has denied the importance of such individual risk and need factors. The psychology of criminal conduct and mainstream criminology also differ in the role of clinical service for offenders (e.g., rehabilitation). The psychology of criminal conduct relies on clinical experience to promote rehabilitation while mainstream criminology contends that such efforts are ineffective. The final area of comparison between the two perspectives concerns the importance of systematic empirical research. The psychology of criminal conduct maintains a reductionistic model in which systematic empirical research and an unsparing identification of potential errors of conceptualization and measurement reveals covariates of criminal behaviour. Mainstream criminology, on the other hand, promotes anti-differentiation and anti-treatment biases and rejects established covariates of criminal behaviour. The psychology of criminal conduct, therefore, appears as a more stimulating and comprehensive perspective of antisocial behaviour.

Andrews (1982a) has suggested that a fundamental objective of any perspective of deviant behaviour is to enhance the knowledge of deviant behaviour. Central to this notion of knowledge construction is the documented ability, or potential ability, to both predict the occurrences of deviant behaviour and to influence the chances of deviant behaviour occurring. One perspective on antisocial conduct congruent with these notions is that of the Personal, Interpersonal, and Community-Reinforcement (PIC-R) (Andrews, 1982a) perspective on deviant behaviour.

Personal, Interpersonal, and Community-Reinforcement (PIC-R)

The PIC-R perspective represents a broad social-learning approach to human conduct in general, and deviant behaviour in particular. It is a flexible perspective which considers a range of factors that may actively encourage as well as actively discourage deviant behaviour. Moreover, it recognizes that these factors may operate at several levels (e.g., personal, interpersonal, and community) and that they may be highly individualistic over time and across situations. Andrews (1982a) identifies several special functions served by PIC-R. First, it highlights the foci of prediction, prevention and rehabilitation of deviant behaviour. Second, while it recognizes the limitations of the more traditional theories of deviance, it does not dismiss them. Rather, it readily classifies them for the

contribution they make to the overall knowledge base.

Third, PIC-R recognizes the inter-disciplinary nature of the analysis of deviant behaviour and promotes and integration of these into to the complete analysis. Finally, PIC-R serves to dynamically explore the empirical foundations of deviant behaviour.

The fifteen principles of PIC-R are presented in Appendix A. While only a brief summary of the four main features of this perspective will be made, a more detailed discussion may be found elsewhere (e.g., Andrews 1982a). The most fundamental principles, drawn from the field of behaviour analysis, contend that the factors responsible for variations in deviant behaviour are located in the immediate situation of action. More specifically, certain antecedent and consequent conditions provide signals of the delivery of rewards and costs for particular acts. Antecedent conditions are those stimuli that occur before the behaviour and alter the probability of the behaviour occurring. Consequent conditions are those stimuli which occur subsequent to the behaviour and influence the recurrence of the behaviour. Consequences that increase the probability of a behaviour are known as rewards, whereas consequences that decrease the probability are called costs. It is thought that neutral stimuli become antecedents and consequences for deviant behaviour through the mechanisms of traditional learning theory (e.g., classical, operant, and

observational learning). It is the antecedent and consequent conditions of the immediate contingencies which are responsible for the acquisition, maintenance and modification of deviant behaviour.

A second main feature of PIC-R is that while the immediate contingencies of action account for variations in deviant behaviour, it is the various personal, interpersonal and community factors which are responsible for the development, maintenance and modification of these fundamental contingencies. This notion speaks of the various individual contingencies. That is, although some contingencies may become automatic (e.g., drug produced sensory change) there are a number of personally-mediated contingencies (e.g., self-management, self-efficacy, etc.) and interpersonally-mediated contingencies (e.g., approval or disapproval of one's actions from others). As well, the community and larger social structure provides certain contingencies which may require a personal or interpersonal response. In this way, the person is seen as being differentially responsive to contingencies, because of biophysical factors (e.g., genetics, age, gender, etc.), and also having the potential to control his/her behaviour. This personally-mediated control occurs through such processes as standard setting, planning, self-monitoring, and self-evaluation of behaviour.

Third, since deviant behaviour serves a variety of functions, PIC-R attends to the density of rewards and costs of such behaviour. In short, the chances of a deviant act occurring are thought to increase with the density of rewards and decrease with the density of costs. Density in this context refers to the number, variety, quality, and magnitude of rewards and costs and the immediacy, frequency and regularity with which they are delivered. The importance of the concept of density within PIC-R is that it encourages a comprehensive assessment of the current rewards and costs. Also, the background density of rewards and costs is seen as important for an understanding of the relative importance of any specific reward or cost. That is, if the density of rewards/costs is already at a high level then additional rewards/costs may have little effect on behaviour. However, adding a specific reward/cost to an intermediate density level is likely to have a greater impact on behaviour.

Finally, PIC-R recognizes the density of rewards and costs for nondeviant alternative behaviours. When the density of contingencies for nondeviant behaviours are at a high level the motivations for deviant behaviour are reduced. Similarly, a high density of rewards for nondeviant behaviour increases the potential density of costs for deviant behaviour which makes this action less likely.

Risk/Need Factors in Delinquency

The PIC-R perspective promotes a comprehensive examination of those factors responsible for variations in criminal conduct. Inherent in this perspective is the notion that these risk/need factors can be reliably measured. Risk factors are those attributes and life circumstances of individuals which are predictive of specific negative outcomes such as delinquency, school failure, and adult criminality (Andrews, Bonta, Motiuk, & Robinson, 1984). Need factors are those dynamic risk factors which are amenable to influence and which, when they do change, are associated with changes in the negative outcomes (Andrews, 1983).

Andrews, et al., (1986) have identified three contexts in which the accurate assessment of risk/need factors in children, including young offenders, are important. First, risk/needs assessments yield important information that can enhance the clinical decisions of type and quality of treatment and/or placement options. Second, the evaluation of program effectiveness must take into consideration the services delivered and the risk/need levels of the clients being served. Finally, and most relevant to the present proposal, is a management context whereby risk/need levels of clients are important for the development of effective case classification systems and resource allocation.

The empirical literature (see Loeber & Dishion, 1983; Parke & Slaby, 1983, for reviews) indicates that considerable effort has been made to identify risk/need factors associated with delinquent behaviour. It is evident from this research that a very broad range of variables can be implicated as risk factors. They may include aspects of the child him/herself, their home, parental attitudes and practices, peer group involvement, and school related factors. Given the range of potential variables it becomes evident that risk factors are highly individual. Moreover, not only is the probability of delinquent behaviour affected by more than one risk/need variable in a given circumstance, these factors have a differential effect across individuals and groups.

The considerations of the empirical research presented above raise the important notion that any assessment of risk/need factors of youth should attempt to provide a broad and comprehensive survey of such factors. Unfortunately, while a variety of risk/need assessment devices have been developed (e.g. Achenbach & Edelbrock, 1983; Ashford & LeCroy, 1988) most are narrow in scope and do not adequately assess the range of risk/need factors within a single instrument. One assessment instrument which appears as an exception in this regard is the Youth Level of Service Inventory (YLSI) (Andrews, Robinson, & Hoge, 1984).

The Youth Level of Service Inventory (YLSI)

The YLSI is a quantitative risk/need assessment instrument used to classify youth according to their risk of deviant behaviour and need for treatment. This instrument originated from work with the Level of Supervision Inventory (LSI) (Andrews, 1982b), a risk/need instrument designed for use with adult probationers. Derived from a social learning perspective which assumes behaviour is learned through the interaction of the individual with the environment, the LSI was initially developed to aid case managers in supervision decisions concerning probationers and parolees. Subsequent research with the LSI has established a number of psychometric properties including; reliability (Andrews, Kiessling, Mickus, & Robinson, 1986), construct validity (Andrews, et. al., 1986; Andrews, et. al., 1984) and, criterion validity (Bonta & Motiuk, 1985; Motiuk, Bonta & Andrews, 1986). The LSI, though, was designed for adult offender populations and thus emphasizes risk/need factors relevant to adults (e.g., marital problems, employment).

In an effort to establish a LSI-style assessment instrument for use with young offenders, the Young Offender Level of Service Inventory (YO-LSI) (Shields & Simourd, 1991) was developed. The YO-LSI emphasizes concerns of adolescent offenders (e.g., parental conflicts, sexual acting out, teacher interactions, etc.) and consists of 76 items which cluster into seven subcategories; criminal

history, substance abuse, education/ employment problems, family problems, peer problems, accommodation problems, and psychological variables. In a recent study of the psychometric properties of the YO-LSI, Shields & Simourd (1991) found the instrument to be reliable, and have construct, predictive, and functional validity on a sample of incarcerated young offenders. Unfortunately, the YO-LSI was designed for use with Phase II (e.g., 16-18 years of age) more serious (e.g. incarcerated) young offenders. It does not consider issues which may be more appropriate for a younger, less serious offender population. In this way, the YLSI may represent an appropriate risk/need assessment instrument for use with younger (e.g., Phase I) adolescent offenders.

Evaluative research with the YLSI to date has focused mainly on child welfare populations. For example, Andrews, Robinson, and Balla (1986) compared high and low risk children and families, as assessed by the YLSI, to evaluate a parenting program as an alternative to residential placement. The YLSI was found to be a reliable and valid instrument for use in effective case classification. In a related study, (Andrews, Robinson, Hoge, & Balla, 1985) evidence for the psychometric soundness (e.g., reliability, construct, predictive, and functional validity) of the YLSI was found for a sample of non-residential subjects of the Children's Aid Society.

More recently, Simourd, Hoge, & Andrews (1991) examined the construct validity of the YLSI with the Child Behavior Checklist (Achenbach & Edelbrock, 1983) and the DSM-III-R (American Psychiatric Association, 1987) criteria for conduct disorder on a residential sample of clients of the Children's Aid Society. In this study, the YLSI total score was found to be significantly associated with both the Child Behavior Checklist and the DSM-III-R criteria for conduct disorder. Moreover, an examination of the YLSI subcomponents found the personality/ skills subtotal to be more strongly associated with the Child Behavior Checklist total score than the YLSI-CBC total score correlation. Given that Child Behavior Checklist is largely a personality-based instrument, this finding indicates the YLSI, with a broader range of risk/need factors assessed, may be a more comprehensive risk/ need assessment tool.

Preliminary evidence of the utility of the YLSI for use with young offenders comes from two studies. It should be noted that in the Province of Ontario young offenders are classified as either Phase I (12 to 15 years of age) or Phase II (16 through 17 years of age). Phase I young offenders are the jurisdiction of the child welfare system and fall under the mandate of the Ministry of Community and Social Services. On the other hand, Phase II offenders are governed by the Ministry of Correctional Services.

One of the first attempts to use the YLSI with Phase I young offenders comes from a study by Scott (1985). In this study, the files of 84 youths in contact with an Ottawa juvenile probation office were reviewed and a YLSI on each subject completed. The subjects ranged in age from 10 to 16 years with a mean of 14 years. Approximately half of the sample were first time offenders while the other half generally had several previous juvenile justice contacts. Using alpha coefficients as a measure of internal consistency, acceptable levels were found with subcomponent scores ranging from .52 to .81 except for the accommodations subcomponent which yielded an alpha of .18. Using various measures of recidivism (e.g., official and unofficial) and a measure of service received by each client (e.g., number of contacts with probation staff) as criterion measures, the YLSI was found to show considerable predictive criterion validity. That is, the YLSI was positively associated with the level of supervision and recidivism.

In summary, while there exist several traditional theories of delinquent behaviour, most appear incomplete and narrow in scope. The conceptual framework offered by the psychology of criminal conduct (Andrews, Bonta, Wormith, 1990) and, in particular, that of the personal, interpersonal, and community-reinforcement perspective on delinquent behaviour (Andrews, 1982a) provides a more comprehensive and flexible approach to the study of

deviance. Within this context is the assessment of certain risk/needs variables. Although there exists a variety of risk/needs instruments, the Youth Level of Service Inventory (Andrews, Robinson, & Hoge, 1984) has shown to be particularly useful with youth and young offenders.

The development of a typology of Phase I young offenders based on the YLSI is important for a number of reasons. First, it will be one of the few typologies relevant to young offenders which is grounded in relevant psychological theory. Second, it will be based on a risk/needs instrument with demonstrated links to antisocial behaviour. Third, because of the nature of the YLSI, a typology based on this instrument will be useful in the clinical assessment and treatment of young offenders and the evaluation of services provided to these individuals. Finally, such a typology provides an opportunity to fill a noticeable void in the young offender literature.

Cluster Analysis

Historical Developments

Cluster analysis represents one of the most popular statistical methods used in the development of empirically-based typologies. Although anthropologists had been using rudimentary concepts of cluster analysis since the early 1900's, it was not until the late 1930's that this approach was used in psychology. Tryon (1939) was one of the first to apply cluster analysis to the study of psychological phenomenon. Although influenced by the conceptual notions of factor analysis, Tryon (1939) was also critical of this approach because "it made certain undesirable assumptions, it involved complicated mathematics which few psychologists understand, and it required a great deal of labour to solve" (p. 2). He proposed the more simpler method of cluster analysis as a "poor man's factor analysis". Another researcher with an early interest in the use of cluster analysis in psychology was Raymond Cattell. Among his contributions to this approach in psychology were discussions of various clustering methods (Cattell, 1944), suggestions for an alternative to the Pearson product moment correlation as a measure of similarity (Cattell, 1949), and comments regarding the meaning of "type" (Cattell, 1957).

In spite of the early efforts in psychology, cluster analysis did not garner much attention in the scientific literature until the early 1960's. It was at this time that

an explosive growth in the use of cluster analysis occurred. In fact, a review of the cluster analysis literature (Blashfield and Aldenderfer 1978) found that between 1963 and 1975 the number of articles on cluster analysis for all disciplines doubled approximately every three years. Two factors are recognized as responsible for this sudden interest in cluster analysis: 1) the availability of high speed computer technology and 2) the publication of the now famous "Principles of Numerical Taxonomy" by Sokal and Sneath (1963).

The most significant contribution computer technology provided for the popularization of cluster analysis was that these machines could perform many of the complicated and time-consuming mathematical processes inherent in cluster analysis. For instance, most cluster analyses rely on the construction and analysis of a $N \times N$ similarity matrix (where N refers to the number of entities to be clustered) which is scanned $N - 1$ times. Blashfield and Aldenderfer (1988) report that a reasonable-sized sample of 200 cases requires the analysis of a 200×200 matrix consisting of 19,900 unique values scanned a total of 199 times. To perform this task manually, as was the case in the pre-computer era, is clearly an overwhelming endeavour. However, high speed computers could perform much of the data processing with relative ease and in a fraction of the time. Not only did this make cluster analysis a more practical

research approach, but more importantly, it provided an opportunity for mathematicians and statisticians to focus on the exploration and development of a wide range of mathematical algorithms and cluster analytic methods. As well, enhanced computer programming made cluster analysis techniques more accessible to those researchers less mathematically/statistically inclined. With cluster analysis programs included in the traditional statistical packages, cluster analysis emerged from the theoretical textbooks and into the laboratory. Overall, computer technology undertook the "perspiration" of cluster procedures freeing researchers for the "inspirations" of the application of these methods to scientific phenomena.

The second major stimulus in the popularization of cluster analysis in the scientific literature was the publication of "Principles of Numerical Taxonomy" by Sokal and Sneath (1963). Although they appeared largely unaware of the early cluster analytic work in psychology, these biologists proposed a new approach to biological classification. Their empirical classification approach consisted of an efficient three step procedure consisting of; gathering considerable data on a set of organisms of interests, estimating the degree of similarity among these organisms, and the use of a clustering method to place relatively similar organisms into similar groups. The approach proposed by Sokal and Sneath (1963) raised the

issue of the fundamental importance of classification as a scientific procedure.

Although the growth in the literature on cluster analysis has moderated since the period of the 1960's and 1970's, it remains as one of the most popular techniques in the development of empirically-based typological systems. In spite of its popularity, however, cluster analysis remains a poorly understood statistical procedure. Because of its central role in the development of the proposed typology, a brief discussion of cluster analysis methodology will be offered.

Cluster analysis is a multivariate statistical procedure that starts with a data set containing information about a sample of entities and attempts to reorganize these entities into relatively homogeneous groups (Aldenderfer & Blashfield, 1984). In actual practice, cluster analysis proceeds in five steps. First, a data sample with appropriate measures of case characteristics is selected. Second, an estimate of the degree of similarity among cases is computed which forms the $N \times N$ similarity matrix. Third, the similarity matrix is subjected to a clustering method which reveals groups of similar cases. Fourth, the most meaningful cluster-number solution is determined and retained for further investigation. Finally, a variety of methods are used to validate the retained cluster number solution. Before describing in more detail the steps of

cluster analysis, it is important to describe some cautionary remarks about the cluster analytic approach.

Cautions in Cluster Analysis

Whereas most statistical methods are based upon an extensive body of statistical reasoning and theoretical assumptions, most cluster analysis methods are relatively simple procedures which have no such statistical underpinnings. The essence of cluster analysis is that they simply represent mathematical algorithms which create clusters of cases. Although there exists research (Jardin and Sibson, 1971) which has explored the properties of these algorithms, the user of cluster analysis should recognize the simplicity of this approach. Aldenderfer and Blashfield (1984) have described cluster analysis methods as heuristics, or "rules of thumb" without a fundamental statistical background.

Another cautionary note on cluster analysis is the notion that these techniques have evolved from a variety of disciplines, many holding unique requirements and biases. Thus, the techniques common to one discipline may not be relevant to other disciplines. Evidence of this issue can be found in the terminology used. For example, while terms such as "case" and "entity" are common in the social sciences, "OTU" (operational taxonomic unit) is the preferred term in the biological sciences to describe the

"thing" being classified. A more important aspect of this discipline bias issue is the fact that different disciplines generally prefer different clustering methods. Given that different clustering methods can, and do, generate different solutions to the same data set, it is important for the user to select the clustering methods most consistent with the discipline with which the data set was derived.

One final cautionary note on cluster analysis is Aldenderfer and Blashfield's (1984) notion that the cluster analysis strategy is structure-seeking but its operation is structure-imposing. That is, the aim of cluster analysis is to discover structure in data. In operation, though, cluster analysis assigns cases into groups, and these groups may be radically different in composition when different clustering methods are used. Thus, a key component in using cluster analysis is to take steps (e.g., replication of cluster solutions) to ensure resultant cluster groups are theoretically and practically meaningful.

Data Issues and Cluster Analysis

The first step in a cluster analysis is the selection of the data set and measurement of case characteristics. Aldenderfer and Blashfield (1984) suggest that the choice of variables to be used with cluster analysis is one of the most critical steps in the research process. One aspect of this issue is that variables must be selected which are

relevant to the typology being sought. For example, if a researcher is investigating the effects of different styles of treatment on different types of offenders, including such variables as height, weight, blood pressure, etc., may add very little to the result typology. Aldenderfer and Blashfield (1984) also raise the important point that variables should be selected on the basis of an implicitly or explicitly stated theoretical rationale. Given the rather arbitrary nature of cluster analysis it becomes tempting to engage in a process of "naive empiricism". Also thought of as "data fishing", naive empiricism refers to the collection and analysis of a large number of variables in the hope of discovering some structure. Everitt (1979) contends that this fishing issue is particularly dangerous in the context of cluster analysis because of the heuristic nature of the approach.

Another important aspect of variables selected for cluster analysis is the standardization or other transformation of these data. As is the case with many statistical analyses, when the normality of a data set is in question a logarithmic or other transformation is commonly performed. Similarly, data not of the same scale values are commonly standardized to a mean of 0 and to unit variance. However, a number of issues have been raised in the literature regarding the standardization of data to be cluster analyzed. While arguing that the standardization of

variables be a recommended procedure in cluster analysis, Everitt (1974) also points out that such a procedure can dilute the differences between groups on those variables which are the best discriminators. At a theoretical level, Edelbrock (1979) has suggested that multivariate data sets may have different distribution parameters across groups in which standardization may alter the relationship between them. At a practical level, however, his Monte Carlo studies on the effects of standardization reveal little differences between standardized and unstandardized data to the resulting clusters. Clearly, the issue of data standardization in cluster analysis remains unresolved. While it is considered to be an acceptable practice, Aldenderfer and Blashfield (1984) suggest the decision to standardize should be based on a problem-to-problem basis.

Concept of Similarity

Since most clustering procedures require the computation and analysis of an $N \times N$ matrix of entities, the concept of similarity and its measurement play an integral role in the cluster analysis process. Blashfield and Aldenderfer (1988) consider the concept of similarity of objects to be fundamental to the classification process. Although the general concept of similarity may be relatively simplistic, the quantification of this concept in cluster analysis is somewhat more sophisticated.

Clifford and Stephenson (1975) suggest the concept of similarity includes the comparison of at least two cases, with the meaningfulness of the similarity between any two cases dependent upon the total heterogeneity of that population. These authors also note that any discussion of similarity must include the consideration of the comparisons between cases, comparisons between a case and a group of cases, and comparisons between groups of cases. It should be noted that the term "similarity", within the cluster analysis literature, is commonly used in a generic sense to refer to the mutually dependent concepts of similarity and distance. In essence, similarity refers to the degree of closeness between cases whereas distance refers to the difference between cases. While each approach has its own theoretical and mathematical properties, they represent complementary concepts in the cluster analysis approach.

In terms of the quantitative estimation of similarity, Lorr (1983) notes that the conventional theoretical model of similarity is geometric and dominated by the notion of the metric. In essence, cases are represented as points in some attribute space such that the observed similarities and dissimilarities between cases correspond to the metric distance between respective points. In order to meet the criterion of being metric, Cormack (1971) suggests the similarity estimate must be of an interval scale, must have only positive values, must be symmetric, and adhere to the

triangular inequality. However, at least one researcher (Tversky, 1977) has questioned the symmetric assumption on the basis of underlying mathematical properties. Presenting evidence of asymmetric similarities, he argues that similarity should not be treated as a symmetric relation. While recognizing this issue, Lorr (1983) suggests that departures from the symmetry relationship are generally small and that similarity measures are useful in the approximation of discrete structures that are represented in the relation between cases.

Although cluster analysis researchers have a wide selection of similarity measures, a much smaller number of these measures are most routinely used. Clifford and Stephenson (1975) have suggested that certain similarity measures are not commonly used because they are mere variants of other methods, they have unfavourable properties, or are too highly specialized. Sneath and Sokal (1973) have organized the many similarity measures into four types: 1) correlation coefficients, 2) distance measures, 3) association coefficients, and 4) probabilistic similarity coefficients. Although all have appeared in the cluster analysis literature, the two most common types used in the social sciences are correlation coefficients and distance measures.

Designed originally as a method to correlate variables, the correlation coefficient, particularly the Pearson

product-moment correlation, has been used as a similarity measure in the classification literature to correlate cases. This method can be used with ratio or interval scale variables, and in the case of binary data it is transformed into the popular phi coefficient. Aldenderfer and Blashfield (1984) note that when the correlation coefficient is used as a similarity measure it represents an index of "shape" which is insensitive to differences in the magnitude of the variables used to compute the coefficient. The attention to the shape characteristics of data can be particularly useful in the development of case profiles.

Although the correlation coefficient has been used as a similarity measure in the classification literature, there are a number of limitations with this method. Aldenderfer and Blashfield (1984) point out that this measure of similarity fails to meet the triangle inequality criterion. These authors also note that the calculation of the correlation between cases does not make statistical sense because a mean value across different variables must be obtained rather than across cases. However, perhaps the most significant limitation of the correlation coefficient as a measure of similarity is its sensitivity to the feature of shape while ignoring the magnitude of differences between variables. In an early review, Cronbach and Gleser (1953) described the similarity between profiles as consisting of: "shape", the pattern of dips and rises across variables;

"scatter", the dispersion of scores around the average; and "elevation" (level or size), the mean score of the case over all of the variables. Since correlation coefficients are sensitive only to the shape characteristic, two profiles may be perfectly correlated but yet not be identical because one may be more elevated.

The second general type of similarity index is the distance measures. Because of their intuitive appeal, distance measures have enjoyed widespread popularity in the cluster analysis literature (Blashfield & Aldenderfer, 1988). These measures may be best described as dissimilarity measures because a high value between two cases means they are relatively dissimilar. When two cases have the same values the distance between them is zero. One of the most popular distance measures is the squared Euclidean distance. Whereas the correlation coefficient addresses only the shape component of profile similarity, the computation of the squared Euclidean distance attends to the shape, elevation, and scatter components concomitantly.

Although one of the most popular similarity measures used in the cluster analysis process, the squared Euclidean distance is not free from limitations. Perhaps the most serious limitation is that the estimation of similarity between cases is strongly affected by elevation differences. Aldenderfer and Blashfield (1984) contend that variables with both large size differences and standard deviations can

essentially swamp the effects of those variables with smaller absolute sizes and standard deviations. One way of reducing the effect of relative elevations of certain variables is through standardization. However, as was mentioned previously, this procedure may raise other issues.

Clustering Methods

The main reason for performing cluster analysis on a data set is to find groups of similar cases, known as clusters. Sneath and Sokal (1973) have described several important properties of clusters which include; density, variance, shape, and separation. Density refers to the relatively compact swarm of data points in a space when compared to other areas of space that may have few or no data points. Variance represents the degree of dispersion of points in this space from the cluster centroid. A "tight" cluster is one in which the data points are near the centroid, while a "loose" cluster is one where the data points are dispersed from the centroid. The shape property is simply the arrangement of points in this space with most clusters shaped as hyperspheres or ellipsoids. Finally, separation reflects the degree to which clusters overlap or lie apart in the space. That is, clusters may be relatively close together with no clear boundaries or they may be widely separated with large gaps between them.

Although there are several methods of clustering (e.g., hierarchical agglomerative, hierarchical divisive, iterative partitioning, etc.), the most frequently used, and the one to be described, is that of hierarchical agglomerative. In fact, Blashfield and Aldenderfer (1978) found that approximately two-thirds of all applied uses of cluster analysis involved this method of clustering. Sneath and Sokal (1973) describe the basic process of this method as beginning with each case defined as a cluster, and these clusters are combined on the basis of their similarity until all cases are grouped into one cluster. Given the hierarchical nature of this method, non-overlapping clusters are produced whereby each case can be a member of only one cluster of the same rank or level. However, the clusters are nested in that each cluster can be assumed as a member of a larger, more inclusive cluster at a higher rank.

In spite of the popularity, there are a number of issues inherent in the use of hierarchical methods of clustering. First, these methods require the calculation, storage, and analysis of a potentially large similarity matrix. Not only can computer costs be relatively great, but the storage space requirements may place a limit on the number of cases that can be clustered. Second, this method takes only one "pass" through the similarity matrix with the initial partitioning of the data not being modified in subsequent clustering steps. Thus, a poor early partition

may have a negative affect on the resultant cluster solution. Finally, it is possible that different cluster solutions can be generated if the data are simply reordered in the similarity matrix.

Lorr (1983) has described 12 different types of hierarchical agglomerative clustering methods which are distinguished on the basis of linkage rules, the mathematical properties inherent in the merging of cases. All of these methods start the clustering process by searching the similarity matrix for the most similar cases. These two cases are merged (agglomerated) and form a cluster. The matrix is then searched for the next two most similar cases and are merged. After each merger the cases are replaced in the similarity matrix by the cluster that contains them. All clustering methods proceed in this manner. However, where they differ is in the merging of clusters. The four most popular clustering methods include; single linkage, complete linkage, average linkage, and Ward's method.

The single linkage method of cluster analysis represents one of the oldest agglomerative clustering methods. With this method, two clusters are merged if there is at least one case from each cluster which achieves a certain level of similarity. Therefore, clusters are merged solely on the basis of a single link between any two cases from different clusters. In other words, a cluster can be

defined as a group of cases such that every member of the cluster is more similar to at least one member of the same cluster than it is to any member of another cluster (Blashfield & Aldenderfer, 1988). Although this method of clustering has desirable mathematical properties, it is limited in that it has a tendency to "chain". Chaining occurs when one cluster continues to add cases to itself, one by one, as the agglomerative process continues. The possibility of cluster chaining is an undesirable property of the single linkage method because it can generate cluster solutions which may be meaningless. While rarely helpful for cluster solutions, Blashfield and Aldenderfer (1988) suggest that this clustering method may be useful to identify multivariate outliers.

A second type of hierarchical agglomerative clustering is the complete linkage method. This method represents the theoretical opposite to single linkage whereby all members of both clusters must have a high degree of similarity before they may merge. Since each member is more similar to all members of the same cluster than it is to all members of any other cluster, the complete linkage method of clustering tends to generate relatively "tight" clusters composed of highly similar cases. However, Monte Carlo studies have found evidence to suggest this method may generate artifactual cluster solutions (Milligan, 1981).

The average linkage method of clustering was developed as an antidote to the liberal nature of the single linkage method and the conservative nature of the complete linkage method (Sneath & Sokal, 1973). With average linkage clustering the arithmetic average of the similarities between all cases in one cluster are compared with all cases in the second cluster and merges them when the average level of similarity is achieved. This yields a cluster in which each member has a greater mean similarity with all members of the same cluster than it does with all members of any other cluster. While this clustering method has been used fairly extensively in the biological sciences, it is not particularly common within the social sciences (Blashfield & Aldenderfer, 1988).

One of the most popular clustering methods used in the social sciences is that of Ward's method. According to Ward (1963), this method was designed to optimize the minimum variance within clusters. It does this by merging those clusters that result in the minimum increase in the within-groups sum of squares. Thus, cluster solutions are those in which the variance among members is relatively small. Blashfield and Aldenderfer (1988) contend that Ward's method tends to find clusters of relatively equal sizes and that are shaped as hyperspheres. Evidence from Monte Carlo studies (Kuiper & Fisher, 1975) has found Ward's method to be one of the better clustering methods.

Determination of Cluster-Number Solutions

The fourth step in the cluster analysis process is to determine the most meaningful cluster-number solution. Unfortunately, this fundamental step is among the as yet unsolved problems of cluster analysis (Everitt, 1979). In fact, a comprehensive and statistically rational solution to the cluster-number problem has yet to be made, and does not appear to be forthcoming. Blashfield and Aldenderfer (1988) note that the most striking feature about the number-of-clusters problem is the lack of systematic work on the issue. Consistent with the underlying heuristic nature of cluster analysis, the cluster-number solution has been addressed most commonly through the subjective analysis of the cluster solution.

Aldenderfer and Blashfield (1984) suggest the most basic level at which to address the cluster-number problem is with the aid of a cluster solution dendrogram. A dendrogram is a visual representation of the cluster combining steps in the hierarchical clustering solution. A subjective inspection of this display provides a rudimentary understanding of the structure of the data set. A second approach is to graphically combine the cluster-number solution and corresponding amalgamation coefficients, the numerical value at which various cases are merged to form a cluster. With cluster-number plotted on the y-axis and amalgamation coefficients on the x-axis a flattening in the

graph suggests that no new information is revealed by the merging of new clusters. This approach is analogous to the "scree test" in factor analysis. One final approach, somewhat more formal, is to examine the amalgamation coefficients to identify significant "jumps" in values. Such a jump implies that two relatively dissimilar clusters have been merged. Therefore, the number of clusters prior to the merger is the most likely cluster-number solution.

Cluster Solution Validation

The final step in the cluster analysis process is the validation of the established cluster solution. The purpose of this step is to distinguish between a cluster solution in which a useful classification of a data set has been discovered from a solution in which some classificatory structure has been forced onto the data (Blashfield and Aldenderfer, 1988). One approach to cluster validation is the cophenetic correlation proposed by Sokal and Rohlf (1962). According to Sneath and Sokal (1973), this approach is the major validation measure advocated by numerical taxonomists in the biological sciences. The focus of the cophenetic correlation is to determine how well the hierarchical dendrogram represents the actual patterns of similarities among cases. Practically, the cophenetic correlation is the product-moment correlation between the values in the original similarity matrix and the values in

an implied matrix. The implied matrix is the similarity matrix of cases constructed by hierarchical agglomerative clustering, which is implied by the clustering dendrogram.

Despite its frequent use in the biological sciences, the cophenetic correlation is not regarded as the optimal index of cluster validity (Blashfield & Aldenderfer, 1988). There are several reasons for the limited application of this approach in the social sciences. First, while it indicates how well clustering methods generate structure to the original similarity matrix, it does not indicate how the data are partitioned into clusters. Second, since the similarity matrix is scanned $N - 1$ times, there are fewer unique values in the implied matrix than the original matrix. Thus, the information contained in the two matrices can be quite different. Finally, Monte Carlo studies of the cophenetic correlation have found it to be a misleading indicator of the quality of a cluster solution (Holgerson, 1978).

A second approach which has been used to validate cluster solutions is to employ multivariate statistical tests of significance along the variables used to create clusters. A discriminant function analysis is perhaps the most popular statistical method used in this way. Whereas the cophenetic correlation examined the structure of the cluster solution, the discriminant function analysis examines the partitioning of the data to generate clusters.

Although this approach is intuitively appealing, Aldenderfer and Blashfield (1984) strongly discourage this approach on the grounds it is inappropriate statistically.

In describing the inappropriate nature of discriminant function analysis as a method of cluster validation, Aldenderfer and Blashfield (1984) describe an example of a researcher who administers IQ tests to a sample of subjects. A plot of these data indicates a normal distribution with a mean of 100. A cluster analysis of these data would result in a two-cluster solution; scores above 100 and scores below 100. If a discriminant function analysis is performed to compare the two groups on IQ scores a highly significant F value would emerge. This significant value would appear despite the fact that no clusters exist in the data. Since the aim of cluster analysis is to separate cases into non-overlapping clusters, any tests to compare the variables used in the cluster solution will always be positive.

Because of serious problems with cophenetic correlation and discriminant function analysis as method of cluster validation methods, some cluster analysts (Hartigan, 1975) contend they are not particularly useful. A more popular cluster validation approach is the more heuristic method of examining the degree of replicability of cluster solutions across various data sets. Aldenderfer and Blashfield (1984) suggests that if a cluster solution is repeatedly discovered across different samples from the same general population,

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it is plausible to conclude that this solution has some generality. On the other hand, a cluster solution that is not stable is unlikely to have general utility. One method of cluster replication, which has been used in the development of a typology of adult alcoholics (Goldstein & Linden, 1969), is to split the data sample into segments and perform separate cluster analyses on the different segments. Consistency of cluster solution between the different data sets is suggestive of a stable cluster solution.

Perhaps the most straightforward method of cluster validation is the linking of cluster solutions with external criteria. In this way, the cluster can be compared, through statistical significance tests, on variables not used to generate the cluster solution. Aldenderfer and Blashfield (1984) suggest that this represents one of the better ways of validating a clustering solution because external validation directly tests the generality of the cluster solution against relevant criteria. In the Goldstein and Linden (1969) typology of adult alcoholics, variables such as alcohol consumption, physical impairments, and employment status, were successfully used to validate their cluster solution.

In summary, cluster analysis is one of the most popular statistical methods used in the development of typological schemes. With the aid of computer technology and discovery of improved methods, the cluster analysis literature has

grown enormously during the past three decades. Whereas most multivariate statistical methods are based on rationale statistical properties, cluster analysis is a more heuristic multivariate approach. Cluster analysis generally proceeds in a multi-step process beginning with a data set, followed by the construction of a similarity matrix and clustering procedure and concluding with the validation of the cluster solution.

Method

Background

The subject pool of the present study was drawn from the data bank of the Youth at Risk project (Leschied, Andrews, & Hoge, 1990), a collaborative effort between the London Family Court Clinic, London Ontario, and Laboratory for Research on Assessment and Evaluation in the Human Services at Carleton University. This project entailed a file-based assessment and psychometric evaluation of the Toronto Case Management Strategy and Interim Risk Indicator Form for custody cases in the province of Ontario and was sponsored by the Ontario Ministry of Community and Social Services. In all, it represents one of the largest and most detailed reviews of young offenders to be completed since the implementation of the Young Offenders Act.

Subjects

The sample for the present study was derived from those cases of the Toronto Case Management Strategy system. This sample was selected because it included the full range of young offenders as defined by the seriousness of their offence behaviour and severity of disposition. Approximately 67% were first-time offenders with 91%, 15%, and 12% having a current disposition of probation, open custody, and secure custody, respectively.

A total of 329 subjects, with 256 males and 63 females, were used in the present study. The age ranges were from 12.3 years to 18.2 years ($M = 15.2$, $SD = 0.92$ years) for males and 12.5 years to 17.4 years ($M = 15.1$, $SD = 0.94$ years) for females. Approximately 65% of the males were first-time offenders, with 92%, 16%, and 13% having current dispositions of probation, open custody, and secure custody respectively. For females, 69% were first-time offenders, all had a current probation disposition while 12% and 10% had a current open custody and secure custody disposition respectively.

Measure

Youth Level of Service Inventory (YLSI). The current version of the YLSI (see Appendix B) contains 112 items denoting specific risk variables and is scored in a binary (yes/no) format indicating the presence or absence of the risk/need factor. This instrument is in the form of an inventory and can be completed by child care workers or other direct care professionals. As well, the YLSI can be completed from case record information. Individual items are logically grouped into ten subcategories representing different problem areas: Delinquent History (20 items; e.g., police contacts, shoplifting, etc.), Education (12 items; e.g., truancy, poor achievement, etc.), Family Finances (2 items; e.g., receives social assistance), Family Structure

and Functioning (21 items; e.g., relations with parents/siblings, etc.), Parent Characteristics (12 items; e.g., criminal history, drug/alcohol abuse, etc.), Accommodations (3 items; high crime neighbourhood, etc.), Leisure/ Recreation (4 items; participation in organized activities etc.), Companions (6 items; delinquent acquaintances/friends), Personality/Social Skills (27 items; frustration tolerance, manners, etc.), and Attitudes/Orientation (4 items; attitudes towards convention and delinquency).

Procedure

Consultations among the Youth at Risk project investigators, the Research Advisory Group, and the Ministry Provincial Director established a base sample for the study. This sample consisted of consecutive admissions to the Toronto Youth Probation offices of the Ontario Ministry of Community and Social Services during the period May 1989 to October 1989.

Data coders were hired specifically for the project with most holding bachelor level degrees in the social sciences. All coders were trained as a group in the proper coding of file information. These coders were supplied a list of names of those files eligible for review. Located files were read completely and coded according to specific data forms. Information relevant to the YLSI was recorded

on the "PDR/Other Sources" data form (Appendix C). A variety of offence based and general case characteristic information were recorded on the "YO Client Information Card" coding sheet (Appendix E). Finally, information relevant to inprogram behaviour and post admission criminal activity were recorded on the "YO Processing and Recidivism" coding form (Appendix F).

In terms of reliability information, inter-rater reliability of file coding was conducted on approximately 5 percent of the cases. Overall, acceptable levels were found, ranging between .65 and 1.00 for the YLSI subtotals.

Results

YLSI Psychometrics

Before considering the development of the typology, a number of statistical analyses were performed to establish the psychometric properties of the YLSI for the present sample. The range of YLSI total scores was from 2 to 75, 2 to 75, and 3 to 66, for the total sample, males, and females, respectively. The means and standard deviations for the YLSI total score and subtotals for the total sample and separately for males and females are presented in Table 1. The comparisons between males and females on the YLSI total score and subtotals is shown in column four. An inspection of these indicate females had significantly higher mean scores than males for the YLSI total score, and Family, Parents, and Leisure/Recreation subtotals.

The YLSI subtotal intercorrelations and Cronbach Alpha reliability are presented in Table 2. An inspection of this table reveals reliable and modest correlations with acceptable levels of internal consistency. In addition, a principal components analysis with varimax rotation was performed on the YLSI subtotals. These results are presented in Table 3. As can be seen, this analysis yielded a meaningful two factor solution which accounted for 35.9% and 8.2% of the total variance, respectively. Factor one was a general criminogenic risk/need factor comprised of the Family, Personality/Skills, Attitudes/ Orientations,

Table 1.
Mean YLSI Scores of Total Sample and
Gender Comparisons (SD)

Measure	Total (N=319)	Males (N=256)	Females (N=63)	t
YLSI Total	26.67 (14.4)	25.67 (14.0)	29.94 (14.8)	2.15*
YLSI Subtotal				
Delinquent History	5.58 (2.6)	5.64 (2.6)	5.19 (2.0)	1.27
Education	2.49 (1.9)	2.43 (1.9)	2.68 (1.8)	0.95
Family Finances	0.32 (0.6)	0.31 (0.6)	0.38 (0.7)	0.75
Family	5.88 (4.3)	5.43 (4.1)	7.49 (4.3)	3.54**
Parents	1.36 (1.6)	1.20 (1.4)	1.98 (1.9)	3.65**
Accomodations	0.43 (0.7)	0.41 (0.7)	0.51 (0.7)	1.03
Leisure/Recreation	1.78 (1.5)	1.68 (1.4)	2.21 (1.5)	2.59*
Companions	2.15 (1.5)	2.07 (1.4)	2.32 (1.8)	1.17
Personality/Skills	5.54 (4.6)	5.43 (4.5)	5.86 (4.6)	0.67
Attitudes/ Orientation	1.14 (1.3)	1.06 (1.3)	1.32 (1.3)	1.45

Note: T-test probabilities are two tailed.

*p< .05; **p<.001

Table 2.
YLSI Subtotal Intercorrelations and
Subtotal Total Correlation

YLSI Subtotal	YLSI Subtotal										Total
	A	B	C	D	E	F	G	H	I	J	
A Delinquent History (.59)											
B Education .37 (.74)											
C Family Finances .09 .18 (.70)											
D Family .54 .49 .24 (.82)											
E Parents .32 .29 .31 .50 (.65)											
F Accomodations .24 .30 .42 .29 .30 (.41)											
G Leisure/Recreation .21 .32 .16 .48 .23 .23 (.77)											
H Companions .42 .32 .09 .42 .20 .22 .38 (.68)											
I Personality/Skills .51 .58 .09 .60 .40 .26 .37 .36 (.82)											
J Attitudes/ Orientation .46 .32 .07 .52 .25 .18 .41 .53 .48 (.70)											
Total .70 .67 .27 .86 .57 .41 .56 .58 .84 .65 (.93)											

Note: All correlations are significant beyond the .001 level. Cronbach Alphas are in parentheses.

Table 3.
YLSI Subtotal Factor Loadings (Eigenvalue)

Measure	Factor 1 (3.59)	Factor 2 (0.82)
YLSI Subtotal		
Delinquent History	.6486	.1104
Education	.5743	.2361
Family Finances	.0006	.7765
Family	.7548	.3116
Parents	.4130	.4047
Accomodations	.2306	.5308
Leisure/Recreation	.4913	.2045
Companions	.5666	.0929
Personality/Skills	.7486	.1472
Attitudes/ Orientation	.6724	.0579

Note: Factor 1 and Factor 2 account for 75.9% and 8.2% of the total variance, respectively.

Delinquent History, Education, Companions, and Leisure/ Recreation subtotals. Factor two was a family/home environment factor comprised of the Family Finances and Accommodations subtotals. It should be noted that a similar two-factor solution emerged when the sample was randomly divided into two cross-validating samples and subjected to separate principle components analysis.

Young Offender Risk Level

The calculation of overall risk level represents one of the most promising approaches to offender case classification. In the present study, the assignment of the young offenders to risk level was accomplished by partitioning the distribution of YLSI total scores into thirds to form a Low, Medium, and High risk/need group. This procedure, as well as all other analyses pertaining to risk level, were performed separately for the total sample, males, and females. For the total sample, the range of YLSI total scores were from 2 to 19, 20 to 33, and 34 to 75, for Low, Medium, and High risk groups, respectively. For males, the range of YLSI total scores were from 2 to 18, 19 to 31, and, 32 to 75 for the Low, Medium, and High risk groups, respectively. Finally, the YLSI total scores for females were from, 3 to 23, 24 to 38, and 39 to 66, for the Low, Medium, and High risk groups, respectively. Tables 4, 5, and 6, present the means and standard deviations of the YLSI

Table 4.
Mean YLSI Scores by Risk Level for Total Sample (SD)

Measure	Low (N=111)	Medium (N=113)	High (N=105)
YLSI Total	10.95 (4.8)	26.56 (4.0)	43.42 (9.2)
YLSI Subtotal			
Delinquent History	3.70 (1.2)	5.44 (1.9)	7.71 (2.8)
Education	1.03 (1.3)	2.67 (1.4)	3.84 (1.7)
Family Finances	0.14 (0.4)	0.30 (0.6)	0.52 (0.8)
Family	1.74 (1.9)	5.78 (2.6)	10.37 (2.7)
Parents	0.55 (0.8)	1.24 (1.3)	2.35 (1.99)
Accommodations	0.14 (0.4)	0.45 (0.7)	0.71 (0.9)
Leisure/Recreation	0.84 (1.1)	1.95 (1.4)	2.61 (1.2)
Companions	1.31 (1.3)	2.07 (1.2)	3.13 (1.4)
Personality/Skills	1.32 (1.5)	5.48 (2.9)	10.06 (3.9)
Attitudes/ Orientation	0.17 (0.5)	1.18 (1.2)	2.11 (1.2)

Note: All group differences significant at $p < .03$.

Table 5.
Mean YLSI Scores by Risk Level for Males (SD)

Measure	Low (N=85)	Medium (N=85)	High (N=86)
YLSI Total	10.60 (4.4)	24.82 (3.6)	41.41 (8.7)
YLSI Subtotal			
Delinquent History	3.71 (1.1)	5.37 (1.9)	7.83 (2.7)
Education	0.93 (1.3)	2.58 (1.4)	3.78 (1.6)
Family Finances	0.15 (0.4)	0.25 (0.6)	0.54 (0.8)
Family	1.46 (1.6)	5.28 (2.6)	9.50 (2.9)
Parents	0.52 (0.7)	1.08 (1.2)	2.00 (1.7)
Accommodations	0.15 (0.4)	0.44 (0.8)	0.63 (0.8)
Leisure/Recreation	0.84 (1.1)	1.85 (1.4)	2.36 (1.3)
Companions	1.28 (1.3)	2.01 (1.2)	2.92 (1.3)
Personality/Skills	1.38 (1.5)	4.93 (2.7)	9.93 (3.8)
Attitudes/ Orientation	0.12 (0.5)	1.05 (1.3)	1.93 (1.2)

Note: All group differences significant beyond $p < .01$ except between Low and Medium for Family Finances, and Medium and High for Accommodations.

Table 6.
Mean YLSI Scores by Risk Level for Females (SD)

Measure	Low (N=21)	Medium (N=21)	High (N=21)
YLSI Total	12.76(6.7)	31.38(4.2)	45.67(6.5)
YLSI Subtotal			
Delinquent History	3.67(1.1)	5.43(2.0)	6.48(1.7)
Education	1.33(1.4)	3.05(1.6)	3.67(1.7)
Family Finances	0.24(0.5)	0.43(0.8)	0.48(0.8)
Family	2.86(2.6)	7.86(2.6)	11.76(1.7)
Parents	0.95(1.1)	1.71(1.3)	3.29(2.3)
Accommodations	0.29(0.6)	0.48(0.6)	0.76(0.8)
Leisure/Recreation	0.81(1.1)	2.33(1.4)	3.48(0.6)
Companions	1.33(1.5)	2.19(1.7)	3.43(1.4)
Personality/Skills	0.91(1.4)	6.57(2.7)	10.10(3.3)
Attitudes/ Orientation	0.38(0.9)	1.33(1.0)	2.24(1.2)

Note: All group differences significant beyond $p < .01$ except between; Medium and High risk groups on Delinquent History and Education, any groups on Family Finances, Low and Medium and Medium and High groups on Accommodations, and Low and Medium groups on Companions, subtotals.

scores for each risk level for total sample, males, and females, respectively.

In an effort to explore the characteristics of offenders from each risk level, a variety of offence-based and other case history variables were examined. It should be noted that a majority of the comparison variables were based on a behaviour index comprised of both current and past behaviour. This approach was used to provide for a broad comparison between risk level on the overall pattern of delinquent behaviour.

Tables 7, 8, and 9, present the risk level means, standard deviations, etas, and main effect comparisons for several offence-based criteria. An inspection of row one of these tables indicates a main effect of risk level for total number of offences ($F(2,312) = 33.40, p < .001$) for total sample, and for males ($F(2,249) = 42.03, p < .001$). An inspection of row two of these tables indicates a main effect for the number of property offences for the total sample ($F(2,326) = 9.07, p < .001$) and for males ($F(2,253) = 18.43, p < .001$). In an effort to determine the precise differences between risk levels, post hoc comparisons were performed on all significant main effect analyses with these results appearing below the tables. For all post hoc risk level comparisons the family-wise error rate was adjusted (e.g., $p < .03$) to reflect the number of comparisons.

Table 7.

Offence-based Means by Risk Level for Total Sample (SD)

Measure	Low (N=111)	Medium (N=113)	High (N=105)	Eta	F
Total Offences ^a Cur. + Past	1.79(1.2)	2.84(2.8)	4.94(3.9)	.42	33.40**
Property Offences ^b Cur. + Past	0.91(0.9)	1.14(1.1)	1.63(1.7)	.23	9.07**
Violence ^c Cur. + Past	0.19(0.4)	0.48(0.6)	0.57(0.8)	.25	10.63**
Seriousness ^d Cur. + Past	0.51(0.6)	0.87(0.7)	1.11(1.2)	.33	15.03**

Note: * $p < .05$ ** $p < .001$ ^a Difference between all groups significant at $p < .001$ ^b No statistical difference between Low and Medium groups.All other group differences significant at $p < .01$.^c No statistical difference between Medium and High groups.All other group differences significant at $p < .001$.^d No statistical difference between Medium and High groups.All other group differences significant at $p < .001$.

Table 8.

Offence-based Means by Risk Level for Males (SD)

Measure	Low (N=85)	Medium (N=85)	High (N=86)	Eta	F
Total Offences ^a Cur. + Past	1.84 (1.1)	2.37 (1.5)	4.99 (3.7)	.50	42.03**
Property Offences ^b Cur. + Past	0.93 (0.9)	1.12 (1.1)	2.04 (1.7)	.36	18.43**
Violence ^c Cur. + Past	0.21 (0.5)	0.47 (0.7)	0.55 (0.8)	.22	6.35*
Seriousness ^d Cur. + Past	0.58 (0.6)	0.87 (0.8)	1.33 (1.2)	.33	15.03**

Note: * $p < .05$

** $p < .001$

^a Difference between all groups significant at $p < .008$.

^b No statistical difference between Low and Medium groups.

All other group differences significant at $p < .001$.

^c No statistical differences between Medium and High groups.

All other group differences significant at $p < .003$.

^d Differences between groups significant at $p < .007$.

Table 9.

Offence-based Means by Risk Level for Females (SD)

Measure	Low (N=21)	Medium (N=21)	High (N=21)	Eta	F
Total Offences Cur. + Past	2.52 (3.5)	3.24 (4.7)	4.38 (4.0)	.19	1.10
Property Offences Cur. + Past	1.05 (0.9)	0.81 (0.9)	0.62 (0.8)	.20	1.29
Violence ^a Cur. + Past	0.10 (0.3)	0.71 (0.6)	0.61 (0.9)	.40	5.59*
Seriousness ^b Cur. + Past	0.19 (0.4)	0.81 (0.5)	0.62 (0.9)	.38	4.98*

Note: * $p < .02$

^a No statistical difference between Medium and High groups.

All other group differences significant at $p < .02$.

^b Difference between Low and Medium groups significant at $p < .001$.

Risk level groups were also compared on the violence inherent in offence behaviour. This was accomplished by computing a violence index based on the nature of the offence and included; capital offences (e.g., murder, manslaughter, attempted murder), assaults (e.g., common, sexual, against police), and robbery (e.g., armed, with violence). Row three of Tables 7, 8, and 9 presents the means, standard deviations, etas, and main effect comparison of risk level for the current plus past violence index. As can be seen, there was a main effect of risk level for the total sample ($F(2,326) = 10.63, p < .001$), males ($F(2,253) = 6.35, p < .002$), and females ($F(2,60) = 5.59, p < .006$) with post hoc comparisons shown below the tables.

Another measure used to compare risk level on offence-based variables was a seriousness index. Similar to the violence index, the seriousness measure was used as an index of offence severity. Where the seriousness measure differed, though, was its attention to offence severity with and without apparent violence. This measure was composed of the same violence index variables but also included; break and enter, theft over 1000.00, auto theft, drug trafficking, and arson. Row four of Tables 7, 8, and 9, presents the means, standard deviations, etas, and main effect comparison of risk for the seriousness index. An inspection of these tables indicate a main effect of risk level for total sample ($F(2,326) = 13.12, p < .001$), males

($F(2,253)= 15.03$, $p<.001$), and females ($F(2,60)= 4.98$, $p<.01$) for the seriousness index.

Tables 10, 11, 12, present the means, etas, standard deviations, and risk level main effect comparisons for disposition (e.g., probation, open custody, and secure custody). Not included is information on current probation. This was omitted because of the nature of the sample (e.g., Ontario juvenile probationers), with almost all subjects (i.e., approximately 91%) currently on probation. An inspection of Table 10 shows a main effect of risk level for past probation ($F(2,326)= 26.55$, $p<.001$), current plus past open custody ($F(2,326)= 17.33$, $p<.001$), and current plus past secure custody ($F(2,326)= 12.04$, $p<.001$) for total sample. Table 11 reveals main effects of risk level for past probation ($F(2,253)= 35.19$, $p<.001$), current plus past open custody ($F(2,253)= 15.71$, $p<.001$), and current plus past secure custody ($F(2,253)= 11.09$, $p<.001$) for males. Table 12 shows no statistical differences between risk levels for females on any of the disposition variables.

A rating of case files was made for information relevant to the offenders behaviour towards the criminal justice process. The specific variables coded included, a) whether the offender had complied with the formal conditions of his disposition; b) had the offender violated the formal conditions resulting in a breach charge; and, c) the overall adjustment of the offender. The means, standard deviations,

Table 10.

Disposition Means by Risk Level for Total Sample (SD)

Measure	Low (N=111)	Medium (N=113)	High (N=105)	Eta	F
Probation ^a Past	0.04 (0.2)	0.27 (0.5)	0.43 (0.5)	.37	26.55**
Open Custody ^b Cur. + Past	0.05 (0.2)	0.13 (0.4)	0.36 (0.6)	.31	17.33**
Secure Custody ^c Cur. + Past	0.03 (0.2)	0.07 (0.3)	0.28 (0.6)	.26	12.04**

Note: ** $p < .001$ ^a Differences between all groups significant at $p < .005$.^b No statistical difference between Low and Medium groups.All other group differences significant at $p < .001$.^c No statistical difference between Low and Medium groups.All other group differences significant at $p < .002$.

Table 11.

Disposition Means by Risk Level for Males (SD)

Measure	Low (N=85)	Medium (N=85)	High (N=86)	Eta	F
Probation ^a Past	0.02(0.2)	0.24(0.4)	0.52(0.5)	.47	35.19**
Open Custody ^b Cur. + Past	0.04(0.2)	0.15(0.4)	0.40(0.6)	.33	15.71**
Secure Custody ^c Cur. + Past	0.04(0.2)	0.07(0.3)	0.31(0.7)	.28	11.09**

Note: ** $p < .001$

^a Differences between all groups significant at $p < .001$.

^b Differences between all groups significant at $p < .01$.

^c No statistical difference between Low and Medium groups.

All other group differences significant at $p < .002$.

Table 12.

Disposition Means by Risk Level for Females (SD)

Measure	Low (N=21)	Medium (N=21)	High (N=21)	Eta	F
Probation Past	0.10 (0.3)	0.29 (0.5)	0.24 (0.4)	.20	1.25
Open Custody Cur. + Past	0.05 (0.2)	0.14 (0.4)	0.19 (0.4)	.18	0.99
Secure Custody Cur. + Past	0.00 (0.0)	0.05 (0.2)	0.14 (0.5)	.20	1.21

Note: No statistical differences found between any groups.

etas, and main effect comparisons for these variables appear in Tables 13, 14, and 15 for total sample, males, and females, respectively. An inspection of the Table 13 indicates, for total sample, a main effect of risk level for compliance ($F(2,320) = 29.80, p < .001$), overall adjustment ($F(2,319) = 39.10, p < .001$), and breach rate ($F(2,326) = 28.04, p < .001$). Table 14 reveals a main effect of risk level for compliance ($F(2,251) = 30.48, p < .001$), overall adjustment ($F(2,249) = 35.59, p < .001$), and breach rate ($F(2,253) = 28.56, p < .001$), for males. For females, Table 15 shows the only statistically significant main effect was for overall adjustment ($F(2,57) = 4.33, p < .02$). The difference between risk levels for breach rates approached ($F(2,60) = 2.68, p = .08$), but did not reach statistical significance.

The reoffending data included subjects who incurred new convictions subsequent to the initial Ministry interview. The base rates for recidivism were 64% for total sample and males, and 63% for females. Tables 16, 17, and 18 present the means, standard deviations, etas, and main effect comparisons for several recidivism and recidivism disposition variables. An inspection of Table 16 indicates a main effect of risk level for any recidivism (yes/no) ($F(2,326) = 45.37, p < .001$), number of new offences ($F(2,326) = 15.56, p < .001$), number of new property offences ($F(2,326) = 13.29, p < .001$), probation disposition ($F(2,326) = 4.70, p < .01$), and any custody recidivism disposition ($F(2,326) =$

Table 13.
Mean Inprogram Adjustment Ratings and Breach
Rates by Risk Level for Total Sample(SD)

Measure	Low (N=111)	Medium (N=113)	High (N=105)	Eta	F
Compliance with ^a Formal Conditions	0.77(0.4)	0.41(0.5)	0.30(0.5)	.40	29.80**
Offender Overall ^b Adjustment	2.54(0.7)	1.93(0.8)	1.65(0.8)	.44	39.10**
Breach of ^c Condition	0.06(0.2)	0.34(0.5)	0.49(0.5)	.38	28.04**

Note: ** $p < .001$

^a No significant difference between Medium and High.

All other group differences significant at $p < .001$.

^b Differences between all groups significant at $p < .009$.

^c Differences between all groups significant at $p < .03$.

Table 14.
Mean Inprogram Adjustment Ratings and Breach
Rates by Risk Level for Males(SD)

Measure	Low (N=85)	Medium (N=85)	High (N=86)	Eta	F
Compliance with ^a Formal Conditions	0.80(0.4)	0.42(0.5)	0.27(0.5)	.44	30.48**
Offender Overall ^c Adjustment	2.58(0.7)	1.92(0.8)	1.63(0.8)	.47	35.58**
Breach of ^b Condition	0.02(0.2)	0.33(0.5)	0.49(0.5)	.43	28.56**

Note: ** $p < .001$

^a No significant difference between Medium and High, all other differences between groups significant at $p < .001$.

^b Differences between all groups significant at $p < .001$.

^c Differences between all groups significant at $p < .02$.

Table 15.
Mean Inprogram Adjustment Ratings and Breach
Rates by Risk Level for Females (SD)

Measure	Low (N=21)	Medium (N=21)	High (N=21)	Eta	F
Compliance with Formal Conditions	0.63(0.5)	0.45(0.5)	0.33(0.5)	.24	1.82
Offender Overall* Adjustment	2.44(0.7)	2.00(0.8)	1.76(0.7)	.36	4.33*
Breach of Condition	0.19(0.4)	0.33(0.5)	0.52(0.5)	.29	2.68

Note: * $p < .02$.

* Difference between groups Low and High significant at $p < .005$.

Table 16.
Mean Recidivism Offence Variables and Dispositions
by Risk Level for Total Sample (SD)

Measure	Low (N=111)	Medium (N=113)	High (N=105)	Eta	F
Recidivism ^a	0.32(0.5)	0.75(0.4)	0.84(0.4)	.47	45.37**
# of New Offences ^b	0.24(0.7)	1.09(1.5)	1.65(2.8)	.30	15.56**
# of New Violent Offences	0.10(0.4)	0.17(0.5)	0.25(0.6)	.12	2.58
# New Property ^c Offences	0.05(0.2)	0.51(0.9)	0.45(0.8)	.27	13.29**
Probation ^d	0.00(0.0)	0.06(0.2)	0.08(0.3)	.17	4.70*
Any Custody ^e	0.00(0.0)	0.08(0.3)	0.11(0.4)	.16	4.22*

Note: ** $p < .001$
* $p < .05$

- ^a No statistical difference between Medium and High groups.
All other group differences significant at $p < .001$.
- ^b No statistical difference between Medium and High groups.
All other group differences significant at $p < .001$.
- ^c No statistical difference between Medium and High groups.
All other group differences significant at $p < .01$.
- ^d No statistical difference between Medium and High groups.
All other differences significant at $p < .03$.
- ^e No statistical difference between Medium and High groups.
All other group differences significant at $p < .01$.

Table 17.
Mean Recidivism Offence Variables and Dispositions
by Risk Level for Males (SD)

Measure	Low (N=85)	Medium (N=85)	High (N=86)	Eta	F
Recidivism ^a	0.28(0.5)	0.73(0.5)	0.86(0.4)	.51	44.73**
# of New Offences ^b	0.22(0.7)	1.17(1.6)	1.79(2.9)	.32	13.94**
# of New Violent Offences	0.08(0.4)	0.25(0.6)	0.23(0.6)	.14	2.65
# New Property ^c Offences	0.04(0.2)	0.52(0.9)	0.61(1.0)	.32	14.02**
Probation ^d	0.00(0.0)	0.07(0.3)	0.08(0.3)	.16	3.51*
Any Custody	0.00(0.0)	0.07(0.3)	0.13(0.5)	.16	3.53*

Note: ** $p < .001$

* $p < .05$

^a Differences between all groups significant at $p < .03$.

^b Differences between all groups significant at $p < .001$.

^c No statistical difference between Medium and High groups.

All other group differences significant at $p < .001$.

^d Differences between all groups significant at $p < .01$.

^e Difference between Low and High groups significant at $p < .009$.

No other statistical differences between groups.

Table 18.
Mean Recidivism Offence Variables and Dispositions
by Risk Level for Females (SD)

Measure	Low (N=21)	Medium (N=21)	High (N=21)	Eta	F
Recidivism	0.52(0.5)	0.62(0.5)	0.86(0.4)	.30	2.91
# of New Offences ^a	0.19(0.5)	0.38(1.0)	0.38(2.9)	.34	3.81*
# of New Violent Offences	0.00(0.0)	0.05(0.2)	0.23(0.6)	.18	1.03
# New Property Offences	0.14(0.5)	0.10(0.3)	0.61(1.0)	.12	0.41
Probation ^b	0.00(0.0)	0.00(0.0)	0.08(0.3)	.32	3.33*
Any Custody	0.00(0.0)	0.05(0.2)	0.14(0.4)	.24	1.89

Note: * $p < .05$

^a Differences between groups Low and High significant at $p < .03$.

^b No statistical difference between groups.

4.22, $p < .02$) for total sample. Table 17 reveals a main effect of risk level for any recidivism ($F(2,253) = 44.73$, $p < .001$), number of new offences ($F(2,253) = 13.94$, $p < .001$), number of new property offences ($F(2,253) = 14.02$, $p < .001$), probation recidivism ($F(2,253) = 3.51$, $p < .03$), and any custody recidivism ($F(2,253) = 3.53$, $p < .03$) for males. The main effect for number of new violent offences approached ($F(2,253) = 2.65$, $p = .07$), but did not reach, statistical significance. The results of the analyses for females are shown in Table 18. An inspection of this table indicates a main effect of risk level for number of new offences ($F(2,60) = 3.81$, $p < .03$), and probation disposition ($F(2,60) = 3.33$, $p < .04$). The difference between risk levels for any recidivism approached ($F(2,60) = 2.91$, $p = .06$) but did not reach, statistical significance. It should be noted that the results of the recidivism analyses are particularly important in that they provide independent validation of risk level because this information reflects the behaviour of offenders subsequent to the Ministry initial assessment.

Young Offender Typology

In addition to the traditional risk level examination, an attempt was made to develop an empirically-based typology of young offenders. The development of the young offender typology involved three stages; 1) cluster analysis of YLSI subtotal scores, 2) replication of clusters to ensure

reliability, and 3) validation of clusters on external criteria.

Cluster Analysis. For the cluster analysis, standardized YLSI subtotal scores were combined using the Squared Euclidean Distance measure and subjected to Ward's method of clustering. Separate cluster analyses were performed for the total sample, males, and females. There are at least two methods in cluster analysis for determining the number of clusters present in a data sample. One involves an inspection of the cluster dendrogram, a visual representation of the cluster combining steps. By showing the points at which clusters merge, the cluster dendrogram provides a guide as to the optimal number of clusters present in the data. A second, more subjective, approach to addressing the cluster-number problem is to request specific cluster-number solutions and simply select the cluster-number solution that is most interpretable and meaningful. In the present study, a two-cluster through to a ten-cluster analysis was performed. An examination of each cluster dendrogram suggested a seven-cluster solution was most representative of the data. This dendrogram is reproduced in Figure 1. In addition, the most interpretable and meaningful YLSI profiles were those from the seven-cluster solution. This seven-cluster solution yielded five unique and meaningful cluster types, with two being uninterpretable. Applying this same procedure on male

Figure 1.
Reproduced Cluster Dendrogram

CLUSTER 1 (N=114)

D.H. - Delinquent History

Ed. - Education

F.F. - Family Finances

Fy. - Family

Pt. - Parents

Ac. - Accommodations

Le. - Leisure

Cp. - Companions

Pr. - Personality

At. - Attitude

Figure 3.

CLUSTER 2 (N= 79)

D.H - Delinquent History
Ed. - Education
F.F. - Family Finances
Fy. - Family
Pt. - Parents
Ac. - Accommodations
Le. - Leisure
Cp. - Companions
Pr. - Personality
At. - Attitude

CLUSTER 3 (N=26)

D.H. - Delinquent History
Ed. - Education
F.F. - Family Finances
Fy. - Family
Pt. - Parents
Ac. - Accommodations
Le. - Leisure
Cp. - Companions
Pr. - Personality
At. - Attitude

Figure 5.

114

CLUSTER 4 (N=18)

D.H - Delinquent History
Ed. - Education
F.F. - Family Finances
Fy. - Family
Pt. - Parents
Ac. - Accommodations
Le. - Leisure
Cp. - Companions
Pr. - Personality
At. - Attitude

Figure 6.

CLUSTER 5 (N=14)

D.H. - Delinquent History
Ed. - Education
F.F. - Family Finances
Fy. - Family
Pt. - Parents
Ac. - Accommodations
Le. - Leisure
Cp. - Companions
Pr. - Personality
At. - Attitude

subjects also yielded five unique types with approximately 97% of all cases classified. These profiles are shown in Figure 2 through Figure 6.

The pattern of YLSI scores in Figure 2 suggests a low-risk type, with all scores in the low range. A tentative label for this profile would be a "Low Risk" type. A more serious YLSI profile pattern is depicted in Figure 3. This profile is characterized by noticeable elevations on Family, Attitudes, and Delinquent History, subtotals and minor elevations on Parents, Companions, Personality, and Leisure subtotals. This profile may be referred to as a "Generalized High Risk/Need" type. Figure 4 depicts a more variable profile pattern with noticeable elevations on Leisure and Education, less severe elevations on Companions and Personality, and depressions on Parents and Family Finances, subtotals. A tentative label for this profile would be a "Difficulties in Community" type. The profile pattern depicted in Figure 5 reflects obvious elevations in the family related areas (e.g., Family Finances, Family, Education, and Parents) and Personality, subtotals and may be referred to a a "Family and Personal Distress" type. Figure 6 is characterized by two marked elevations on Family Finances and Accommodations and minor elevations on Parents, Delinquent History, Education, and Leisure, subtotals. A tentative label for this profile would be a "Economically Disadvantaged" type.

The cluster analyses for females was quite different than that of males. While unique and meaningful cluster types were not as clear cut, the greatest obstacle for a typology of females was the extremely low number of subjects within each cluster type. This was a particular concern, in that, it would prohibit the replication and validation components necessary in proper cluster analysis procedures. Consequently, female subjects were omitted from further analysis and the young offender typology was based on male subjects alone. The five cluster solution for females, however, is presented in Appendix G.

Cluster Replication. With the cluster-number problem resolved, the next stage in the development of the young offender typology was to determine whether the clusters were reliable. Since cluster analysis represents somewhat of a heuristic statistical procedure, there are concerns over whether the clusters are stable and reliable or merely statistical artifacts. The most common method of examining this issue is to replicate the cluster solution on separate samples. In the present study, the data were randomly divided into two cross-validating samples and subjected to separate cluster analyses. The cross-validating cluster solutions are depicted in Figures 7 through 11. An inspection of these figures indicates that for Cluster 1 in Figure 7 the profile pattern of each sample is virtually identical. The cross-validating samples of the other

CLUSTER 1 REPLICATION

D.H - Delinquent History
Ed. - Education
F.F. - Family Finances
Fy. - Family
Pt. - Parents
Ac. - Accommodations
Le. - Leisure
Cp. - Companions
Pr. - Personality
At. - Attitude

CLUSTER 2 REPLICATION

D.H. - Delinquent History

Ed. - Education

F.F. - Family Finances

Fy. - Family

Pt. - Parents

Ac. - Accommodations

Le. - Leisure

Cp. - Companions

Pr. - Personality

At. - Attitude

CLUSTER 3 REPLICATION

D.H - Delinquent History

Ed. - Education

F.F. - Family Finances

Fy. - Family

Pt. - Parents

Ac. - Accommodations

Le. - Leisure

Cp. - Companions

Pr. - Personality

At. - Attitude

CLUSTER 4 REPLICATION

D.H. - Delinquent History

Ed. - Education

F.F. - Family Finances

Fy. - Family

Pt. - Parents

Ac. - Accommodations

Le. - Leisure

Cp. - Companions

Pr. - Personality

At. - Attitude

CLUSTER 5 REPLICATION

D.H. - Delinquent History

Ed. - Education

F.F. - Family Finances

Fy. - Family

Pt. - Parents

Ac. - Accommodations

Le. - Leisure

Cp. - Companions

Pr. - Personality

At. - Attitude

cluster types show remarkable similarity to the host cluster with the possible exception of the Attitudes/Orientation subtotal of Cluster 3 (Figure 9). This difference, however, may still be considered to be at an acceptable level. Overall, the results of the cluster replication procedure suggest these cluster types to indeed be reliable.

Cluster Validation. The third stage in the development of the young offender typology was cluster validation. While reliable clusters may be found in a data set, to be meaningful and useful each cluster should yield a distinctive pattern of information. According to Aldenderfer and Blashfield (1984), one of the best methods for validating a cluster solution is to compare clusters on various external criteria. In the present study, clusters were compared on a variety of offence-based and other case characteristic variables. Similar to the risk level analyses, a majority of variables used to compare clusters were based on the behaviour index comprised of both current and past behaviour. It should be noted that a considerable number of cluster validation analyses were performed. Thus, a more cursory description of these results will be presented at this time, with a more thorough description of them reserved for the discussion section.

Table 19 shows the cluster means and standard deviations on the YLSI total score and subtotals, for each cluster. Table 20 presents the cluster means, standard

Table 19.
Mean YLSI Scores by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)
YLSI Total	13.4(6.3)	35.4(8.8)	30.9(8.2)	36.7(8.4)	32.7(5.9)
YLSI Subtotal					
Delinquent History	4.0(1.4)	7.3(2.7)	5.2(1.5)	6.6(2.5)	6.9(2.2)
Education	1.4(1.5)	2.7(1.5)	3.9(1.2)	3.8(1.6)	3.4(1.4)
Family Finances	0.1(0.4)	0.2(0.5)	0.0(0.2)	1.2(0.7)	1.5(0.7)
Family	2.2(2.2)	8.7(3.2)	5.4(2.9)	8.8(2.7)	6.1(2.0)
Parents	0.6(0.7)	1.8(1.5)	0.5(0.6)	1.7(1.1)	2.3(1.6)
Accommodations	0.2(0.4)	0.4(0.6)	0.4(0.6)	0.3(0.5)	1.9(0.7)
Leisure/Recreation	1.0(1.2)	2.0(1.3)	3.2(0.7)	1.6(1.5)	2.3(1.2)
Companions	1.3(1.2)	2.8(1.2)	3.0(1.3)	1.7(0.9)	2.5(1.3)
Personality/Skills	2.4(2.6)	7.3(3.8)	8.2(4.3)	10.1(3.6)	5.0(3.5)
Attitudes/ Orientation	0.2(0.6)	2.2(1.1)	1.1(1.2)	0.7(0.8)	0.9(1.3)

Table 20.

Offence-based Means by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)	F
# of Total ^a Offences Cur. + Past	1.84(1.1)	4.05(3.3)	2.96(2.4)	4.00(2.8)	4.14(2.4)	12.61**
# Property ^b Offences Cur. + Past	0.92(0.9)	1.73(1.5)	1.23(1.7)	1.67(1.6)	2.43(1.2)	7.86**
Violence ^c Cur. + Past	0.29(0.5)	0.42(0.7)	0.69(0.9)	0.72(0.8)	0.29(0.6)	3.48*
Seriousness ^d Cur. + Past	0.62(0.7)	1.13(1.1)	1.12(0.9)	1.17(1.2)	1.43(0.7)	5.94**

Note: * $p < .05$

** $p < .001$

^a Differences between groups Clust 1 and all others, Clust 2 and Clust 3, Clust 3 and Clust 4, Clust 3 and Clust 5, significant at $p < .001$.

^b Difference between groups Clust 1 and Clust 2, Clust 1 and Clust 3, Clust 1 and Clust 5, Clust 2 and Clust 3, Clust 3 and Clust 4, Clust 3 and Clust 5, significant at $p < .001$.

^c Differences between groups Clust 1 and Clust 3, Clust 2 and Clust 3, Clust 3 and Clust 4, significant at $p < .002$.

^d Differences between groups Clust 1 and Clust 2, Clust 1 and Clust 3, Clust 1 and Clust 5, Clust 2 and Clust 3, Clust 3 and Clust 4, Clust 3 and Clust 5, significant at $p < .001$.

deviations, and the main effect comparisons for the offence-based criteria. An inspection of this table indicates a main effect for total number of offences ($F(4,243)=12.61$, $p<.001$), number of property offences ($F(4,246)=7.86$, $p<.001$), current plus past violence ($F(4,246)=3.48$, $p<.009$), and the seriousness index ($F(4,246)=5.94$, $p<.001$). Post hoc comparisons were performed to determine which clusters were significantly different from each other and these appear below the table. The family-wise error rate in these, and all other cluster post hoc tests, were adjusted to the $p<.005$ level to reflect the number of comparisons. For the total number of offences, Cluster 1 had the least number of offences while Cluster 5 had the most. A similar pattern of results was found for the number of property offences with Cluster 1 having the fewest and Cluster 5 having the most. For violence, Cluster 1 had the lowest mean score while Cluster 3 and Cluster 4 had the highest. Finally, for the seriousness index, Cluster 1 had the lowest mean score and Cluster 5 had the highest. It is interesting to note in this comparison that Cluster 5 was one of the least violent but had the highest mean seriousness score.

To summarize Table 20, the pattern of results shows that Cluster 1 had the lowest mean scores for all offence-based variables. While Cluster 2 had the second greatest mean number of total and property offences, it had an average level of violence and seriousness scores. Cluster 3

had the second lowest mean scores for offences and seriousness, but had the second greatest mean violence score. Cluster 4 represents one of the more serious types with respect to delinquent pattern. This cluster had an average mean number of total offences but ranked highest and second highest for violence and seriousness, respectively. Cluster 5 presents as an interesting type. While it clearly had the greatest mean number of total and property offences and seriousness score, it also had the second lowest violence score.

Table 21 presents the means, standard deviations, and cluster main effect comparisons for type of disposition (e.g., probation, open custody, secure custody). An inspection of this table shows a main effect of cluster for past probation ($F(4,246)=15.48, p<.001$), current plus past open custody ($F(4,246)= 7.26, p<.001$), and current plus past secure custody ($F(4,246)= 4.30, p<.002$). The Post hoc comparisons between clusters for each variable are presented below the table. An inspection of this table indicates that Cluster 1 had the least amount of past probation, open custody, and secure custody. Cluster 2 had an average amount of probation and open custody, but had the greatest mean secure custody score. Cluster 3 was second lowest on probation and open custody, but had the second greatest secure custody score. For Cluster 4, there were high scores for probation and open custody but an average score for

Table 21.
Disposition Means by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)	F
Probation ^a Past	0.05(0.2)	0.43(0.5)	0.27(0.5)	0.50(0.5)	0.57(0.5)	15.48**
Open Cust. ^b Cur. + Past	0.04(0.2)	0.29(0.5)	0.19(0.5)	0.39(0.6)	0.50(0.8)	7.26**
Secure Cust. ^c Cur. + Past	0.03(0.2)	0.25(0.6)	0.23(0.4)	0.11(0.3)	0.07(0.3)	4.30**

Note: * $p < .05$

 ** $p < .001$

^a Differences between groups Clust 1 and all others except Clust 3, Clust 3 and all others, significant at $p < .002$.

^b Differences between groups Clust 1 and all others except Clust 3, Clust 2 and Clust 3, Clust 3 and Clust 4, Clust 3 and Clust 5, significant at $p < .001$.

^c Differences between groups Clust 1 and Clust 2, Clust 2 and Clust 3, significant at $p < .001$.

secure custody. Finally, Cluster 5 had the greatest amount of probation and open custody but the second lowest secure custody score.

The means, standard deviations and cluster main effect comparisons for the inprogram adjustment ratings and breach rates appear in Table 22. The main effects analysis of cluster indicated an overall significant difference between groups for the compliance measure ($F(4,244)= 13.26, p<.001$), breach of condition ($F(4,246)= 13.20, p<.001$), and overall adjustment ($F(4,242)= 12.32, p<.001$). A summary of this table indicates Cluster 1 had the lowest mean breach rating, and greatest mean rating for both compliance and overall adjustment. Cluster 2 had the lowest mean compliance and overall adjustment rating and greatest mean breach rating. For Cluster 3, the second lowest mean ratings for compliance and overall adjustment were found with breach of condition in the average range. Cluster 4 had the second greatest mean compliance and overall adjustment rating and second lowest breach rating. Finally, Cluster 5 had the second greatest mean compliance rating, average overall adjustment rating, but the greatest mean breach of condition rating.

Table 23 presents the means, standard deviations, and main effect comparisons of cluster for several recidivism variables. An inspection of this table indicates a main effect for any recidivism (yes/no) ($F(4,246)= 17.42, p<.001$), number of new offences ($F(4,246)= 7.36, p<.001$),

Table 22.
Mean Inprogram Adjustment Ratings
and Breach Rates by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)	F
Compliance^a with Formal Conditions	0.72(0.5)	0.23(0.4)	0.42(0.5)	0.50(0.5)	0.50(0.5)	13.26**
Offender^b Overall Adjustment	2.42(0.8)	1.64(0.8)	1.81(0.8)	2.06(0.7)	1.86(1.0)	12.32**
Breach of^c Conditions	0.09(0.3)	0.48(0.5)	0.42(0.5)	0.17(0.4)	0.50(0.5)	13.20**

Note: ** p< .001

^a Differences between groups Clust 1 and Clust 2, Clust 3 and all others, significant at p <.003.

^b Differences between groups Clust 1 and Clust 2, Clust 3 and all others, significant at p <.001.

^c Differences between groups Clust 1 and Clust 2, Clust 1 and Clust 3, Clust 2 and Clust 3, Clust 3 and Clust 5, significant at p <.003.

Table 23.

Mean Recidivism Offence Variables by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)	F
Recidivism ^a	0.38(0.5)	0.89(0.3)	0.77(1.2)	0.72(1.4)	0.64(1.7)	17.42**
# of New ^b Offences	0.47(1.1)	1.87(2.9)	1.19(1.9)	0.33(2.2)	2.00(2.3)	7.36**
# of Violent Offences	0.16(0.5)	0.25(0.6)	0.23(0.8)	0.17(0.8)	0.07(0.8)	N.S.
# Property ^c New Offences	0.16(0.6)	0.73(1.0)	0.35(0.9)	0.06(0.8)	0.74(1.0)	8.46**

Note: ** $p < .001$

^a Differences between groups Clust 1 and Clust 2, Clust 3 and all others, significant at $p < .001$.

^b Differences between groups Clust 1 and Clust 2, Clust 2 and Clust 4, Clust 3 and all others except Clust Clust 4, significant at $p < .005$.

^c Differences between groups Clust 1 and Clust 2, Clust 1 and Clust 3, Clust 2 and Clust 3, Clust 2 and Clust 4, significant at $p < .003$.

and number of property recidivism offences ($F(4,246) = 8.46$, $p < .001$). Overall, Cluster 1 had the lowest mean recidivism and number of new offences and second lowest mean number of property re-offences. Cluster 2 had the greatest mean recidivism, and second greatest mean number of new offences and property offences. Cluster 3 had the second greatest mean recidivism score combined with average mean scores for number of new offences and property offences. Cluster 4 had average recidivism, second lowest mean number of new offences, and the least amount of property re-offences. For Cluster 5, while this cluster had the second lowest mean recidivism it also showed the greatest mean number of new offences and property re-offences.

For the recidivism dispositions, Table 24 presents the means, standard deviations, and main effect comparisons of cluster for probation, open custody, and secure custody recidivism dispositions. A consistent pattern of results emerged for these variables marked by significant main effects but few, in some cases none, significant adjusted post hoc comparisons. For probation recidivism, there was a main effect of cluster ($F(4,246) = 2.61$, $p < .04$) but no significant post hoc tests. The difference between Cluster 2 and Cluster 3 ($t(78) = 2.76$, $p = .007$) approached, but did not reach statistical significance. For both open custody recidivism ($F(4,246) = 2.73$, $p < .05$) and secure custody recidivism ($F(4,246) = 3.15$, $p < .02$) there were significant

Table 24.

Mean Recidivism Dispositions by Cluster (SD)

Measure	Clust 1 (N=114)	Clust 2 (N=79)	Clust 3 (N=26)	Clust 4 (N=18)	Clust 5 (N=14)	F
Probation Recidivism	0.01(0.9)	0.09(0.3)	0.04(0.2)	0.11(0.3)	0.14(0.4)	2.61*
Open Custody Recidivism	0.01(0.9)	0.08(0.3)	0.00(0.0)	0.06(0.2)	0.14(0.4)	2.73*
Secure Cust. Recidivism	0.00(0.0)	0.08(0.3)	0.00(0.0)	0.00(0.0)	0.07(0.3)	3.15*

Note: * $p < .05$ ** $p < .001$

main effects of cluster but no significant post hoc comparisons based on the adjusted family-wise error rate.

A final set of analyses compared the relative contributions of risk level and cluster to the prediction of the delinquency measures. To do this, all analysis of variance (ANOVA) procedures were repeated on risk level with controls introduced for cluster, and cluster controlling for risk level. None of the two-way interaction analyses reached statistical significance. Attention then focused on the eta and beta weights, and the percentage of variance explained by the comparison variables. Table 25 presents the risk level and cluster etas, betas, and percentage of variance explained, for the comparison measures. An inspection of this table indicates a consistent pattern in which the risk level variables were more stable and contributed to a greater degree to the measures, than did cluster. An exception to this pattern, however, was found for the recidivism disposition measures in which cluster made a greater contribution than did risk level.

Table 25.

Comparison Variables with Controls for Risk Level and Cluster

Measure	Risk Eta	Cluster Eta	Risk Beta	Cluster Beta	% Variance Accounted
# Offences Current + Past	.48	.41	.37	.19	.25
Property Offences Cur. + Past	.35	.34	.27	.21	.16
Violence Curr. + Past	.21	.23	.26	.18	.08
Seriousness Curr. + Past	.33	.30	.27	.12	.12
Probation Past	.46	.45	.32	.22	.24
Open Custody Cur. + Past	.32	.32	.21	.20	.13
Secure Custody Cur. + Past	.27	.26	.19	.18	.09
Compliance	.43	.42	.35	.20	.22
Breach	.43	.42	.37	.20	.22
Overall Adjustment	.47	.41	.46	.13	.24
Recidivism	.50	.47	.40	.18	.28
# New Offences	.32	.33	.35	.20	.14
# Violent New Offences	.15	.10	.30	.21	.04
# Property New Offences	.32	.35	.32	.23	.16
Probation Recid. Disp.	.17	.20	.07	.16	.04
Open Custody Recid. Disp.	.16	.21	.11	.15	.05
Secure Custody Recid. Disp.	.15	.22	.07	.19	.05

Discussion

One objective of the present thesis was to investigate the use of a quantitative risk/needs assessment instrument with Ontario Phase I young offenders. Overall, there is evidence to suggest the Youth Level of Service Inventory (YLSI) (Andrews, et. al., 1984) is a suitable instrument for this purpose. Evidence was found indicating the psychometric properties of the YLSI to be sound. The overall pattern of results in the present study compare favourably with previous research with the YLSI on a young offender population (e.g., Scott, 1985) and also with its associated instruments, the Young Offender Level of Service Inventory (YO-LSI) (Shields & Simourd, 1991) and the Level of Supervision Inventory (LSI) (Andrews, 1982b). Moreover, the distribution of scores in the present study were found to be essentially identical to those found in the Scott (1985) Ontario Phase I young offender study, and approximately 2 points lower than the relative distribution of scores from the YO-LSI with Ontario Phase II young offenders (Shields & Simourd, 1991). One unique feature of the present thesis was an examination of a modest sample of female young offenders on the YLSI. Overall, the findings indicate female young offenders have a slightly more narrow range of YLSI scores and have higher scores on the Family, Parents, and Leisure/Recreation subtotals, than male young offenders.

The principal components analysis in the present study indicates the presence of two underlying dimensions of the YLSI, a generalized criminogenic dimension, and a family/home environment dimension. These findings show a very strong resemblance to those found in a study of Ontario Phase II young offenders using the YO-LSI (Shields & Simourd, 1991). They do, however, differ slightly from the three factor solution found by Scott (1985). The difference between the two studies is that the YLSI subtotals that comprise factors one and two of the Scott (1985) study appear as factor one of the present study. Factor two of the present study matches perfectly with factor three of the Scott (1985) study. The slight divergence of findings may be attributed to sample size, with approximately three times as many subjects in the present study than that of Scott (1985).

Andrews et. al. (1986) have identified clinical decision making and treatment/placement options, program evaluations, and, case management and resource allocation as the three main contexts for accurate assessment of risk/need factors in young offenders. The results of the present study have implications for these issues. For example, the validation analyses indicate that the YLSI clearly distinguished different risk levels of offenders and showed a consistent pattern of results in which higher scores were linked with a greater degree of maladjustment (e.g., more

problem behaviour, more likelihood for recidivism, and more family disharmony). This finding is particularly interesting in that it demonstrates that risk/need factors appear, and can be accurately measured, at a relatively early age when intervention strategies may be most effective. Future research should pay particular attention to this issue and, more importantly, examine the risk principle (Andrews, et. al., 1990) which suggests higher levels of service are best reserved for higher risk clients and that lower risk cases are best assigned minimal service, with the YLSI and Phase I young offenders.

In terms of clinical intervention, the results of the present study suggest that male young offenders with YLSI total scores above 32 and female young offenders with scores above 39 would be considered those requiring the most intensive service. Males with YLSI total scores below 31 and above 19, and females with scores between 24 and 38, should receive an intermediate amount of clinical intervention, while those males with YLSI total scores below 18, and females below 23, should receive minimal therapeutic interactions. Discussions (Andrews, et. al., 1990) of therapeutic interventions with offender groups suggests treatment for all client groups should focus on such intermediate targets as; antisocial attitudes/values/ beliefs, delinquent peer associations, self control and self

management, and a general shifting of rewards and costs away from criminal behaviours.

A second objective of the present thesis was to investigate whether an empirically-based typology of young offenders could be developed based on a suitable assessment instrument. The results of the present study indicate that a reliable and valid typology of young offenders can be empirically derived based on the Youth Level of Service Inventory. The overall analyses of the present study suggest five young offender types. The most predominant type, comprising approximately forty-five percent of the sample, may be seen as a "Low Risk" young offender. The YLSI profile pattern appears as uniform depressions across all YLSI subtotals for this type of offender. A minor deviation to this pattern is the greater depression on Family and slight elevation, albeit still in the low risk range, on the Family Finance subtotal. This profile configuration is suggestive of an offender who has no major problems and only a slight concern over family finances. Moreover, family may have an inoculating influence on this type of offender.

As far as criminal conduct is concerned, the validation analyses across the different offender types indicates the "Low Risk" type to be the least serious. This offender shows a pattern characterized by the lowest number of criminal offences, the least amount of violent and serious

offences, the least amount of reoffending with the lowest number of recidivism offences. This type of offender also has the lowest breach of condition charges, is rated as the most compliant with the disposition, and has the highest overall adjustment rating. The dispositions received are consistent with their criminal behaviour. That is, they show the lowest rate of past probation and have the lowest rate of secure and open custody dispositions.

Only a few tenuous theoretical hypotheses regarding criminal conduct may be advanced for this type of offender given the low risk nature. One possibility is that individuals of this type may be attracted to criminal behaviour for small financial gain. That is, although there may be sufficient family finances to meet basic needs, resources for the many non-basic items adolescents seem to require, may be limited. Faced with a shortfall between the amount of money supplied by their parents and what is needed to obtain what it is they desire, they may see "small-time" crime (e.g., stealing candy bars, magazines, etc.) as a means of securing those desired items.

In terms of clinical implications, this type of offender is not likely to require a great deal of therapeutic intervention. In fact, the criminal justice encounter itself may serve as a sufficient deterrent to future criminal activity. If treatment were required, however, perhaps the most gains can be made by focusing on

money management issues. It should be noted, though, that research (Andrews, et. al., 1986) on the treatment of low risk offenders has shown that providing intensive treatment to low risk offenders may actually increase recidivism. Thus, caution should be exercised with regard to the intensity of treatment for this type of offender.

The second most predominant offender type, comprising approximately thirty-one percent of the sample, may be considered as a "Generalized High Risk/Need" young offender. The YLSI profile pattern of this type of offender shows minor elevations on most subtotals with elevation spikes on Attitudes/Orientation, Family, and Delinquent History. YLSI subtotal scores that may be considered marginally low risk are Family Finances and Accommodations. Generally, this profile pattern is suggestive of an offender type that has many problems within the family environment, has a fairly serious criminal record, and has attitudes/values/beliefs (i.e., antisocial) which are consistent with his criminal behaviour.

Consistent with the elevation on the YLSI Delinquent History subtotal, the validation analyses between clusters indicates this is one of the more serious offenders, at least with respect to volume of criminal activity. Specifically, this offender type shows the second greatest total number of offences, second greatest amount of property offences, and an average rate of violent or serious

offences. This type of offender is the most likely to reoffend and has the second greatest number of new offences. Not surprisingly, this offender type shows the lowest compliance and overall adjustment ratings, and is the most likely to incur a breach of condition charge. It is also not surprising, given the severity of criminal conduct, that this type of offender receives the greatest amount of secure custody dispositions. The amount of entire open custody and past probation falls in the average range.

As far as theoretical postulates are concerned regarding the criminal behaviour of this type of offender, perhaps the most compelling hypothesis is that a negative, antisocial oriented, family/parental environment cultivates a negative, antisocial attitude, which fosters delinquent behaviour. Research on the family environment of youth at risk for criminal lifestyles (for a review see Geismar & Wood, 1986) is supportive of this hypothesis. There is, however, also evidence to suggest this type of offender may be somewhat resilient to the negative family environment. Given the relatively few educational problems, it may be that this type of offender can function adequately within the confines of a prosocial environment (e.g., school). In addition, the relatively few personality problems suggests this offender type may be governed more by situational factors than enduring personality traits. In more simple terms, this offender may not be a "hardened" criminal at

this age. In comparison with other young offender typological endeavours, this type may be similar to Hewitt and Jenkins (1946) "socialized delinquent" and Quay's (1964) "socialized-substructural" type. These authors suggest that this offender type is a relatively "normal" delinquent, characterized by bad companions, gang delinquency, poor family situation, and truancy from school.

Clinical intervention would likely have a very positive effect on this type of offender. Ameliorating the family environment would clearly be the first priority in this respect. Perhaps the functional family therapy approach (Alexander & Parsons, 1973) may produce the most improvement. Another treatment area that may be helpful would be to address the antisocial attitudes, values, and beliefs system, and increase prosocial circumstances. Both treatment approaches should be delivered at an intensive level.

The third type of young offender, comprising approximately ten percent of the sample, may be considered as an "Difficulties in the Community" type. The YLSI profile pattern is marked by noticeable elevations on Leisure/Recreation, Education, Companions, and Personality subtotals, depressions on the Family Finances and Parents subtotals, and average scores on Delinquent History, Family, Accommodations, and Attitudes/Orientation subtotals. This profile is suggestive of an individual whom has a fairly

decent family environment but has problems in school, in using his leisure time appropriately, has personality problems, and affiliates with a peer group of negative influence.

The results of the validation analyses provide some insight as to the functioning of this type of offender. In terms of criminal behaviour, this offender type has the second lowest total number of offences, second lowest number of property offences, and engages in the second least serious activity. Despite the low number of offences, however, this offender type has the second greatest amount of violence. Consistent with personality problems, this offender type has the second lowest compliance rating, the second lowest overall adjustment rating, and an average amount of breach of condition charges. This offender type has the second greatest recidivism, only average number of total offences, but the second greatest amount of violent reoffending. In terms of dispositions received, this offender has the second lowest past probation, second lowest open custody, but the second greatest amount of secure custody dispositions.

As far as criminological hypotheses are concerned, the YLSI profile pattern and validation analyses are suggestive of an individual that may not be particularly cognitively sophisticated and deals with difficult/stressful situations in a violent manner. This hypothesis may be consistent with

Dodges' research (Dodge, 1980) that shows aggressive boys to have a propensity for aggression in unstructured situations. A related hypothesis is that this type of offender corresponds to the DSM-III-R conduct disorder diagnosis (American Psychiatric Association, 1987) based on the combination of school problems and aggressive tendencies. In comparing this offender type to previous young offender typologies, it is perhaps similar to the "asocial aggressive" type from Warren's (1966,1969,1976) Interpersonal Maturity Level (I-Level). A primitive, egocentric offender who is actively demanding of others and aggressive when thwarted.

The clinical intervention strategies employed with conduct problem children and youth are likely to have a beneficial impact on this type of offender. More specifically, those that are highly structured, address problem solving and anger management issues, and are delivered at an intensive level.

The fourth type of young offender comprises approximately seven percent of cases and may be the most complex of the offender types. The YLSI profile of this type is characterized by primary elevations on Family Finances and Personality and less severe elevations on Education, and Family, subtotals. The Delinquent History and Parents subtotals fall just above the normal range with Accommodations, Leisure/Recreation, Companions, and

Attitudes/Orientation in the low risk range. This pattern is suggestive of an individual that is driven towards criminal conduct more because of personality, than situational, factors and, therefore, may be labelled as a "Family and Personal Distress" type of offender.

Evidence from the cluster validation analysis shows the characteristic criminal conduct for this type of offender to have an average number of total offences but the most violent and most serious offences of all offender types. This offender type shows only an average rate of recidivism, has the second lowest number of new offences, and the least amount of property offences. Interestingly, this offender type shows the second highest ratings for compliance and overall adjustment, and has the second lowest rate of breach of conditions. Somewhat interesting, given the high rate of violent and serious offences, is the fact that these offenders have only an average rate of secure custody dispositions. They do, however, have the second highest amount of past probation and open custody dispositions.

In comparing this offender type to those of other young offender typologies, it may be most closely associated with that of Quay's (1964) "unsocialized-psychopathic". An assaultive, defiant, and irritable type of offender. One intriguing theoretical hypothesis for this offender type is that the offences and behaviour characteristics resemble those of the criminal psychopath. For the personality based

YLSI items, this offender type had the greatest mean score of all clusters for those variables (e.g., aggressiveness, inadequate guilt, defiant of authority, callousness, etc.) most closely associated with the personality disposition of psychopaths. The slight exception to this pattern was for callousness, in which this offender type had the second greatest mean score. The moderate number of offences yet high rate of violent and serious offences may be suggestive of an offender who embraces the instrumental use of violence to achieve a desired end. As far as recidivism is concerned, this type of offender shows a relatively moderate rate of recidivism but tends to engage in violent re-offences. Research (e.g., Hare, 1980; Wong, 1984) has shown all these patterns to be characteristic of the adult criminal psychopath. The patterns of criminal justice disposition and behaviour rating provide additional evidence to suggest the link between this offender type and criminal psychopaths. For example, this offender type is characterized by the greatest amount of violence and serious offences yet receives some of the lowest secure custody dispositions. Moreover, this individual is often rated as having some of the best overall adjustment. Descriptions of psychopaths (Cleckley, 1976) maintain that psychopaths are masters of deception and manipulation to best serve their own interests. Perhaps the same may be true of this young offender type.

Treatment initiatives with this type of offender may be extremely difficult if these individuals are indeed juvenile psychopaths. The psychopathy literature has consistently shown that psychopaths are very poor candidates for treatment. Treatment efforts, however, should be attempted and may be most productive by focusing on reducing violent outbreaks (e.g., anger management training), improving the family environment, and fostering improved interpersonal relationships.

The final offender type comprises approximately 5 percent of the sample and may be described as a "Economically Disadvantaged" young offender. Perhaps the most distinctive feature of the YLSI profile is the marked elevations on the Family Finances and Accommodations subtotals. The profile is also characterized by more minor elevations on Delinquent History, Education, Parents, Leisure, and Companions subtotals. The Family, Personality, and Attitudes/Orientation subtotals are within the normal range.

The cluster validation analyses indicate this offender type to have the greatest number of offences, greatest number of property offences, but lowest rate of violence. This type shows a distinct recidivism pattern characterized by the second lowest rate of reoffending, but the greatest number of total, and property, offences. An interesting picture emerges for the behaviour ratings. While this

offender type has the second highest compliance rating, it also has the highest rate of breach of conditions. The overall adjustment falls in the average range. For dispositions, this offender type has the second lowest rate of secure custody and has the most open custody and past probation.

An appealing theoretical hypothesis for the criminal conduct of this type of offender is that criminal behaviour is linked to perceived financial hardship. Moreover, with some evidence for parental problems, it may be that this type of young offender may receive a familial social influence that criminal activity is an acceptable solution to the financial situation. The lack of personality and antisocial attitude problems is also suggestive that this individual may engage in crime out of a perceived need rather than a personal, procriminal, disposition. With the high rate of property-based crime, it may be that this type of offender exchanges the stolen goods for more useful items (e.g., money, clothes, etc.). In terms of comparisons with types from other offender typologies, this offender may be similar to Warren's (1966,1969,1976) "situation-emotional reaction" offender from the I-Level system. That is, the offender is very reactive to current crises (i.e., financial hardship) and engages in behaviour that may be seen as providing the most expedient solution, albeit illegal, to the problem.

As far as treatment is concerned, attending to the family financial situation may be the point of first departure. Once this has been addressed, the offender may not feel as great a need to secure items through illegal methods. Attention should, however, focus on money management and employment skills training such that this type of offender does not repeat the cycle of financial hardship as an adult.

Finally, the results of the present study should be regarded as a preliminary examination of the YLSI for use with Phase I young offenders. The fact that scores were derived from a file-based review raises concerns about whether similar scores may be obtained through structured interviews. As well, there is a need for evidence of the predictive criterion validity and, in particular, risk by treatment interactions with this population. The results with respect to the typological analyses are equally preliminary. Because of technical limitations (e.g., cluster instability, limited validation data, etc.), there is a need here to replicate the results and examine the viability of this system in actual clinical practice. Future research should address both these issues. Finally, while the results of the present study do not "disprove" the theoretical postulates of mainstream criminology, much of the evidence found favours the psychology of criminal conduct as the more appropriate theoretical model.

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APPENDIX A

The Principles of PIC-R (Andrews, 1982)

1. Occurrences of deviant and nondeviant behaviour are under antecedent and consequent control.
2. Inter- and intra-individual variations in the probability of occurrence of a given class of behaviour (deviant or nondeviant) are due to variations in the signalled rewards and costs for that class of behaviour.
3. Antecedents and consequences are of two major types: additive events (stimuli are introduced, extended or augmented) and subtractive (stimuli are withdrawn, postponed or diminished).
4. The controlling properties of antecedents and consequences are acquired through the interaction of the person with the environment. The principles governing the acquisition, maintenance, and modification of the controlling properties of stimulus conditions included those of genetic and constitutional disposition and capability; biophysical functioning; cognitive functioning; human development; behavioral repertoire; state conditions; and respondent and operant conditioning including observational learning, rule learning, symbolic control and role enactment.
5. Antecedents and consequences arise from four major sources: the actor (personally-mediated events); other persons (interpersonally-mediated events); the act itself (non-mediated, or automatic and habitual events); and other aspects of the situation of action.
6. Variations in the probability of occurrence of a given class of behaviour are a positive function of the signalled density of the rewards for that class of behaviour and a negative function of the signalled density of the costs for that class of behaviour.
7. The magnitude of the effect of any one signalled reward, for any class of behaviours, depends upon the signalled density of other rewards for that class of behaviours. Generally, the magnitude of the effect of any one reward is greatest at some intermediate level of density, and the magnitude of the effect of any one reward is diminished at the lowest and highest levels of density. Similarly, the magnitude of the effect of any one cost

for any class of behaviours is greatest at some intermediate level of density of costs.

8. The magnitude of the effect of the signalled density of the costs for any class of behaviours depends upon the signalled density of the rewards for that class of behaviours. Generally, the effect of density of costs is greatest at some intermediate level of density of rewards and diminished at the lower and higher levels of density of rewards.
9. Variations in the signalled rewards and costs for one class of behaviour (deviant and nondeviant) may produce variations in the probability of occurrence of the other class of behaviours. The magnitude of the effect is a function of interconnecting contingencies and schedules for deviant and nondeviant behaviour. The rewards for nondeviant behaviour approach their maximum impact on the chances of deviant behaviour under the following conditions:
 - a) when and where relatively noncostly and non-deviant behaviours produce a relatively high density of rewards, including rewards similar to those produced by deviant behaviour;
 - b) when and where the costs for deviant behaviour include a reduction, postponement, omission or interruption in the delivery of those rewards produced by nondeviant behaviours; and,
 - c) when and where nondeviant behaviours are incompatible with deviant behaviour.
10. Historical, geographic and political-economic factors primarily influence individual behaviour by way of the contingencies which they produce within settings and communities.
11. Setting and community factors include physical, environmental and cultural variables, as well as the structure of social systems; these influence individual behaviour through the reward-cost contingencies they maintain within the settings.
12. Two basic dimensions for the analysis of the effects of systems on the deviant and nondeviant behaviours of its members are the normative and the control dimensions. The normative dimension includes behavioral prescriptions and proscriptions and their distribution according to one's position within the system. The control dimension includes the visibility of normative

and deviant behaviour to persons who control resources (including potential rewards and costs); the quantity, variety, quality and magnitude of potential rewards and costs; the immediacy, frequency, and regularity with which rewards and costs are delivered; and, the maintenance of inter-connecting contingencies for deviant and nondeviant behaviour.

13. Variations in the probability of occurrence of any given behaviour within each of the deviant and nondeviant classes of behaviour may be understood or produced by the application of the preceding principles to that specific behaviour.
14. The predictability of behaviour and its amenability to influence, increase with individualized assessment of the signalled reward/cost contingencies.
15. The human and social value of any perspective on human conduct is in some part a function of predictive efficiency and the ability to influence events. For the most part, its value is a function of ethical and humane applications.

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Delinquent History

- ☐ Police Contacts
- ☐ Court Appearances
- ☐ Ever Probation
- ☐ Current Probation
- ☐ Training School
- ☐ Group Home for Delinquency
- ☐ Shoplifting
- ☐ Stealing (Except Shoplifting)
- ☐ Engages in Cooperative Stealing
- ☐ Vandalism
- ☐ Break-Enter Theft
- ☐ Assault/Violence
- ☐ Robbery
- ☐ Drugs (Specify _____)
- ☐ Drinking
- ☐ Trespassing
- ☐ Sex Misconduct
- ☐ Engages in Malicious Mischief
- ☐ Engages in Gang Activity
- ☐ Other (Specify _____)

Education

- ☐ Truancy
- ☐ Punctuality
- ☐ Poor Classroom Behaviour
- ☐ Poor Schoolyard Behaviour
- ☐ Poor School Achievement
- ☐ Failed Grades
- ☐ Homework Incomplete
- ☐ Diagnosed Learning Disability
- ☐ Ever Expelled/Suspended
- ☐ Poor Participation/Performance
- ☐ Poor Relations with Peers
- ☐ Poor Relations with Teachers

Family Finances

- ☐ Poor Situation
- ☐ Receives Social Assistance

Family

- ☐ Family Composition Unstable
- ☐ Poor Relations with Mom
- ☐ Poor Relations with Dad
- ☐ Poor Relations with Siblings
- ☐ Scapegoat of Family
- ☐ Inadequate Supervision of Children
- ☐ Difficulties Controlling Child's Behaviour

- ☐ Inappropriate Discipline of Children
- ☐ Inconsistency in Parenting
- ☐ Poor Family Communication
- ☐ Lack of Family Cohesion
- ☐ Runs from Home
- ☐ Subject Currently in Residential Care
- ☐ Subject Ever in Residential Care
- ☐ Delinquent History Sibling
- ☐ Mental Health Problem Sibling
- ☐ Alcohol/Drug Problem Sibling
- ☐ Sibling Ever in Residential Care
- ☐ Siblings Currently in Residential Care
- ☐ Stays Out Late at Night
- ☐ Too Often Absent from Home

E. Parents

- ☐ Criminal History Dad
- ☐ Criminal History Mom
- ☐ Mental Health Problem Dad
- ☐ Mental Health Problem Mom
- ☐ Alcohol/Drug Problem Dad
- ☐ Alcohol/Drug Problem Mom
- ☐ Abusive Dad (Physical/Sexual)
- ☐ Abusive Mom (Physical/Sexual)
- ☐ Other History (Specify _____)
- ☐ Marital Conflict
- ☐ Poor Self-Image/Confidence of Parents
- ☐ Poor Problem-Solving Ability of Parents

F. Accommodations

- ☐ Housing Problems
- ☐ Frequent Changes of Address
- ☐ High-Crime Neighbourhood

G. Leisure/Recreation

- ☐ Limited Organized Participation
- ☐ Limited Participation in Informal Peer Activities
- ☐ Could Make Better Use of Time
- ☐ No Personal Interests (hobbies, sports, etc.)

I. Companions.

15. ☐ Some Delinquent Acquaintances
 16. ☐ Some Delinquent Friends
 17. ☐ None or Few Positive Acquaintances
 18. ☐ None or Few Positive Friends
 19. ☐ Strong Allegiance to Selected Peers
 20. ☐ Associates with Peer Outside of Peer Group

J. Personality/Skills

21. ☐ Poor Physical Appearance
 22. ☐ Poor Physical Health
 23. ☐ Weight Problems (Under/Over)
 24. ☐ Smokes Tobacco
 25. ☐ Sense of Inferiority
 26. ☐ Inflated Self Esteem
 27. ☐ Withdrawn
 28. ☐ A Social Isolate
 29. ☐ Physically Aggressive
 30. ☐ Tantrums
 31. ☐ Manners/Etiquette
 32. ☐ Unable to Express Her/Himself

33. ☐ Short Attention Span
 34. ☐ Frustration Tolerance
 35. ☐ Uses Inappropriate Attention Seeking
 36. ☐ Sexual Awareness
 37. ☐ Worries
 38. ☐ Has Inadequate Guilt Feelings
 39. ☐ Irritable
 40. ☐ Verbally Aggressive, Impudent
 41. ☐ Difficulties in Completing Tasks
 42. ☐ Obscene, Uses Foul Language
 43. ☐ Feels Persecuted, Believes Others Unfair
 44. ☐ Callous, Little Concern for Others
 45. ☐ Defies Authority
 46. ☐ Trouble Getting Along with Others
 47. ☐ Initiates Fights
 48. ☐ Other (Specify _____)

J. Attitudes/Orientation

109. ☐ Supportive of Delinquency
 110. ☐ Supportive of Unconventional Attitudes
 111. ☐ Not Actively Seeking Help
 112. ☐ Actively Rejecting Help

APPENDIX C
PDR/OTHER SOURCES

Client ID _____

Coder _____

CURRENT OFFENCE (S)

E. Offender's Participation: ___ 1. Alone 2. Leader
3. Follower 4. Equal with others 5. NA 9. Unknown

F. Use of Weapon: ___ 0. No weapon involved 1. Weapon, but not used
2. Weapon used 3. Used unnecessarily 8. NA 9. Unknown

G. Type of Weapon: ___ 0. No weapon 1. Other than knife or gun
2. Knife 3. Gun 8. NA 9. Unknown

H. Violence or Physical Harm Present: ___ 0. Not Apparent 1. Yes

I. Type of Violence: (0. Not Apparent 1. Yes, Present)
2. To property ___ 3. To person/victim ___
4. To more than 1 person ___ 5. Sadistic element ___
6. Lack of purpose for violence ___ 7. Ritualistic/cult related ___

J. Type of Threat/Intimidation:

1. Threat/intimidation ___ 2. Verbal ___
3. Physical ___ 4. By weapon ___
5. Hostage taken ___ 6. Sexual implications in offence ___

K. Sophistication:

1. Planning & premeditation ___ 2. Organization & precision ___
11. Impulsiveness ___ 12. Lacked criminal professionalism ___
13. "One-shot" offence ___ 15. Breach of trust ___
14. Ignorance of the law/negligence ___

L. Participation:

1. Youth culpable ___ 2. Youth encouraged crime in others ___
3. Victim rendered vulnerable by involvement of more than 1 offender ___
5. Youth participated under coercion, duress, or great provocation ___
4. Youth influenced by others ___

M. Manner of Commission of Offence:

1. Crime unprovoked ___ 8. Result of great provocation ___
9. Youth acted in self-defense ___ 10. Acted in fear of victims ___
11. A mental or physical condition which reduces culpability ___
12. Youth motivated by desire to provide necessities for self/family ___
13. Offence is out of character for offender ___
14. Motivated by physical/sexual victimization ___
15. Offence related to family culture & environment ___

2. Methodical attack ___ 6. Victim threatened ___ 7. Witness threatened ___
3. Detection of crime prevented by manner of operation ___
4. Unnecessary destruction of property ___
5. Crime committed under influence of alcohol/drugs ___

N. 1. Multiple Victims ___

W. Offender's Conduct After the Offence (and before disposition):

4. Nonco-operative with police ___ 5. Destruction of evidence ___
 6. Took steps to avoid arrest ___ 7. Threats to victim ___
 8. Defiant/joking attitude ___ 1. Lack of remorse ___
 10. A confession ___ 12. Guilty plea ___
 11. Admits past guilt/seeks deliverance from past crimes ___
 13. Respect for the law ___ 15. Surrendered to police ___
 16. Failed to appear for PDR/unco-operative with PO/in detention ___
 14. Inability to cope with closed custody ___
 NEW ITEM. Family circumstances preclude staying at home ___

V. Lack of Response to Previous Court Orders

1. Just after/while closed custody ___ 2. While on probation/OC ___
 3. While on bail for another charge ___
 4. After fine/absolute discharge/after or while alternative measures ___
 5. Ever one year without law trouble after first offence ___
 6. Chronic/professional criminal ___ 9. Intends to continue crime ___

*** PLEASE COMPLETE TO-CMS RATING FOR "SERIOUSNESS OF CURRENT OFFENCE(S)"***

*** PLEASE COMPLETE TO-CMS "YOUTH'S RESPONSE TOWARDS CURRENT OFFENCES" ***

*** PLEASE COMPLETE TO-CMS "PAST OFFENCES" ***

A. Delinquent History (YLSI)

1. Previous probation ___ 5. Closed custody ever ___ 6. Open custody ever ___
 2. Alternative measures (formalized diversion) ___

ESCAPE HISTORY:

1. Frequent attempts ___ 2. Frequent escapes ___ 3. Daring/risky attempts ___
 4. Recent history (within last year) ___ 5. Escape poses a threat to others ___

*** PLEASE COMPLETE TO-CMS "RESPONSE TO AUTHORITY" ***

(Survey of types of charges and/or offensive behaviour recorded)

7. Shoplifting ___ 8. Stealing (except shoplifting) ___
 10. Vandalism ___ 11. Break, Enter, Theft ___
 12. Assault/Violence ___ 13. Robbery ___
 9. Engages in co-operative stealing ___ 16. Trespassing ___
 17. Sex misconduct ___ 18. Engages in malicious mischief ___
 19. Engages in gang activities ___ 20. Other (specify _____) ___

PREVIOUS VIOLENCE

1. Previous assaults on peers ___ 2. Previous assaults on siblings ___
 3. Previous assaults on adults ___ 4. History of fighting ___
 5. Harm to victim ___ 6. Alcohol/drug induced violence ___
 27. (YLSI) Initiates fights ___ History of fire-setting/arson ___

*** PLEASE COMPLETE TO-CMS "AGGRESSIVE BEHAVIOUR" ***

- YOLSI 1. Has used illicit drugs ___ 2. Regular use of cannabis ___
 3. Regular use of other drugs (specify _____) ___
 4. Charged or convicted of possession or trafficking drugs ___
 5. Alcohol abuse ___ 8. Crime in order to satisfy craving ___
 9. Crimes due to poor judgment associated with intoxication ___
 *** PLEASE COMPLETE TO-CMS "DRUG/ALCOHOL ABUSE" ***

Childhood History (OMCS) AND YLSI Personality/Skills :

1. Cruelty to animals	___	2. Persistent inappropriate sexual behaviour	___
3. Temper tantrums/rage	___	6. Defiance of authority	___
7. Enuresis/bed wetting	___	4. Physically abused as a child	___
5. Sexually victimized as a child	___		
(YLSI) 3. Weight problem (under/over)	___	4. Smokes tobacco	___
5. Sense of inferiority	___	6. Inflated self-esteem	___
7. Withdrawn	___	8. A social isolate	___
11. Poor manners/etiquette	___	12. Unable to express self	___
13. Short attention span	___	14. Low tolerance for frustration	___
15. Uses inappropriate attention seeking	___	17. Worries	___
18. Inadequate guilt feelings	___	19. Irritable	___
20. Verbally aggressive, impudent	___	22. Uses foul language	___
21. Difficulties in completing tasks	___		
23. Feels persecuted, believes others unfair	___		
24. Callous, little concern for others	___		
26. Trouble getting along with others	___		

Leisure Recreation (YLSI)

1. Limited organized participation ___
2. Limited participation in informal peer ___
3. Could make better use of time ___
4. No personal interests (hobbies, sports, etc) ___

Special Interests

1. Preferences for violence in movies, TV ___
2. Fascination with fire-setting ___
3. Ritualistic or cult related interests ___
4. Fascination with weapons ___
5. Collection of weapons, ammunition or weapon literature ___

*** PLEASE COMPLETE TO-CMS "USE OF NON-SCHOOL/WORK TIME" ***

Suicide Attempts

1. Previous attempts	___	2. Well planned attempts	___
3. Impulsive attempts	___	4. Alcohol/drug related attempts	___
5. Self-mutilation	___	6. Ritualistic or cult related attempts	___
7. Recent attempt (within last year)	___		
8. Attempt precipitated by environmental cues	___		
9. Family history of suicide or attempts	___		

*** PLEASE COMPLETE TO-CMS "EMOTIONAL DISTRESS: HISTORY" ***

*** PLEASE COMPLETE TO-CMS "EMOTIONAL DISTRESS: CURRENT" ***

Peer Relations (YOLSI)

3. Has sexual experience	___	4. Is promiscuous (multiple partners)	___
5. Is unconcerned with birth control	___	6. Has children	___
		Unsafe sex	___

*** PLEASE COMPLETE TO-CMS "SEXUALITY/SEXUAL BEHAVIOUR" ***

Companions (YLSI)

1. Some delinquent acquaintances	___	2. Some delinquent friends	___
3. None or few positive acquaintances	___	4. None or few positive friends	___
5. Strong allegiance to selected peers	___		

Influence from Others

1. Criminogenic family ☐
2. Deeply entrenched in delinquent or drug subculture ☐
3. Commitment to violent subculture (e.g., biker, racial gang) ☐
5. Passive dependent personality documented ☐
6. High need for approval or acceptance ☐
7. Allegiance to deviant, charismatic friend or leader ☐
8. Unable to avoid influence of another (e.g., pimp) ☐

*** PLEASE COMPLETE TO-CMS "PEER RELATIONSHIPS" ***

*** PLEASE COMPLETE TO-CMS "HEALTH" ***

Parents: Biological and/or Surrogate (YLSI)

1. Criminal history dad ☐	2. Criminal history mom ☐
3. Mental health problem dad ☐	4. Mental health problem mom ☐
5. Alcohol/drug problem dad ☐	6. Alcohol/drug problem mom ☐
7. Abusive dad (physical) ☐	Abusive dad (sexual) ☐
8. Abusive mom (physical) ☐	Abusive mom (sexual) ☐
NEW ITEMS. Mom abused by dad ☐	Dad abused by mom ☐
9. Marital conflict ☐	

Siblings: Biological and/or by other family arrangements (YLSI)

15. Criminal history sib ☐	16. Mental health problem sib ☐
17. Alcohol/drug problem sib ☐	
NEW ITEMS. Abused by sib (physical) ☐	Abused by sib (sexual) ☐
Abusing sib (physical) ☐	Abusing sib (sexual) ☐

Family (YLSI)

2. Poor relations with mom ☐	3. Poor relations with dad ☐
4. Poor relations with sibs ☐	5. Scapegoat of family ☐
5. Poor supervision of children ☐	7. Difficulties controlling child ☐
11. Lack of family cohesion ☐	12. Child runs from home ☐
20. Stays out late at night ☐	21. Too often absent from home ☐
13. Subject currently in residential care ☐	
18. Sibling ever in residential care ☐	
19. Sibling currently in res. care ☐	

*** PLEASE COMPLETE TO-CMS "FAMILY CIRCUMSTANCES: CRIME" ***

*** PLEASE COMPLETE TO-CMS "FAMILY CIRCUMSTANCES: EMOTIONAL DISTRESS" ***

*** PLEASE COMPLETE TO-CMS "FAMILY CIRCUMSTANCES: STABILITY OF LIVING ARRANGEMENT" ***

*** PLEASE COMPLETE TO-CMS "FAMILY DYNAMICS: COMMUNICATION" ***

*** PLEASE COMPLETE TO-CMS "FAMILY DYNAMICS: ROLES" ***

*** PLEASE COMPLETE TO-CMS "FAMILY DYNAMICS: DISCIPLINE" ***

*** PLEASE COMPLETE TO-CMS "FAMILY DYNAMICS: PROBLEM SOLVING" ***

*** PLEASE COMPLETE TO-CMS "FAMILY CRISES" ***

*** PLEASE COMPLETE TO-CMS "PLACEMENT HISTORY" ***

*** PLEASE COMPLETE TO-CMS "ANTICIPATED TRANSITIONAL EVENTS" ***

- Family Structure: ☐ 01. Married parents 02. Unmarried parents
03. Single mother 04. Single father 05. Unattached female
06. Unattached male 07. Foster parents 08. Other relatives
09. Grandparents 10. Other (Specify _____)

Parents/Guardian

1. Male married previously ☐ 2. Female married previously ☐
 3. Currently separated ☐ 4. Low father availability ☐
 5. Low mother availability ☐

01. Total number of children # 02. # of adopted/foster children #
 03. # of children from previous union of dad # 04. of mom #

- Living arrangements: ☐ 1. Lives alone ☐ 2. with parent(s) ☐ 3. with friends
 4. other relatives ☐ 5. foster parents ☐ 6. adoptive parents ☐ 7. Other

Accommodation (YLSI)

1. Housing problems ☐ 3. High crime neighborhood ☐

Family Finances (YLSI)

1. Poor situation ☐ 2. Receives social assistance ☐

Employment Status of Female Head of Family: ☐Employment Status of Male Head of Family: ☐

01. Employed, full-time 02. Employed, part-time 03. Homemaker
 04. Unemployed seeking work 05. Unemployed not seeking work 06. Student
 07. Disabled 08. Retired 08. NA 99. Missing

Education (YLSI)

3. Diagnosed learning disability ☐ 11. Poor relations with school chums ☐
 12. Poor relations with teachers ☐

*** PLEASE COMPLETE TO-CMS "EDUCATION: SCHOOL BEHAVIOUR" ***

*** PLEASE COMPLETE TO-CMS "EDUCATION: SCHOOL ATTENDANCE" ***

*** PLEASE COMPLETE TO-CMS "EDUCATION: ACADEMIC PERFORMANCE" ***

*** PLEASE COMPLETE TO-CMS "EMPLOYMENT (IF APPLICABLE)" ***

Attitudes/Orientation/Motivation (YLSI)

1. Supportive of delinquency ☐ 2. Supportive of unconventional activities ☐
 3. Not actively seeking help ☐ 4. Actively rejecting help ☐

Agency History/Referral Reason: *for Transfer into other Agencies*

1. Court order ☐ 2. Placement ☐ 3. Violence ☐ 4 Education ☐
 5 Family Problems ☐ 6 Physical illness ☐ 7. Mental illness ☐
 8. Fitness to stand trial ☐ 9. Psychological disorder ☐
 10. Emotional disorder ☐ 11. Learning disorder ☐ 12 Mental Retardation ☐
 13. Disturbing unacceptable behaviour ☐

Involvement with Other Agencies

1. CAS ward in past ☐ 2. CAS ward ☐ 3. CAS nonward past ☐
 4. CAS nonward present ☐ 5. Corrections ward past ☐
 6. Corrections ward present (custody, detention, order to reside) ☐
 7. Ind/family counselling, past ☐ 8. Ind/family counselling present ☐
 9. Group home past ☐ 10. Group home present ☐ 11. Res Rx. Past ☐
 12. Res Rx. Present ☐ 13. Secure custody past ☐ 14. Secure custody now ☐
 15. Foster care past ☐ 16. Foster care present ☐

Ethnicity: ☐ 1. Caucasian 2. Black 3. Chinese. 4. Native 5. 6. 7....

CASE ID

of/de

3

A resolution test chart featuring various patterns of vertical and horizontal lines. Each pattern is accompanied by a numerical value indicating its resolution. The values include 1.0, 1.1, 1.25, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8, 3.2, 3.6, and 4.0. The patterns become progressively smaller and more densely packed as the numerical value increases.

ON A NEW MICROPROCESSOR-CONTROLLED SYSTEM

MicroD

FOR THE MICROPROCESSOR-CONTROLLED SYSTEM

FOR THE MICROPROCESSOR-CONTROLLED SYSTEM

Client ID _____

Coder _____

Office: _____

*** Date of YOA Placement Assessment (dd/mm/yy): ____ / ____ / ____

*** Initial Facility _____

YO A PLACEMENT CONSIDERATIONS: COMMON INDICATORS (Direct from Ministry form)

1. Previous suicide attempts or serious self-injury _____
2. Previous sexually or physically assaultive behaviour _____
3. Previous assaultive behaviour aimed at recognized authority figures _____
4. Previous convictions for violent offences _____
5. Previous incidents involving use of weapons _____
6. Previous incidents of fire setting _____
7. Previous escape from custody _____
8. Previous diagnosis of psychosis _____
9. The existence of a third party who meets one of the above criteria, and poses a threat to the young person or his/her care givers _____
10. Other indicators _____

*** Youth judged to be high risk by Case Manager _____

11. Child placed in dedicated facility? _____ (See list)
12. Child placed in mixed facility? _____ (See list)
13. Child placed in open custody? _____
14. Child placed on secure custody? _____
15. Child placed in residential setting on an Order to Reside (OTR)? _____
 - OTR - Foster Care? _____
 - Open Custody - Foster Care? _____
 - OTR - CAS _____
 - Group Home? _____
 - Community Mental Health Centre? _____
17. Assessment pending? _____
18. Extra staff required for placement? _____
19. Evidence of Conduct Disorder? _____
20. Alcohol Abuse Disorder? _____
21. Attention Deficit Disorder? _____
22. Depressive Disorder? _____
23. On medication? (e.g., Elavil, Ritalin) _____

Reasons For Placement Decision by Po/PD: _____

1. Repeat/frequent offence history _____
2. Severity/nature of Offence _____
3. Previous probation negative _____
4. Likely to deter crim _____
5. For rehabilitation/counselling _____
6. For treatment _____
7. Needs sufficient controls/support _____
8. All else has failed _____
9. Court intent to "Shock" _____
10. To access treatment _____
11. Intake bed only available _____
12. One intake point _____
13. Family/parental home unavailable _____
14. Length of disposition _____
15. Need for on-site school/education _____
16. Closeness to family _____
17. Other: specify _____

Client ID # _____ Coders _____

Client Identifier _____ Court File # _____

Study: __ 1. TO-CMS 2. London Office: _____

Date CIC Index File opened: DD ____ MM ____ YY ____ Intake Point/Location _____

Date of Birth: DD ____ MM ____ YY ____ Gender: 1. Male ____ 2. Female ____

*** (MOVED FROM PDR): Ethnicity: __ 1. Caucasian 2. Black 3. Native

4. Other Specify _____

Residing With: __ 1. Both parents 2. Mother only. 3. Father only

4. Foster parent/child welfare 5. Custody 6. Independent 7. Other
(specify _____)

Guardianship: __ 1. Parental 2. Child Welfare 3. Custody 4. Independent

5. Other _____

CAS Wardship: __ 0. No 1. Crown Ward 2. Society Ward 3. Care by Agreement

4. Special Needs Agreement

Case Manager: _____ Provincial Director _____

First Language: __ 1. English 2. French 3. Other _____

Religion: __ 1. Catholic 2. Protestant 3. Jewish. 4. Other _____

Status Native: __ Special Medical Problems: _____

Ident Inform: Scars _____ Marks _____ Tattoos _____

Termination/Release Date: DD ____ MM ____ YY ____

PLACEMENT CHANGES: 1. From ____ To ____ 2. From ____ To ____
 3. From ____ To ____ 4. From ____ To ____ 5. From ____ To ____
 6. From ____ To ____ 7. From ____ To ____ 8. From ____ To ____
 9. From ____ To ____ 10. From ____ To ____ 11. From ____ To ____

CURRENT OFFENCES / DISPOSITIONS

Total # (including counts of each): _____ Total # Different Types _____

Offence	Counts				
Act: PO/YO/CC	_____	_____	_____	_____	_____
Conviction Date: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
Dispo Date: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
Absolute Discharge	_____	_____	_____	_____	_____
Fine	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Compensation	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Restitution	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Repayment	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Personal Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Comm Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Treatment Serv Ord	Days _____	Days _____	Days _____	Days _____	Days _____
Probation	Days _____	Days _____	Days _____	Days _____	Days _____
Start: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
End: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
Open Custody	Days _____	Days _____	Days _____	Days _____	Days _____
Start: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
End: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
Secure Custody	Days _____	Days _____	Days _____	Days _____	Days _____
Start: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
End: D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____	____/____/____
Prob Placement	_____	_____	_____	_____	_____
Add Days AWOL	_____	_____	_____	_____	_____
Pro, Seiz., Forf.	_____	_____	_____	_____	_____
Indictable?	_____	_____	_____	_____	_____
*** Note any order to reside	_____	_____	_____	_____	_____

CURRENT OFFENCES / DISPOSITIONS continued....

CASE ID _____

Offence	_____	_____	_____	_____
Counts	_____	_____	_____	_____
Act: PO/YO/CC	_____	_____	_____	_____
Conviction Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Dispo Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Absolute Discharge	_____	_____	_____	_____
Fine	\$ _____	\$ _____	\$ _____	\$ _____
Compensation	\$ _____	\$ _____	\$ _____	\$ _____
Restitution	\$ _____	\$ _____	\$ _____	\$ _____
Repayment	\$ _____	\$ _____	\$ _____	\$ _____
Personal Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Comm Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Treatment Serv Ord	Days _____	Days _____	Days _____	Days _____
Probation	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Open Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Secure Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Prob Placement	_____	_____	_____	_____
Add Days AWOL	_____	_____	_____	_____
Pro, Seiz., Forf.	_____	_____	_____	_____
Indictable?	_____	_____	_____	_____
*** Note any order to reside _____				

Offence	_____	_____	_____	_____
Counts	_____	_____	_____	_____
Act: PO/YO/CC	_____	_____	_____	_____
Conviction Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Dispo Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Absolute Discharge	_____	_____	_____	_____
Fine	\$ _____	\$ _____	\$ _____	\$ _____
Compensation	\$ _____	\$ _____	\$ _____	\$ _____
Restitution	\$ _____	\$ _____	\$ _____	\$ _____
Repayment	\$ _____	\$ _____	\$ _____	\$ _____
Personal Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Comm Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Treatment Serv Ord	Days _____	Days _____	Days _____	Days _____
Probation	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Open Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Secure Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Prob Placement	_____	_____	_____	_____
Add Days AWOL	_____	_____	_____	_____
Pro, Seiz., Forf.	_____	_____	_____	_____
Indictable?	_____	_____	_____	_____
*** Note any order to reside _____				

CLIENT ID# _____ CODER _____

NEW OFFENCES / DISPOSITIONS: Any pending/noted on file, but not
yet on CIC? _____ More than one pending/noted but not on CIC? _____
Any of them new criminal offence(s) (not just violation of order)? _____

Total # New on CIC (including counts of each): _____ **** Date of
occurrence/charge/conv of first re-offence (D/M/Y): ____/____/____; ____/____/____; ____/____/____

Offence	_____	_____	_____	_____
Counts	_____	_____	_____	_____
Act: PO/YO/CC	_____	_____	_____	_____
Conviction Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Dispo Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Absolute Discharge	_____	_____	_____	_____
Fine	\$ _____	\$ _____	\$ _____	\$ _____
Compensation	\$ _____	\$ _____	\$ _____	\$ _____
Restitution	\$ _____	\$ _____	\$ _____	\$ _____
Repayment	\$ _____	\$ _____	\$ _____	\$ _____
Personal Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Comm Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Probation	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Open Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Secure Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Add Days AWOL	_____	_____	_____	_____
Indictable?	_____	_____	_____	_____
*** Note an order to reside	_____	_____	_____	_____

Offence	_____	_____	_____	_____
Counts	_____	_____	_____	_____
Act: PO/YO/CC	_____	_____	_____	_____
Conviction Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Dispo Date:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Absolute Discharge	_____	_____	_____	_____
Fine	\$ _____	\$ _____	\$ _____	\$ _____
Compensation	\$ _____	\$ _____	\$ _____	\$ _____
Restitution	\$ _____	\$ _____	\$ _____	\$ _____
Repayment	\$ _____	\$ _____	\$ _____	\$ _____
Personal Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Comm Serv Ord	# Hrs _____	# Hrs _____	# Hrs _____	# Hrs _____
Probation	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Open Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Secure Custody	Days _____	Days _____	Days _____	Days _____
Start:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
End:D/M/Y	____/____/____	____/____/____	____/____/____	____/____/____
Prob Placement	_____	_____	_____	_____
Add Days AWOL	_____	_____	_____	_____
Indictable?	_____	_____	_____	_____
*** Note an order to reside	_____	_____	_____	_____

OTHER PROCESS INDICATORS (Judgments from file):

Compliance with formal Conditions ___ Co-operative/meeting expectations ___
 Indications of violation of conditions (without formal breach/violation proceedings) ___ Breach ___
 Low risk maintained/higher risk reduced ___ Recommendations implemented ___
 Client in school/on job ___ New agency involvement ___
 Overall Client Adjustment ___ 1. Poor 2. Average 3. Good

TEMPORARY RELEASE

of requests for Temporary Release: ___ # Approved ___ # Denied ___

Reasons for TR Approval:

1. Reintegration ___ 2. Rehabilitation ___ 3. Home visits ___
4. Provide some unsupervised time/re-entry to community ___
5. Part of counselling process ___ 6. To be with PO ___
7. Attend appointment ___ 8. Medical visit ___
9. Personal reasons ___ 10. Emergency ___
11. Transfer from SC to OC ___ 12. Job search ___
13. Reward for progress ___ 14. Educational ___

Reasons for TR Denial

1. Concern re progress in program ___ 2. Related to risk ___
3. Lack of information re setting ___ 4. Problematic behaviour ___
5. Family problems ___ 6. Application too late ___
7. Not enough detail on Prob/Community report ___
8. No indication of adequate supervision ___
9. No indication of conflict resolution ___
10. Insufficient time to assess risk level ___
11. Request incongruent with Judges Order ___
12. Lack of communication with Police/Community ___

Overall Characteristics of TR Requests

1. Any indication of risk factors involved? ___
2. Any indication that youth's total situation was considered as it relates to risk? ___
3. Reasons for risk level ___ 4. Previous violence ___
5. Current violence ___ 6. Mental Disorder noted ___
7. Any aggressive/destructive activity noted ___ towards staff ___, residents ___, property ___, self ___
8. Any behavioural difficulties ___
9. Any indication of progress during disposition ___
10. Any indication of intent/purpose TR is to achieve ___
11. Is purpose of TR related to attainment of rehabilitation and/or reduction of problems ___

OVERALL EVALUATION OF MANAGEMENT OF CASE

1. Case goals/objectives clear ___ 3. Appropriate targets set ___
5. Targets antisocial feelings/attitudes ___ antisocial peer assoc ___
 antisocial role model ___ self-control/management/problem solving ___
10. Plan related directly to problems ___ 12. Aim to increase self-esteem ___
11. Practice/training in identifying risky sits & appropriate responses ___
13. Focus on emotional/personal complaints not linked to criminality ___
17. Provided little concrete assistance (in areas of school/work) ___
21. Manager rewarded compliance with Rx ___
23. Concrete problem solving/skill building/removal of obstacles (all for increased rewards for anticriminal pursuits) ___
24. Youth referred to helping agencies as needed ___
25. Positive relationship factors evident in case management ___

CASE ID: _____

Appendix G

FEMALE CLUSTER 1 (N= 15)

D.H. - Delinquent History
E.D. - Education
F.F. - Family Finances
F.y. - Family
P.t. - Parents
A.c. - Accommodations
L.e. - Leisure/Recreation
C.p. - Companions
P.r. - Personality
A.t. - Attitudes/Orientation

FEMALE CLUSTER 2 (N= 15)

YLSI SUBTOTALS

- D.H. - Delinquent History
- E.d. - Education
- F.F. - Family Finances
- Fy. - Family
- Pt. - Parents
- Ac. - Accommodations
- Le. - Leisure/Recreation
- Cp. - Companions
- Pr. - Personality
- At. - Attitudes/Orientation

FEMALE CLUSTER 3 (N=13)

YLSI SUBTOTALS

- D.H. - Delinquent History
- Ed. - Education
- F.F. - Family Finances
- Fy. - Family
- Pt. - Parents
- Ac. - Accommodations
- Le. - Leisure/Recreation
- Cp. - Companions
- Pr. - Personality
- At. - Attitudes/Orientation

FEMALE CLUSTER 4 (N= 11)

YLSI SUBTOTALS

- D.H. - Delinquent History
- Ed. - Education
- F.F. - Family Finances
- Fy. - Family
- Pt. - Parents
- Ac. - Accommodations
- Le. - Leisure/Recreation
- Cp. - Companions
- Pr. - Personality
- At. - Attitudes/Orientation

FEMALE CLUSTER 5 (N= 6)

YLSI SUBTOTALS

- D.H. - Delinquent History
- Ed. - Education
- F.F. - Family Finances
- Fy. - Family
- Pt. - Parents
- Ac. - Accommodations
- Le. - Leisure/Recreation
- Cp. - Companions
- Pr. - Personality
- At. - Attitudes/Orientation

END

29/07 93

FIN