—————Research Report—————
The Computerized Assessment of Substance Abuse (CASA):Results from the Demonstration Project

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Acknowledgements

Executive Summary

Ensuring offenders receive the most effective treatment for their substance abuse problems is a major challenge for the Correctional Service Canada (CSC). To address this challenge, CSC includes standardized assessments in its service delivery process to ensure efficiency, consistency and a common language among service providers and clients. In addition, information from well-informed assessment is valuable for policy development and program refinement. This approach is consistent with recommendations from best practices literature.

In 1999, after consultations with operational staff and an international accreditation panel of experts, the Reintegration Programs Branch of CSC commenced development of a new assessment system to replace the cumbersome, lengthy and outdated Computerized Lifestyle Assessment Instrument (CLAI). The new instrument, called the Computerized Assessment of Substance Abuse (CASA), was developed, field tested and refined by the Addictions Research Centre. The 288-item, bilingual, audio-enhanced CASA was implemented in 2002 as a demonstration project at two regional intake units: Springhill and Millhaven Institutions.

The CASA was completed by 907 male offenders, admitted to federal custody between May 2002 and January 2004. The CASA assesses substance abuse in seven domains: 1) alcohol and 2) drug abuse severity, 3) patterns of use, 4) link to criminal behaviour, 5) parental substance abuse, 6) previous program participation; and 7) treatment readiness.

Substance abuse severity is assessed using standardized instruments, which include the Alcohol Dependence Scale (ADS), the Drug Abuse Screening Test (DAST), the Problems Related to Drinking Scale (PRD), the Severity of Dependence Scale (SDS) and the Michigan Alcoholism Screening Test (MAST). The ADS, DAST and PRD are currently used to determine what level of treatment intensity the offender should be assigned to. The SDS and MAST are being used for experimental purposes to

determine if they can improve on the quality of assessment. The Paulhus Deception Scales (PDS) is also incorporated into the CASA to measure the reliability of responding.

From the standardized assessment instruments used in the CASA it was determined that, of the offenders who completed the CASA, 31% had no substance abuse problems, 32% had a low level problem, 15% had a moderate problem, 16% had a substantial problem and 5% of this sample was assessed as having a severe substance abuse problem. The drugs used most often by the offenders during the 12-months before their arrest for the current offences included cannabinoids (52%), cocaine (26%), and opioids (13%). All other drugs accounted for less than 10% of the sample.

The results suggest that CASA accurately differentiates cases for referral to substance abuse programs. Offenders with increasing overall substance abuse severity levels as assessed by the CASA had more criminogenic need indicators identified in the Offender Intake Assessment (OIA), had more involved criminal histories as evidenced by higher static factor (risk) scores and were rated more likely to re-offend by the SIR-R Scale (Statistical Information on Recidivism Scale – Revised – an actuarial measure of risk to re-offend).

With respect to current offending, higher severity levels on the ADS and DAST were strongly associated with substance use and impairment at the time of offence, and an increased likelihood of offence-related cognitive impairment than offenders with lower severity levels. Exacerbated offence-related aggression was closely associated with alcohol impairment, but not drug impairment. It is not surprising then that violent offences were more closely linked to alcohol impairment than drug impairment. Property offences, on the other hand, were more closely associated with drug impairment.

Results from this research indicate that, while the majority of offenders responded reliably to the assessment questions, approximately 36% may have underestimated

their drug and alcohol problems as was evidenced by lower ratings on overall substance abuse severity for the offenders who produced PDS profiles suggesting a pattern of unreliable responding. Including a measure of response bias can serve to alert operational staff to this potential so that guided adjustments can be made to the results when necessary. When questionable results are indicated, it is recommended that staff rely on multi-method assessment approaches (e.g., reviewing collateral sources of information) to ensure assessment accuracy.

Lastly, offenders were generally positive in their evaluation of the CASA. They found the software simple to use and the content easy to understand. Of the 20% that listened to the computer read the questions and response choices, the majority better understood the content because of the audio delivery.

Additional research is needed to examine the utility of using the results from the PDS to make adjustments to the CASA results when there is evidence of unreliable responding, and to assess the impact of fully integrating the results from the Severity of Dependence Scale (SDS) and the Michigan Alcoholism Screening Test (MAST) in the program referral matrix. Other analyses involving the linking of substance abuse assessment results with other indicators, such as in-custody substance use and program engagement, will build on current knowledge concerning the determinants of post-release outcome. Lastly, future research on a national scale will be required to realize the potential benefits of fully integrating the CASA in the Service's correctional planning and treatment activities.

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Introduction

Assessment

Assessment has long been considered an important activity in the day-to-day management of offenders (Bonta, 2000). Over the last 20 years, it has evolved from a clinically-based, subjective process to one that involves a rigorous, evidence-based approach, designed to systematically identify factors which contribute to criminal behaviour (Andrews & Bonta, 1998). Once identified, these criminogenic needs can be addressed through relevant correctional programming.

Early assessment approaches emphasized a reliance on professional judgment, which was guided by informal, non-observable criteria. The decisions that were borne out of these first generation approaches were subjective and intuitive in nature, driven by feelings about a particular case rather than by empirically validated assessment methods. Second generation approaches relied on results from actuarial assessments that specifically targeted an offender's historical or static factors (i.e., criminal history). While an improvement over clinical judgment, these assessments failed to include other known correlates of criminal behaviour that are dynamic or changeable in nature (e.g., antisocial peer group, substance abuse, community functioning) (Andrews & Bonta, 1998).

With the introduction of third generation approaches, criminal justice systems began to recognize the utility of incorporating comprehensive, multi-dimensional, standardized assessments into their program delivery and decision making processes. These third generation assessments specifically examine the static (historical) and dynamic (need) factors associated with criminal behaviour for the purposes of matching an offender's static and dynamic needs to appropriate levels of programming. This systematic identification of criminogenic need is consistent with the principles of effective correctional treatment, which argue that

offenders who present with higher needs that are associated with criminal behaviour should be matched to more intensive and extensive services so that the probability of re-offence is diminished; low needs offenders require minimal to no treatment (Andrews & Bonta, 1998).

The emergence of best practices literature concerning the treatment of alcohol and illicit drug users has further strengthened the argument for standardized assessment (Cross & Sibley-Bowers, 2001; McMurran, 2001; Miller & Rollnick, 1991). There is now general agreement in the field of addictions that a standardized assessment approach builds efficiency in the system, since only information that is required for programming decisions is gathered for each client. Standardized assessment approaches also ensure consistency or a common language among decision makers and stakeholders across the service delivery continuum. Clients and clinicians alike consider formal, empirically-based tools credible for program planning purposes. The sharing of assessment results also provides useful feedback to the client and enhances treatment-seeking behaviour by building motivation and a commitment to change in the client. Lastly, from a policy perspective, a database of standardized assessment results provides a means of informing best practices policy because this information can be readily transformed into knowledge about the population's characteristics, such as trends, profiles and outcomes.

Computerized Assessment

Recent advancements in computer technology, such as audio enhancement, have created additional opportunities for innovations in standardized assessment. The introduction of automated assessments has capitalized on the efficiencies and dynamic capabilities of the computer (Turner, Ku, Rogers, Lindberg, Pleck & Sonenstein, 1998). Computerized assessments are event driven and rely on an automated, computer-controlled flow of questions to deliver complex questionnaires within a simplified process. Respondents choose an answer on the computer screen (the event), which in turn automates a complex

(hidden) branching procedure that is responsible for sequencing subsequent relevant questions. Respondents only see or hear the relevant questions; all other questions are obscured from view. This is a marked improvement over pencil-and-paper questionnaires, which rely on conditional statements, additional instructions and branching statements that are often onerous, even for the literate respondent.

Moreover, research in this area has suggested that efficient, computerized assessment models have the added benefit of increasing the candidness of self-reported responses given by the subject because of a number of unique properties (Del Boca & Noll, 2000; Feigelson & Dwight, 2000). First, assessment items are answered with little or no assistance from the administrator, which greatly reduces the potential for interviewer influence. Second, as the respondent progresses through the assessment, questions and related response choices appear only as needed. In this way, responses are obscured from view and from the scrutiny of others during the assessment. Third, computer scoring and analysis algorithms create an impartial, non-judgmental evaluative process, which may in turn boost the candidness of self-report information. Lastly, computerized testing situations create an impersonal situation, free of social cues, where individuals can respond more candidly.

Development of the CASA

In 1990, the Correctional Service of Canada (CSC), in response to growing concern over the degree of alcohol and drug abuse among newly admitted offenders, established a policy framework that would facilitate the development of a new process to address the needs of this population (Robinson, Porporino & Millson, 1991). This framework included the development and implementation of a standardized intake assessment process for screening offenders for appropriate substance abuse programs. As a result, the self-administered Computerized Lifestyle Screening Instrument (CLSI) was introduced at two regional reception centres to test its ability to facilitate evidence-based program referrals. After several enhancements to the CLSI, the production version, called

the Computerized Lifestyle Assessment Instrument (CLAI), was nationally implemented.

Since the mid 1990s, information gleaned from the CLAI has informed the Offender Intake Assessment (OIA) process (CSC, 2003). The OIA involves the timely and systematic identification and analysis of critical static and dynamic factors that affect the safe and timely reintegration of each offender into the community. Supplementary assessments like the CLAI inform the OIA process by providing additional information about the nature and seriousness of particular criminogenic needs, including substance abuse problems. The OIA process and supplementary assessments are used for correctional planning and other administrative purposes.

In 1998, CSC commenced revisions to the CLAI after operational staff and an international panel of expert consultants cited a number of difficulties with the software and content. In 1999, CSC began development of the CASA for the purposes of establishing substance abuse severity levels and for matching offender needs to level of service delivery. Demonstrations of the English and French versions began in the Atlantic and Ontario regions in 2002.

Content

The 288-item, self-administered CASA explores the nature and seriousness of an offender's substance abuse problems (see Table 1). It specifically assesses: patterns of alcohol use (total of 36 items); consequences of alcohol use (25 items); severity of alcohol problems (25 items); problems related to drinking (15 items); and alcohol's link to past and current offending (20 items). The CASA also assesses: patterns of drug use (39 items); the severity of drug problems (20 items); the degree of psychological dependence on drugs (5 items); drug use and its relationship to past and current offending (19 items); injection drug use (6 items); and poly-substance use patterns (8 items). Nine items investigate in-

custody substance abuse patterns and nine items explore family-related patterns of substance use.

Information concerning progress in prior substance abuse programming, including methadone maintenance, is collected by means of 20 items. The CASA concludes with 20 items that delve into the area of treatment readiness along the following six dimensions: problem recognition, level of comfort with problem, feelings of personal responsibility, commitment to treatment, willingness to change and external support for change. Twelve additional post-assessment items provide respondents with an opportunity to rate their experience completing the CASA.

Table 1: CASA Content

Content Areas	Number of Items
Patterns of alcohol use	36
Consequences of alcohol use - MAST (Selzer, 1971)	25
Severity of alcohol problems – ADS (Skinner & Horn, 1984)	25
Problems related to drinking - PRD	15
Link to past and current offending (alcohol)	20
Patterns of drug use	39
Severity of drug problems – DAST (Skinner, 1982)	20
Degree of psychological dependence on drugs – SDS (Gossop, et al., 1995)	5
Link to past and current offending (drugs)	19
Injection drug use	6
Poly-substance use patterns	8
In-custody substance use patterns	9
Family-related patterns of use	9
Progress in prior programming	20
Treatment readiness	20
Respondent satisfaction with the CASA	12

Unlike the CLAI, the CASA does not investigate ancillary lifestyle areas, such as nutrition, caffeine use, physical activity, general health, smoking and psychological complaints. The assessment is designed to assist operational staff in making evidence-based recommendations for substance abuse programming.

Functionality

The CASA's computer-controlled question flow (i.e., conditional logic branching) and automated data checking (e.g., field validation events) increase the integrity of the data and the quality of self-report information. When the computer detects major inconsistencies in self-report information, it adjusts the delivery of subsequent questions so that respondents are presented with additional opportunities to reconcile these inconsistencies. For example, if a respondent denies any substance use during the 12-month period prior to arrest for the current offences, but later reports substance use at the time of the current offences, which occurred during the same 12-month period prior to arrest, the computer displays a message describing this inconsistency and branches back to re-sequence relevant questions.

Each CASA item is delivered sequentially by the software in either French or English. Each question is presented separately along the upper edge of the computer screen while the offender uses a mouse to point and click at the appropriate answers that appear directly below the question. The software uses hidden, conditional logic branching to present only those questions that are relevant. The system incorporates a variety of visually appealing option buttons, check boxes and text fields similar to those found in web browsers to create a graphical user interface (see Figure 1). Security features, such as password protection, prevent respondents from exiting the program, windowing between applications and minimizing screens.

Figure 1: CASA Graphical User Interface
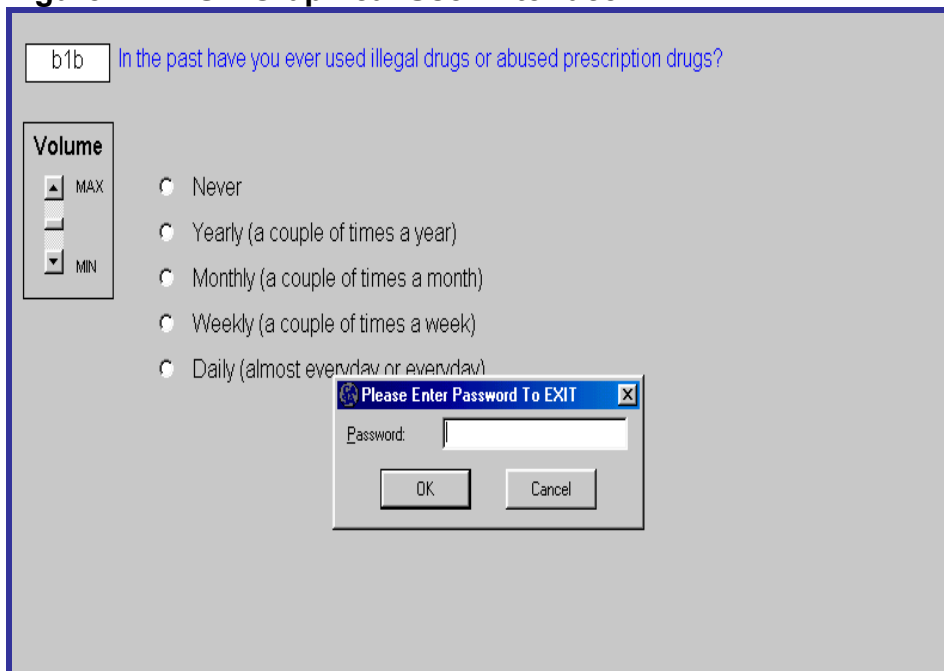
The CASA also has an optional audio function to assist respondents with reading difficulties. Digital audio recordings of a human voice are linked to each instruction box, question and answer choice. With a click of the mouse button, the computer can play each text string to the respondent through a set of headphones. The audio option can be turned on or off at any point during the computerized interview and can be presented in both French and English. A volume control image also appears on the screen to assist the hearing impaired.

An automated report is produced upon conclusion of the computerized interview. Demographic information, summary scores for the standardized measures, substance abuse severity levels and recommended substance abuse programming appear on the first page. Subsequent pages include a bulleted summary of the respondent's substance abuse history, prior programming, and treatment readiness indices. With the click of a button, the CASA can produce an automated report in either French or English to inform assessment staff and the offender. All of this is made possible by a dynamic database management system.

Measures of Substance Abuse Severity

The CASA systematically applies a number of standardized instruments to assess the severity of substance abuse. The severity of alcohol abuse is assessed with the 25-item Alcohol Dependence Scale (ADS) (Skinner & Horn, 1984), the 15-item Problems Related to Drinking Scale (PRD) and the 25-item Michigan Alcoholism Screening Test (MAST) (Selzer, 1971). The MAST and ADS have been extensively used with a number of special populations, including offender populations, to assess severity of alcohol abuse. Both are considered valid and reliable by best practices literature (Boland, Henderson, & Baker, 1998).

The ADS assesses the degree of physiological dependence, whereas the MAST and PRD focus on the extent of psycho-social interference or negative consequences of alcohol abuse. All three scales reference the 12-month period prior to arrest in order to establish a severity index. The ADS classifies individuals into the following groups: "none", "low", "moderate", "substantial" and "severe". The PRD uses the classifications of "none", "some", "quite a few", and "a lot" to describe the extent of alcohol-related interference. CSC has used the ADS to establish the severity of alcohol dependence and the PRD to establish the extent of alcohol-related problems since the early 1990s. The MAST has been included in the CASA to establish its clinical utility within a CSC context with the end goal of replacing the PRD in the program referral matrix.

To assess the severity of drug abuse, CASA employs the 20-item Drug Abuse Screening Test (DAST) (Skinner, 1982) and the 5-item Severity of Dependence Scale (SDS) (Gossop, Darke, Griffiths, Hando, Powis, Hall & Strang, 1995). The former focuses on the extent of psycho-social interference and parallels the MAST items (Boland et al., 1998), whereas the latter assesses the degree of psychological dependence (Gossop et al., 1995). The DAST uses the same classification system as the ADS. Both the DAST and the SDS reference the 12-month period prior to arrest. CSC has used the DAST to establish the severity of

drug abuse since the early 1990s. The validity of both instruments has been previously established (Skinner, 1982; Gossop et al., 1995).

The SDS has been introduced in the CASA to provide a measure of psychological dependence on drugs and to establish its diagnostic utility within a CSC context. A number of studies have examined the relationship between the dependence syndrome, first identified by Edwards and Gross (1976), in their research with alcohol abusers, and the consequences of drug use (Skinner & Goldberg, 1986; Feingold & Rounsaville, 1995). A greater emphasis has been placed on the psychological components (e.g., compulsiveness) of dependence within this syndrome. The compulsive use of drugs is now seen as a central feature of drug dependence (Gossop et. al., 1995; Swift, Copeland & Hall, 1998). The SDS was included in the CASA so that additional information related to the psychological dimensions of addictions, such as an individual's preoccupation with and anxiety about drug taking and impaired control, could be more closely examined in an offender population.

The CASA currently uses the same program referral criteria as the Offender Management System (OMS)[1] to match offenders to appropriate program intensity levels. Table 2 provides an overview of the OMS program referral matrix. Highest classification level on the ADS, DAST or PRD dictates program intensity level.

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[1] OMS is a database of detailed information about Canadian federal offenders. It is used daily by officers of the Correctional Service Canada and the National Parole Board to enter information about offenders and to track offender progress, from admission to sentence end.

Table 2: OMS Program Referral Matrix

PRD Cut-off Scores	0	1-3	4-6	7-15	
Problems related to drinking	None	Some	Quite a few	A lot	
Recommended Program Intensity based on PRD Levels[a]	**None**	**Low**		**High**	
ADS Cut-off Scores	0	1-13	14-21	22-30	31-47
DAST Cut-off Scores	0	1-5	6-10	11-15	16-20
Severity Level based on ADS/DAST cutoffs	None	Low	Moderate	Substantial	Severe
Recommended Program Intensity Level based on ADS & DAST[b]	**None**	**Low**	**Moderate**	**High**	

[a]The PRD dictates program intensity level only when the ADS and DAST suggest a lower program intensity level than the PRD. For example, the PRD determines referral to the high intensity program only when offenders are rated as "a lot" on the PRD *and* moderate or lower on the ADS and DAST.

[b]Highest severity level on the ADS or DAST establishes overall substance abuse severity level of none, low, moderate, substantial or severe. This severity level is then used to establish program intensity.

Both the ADS and DAST use a five-category, case-classification system which is supported by previous research examining the validity of the ADS and DAST within clinical populations (Skinner & Horn, 1984). The first rating of "none" on the ADS indicates no alcohol dependence. Individuals with a rating of "low" on the ADS are more likely to be psychologically dependent rather than physiologically dependent and more likely to comply with controlled drinking strategies than abstinence goals. Individuals with a rating of "moderate" on the ADS experience psycho-social problems related to drinking, and they are likely psychologically dependent with possible signs of physiological dependence and withdrawal symptoms. These individuals are also more likely to accept controlled drinking strategies and to reject abstinence goals. Respondents with a severity rating of "substantial" are more likely to be physically dependent and suffering from a myriad of psycho-social problems related to alcohol. Abstinence is likely

the only option for these individuals. Lastly, individuals with a rating of "severe" on the ADS are physically dependent on alcohol with clear evidence of physical disorders related to drinking. For this group, abstinence is probably the only realistic treatment goal.

Skinner (1982) also found that higher scores on the DAST were closely associated with interference in a number of life areas. Individuals with higher scores tend to experience psycho-social and behavioural instability marked by impulsivity, anti-social attitudes, interpersonal problems, suspiciousness and depressive symptoms. High scores are inversely related to age, social stability, stable accommodation, employment and family contact. Higher scores on the DAST are also related to more frequent use of cannabis, barbiturates, and opioids.

Previous research has emphasized the importance of including instruments, like the ADS and DAST, in a comprehensive assessment process. The systematic application of these objective measures ensures that clients are correctly matched to the appropriate levels of treatment. This approach is consistent with the principles of effective correctional treatment, which argue that offenders who present with higher needs should be matched to more intensive and extensive services to reduce the likelihood of re-offence (Andrews & Bonta, 1998).

Measure of Response Bias

There has been much debate concerning the reliability and usefulness of offender self-reported information. Some argue that self-report is fairly accurate, while others suggest that offenders in particular under-report personal information (Kroner & Weekes, 1996; Boland, Henderson & Baker, 1998). Developers of assessment instruments recommend that staff remain sensitive to the possibility that individuals may under-report their symptoms of substance abuse in certain high-demand situations, such as when they are being assessed (Skinner & Horn, 1984). For this reason the Paulhus Deception Scales (PDS)

(Paulhus, 1998) was incorporated into the CASA to measure offender response bias within a correctional context.

The 40-item Paulhus Deception Scales (PDS) (Paulhus, 1998) provide staff with an objective measure of response bias. Two subscales comprise the PDS: the Impression Management Scale and the Self-Deceptive Enhancement Scale. The Impression Management Scale measures a form of dissimulation (e.g., faking, lying) while the Self-Deceptive Enhancement Scale measures self-enhancement (i.e., a rigid overconfidence similar to narcissism). A respondent who claims an over-abundance of unlikely behaviours on the Impression Management Scale may be attempting to present himself or herself in a favourable light because of the high demands associated with being in an assessment situation. Likewise, extreme scores on the Self-Deceptive Enhancement Scale identify respondents with extreme claims of overconfidence. The 40 items that comprise the PDS are unrelated to the respondent's substance use history.

The CASA uses the results from the PDS to classify respondents into one of four profiles that have been established using prison entrant norms (Paulhus, 1998). The first profile consists of respondents with low scores on Impression Management and Self-Deceptive Enhancement. These individuals tend to be aware of their problems. Their self-presentation is less likely to be influenced by situational demands, and their interpersonal style is direct. Based on these results, the responses to CASA questions are considered likely honest and valid.

For the next three profiles, CASA results may be overly positive. That is, respondents may have underestimated their severity of substance abuse problems. Respondents with high scores on Impression Management and low scores on Self-Deceptive Enhancement are aware of their shortcomings; however, they may want to appear publicly acceptable because of the high social demands of the assessment situation. Respondents with low scores on Impression Management and high scores on Self-Deceptive Enhancement

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generally tend to provide overly positive responses stemming from a trait-like tendency to present themselves in an overly favourable light; it does not tend to be related to situational demands. Lastly, respondents with high scores on both scales have a trait-like style towards self-enhancement as well as a tendency towards socially desirable responding when influenced by situational demands.

The PDS results provide operational staff with an objective means of assessing the truthfulness of self-reported information. When an offender produces PDS results that suggest questionable responding, it is recommended that operational staff rely on multi-method assessment approaches to produce reliable and accurate assessments. This approach is consistent with the general principle of professional discretion, which states that guided adjustments should rely on sound evidence to improve the sensitivity of assessments when necessary (Andrews & Bonta, 1998).

Moreover, the assessment process can also present an excellent opportunity for brief motivational interventions (Miller & Rollnick, 1991). For example, staff can use motivational interviewing techniques with an oppositional offender who has produced CASA results suggesting questionable responding and some minimization of substance abuse problems. These techniques would aim at encouraging the offender to seek treatment.

Rationale and Purpose

This study examines the results from the audio-enhanced CASA in a sample of federally incarcerated offenders. The relationship between severity of substance abuse and criminogenic need will be determined, followed by an analysis of the impact of offender response bias on the overall CASA results. The general aim is to establish the assessment's ability to appropriately differentiate cases for program referral purposes.

As stated previously, the principles of effective correctional treatment argue that offenders who present with higher needs should be matched to more intensive and comprehensive services. Conversely, low-needs offenders require minimal to no treatment. For this report, the overall substance abuse severity levels will be compared across a number of indicators to determine if these levels appropriately differentiate cases for program referral purposes. It is predicted that respondents who report more severe substance abuse problems on the standardized measures will also report more interference in their personal lives. These individuals are also more likely to identify substance use as a contributing factor in their current offences. It is further expected that respondents who report more severe substance abuse problems will be at a higher risk for general re-offending.

In addition to the aforementioned analyses, the results from the Severity of Dependence Scale (SDS) and the Michigan Alcoholism Screening Test (MAST) will be compared with existing measures in the referral matrix to determine if these scales can be integrated into the matrix. Descriptive information on drug abuse profiles and offence histories will also be presented to shed further light on the link between substance use and criminal behaviour.

For the purpose of this report, the results from the substance abuse measures will be compared across the Paulhus Deceptions Scales (PDS) profiles to determine the effects of socially desirable responding on the overall CASA

results. It is predicted that respondents who produce PDS profiles that are suggestive of unreliable responding will underestimate their level of substance abuse severity as will be evidenced by lower scores on the substance abuse severity measures for these groups.

Finally, results from a number of CASA questions will be presented to rate the respondents' general satisfaction with the content and their general acceptance of a computerized format.

Method

Sample

Demonstrations of the English and French versions of the CASA began at Millhaven and Springhill Institutions in 2002. These two institutions serve as the regional reception centres for the Ontario and Atlantic regions, respectively. Data were available for 907 male offenders [mean age (*M)* = 33; standard deviation *(SD)* = 9.8], who completed the CASA between May 2002 and January 2004. This sample represents about 36% of the actual admissions (N= 2530) to these facilities.[2] The remaining offenders (64%) were assessed with the existing Computerized Lifestyle Assessment Instrument (CLAI) because the rate of admission at these two facilities exceeded the capacity of this demonstration project.

The CASA was administered as part of the standard assessment process that includes completion of the Offender Intake Assessment (OIA) and other supplementary assessments. Both assessments are completed within the first 90 days of an offender's admission to federal custody.

Data Sources

The CASA and the OIA served as the two main data sources. The specific indicators of interest are presented later in this section.

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[2] Assignment to the CASA depended simply on the availability of the CASA work-stations. There was no systematic pre-selection for the CASA that was based on case-specific factors or any other potentially confounding criteria that would have biased the results.

The CASA is a supplementary assessment to the OIA (Correctional Service Canada, 2003). It provides information about the nature and seriousness of specific substance abuse problem areas, and serves as the basis for program referrals. The OIA involves the identification and analysis of critical static and dynamic factors that affect the safe and timely reintegration of each offender into the community. Both are used for correctional planning activities and for other administrative purposes.

The OIA information was extracted from the Offender Management System (OMS). OMS is an electronic database system used by CSC to maintain all offender records and to manage offenders from sentence commencement to sentence end. The system captures a wealth of information that includes, but is not limited to, the following: demographic information, sentence and conviction information, all admission and release records, assessments for decision-making purposes, urinalysis results, misconduct information, reports on offender performance, and related records. The CASA databases were received from the regions through secure electronic linkages.

Standardized Scales and Indicators
The Alcohol Dependence Scale (ADS) (Skinner & Horn, 1984) consists of 25 items that are designed to tap into the alcohol dependence syndrome (Edwards & Gross, 1976). The ADS provides a measure of the extent to which the use of alcohol has progressed from psychological involvement to impaired control. Sample items include: "Did you have the shakes when sobering up (hands tremble, shake inside)?" and "As a result of drinking, did you see things that weren't really there?" Empirically derived severity levels of none (0), low (1-13), moderate (14-21), substantial (22-30) and severe (31-47) are used to differentiate cases for program referral purposes. This case classification system is supported by previous research with the scale (Skinner & Horn, 1984). The ADS references the "12 month period prior to arrest" in establishing a severity level.

The ADS boasts excellent internal consistency and external validity (Skinner & Horn, 1984). Cronbach's alpha values range from 0.85 to 0.94, which indicate excellent reliability (Boland et al., 1998). External validity is supported by the scale's strong association with other measures of alcohol-related instability (Skinner & Horn, 1984; Boland et al., 1998). The scale is considered unidimensional. Previous research has supported its clinical utility within a correctional context (Hodgins & Lightfoot, 1988, 1989).

The Drug Abuse Screening Test (DAST) (Skinner, 1982) was modelled after the Michigan Alcoholism Screening Test (MAST), but is used to assess the severity of problems associated with drug use. Quantitative severity levels of none (0), low (1-5), moderate (6-10), substantial (11-15) and severe (16-20) are based on normative data for the scale (Robinson, Porporino & Millson, 1991). As with the ADS, these severity levels are used to differentiate cases for program referral purposes. The DAST includes items concerning the frequency of use, symptoms of dependence, extent of drug-related interference, feelings of guilt and prior treatment (Boland et al., 1998). Sample items include: "Could you get through the week without using drugs?" and "Did you neglect family because of your drug use?" The DAST also references the "12 month period prior to arrest" in establishing the severity of drug abuse. A dichotomous response format is used with each "yes" endorsement warranting a score of one.

Previous psychometric work has established the reliability and validity of the DAST (Boland et al., 1998). Cronbach's alpha values range from 0.85 to 0.94, which indicates excellent reliability (Boland et al., 1998). External validity is supported by the scale's strong association with other measures of drug-related instability (e.g., frequency of use, psychopathology). Previous research has also supported its clinical utility within a correctional context (Hodgins & Lightfoot, 1988, 1989).

The Michigan Alcoholism Screening Test (MAST) (Selzer, 1971) is a 25-item scale designed to measure a variety of problems associated with alcohol abuse. Sample items include: "Did you ever lose a job because of drinking?" and "Did you ever get into physical fights when drinking?" A dichotomous response format is used with each "yes" endorsement warranting a score of two or five depending on the item.

The reliability and validity of the MAST has been previously established with a number of different populations, including an offender population (Millson, Weekes & Lightfoot, 1995; Boland et al., 1998). Values for Cronbach's alpha range from 0.83 to 0.95. The scores on the MAST have also correlated quite highly with scores from other measures of substance abuse severity, such as the ADS (r=0.69) (Boland et al., 1998).

The Problems Related to Drinking Scale (PRD) was derived from the MAST. This 15-item scale quantifies the number of problems related to alcohol use. A dichotomous response format is used with each "yes" endorsement warranting a score of one. The PRD score is divided into four levels: no substantive alcohol problems (score of 0), some problems (1-3), quite a few problems (4-6), and a lot of alcohol problems (7-15). Example items include: "Were there major arguments in your family because of your drinking?" and "Did your drinking result in your getting hurt in an accident?"

Overall severity level is based on the ADS and the DAST. The highest severity level on either measure dictates an overall severity level of none, low, moderate, substantial or severe. The highest rating on the ADS, DAST or PRD determines program intensity level.[3]

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[3] The PRD determines referral to the high-intensity program only when offenders are rated as "a lot" on the PRD *and* moderate or lower on the ADS and DAST. Of the 907 offenders who completed the CASA, 2% (n = 18) were recommended to a high-intensity program based on a PRD result of "a lot" when the other scales suggested programming of a lower intensity level.

The Severity of Dependence Scale (SDS) (Gossop et al., 1995) provides a measure of the psychological dimensions of addiction, such as an individual's preoccupation and anxiety about drug taking and impaired control. The respondent first identifies the drug used most often during the 12-month period prior to arrest for the current offences. The CASA then automatically inserts the name of the drug into each of the five SDS items. Sample items include: "Did the prospect of missing a fix (or dose) or not chasing make you anxious or worried?" and "Did you worry about your use of (*named drug*)?" For the first four items, responses are indicated using a four-point scale ranging from "never or almost never" to "always or almost always". The fifth item, "How difficult did you find it to stop or go without (named drug)?", is also scored on a four-point scale; however, response choices range from "not difficult" to "impossible". Scores range from 0 to15.

The psychometric properties of the SDS have been previously examined with samples of heroin, cocaine and amphetamine users (Gossop et al., 1995). Cronbach's alpha values of between 0.81 and 0.90 suggest excellent internal consistency. The validity of the scale is supported by its positive correlation with a number of indicators of drug abuse (e.g., dose, duration of use, frequency of use).

The Paulhus Deception Scales (PDS) (Paulhus, 1998) assesses socially desirable responding. Two scales, the Impression Management (IM) Scale and the Self-Deceptive Enhancement Scale (SDE), comprise the PDS. The former measures a form of dissimulation (e.g., faking, lying) while the latter measures self-enhancement (i.e., a rigid overconfidence similar to narcissism). The PDS is comprised of 40 statements. Respondents are asked to rate the statements on a five-point scale indicating the extent to which each statement applies to them from "not true" to "very true". Sample items include: "My first impressions of people usually turn out be right" and "I don't gossip about other people's

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business." Points are assigned for extreme responses (on either end of the five-point scale) (Paulhus, 1998).

A respondent who claims an over-abundance of unlikely behaviours on the IM scale may be attempting to present in a favourable light because of the high demands of the assessment situation. Likewise, extreme scores on the SDE scale identify respondents with extreme claims of overconfidence. The PDS differentiates responders across four profiles, three of which suggest a pattern of unreliable responding (Paulhus, 1998). These three profiles were collapsed into one group of unreliable responders and then compared to the reliable responders across measures of substance abuse severity.

Previous psychometric work has established the reliability and validity of the PDS. Confirmatory factor analysis has produced an orthogonal two factor solution (i.e., there is empirical support for the two scales). Norms are available for four comparison groups including prison entrants (N=1457). Cronbach's alpha as a measure of internal consistency (reliability) produces a high value of 0.84 for the Impression Management Scale and an acceptable value of 0.75 for the Self Deceptive Enhancement Scale (i.e., items consistently measure the two constructs). Concurrent validity is supported by the scales' strong association with other measures traditionally known as lie scales (Paulhus, 1998).

The most often used drug is identified by the respondent for the purpose of completing the SDS. (See above).

Substance use prior to current offence(s) is established by asking respondents to report if alcohol and/or drug use preceded the current offences. For those respondents who report substance use prior to the commission of their current offences, CASA presents follow-up questions that explore the affective and behavioural consequences of alcohol and drug use.

The offender satisfaction survey concludes the CASA. Respondents are asked to indicate their level of agreement with 11 declarative statements that delve into various aspects of their assessment experience. Respondents use a five-point Likert scale to indicate their level of agreement. Response choices include: strongly agree, slightly agree, neither agree nor disagree, slightly disagree, strongly disagree. These responses were collapsed into three categories (agree, neither agree nor disagree, disagree) for these analyses. Sample items include: "I found this questionnaire interesting," "I felt comfortable answering the questions on the computer" and "I understood the questions."

Offender Intake Assessment (OIA) Indicators

The OIA Dynamic Factor analysis is conducted by the institutional parole officer within the Offender Management System (OMS) by confirming the presence of specific indicators which relate to each of the seven domains or criminogenic needs. These domains are: Employment, Marital/family Relationships, Associates/Social Interaction, Substance Abuse, Community Functioning, Personal/Emotional Orientation, and Attitude. The indicators are structured as questions with a dichotomous response format ("yes" = presence of a problem; "no" = absence of a problem). This allows for the efficient identification of specific problems within each domain area.

For each domain, OMS automatically scores the number of responses and ranks them in order of priority (i.e., the higher the score, the higher the priority) (CSC, 2003). Parole officers use the results from this exercise and other case specific information to establish an overall need rating for each domain. Except for the substance abuse and personal/emotional orientation domains, all domains can be rated as an asset. If the offender's background suggests otherwise, the parole officer assigns one of the following three levels: "no need for improvement", "some need for improvement" or "considerable need for improvement". An overall dynamic factor (need) rating of either "low", "moderate" or "high" is then assigned so that the level of required intervention

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can be established. Generally, the more severe the identified problems and the greater the number of domains involved, the higher the overall dynamic factor rating. The parole officer exercises professional discretion in establishing this rating.

The overall dynamic factor rating was compared across levels of overall substance abuse severity to examine the association between the two. Because the identification of specific need indicators serves as the basis for the domain ratings, their total, accummulated across all seven domains, was also used to quantify the number of identified needs in an offender's life. The total number of identified need indicators were accumulated across all seven domains: Employment (35 indicators), Marital/Family Relationships (31 indicators), Associates/Social Interaction (11 indicators), Substance Abuse (29 indicators), Community Functioning (21 indicators), Personal/Emotional Orientation (46 indicators) and Attitude (24 indicators). The total number of identified need indicators were then compared across the overall substance abuse severity levels to examine if the total number of identified needs increased across substance abuse severity levels.

The OIA Static (Risk) Factor rating is based on the Criminal History Record (CHR), the Offence Severity Record (OSR) and the Sex Offence History (SOH). The CHR investigates the significant factors related to the offender's involvement with the criminal justice system. The OSR measures the nature and degree of psychological and physical harm inflicted on the victim(s) and on society. The SOH looks at the nature and extent of sexual offending, if any, and the amount of victim harm. It also highlights involvement in any prior sex offender assessment, treatment and/or intervention activities (CSC, 2003).

Once all questions are completed by the parole officer, OMS automatically scores the number of dichomotous yes/no responses from the CHR, OSR and the SOH. A point is assigned for each "yes" response. Generally, the higher the

number of "yes" responses, the greater the criminal risk (CSC, 2003). A level of intervention of either "low", "moderate" or "high" is automatically assigned based on the results from this static factor analysis (i.e., analysis of the CHR, OSR and the SOH) and the Revised Statistical Informaton on Recidivism Scale (SIR-R1) (described later in this section).

The total number of identified static factor indicators were accumulated across the CHR (38 indicators), OSR (71 indicators), and SOH (28 indicators). This total and the static factor ratings of "low", "moderate" and "high" were then compared across the overall substance abuse severity levels to examine if risk increased across substance abuse severity levels.

The Revised Statistical Information on Recidivism Scale (SIR-R1)[4] (Nuffield, 1982 as cited in Nafekh & Motiuk, 2002) is a statistically derived tool for predicting re-offending in federally sentenced, non-aboriginal males. It is typically completed within the first 90 days after an offender's admission to federal custody to help establish an offender's OIA static factor level. It is also re-administered later in an offender's sentence to establish re-integration potential.

The SIR-R1 statistically quantifies 15 demographic and criminal history indicators using the weighted Burgess method. This method applies positive and negative scores to individual items to reflect differences between endorsed items and population success rates. Items (predictor variables) are assigned a weight depending on their deviation from the base rate of success (Bonta, Harman, Hann & Cormier, 1996). Simple summation of the items yields scores ranging from -30 (poor risk) to +27 (very good risk) (Nafekh & Motiuk, 2002).

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[4] The General Statistical Information on Recidivism Scale (GSIR) (Nuffield, 1982) was modified to improve face validity and to reflect changes in legislation. As a result, it was renamed the Revised Statistical Information on Recidivism Scale (SIR-R1).

Offenders are classified into one of the following five risk categories: "very good" risk (four out of five offenders predicted to succeed); "good" risk (two out of three offenders in this category predicted to succeed on release); "fair" risk (one out of two offenders predicted to succeed); "fair/poor" risk (two out of five offenders predicted to succeed); and "poor" risk (one out of three offenders predicted to succeed). These categories provide an estimate of an offender's risk for re-offending during the first three years after release from federal custody.

The internal reliability and predictive validity of the SIR-R1 has been previously established (Bonta et al., 1996). It is considered a stable predictor of general recidivism. Scores predict a variety of outcomes and the risk categories which comprise the scale demonstrate systematic associations with re-offence outcomes.

For this report, the SIR-R1 risk categories were collapsed into the following three risk groups: "poor to fair/poor", "fair" and "good to very good". The association between these risk groups and substance abuse severity was then examined.

Statistical Analyses

Statistical analyses were performed with the SAS Version 8 software (SAS Institute, 1999). For analyses involving continuous response variables, the assumptions for parametric procedures were first tested. The Shapiro-Wilk and the Levene's tests were applied to test for the normality of distributions and for the homogeneity of variances between groups, respectively (SAS, 1999). If assumptions were met, analysis of variance (ANOVA) was used to test for significant differences.

For the data that violated the assumptions for parametric procedures, rank transformations of each continuous data point were used instead of the raw data (Allison & Gorman, 1993; SAS, 1999). The sums of the ranks for each group were then compared using a General Linear Model (GLM) procedure. The Tukey

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multiple comparison method was employed to control the experimentwise error rate for all pairwise comparisons (SAS Institute, 2000). For comparisons involving only two groups, the nonparametric Kruskal-Wallis chi-square statistic was used to test for significant differences.

The Mantel-Haenszel Chi-square and the Spearman's correlation statistics were used to test the significance and strength of associations between categorical response variables of an ordinal nature. For categorical response variables of a nominal nature, Chi-square and Cramer's-V statistics were employed to test for significance and strength of associations.

Results

Introduction

To illustrate the links between substance abuse, criminal behaviour, and psycho-social instability, the relationship between the overall substance abuse severity level and the dynamic and static factor ratings from the Offender Intake Assessment (OIA) will be examined. In addition, results from the Revised Statistical Information on Recidivism Scale (SIR-R1) will be compared across levels of overall substance abuse severity to explore the relationship between the severity of substance abuse problems and the risk for re-offending. Additional descriptive information relating to current offences and drug use profiles will shed additional light on the link between substance abuse and criminal behaviour.

Following this, the relationship between the Severity of Dependence Scale (SDS) and the Drug Abuse Screening Test (DAST); and the relationship between the Michigan Alcoholism Screening Test (MAST) and the Alcohol Dependence Scale (ADS) will be presented to assess the utility of drawing on additional measures to further differentiate cases for intervention purposes.

The results section will conclude with a look at the potential influence of offender response bias on the overall CASA results, followed by an overview of the respondents' ratings of the computerized assessment.

Severity of Substance Abuse Problems

As stated previously, the overall substance abuse severity level is based on the ADS and the DAST. The highest severity level on either measure produces an overall severity level of none, low, moderate, substantial or severe. The highest rating on the ADS, DAST or PRD determines program intensity level.

In this sample of offenders, which includes only offenders who completed the CASA (about 36% of admissions), 31% were identified as having no substance abuse problems, 32% had a low level problem, 15% were identified with a moderate problem, 16% had a substantial problem and 5% of this sample was assessed as having a severe substance abuse problem. Table 3 provides the distribution of the results for the ADS, DAST and overall severity levels. Ratings of substantial to severe on overall severity result in placement to the high intensity program. Ratings of moderate and low result in a referral to the corresponding intensity levels.

Table 3: Distribution of Results for the ADS, DAST and Overall Severity Levels

Problem Area	Severity Level %				
	None	Low	Moderate	Substantial	Severe
Alcohol (ADS)	56.3	33.2	6.0	2.9	1.7
Drugs (DAST)	46.8	22.3	12.6	14.4	4.0
Overall Severity[1]	31.1	32.4	14.7	16.2	5.4

[1]Highest severity level on the ADS or DAST establishes overall severity level of none, low, moderate, substantial or severe.

The PRD indexes the extent of alcohol-related problems across four levels ranging from "none" to "a lot". Of these respondents, 64% indicated that they experienced no problems related to alcohol, 20% experienced some problems, 8% indicated quite a few problems, and 7% felt that they experienced a lot of problems related to alcohol. A rating of "a lot" results in a referral to the high-intensity program. Ratings of "some" to "quite a few" result in placement to a low-intensity program only when the ADS and DAST produce ratings of "none".

Total Identified OIA Need Indicators by Substance Abuse Severity

When the total number of identified need indicators were compared across overall substance abuse severity levels, the results showed a positive association between substance abuse severity levels and total number of identified need indicators, $F(4, 907) = 81.6$, p < .0001. The results from the muliple comparisons are presented in Table 4.

Offenders who received a rating of none on overall substance abuse severity had a significantly lower number of needs identified on the OIA when compared to all other groups. The same was true for offenders with a severity rating of low. The difference between the severe and substantial groups was not statistically significant. The same was true when the moderate group was compared to the substantial group. However, when the moderate group was compared to offenders with a rating of severe on overall substance abuse severity, the moderate group had a significantly lower number of needs identified in the OIA.

Table 4: Substance Abuse Severity Level by Total Number of Need Indicators

Overall Severity Level[1]	Mean[2]	SD	N
None	41.6$_a$	20.6	284
Low	55.1$_b$	22.6	294
Moderate	68.5$_c$	20.3	133
Substantial	72.5$_{cd}$	22.8	147
Severe	80.1$_d$	20.4	49

Note. Values represent the mean number of OIA need indicators, accumulated across all 7 OIA dynamic factors.

[1]Highest severity level on the ADS or DAST establishes overall severity level of none, low, moderate, substantial or severe.

[2]Means with the same letter are not significantly different at the p <.05 level.

Parametric procedures were used because the assumptions for ANOVA were met. The Tukey multiple comparisons method (HSD) was employed to control for the Type I experimentwise error rate.

Overall Dynamic Factor Rating by Substance Abuse Severity Level

A similar trend emerged when the overall dynamic factor (need) rating was compared across levels of overall substance abuse severity (See Figure 2). The majority of offenders with a rating of moderate to severe on overall substance abuse severity were rated high need on the OIA, indicating the requirement for a more intensive level of intervention to facilitate successful community reintegration. In contrast, fewer offenders with ratings of low or none on overall severity were rated high on need, Mantel-Haenszel $\chi^2(8, N = 907) = 120.82, p < .0001 (r_s = .36)$.

Figure 2: Distribution of Overall Dynamic Factor Rating by Substance Abuse Severity
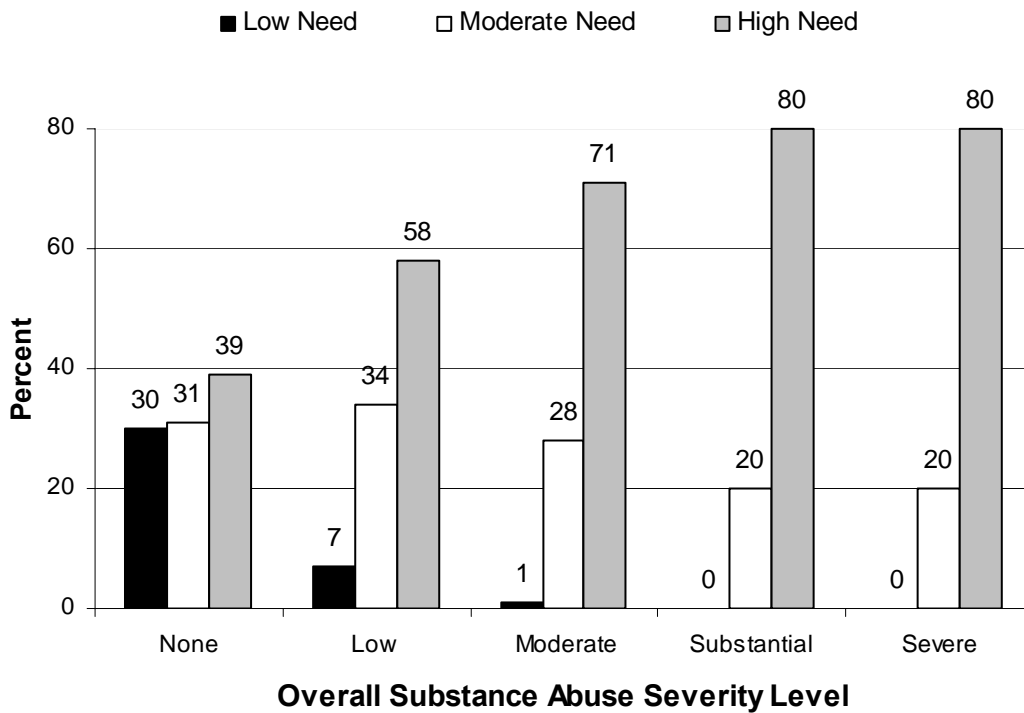
Total Identified OIA Static Factor Indicators by Substance Abuse Severity

When the total number of identified static factor indicators were compared across levels of overall substance abuse severity, there was a positive association, $F(4, 907) = 11.6$, p < .0001. Table 5 summarizes the results from the multiple comparsions.

Offenders who received a rating of none on overall substance abuse severity had a significantly lower number of static factor indicators identified when compared to all other groups. The same was true when the low group was compared to the severe group. All other differences were not statistically significant.

Table 5: Total Risk by Overall Substance Abuse Severity

Overall Substance Abuse Severity Level[1]	Mean[2]	SD	N
None	26.2_a	14.1	284
Low	29.6_b	13.8	294
Moderate	32.6_{bc}	12.7	133
Substantial	33.2_{bc}	12.9	147
Severe	36.3_c	11.8	49

Note. Values represent the mean number of OIA static factor indicators, accumulated across the Criminal History Record, Offence Severity Record and Sex Offence History.

[1]Highest severity level on the ADS or DAST establishes overall substance abuse severity level of none, low, moderate, substantial or severe.

[2]Means with the same letter are not significantly different at the *p* <.05 level.

Parametric procedures were used since the data did not violate the assumptions for ANOVA. The Tukey multiple comparisons method (HSD) was employed to control for the Type I experimentwise error rate.

Overall Static Factor Rating by Overall Substance Abuse Severity Level

There was a significant ordinal association between the overall static factor (risk) rating and the overall substance abuse severity level, Mantel-Haenszel $\chi^2(8, N = 907) = 34.7$, p < .0001 ($r_s = .20$) (see Figure 3). Specifically, as the

severity of substance abuse problems moved from none to severe, the proportion of offenders with a moderate to high static factor rating increased. Almost all of the offenders who were rated substantial to severe on overall substance abuse severity received an OIA static factor rating of moderate to high, indicating a more involved criminal history and thus in need of a more intensive level of intervention to mitigate the risk for re-offending. It appears that offenders with a rating of severe on substance abuse severity were less likely to receive a rating of high on the overall static factor. This may have been due to the comparatively small sample size of offenders (*n*=49) with a rating of severe on overall substance abuse severity.

Figure 3: Distribution of Overall Static Factor Rating across Substance Abuse Severity
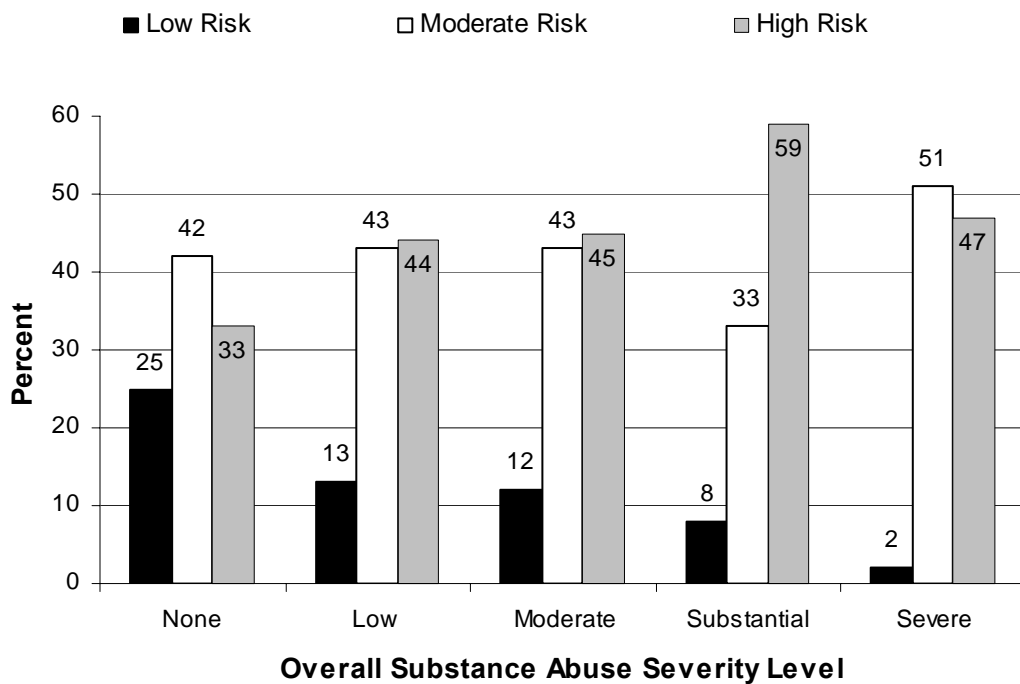
SIR-R1 Results across Overall Substance Abuse Severity Levels

There was also a significant ordinal association between overall substance abuse severity levels and SIR-R1 risk groupings (see Table 6). Offenders with more severe substance abuse problems were assessed as less likely to succeed

(i.e., at a higher risk of re-offending) during the three years after release from custody. The same trend was observed in the "good to very good" risk category. As the overall severity level increased, the probability of post-release success decreased. The one exception to this trend emerged when offenders with a rating of severe on overall substance abuse severity were compared to offenders with a moderate or substantial rating. Offenders with a severe rating appeared more likely to succeed post-release than offenders with ratings of substantial and moderate; however, this may have been attributable to their comparatively small sub-sample size ($n = 38$).

Table 6: Substance Abuse Severity by SIR-R1 Risk Grouping

Overall Substance Abuse Severity Level[2]	SIR-R1 Risk Group (probability of success post-release)[1]			Number of Cases
	Poor to Fair/Poor%	Fair%	Good to Very Good%	
None	32.2	10.5	57.3	267
Low	40.5	20.1	39.4	274
Moderate	54.8	20.0	25.2	115
Substantial	66.9	14.1	19.0	121
Severe	50.0	23.7	26.3	38

Note. Ninety-two (10%) of the offenders were not included in this analysis because they did not meet the criteria for SIR-R1 administration.

[1]The five SIR-R1 risk categories were collapsed into three groups: "poor to fair/poor", "fair" and "good to very good".

[2]Highest severity level on the ADS or DAST establishes overall severity level of none, low, moderate, substantial or severe.

Mantel-Haenszel χ^2(1, N = 815) = 56.9, p < .0001

$r_s = -.28$

Substance Use Prior to Current Offence(s)

Alcohol Use

Of the 907 offenders who completed the CASA, only those who reported a history of alcohol use and who were not appealing current offences were presented with questions examining the relationship between alcohol and their current offence(s). Of the 829 respondents who met these two conditions, 31% ($n = 260$) reported that they had consumed alcohol prior to committing their current offence(s). The majority of these [91% ($n = 236$) or 29% of the total respondents] reported that they were under the influence of alcohol. Of the offenders who reported alcohol impairment prior to their offences, [78% ($n = 185$) or 22% of the total respondents] attributed cause to their alcohol use for their current offences (i.e., would not have committed the offences if they were not under the influence of alcohol).

When the distribution of these results was examined across the ADS severity levels (see Figure 4), there was a strong association between severity levels on the ADS and alcohol use, $\chi^2(4, N = 829) = 316.12$, p < .0001 ($V = .62$). The majority of offenders who received a moderate to severe rating on the ADS used alcohol prior to the commission of their current offence(s). These offenders were also more likely than offenders with a rating of low or none on the ADS to be under the influence of alcohol, $\chi^2(4, N = 829) = 308.43$, p < .0001 ($V = .61$). In addition, offenders with higher severity levels on the ADS were generally more likely than offenders with lower severity levels to attribute cause to their alcohol impairment for their current offence(s), $\chi^2(4, N = 236) = 12.10$, p < .05 ($V = .23$).

Figure 4: Percentage of Offenders Identifying Alcohol as a Contributing Factor in their Current Offence(s) by ADS Severity Levels
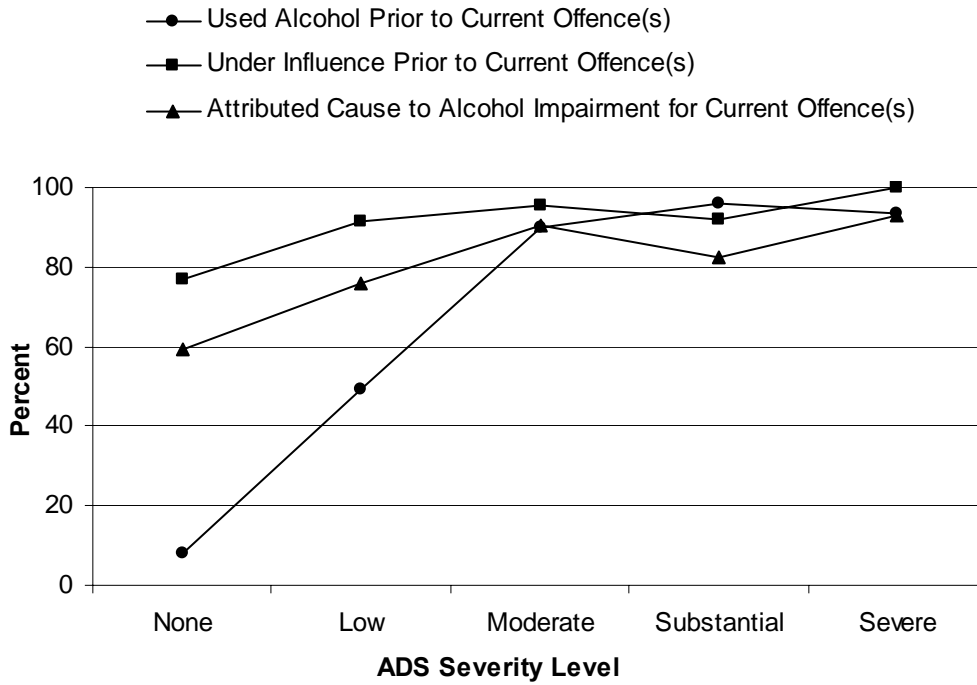
The majority of offenders who were under the influence of alcohol on the day of their offences(s) reported alcohol-related cognitive and behavioural interference (see Table 7). Of the 236 offenders, 81% (n = 192) (or 23% of the total number of respondents) reported that alcohol impaired their judgement at the time of the offence(s). Almost all of the offenders (94%) in the combined moderate, substantial and severe categories on the ADS reported impaired judgement at the time of their offences. Fewer offenders with ratings of none or low on the ADS experienced this type of cognitive interference. A chi-square statistic confirmed a significant association between severity levels on the ADS and cognitive interference, $\chi^2(4, N = 236) = 16.5$, $p < .005$ ($V = .26$).

Approximately 50% of the 236 offenders who were under the influence of alcohol on the day of their offence(s) attributed cause to alcohol for their offence-related physical aggression (see Table 7). Offenders in the moderate to severe ADS categories were far more likely to report increased physical aggression as a result of being under the influence of alcohol than offenders with lower ratings on the ADS. Only 15% of the offenders in the none category and 48% of the offenders in the low category reported that alcohol impairment made them more physically aggressive. A chi-square statistic also confirmed a significant association between severity levels on the ADS and physical aggression at the time of the current offence(s), $\chi^2(4, N = 236) = 21.0$, p < .001 ($V = .30$).

Table 7: Cognitive-Behavioural Interference while Under the Influence of Alcohol

ADS Severity Level	Judgement Impaired %	More Aggressive %	Total Cases
None	63.0	14.8	27
Low	77.5	48.1	129
Moderate	95.4	67.4	43
Substantial	87.0	60.9	23
Severe	100.0	64.3	14

Drug Use

As with the alcohol-related questions, only those offenders who reported a history of drug use and who were not appealing current offences were presented with CASA questions relating to drug use and its relationship to current offending (*n*=661). Of these, 44% (*n* = 289) used drugs prior to committing their current offence(s). The majority of these offenders [88% (*n* = 255) or 39% of the total number of offenders] who reported drug use were under the influence of drugs on the day of their offence(s). Approximately 83% (*n* = 212) of this group (or

32% of the total respondents) attributed cause to their drug impairment (i.e., they would not have committed their current offences if they had not been under the influence of drugs). Figure 5 provides the distribution of these results across the DAST severity levels.

There was a strong association between severity levels on the DAST and antecedent drug use. Offenders with higher ratings on the DAST were more likely to have used drugs prior to the commission of their current offence(s) than offenders with lower ratings, $\chi^2(4, N = 661) = 341.59$, p < .0001 ($V = .72$). Offenders with higher DAST severity levels were also more likely to be under the influence of drugs at the time of their current offence(s), $\chi^2(4, N = 661) = 337.26$, p < .0001 ($V = .71$). Of the offenders who reported drug impairment prior to their current offences, those with higher severity levels were generally more likely than those with lower severity ratings to attribute cause to their drug impairment for their current offence(s), $\chi^2(4, N = 255) = 22.8$, p < .0001 ($V = .30$). It appears that offenders with a rating of none on the DAST were more likely to attribute cause to drug impairment for their current offences than those with a low rating. However, this may have been due to the comparatively small sub-sample ($n = 9$) of offenders in this group.

Figure 5: Percentage of Offenders Identifying Drug Use as a Contributing Factor in their Current Offence(s) by DAST Severity Levels
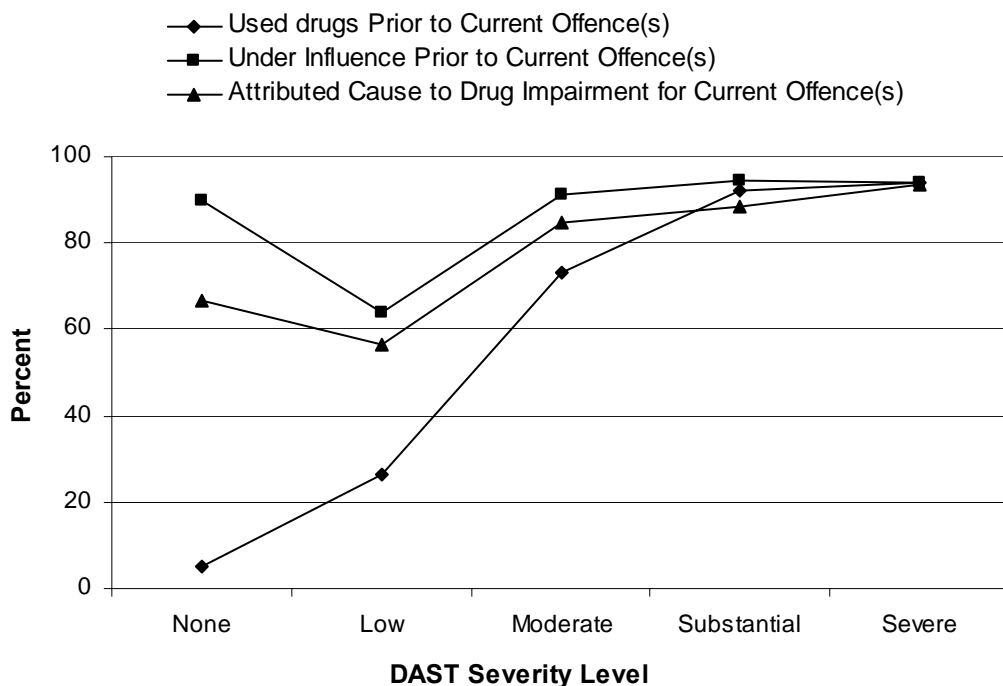
Of the 255 offenders who were under the influence, 83% (n = 212) reported that drugs impaired their judgement at the time of their offence(s) (see Table 8). A large majority of offenders (89%) in the substantial and severe categories reported impaired judgement at the time of their offence(s) as a result of drug use. However, this association was a weak one, $\chi^2(4, N = 255) = 9.98$, p < .05 ($V = .20$). Table 8 provides the distribution of these results across DAST severity levels.

Drug impaired offenders were generally less likely than alcohol impaired offenders to report that drug use contributed to more physically aggressive behaviour. When results were examined across DAST severity levels, there was

a marginal increase in physical aggression among the drug-impaired offenders as DAST severity levels moved from low to severe; however, this association was not significant, $\chi^2(4, N = 255) = 3.60$, p > .05.

Table 8: Cognitive-Behavioural Interference while Under the Influence of Drugs

DAST Severity Level	Judgement Impaired %	More Aggressive %	Total Cases
None	77.8	33.3	9
Low	68.8	34.4	32
Moderate	76.4	34.7	72
Substantial	88.5	38.1	112
Severe	90.0	53.3	30

Alcohol and Drug Use (Both) prior to Current Offending

It has been variously reported that approximately 50% to 60% of Canadian federal offenders have used alcohol, drugs or a combination of the two on the day of their current offences (Robinson et al., 1991; Brochu, Cousineau, Gillet, Cournoyer, Pernanen & Motiuk, 2001). Results from this study support these earlier findings.

Of the 858 offenders who answered questions concerning their current offence(s), 52% reported substance use on the day of their offence(s).[5] Specifically, 12% reported they had used both alcohol and drugs, 18% had consumed alcohol and 21% had used drugs on the day of their offences. Of

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[5] Of the total sample of 907 offenders, 858 were presented with questions concerning their current offences. A small number of offenders (n=49) were excluded because they were appealing their current convictions.

these 858 offenders, 11% were under the influence of both on the day of their current offence(s), while 17% and 19% were under the influence of alcohol and drugs, respectively. Offenders who were under the influence of both alcohol and drugs were more likely to attribute cause to both alcohol and drugs than to drugs or alcohol alone. Specifically, 66% attributed cause to both, 13% to drugs, and 9% attributed cause to alcohol. The remainder (13%) did not attribute cause to alcohol nor to drugs.

Substance Use and Type of Current Offending

Previous research has consistently found that offenders with an alcohol-dependency problem were far more likely to commit a violent crime than offenders with an identified drug-dependency problem (Pernanen, Cousineau, Brochu & Sun, 2002). Conversely, drug dependent offenders were more likely to commit crimes of a property nature (e.g., robberies, break and enters, thefts fraud). It has been argued that where alcohol abuse is associated with criminal behaviour, the intoxicating effects of alcohol often result in cognitive disruption and exacerbated physical aggression, which consequently leads to violent behaviour. In contrast, where drug abuse is linked to criminal behaviour, the offences are often property or theft related and motivated by financial gain to finance the high price of illicit drugs (Brochu et al., 2001).

With this sample of offenders, more violent offences were committed while under the influence of alcohol on the day of the offence(s) than drugs or a combination of the two (see Table 9). Proportionally more assaults (34%), sexual assaults (25%) and murders (22%) were associated with alcohol intoxication than with drugs or a combination of the two. Conversely, offences of a property or theft type were more closely associated with drug impairment. Twenty-nine percent of thefts and 30% of robberies were committed while under the influence of drugs. Interestingly, the majority of drug offences (84%), frauds (68%) and weapons offences (68%) were associated neither with drug nor alcohol impairment.

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Table 9: Offences Committed while Under the Influence of Alcohol, Drugs or a Combination of Both

Offence Types	Alcohol %	Drugs %	Both %	Neither %	Total offences by offence type
Theft	15	29	10	47	315
Robbery	10	30	17	43	192
Fraud	6	21	6	68	90
Drug Offences	2	13	2	84	174
Assault	34	13	13	40	193
Sexual Assault	25	5	13	58	80
Murder	22	3	14	61	36
Possession Weapon	11	14	7	68	76
Escape	26	9	14	51	43
Kidnapping	31	--	15	54	13
Arson	40	20	7	33	15
Obstruction Justice	22	10	12	56	41
Major Driving Offences	46	8	8	38	96
Other	20	10	14	56	80
Total offences	266	257	149	772	1444

Note. The total sample size includes 858 offenders; 49 were excluded from the analysis because they were appealing current convictions.

Offence categories may include more than one offence of that type (see Appendix A).

Most Frequently Used Drug Types

The most frequently used drug was defined as the drug used most often during the 12-month period prior to arrest for the current offences. Of the 504 offenders who responded to the DAST and SDS items, over half (52%) identified cannabinoids as their most frequently used drug, followed by crack cocaine (14%), opioids (13%) and cocaine (12%). All "other" combined drug categories accounted for less than 10% of the sample. Benzodiazepines (2%), heroin (2%),

amphetamines (1%), MDA (methylenedioxyamphetamine) (1%) and the unspecified group (2%) contributed the majority of observations to this combined group. The inhalants, steroids, LSD and the methadone drug categories each contributed less than 1%.

When the most frequently used drugs were examined across DAST severity levels, a clear pattern emerged (see Table 10). A sizable majority of offenders in the crack cocaine, opioids, cocaine and "other" groups produced DAST results suggestive of moderate to severe drug problems. In contrast, very few of the offenders in the cannabinoid group produced DAST results suggesting the same level of problem. Of all the groups, offenders in the crack cocaine and the opiates groups were more likely to report a substantial to severe drug problem. These results are not surprising given the highly addictive nature of these classes of drugs (World Health Organization [WHO], 2004).

Table 10: Most Frequently Used Drug across DAST Severity Levels

	DAST Severity Level%			
Most Frequently Used Drug[1]	**None to Low%**	**Moderate%**	**Substantial to Severe%**	**Total Cases**
Cannabinoids	67.8	20.3	11.9	261
Crack Cocaine	7.3	23.2	69.6	69
Opioids	14.7	22.1	63.2	68
Cocaine	27.1	30.5	42.4	59
Other	31.2	25.5	42.6	47

Note. [1]Defined as the drug used most often during the 12-month period prior to arrest for the current offences.

$\chi^2(8, N = 504) = 160.10, p < .0001$

$V = .40$

Based on the results of the SDS, the degree of psychological dependence varied across drug types, $F(4, 504) = 60.31$, p < 0.0001. The results from the multiple comparisons are presented in Table 11. The cannabinoids group produced significantly lower scores on the SDS than all other groups. Based on previous research with the scale, this sample of cannabinoids users scored well below the threshold for a diagnosis of psychological dependence (Swift, Copeland & Hall, 1998). The crack cocaine group was the most psychologically dependent, followed by the opiates, cocaine and the other groups.

Table 11: SDS Scores across Drug Types

Most Frequently Used Drug[1]	Mean[2]	N
Crack Cocaine	9.9$_a$	69
Opiates	7.7$_{ab}$	68
Cocaine	6.7$_b$	59
Other	5.5$_b$	47
Cannabinoids	2.4$_c$	261

Note. [1]This is defined as the drug used most often during the 12-month period prior to arrest for the current offences.

[2]The mean is reported; however, rank transformations of each continuous data point were used in the parametric procedure instead of the raw data because the data violated the normal distribution and equal error variance assumptions. The sums of the ranks for each group were then compared using the General Linear Model (GLM) procedure. Mean SDS scores with the same letter are not significantly different at the *p* <.05 level.

The Tukey multiple comparisons method (HSD) was employed to control for the Type I experimentwise error rate.

Total Scores on the SDS across DAST Severity Levels

Results from the CASA confirmed a strong relationship between the total scores on the SDS and the DAST (r = .86). Offenders who experienced more drug-related behavioural instability as measured by the DAST severity levels were also more psychologically dependent on drugs as indicated by higher scores on the SDS, $F(4, 907) = 761.54$, p < .0001. The results from the multiple comparisons are presented in Table 12.

Statistical differences were observed across all pair-wise comparisons, except when the substantial group was compared to the severe group. Offenders in these two groups were clearly more psychologically dependent to drugs as indicated by the divergence between their elevated scores on the SDS and the successively lower scores for the offenders with ratings of moderate and low on the DAST.

Table 12: SDS Scores across DAST Severity Levels

DAST Severity Level	Mean[1]	N
None	0.0_a	424
Low	1.3_b	202
Moderate	5.5_c	114
Substantial	9.0_d	131
Severe	10.9_d	36

Note. Values represent the mean score on the SDS

[1]Means with the same letter are not significantly different at the $p < .05$ level. The mean is reported; however, rank transformations of each continuous data point were used in the parametric procedure instead of the raw data because the data violated the normal distribution and equal error variance assumptions. The sums of the ranks for each group were then compared using the General Linear Model (GLM) procedure.

The Tukey multiple comparisons method (HSD) was employed to control for the Type I experimentwise error rate.

Total Scores on the MAST across ADS Severity Levels

Results from the CASA also confirmed a strong relationship between the MAST and the ADS (r = .86). Offenders who produced ADS severity levels suggesting some level of physiological dependence (i.e., the moderate to severe groups) experienced more alcohol-related behavioural instability as measured by the MAST, $F(4, 907) = 295.95$, p < .0001. The results from the multiple comparisons are presented in Table 13.

Offenders with severity ratings of none or low on the ADS produced significantly lower scores on the MAST when compared to all other groups. Although MAST

scores increased as ADS severity levels moved from moderate to severe, these differences were not statistically significant. Nonetheless, these results support earlier research with the ADS (Skinner & Horn, 1984). Individuals with a rating of low on the ADS are more likely psychologically dependent on alcohol than physiologically dependent and less likely to experience psycho-social problems than offenders with higher severity ratings on the ADS (Skinner & Horn, 1984).

Table 13: MAST Scores across ADS Severity Levels

ADS Severity Level	Mean[1]	N
None	1.1_a	511
Low	9.0_b	301
Moderate	24.8_c	54
Substantial	33.7_c	26
Severe	42.9_c	15

Note. Values represent the mean score on the MAST.

[1]Means with the same letter are not significantly different at the *p* <.05 level. The mean is reported; however, rank transformations of each continuous data point were used in the parametric procedure instead of the raw data because the data violated the normal distribution and equal error variance assumptions. The sums of the ranks for each group were then compared using the General Linear Model (GLM) procedure.

The Tukey multiple comparisons method (HSD) was employed to control for the Type I experimentwise error rate.

Offender Response Bias

Developers of substance abuse assessments have argued that staff who administer assessments in high demand situations (e.g., an assessment unit within a correctional context) ought to remain sensitive to the possibility that individuals may under-report their symptoms in order to positively influence the outcome of their assessment (Skinner & Horn, 1984). The Paulhus Deception Scale (PDS) (Paulhus, 1998) was included in the CASA to allow staff to incorporate an objective measure of response bias in their interpretation of the CASA results.

The majority of offenders (64%) who completed the CASA produced results indicating a pattern of reliable responding. The remainder produced results signifying an unreliable pattern of responding. Specifically, 11% of the total sample scored above the threshold (high) on both the Impression Management (IM) and Self Deceptive Enhancement (SDE) scales, 17% of the offenders scored high on the SDE and 8% of the total sample scored high on the IM scale.

To determine if there was evidence of under-reporting of substance abuse problems, all offenders who were identified as unreliable responders (36% of the sample) were placed into one group and their results were compared to offenders for whom the PDS indicated reliable responding. If there was a difference between the groups and the differences indicated under-reporting, the utility of the PDS would be confirmed. For these analyses comparisons were made across the ADS, PRD, DAST and overall substance abuse severity levels.

The Alcohol Dependence Scale (ADS)

As shown in Table 14, when the ADS severity levels were compared across the two PDS profiles, approximately 15% of the reliable responders had a moderate to severe substance abuse problem, as compared to only 2% of the unreliable responders. Overall, over half of the reliable responders produced results indicating some level of substance abuse problem, compared to only 30% of the unreliable responders.

Table 14: ADS Severity Level across PDS Profiles

Paulhus Deception Scale	ADS Severity Level %					Number of Cases
	None	Low	Moderate	Substantial	Severe	
Reliable Responders	48.5	36.3	8.8	4.1	2.4	582
Unreliable Responders	70.5	27.7	0.9	0.6	0.3	325

χ^2(4, N = 907) = 58.6, p < .0001

V = .25

The nonparametric Kruskal-Wallis statistic revealed that the unreliable responders produced significantly lower scores on the ADS than the group of reliable responders, χ^2(1, N = 907) = 60.12, p < .0001.[6]

The Problems Related to Drinking Scale (PRD)

When results from the PRD were examined across PDS response profiles, the reliable responders reported more problems related to alcohol (see Table 15). More specifically, only 79% of the reliable responders indicated they had some or no problems related to alcohol compared to 94% of the unreliable responders.

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[6] The Kruskal-Wallis non-parametric procedure was used for these analyses because the data violated the normal distribution and equal variances assumptions for ANOVA.

Table 15: PRD Level across PDS Profiles

Paulhus Deception Scale	PRD Levels %				
	None	Some	Quite a few	A lot	Number of Cases
Reliable Responders	57.2	21.7	11.0	10.1	582
Unreliable Responders	78.2	16.3	3.1	2.5	325

χ^2(3, N = 907) = 49.8, p < .0001

V = .23

The same pattern was evident when the reliable and unreliable responders were compared on the total PRD score. The unreliable responders produced lower scores on the PRD than the reliable responders. The nonparametric Kruskal-Wallis statistic confirmed a statistically reliable difference, Kruskal-Wallis χ^2(1, N = 907) = 49.27, p < .0001.

The Drug Abuse Screening Test (DAST)

As shown in Table 16, when the DAST severity levels were compared across the two PDS profiles, reliable responders produced results suggesting more severe drug problems. Approximately 40% of the reliable responders produced results indicating a moderate to severe drug problem compared to only 14% of the unreliable responders.

Table 16: DAST Severity Level across PDS Profiles

Paulhus Deception Scale	DAST Severity Level %					
	None	Low	Moderate	Substantial	Severe	Number of Cases
Reliable Responders	38.1	21.7	15.0	19.1	6.2	582
Unreliable Responders	62.2	23.4	8.3	6.2	0.0	325

χ^2(4, N = 907) = 77.5, p < .0001

V = .29

When the total scores on the DAST were compared across the two groups, the unreliable responders produced lower scores on the DAST. The nonparametric Kruskal-Wallis statistic confirmed a reliable difference,

χ^2(1, N = 907) = 73.23, p < .0001.

Overall Substance Abuse Severity Level

As mentioned previously, the CASA's rating of overall substance abuse severity level is based on the OMS referral matrix. Highest severity level on the ADS or DAST dictates overall substance abuse severity level of none, low, moderate, substantial or severe. Figure 6 clearly illustrates the effects of unreliable responding on the assessment of substance abuse severity. Approximately 48% of the reliable responders produced results indicating a moderate to severe substance abuse problem compared to only 16% of the unreliable responders.

There was a significant difference between these groups across overall substance abuse severity levels, χ^2(4, N = 907) = 109.77, p < .0001 (*V* = .35).

Figure 6: Reliable vs. Unreliable Responders across Overall Substance Abuse Severity Levels

□ Reliable Responders   ▤ Unreliable Responders

Overall Substance Abuse Severity Level
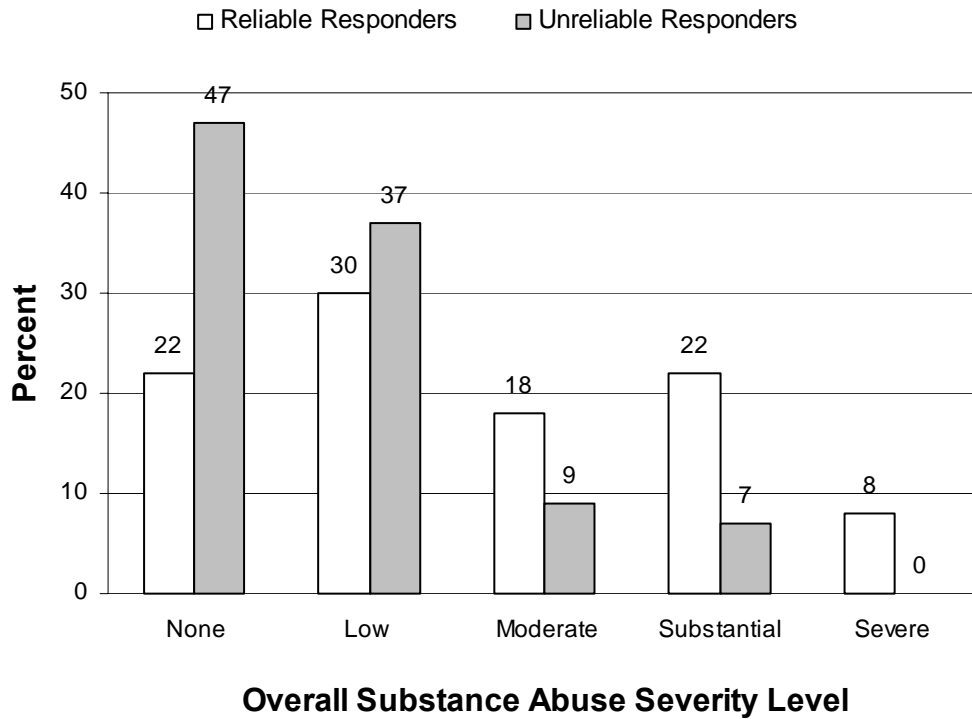
Respondent Ratings of the CASA

The majority of the respondents found the questionnaire interesting (60%), the content easy to understand (85%) and the computerized format comfortable (68%) and easy to use (67%). Approximately 20% of the respondents listened to the computer read the questions and response choices at least some of the time. Of these, 55% better understood the content because of the audio delivery of the text. Table 17 provides the distribution of results.

Table 17: Respondent Ratings of the CASA

Indicators	Level of Agreement[1] %	
	Agree	**Neither Agree nor Disagree**
1. Found the questionnaire interesting.	60.0	30.0
2. Learned a lot about substance abuse habits.	37.8	36.1
3. Easier to be honest with the computer than with a person asking the questions.	36.0	32.3
4. Felt comfortable answering the questions on the computer.	67.6	21.9
5. Found it easy to answer the questions on the computer	67.3	20.7
6. Understood the questions on the computer.	85.1	7.1
7. Better understood the questions when the computer read them	54.6	27.8
8. Found questionnaire too long	22.7	40.9
9. Found the questionnaire too short.	9.2	54.1
10. Recommend questionnaire to others.	56.9	36.8
11. Would be interested in looking at the results.	88.9	8.2

[1]Respondents used a 5 point Likert scale to indicate their level of agreement with each of the declarative statements. The five possible responses, ranging from strongly disagree to strongly agree, were collapsed into three categories (agree, neither agree nor disagree, disagree) for these analyses.

Discussion

The Computerized Assessment of Substance Abuse (CASA) was developed to provide Correctional Service Canada (CSC) with a comprehensive, multi-dimensional tool for establishing the severity of substance problems and for differentiating offenders for referral to CSC's substance abuse programs. Three of the main study findings provided strong empirical support for the application of the CASA for the purposes of case differentiation and program referral. The fourth main finding underscored the importance of including a measure that identifies individuals who may have distorted their responses during the assessment.

First, respondents with more severe substance abuse problems were more likely to experience problems in other aspects of their lives as well. This was illustrated by the strong association between the overall substance abuse severity level, which the CASA produced, and the overall dynamic (need) factor rating on the Offender Intake Assessment (OIA). Generally, as the substance abuse severity level moved from none to severe, the proportion of offenders identified with a high need rating on the OIA increased.

Second, the convergence between the CASA results and the results from the OIA and the Revised Statistical Information on Recidivism Scale (SIR-R1) substantiated the important link between criminal behaviour and substance abuse, which has been articulated in previous research (Andrews & Bonta, 1998). For example, offenders who reported substance abuse problems had more involved criminal histories as evidenced by higher static factor (risk) ratings on the OIA. Based on the SIR-R1 results, these individuals were also rated more likely to re-offend during the first three years after release.

Third, higher severity levels on the Alcohol Dependence Scale (ADS) and Drug Abuse Screening Test (DAST) were strongly associated with substance use and impairment on the day of the current offence(s). Offenders with higher severity

levels on the ADS and DAST were also more likely to report offence-related cognitive impairment than offenders with lower severity levels. Exacerbated offence-related aggression was closely associated with alcohol use, but not with drug use. Not surprising then that violent offences were more closely related with alcohol impairment than drug impairment, whereas property offences were more closely linked to drug impairment.

Fourth, offenders who produced Paulhus Deception Scales (PDS) results suggestive of unreliable responding appeared to underestimate their level of substance abuse problems. Of the 34% who produced PDS results indicating a pattern of unreliable responding, only 50% reported substance abuse problems. In contrast, close to 80% of the respondents with PDS profiles indicating a pattern of reliable responding reported some level of substance abuse problems, which is consistent with recent findings from other CSC research (Grant, Kunic, MacPherson, McKeown & Hansen, 2003).

The systematic identification of criminogenic need, which the CASA employs, is consistent with the principles of effective correctional treatment, which argue that offenders who present with higher needs should be matched to more intensive and extensive services so that the probability of re-offence is diminished. In contrast, low need offenders require minimal to no treatment (Andrews & Bonta, 1998). Within a correctional context, offenders with higher needs require more intensive and extensive services to effectively address multiple target behaviours that are associated with substance abuse and criminal behaviour. Offenders with a low level of substance abuse problems, on the other hand, require fewer services because fewer criminogenic needs are identified for this group.

In addition, findings on unreliable reporting in this study illustrate the importance of systematically evaluating the veracity of self-reported information when conducting assessments in high demand situations, such as those found in correctional contexts. When questionable results are indicated, it is recommended that staff rely on multi-method assessment approaches (e.g.,

reviewing collateral sources such as the Post-Sentence Community Assessment and other official documentation) to ensure assessment accuracy. The PDS profiles that the CASA produces in the automated report, three of which suggest socially desirable responding, should serve as "red flags" for operational staff so that guided adjustments can be made to the CASA results when necessary. This approach is consistent with the general principle of professional discretion, which states that guided adjustments should rely on sound evidence-based practice to improve the sensitivity of assessments when necessary (Andrews & Bonta, 1998).

The Severity of Dependence Scale (SDS) was included in the CASA to provide additional information related to the psychological dimensions of drug addiction, such as an individual's preoccupation with, and anxiety about, drug taking and impaired control. The results revealed that offenders who were more psychologically dependent on drugs based on the results of the SDS also experienced more drug-related behavioural instability as measured by the DAST. When the results were examined more closely, the offenders who produced DAST severity levels of substantial and severe scored well above the threshold on the SDS for a diagnosis of psychological dependence. This threshold has been previously reported in other literature (Topp & Mattick, 1997; De Las Cuevas et al., 2000); however, an optimal diagnostic cut-off will need to be formally established for this correctional population before the SDS is used for clinical purposes. For now, the SDS appears to differentiate offenders along a continuum that closely parallels existing severity levels on the DAST. Offenders in the substantial and severe groups are clearly more psychologically dependent on drugs as indicated by the divergence between their elevated scores on the SDS and the successively lower scores for the moderate and low groups. This marked difference suggests that the combined substantial and severe groups are more appropriate for referral to an intensive program that effectively targets the psychological, physiological and behavioural dimensions of dependence so that the risk of relapse is reduced or eliminated.

Similar results emerged when scores on the Michigan Alcoholism Screening Test (MAST) were compared across ADS severity levels. Offenders who produced ADS severity levels suggestive of physiological dependence (i.e., with a moderate to high rating on the ADS) experienced significantly more alcohol-related behavioural instability as measured by the MAST than offenders with a rating of low. Clearly, offenders with a moderate to severe rating will require more intensive treatment to address the physiological and behavioural dimensions of alcohol dependence.

For this sample of offenders, the most frequently reported drugs of choice were the cannabinoids, followed by crack cocaine, cocaine and opioids. The "other" drug category accounted for less than 10% of the sample. When the distribution of cocaine, crack cocaine and opioids users were compared to the cannabinoids users and the "other" group, the former were more likely to produce DAST results suggestive of moderate to severe substance abuse problems and SDS results indicative of psychological dependence. This is not surprising since opioids, cocaine and crack cocaine have long been considered highly addictive because of their biochemical mechanisms of action and their behavioural effects on the user (World Health Organization, 2004). In the case of cocaine and opioids, the elevated risk of acquiring and transmitting infectious diseases through the sharing of equipment, including syringes, cookers, cotton swabs and rinse water present additional health concerns. In a correctional context, users of these drugs will require intensive programming to mitigate the drug-related health risks and to address the psycho-social and behavioural problems associated with drug dependence.

This research has demonstrated that a self-administered, computerized assessment model, such as the CASA, has its place within a correctional context. Respondents generally found the CASA content easy to understand and the computerized format simple to use. The assessment also efficiently and accurately differentiated offenders for referral to substance abuse programs.

Future research is needed to refine the CASA, however. The development of a new algorithm, which incorporates the results from the SDS, the MAST and the PDS will need to be formally tested to determine whether their inclusion contributes to the overall accuracy of the CASA. For example, the SDS and MAST could be used to quantify the level of dependence and the extent of interference attributable to drug and alcohol use. Including both measures could provide additional insight into the psychological and psycho-social dimensions of drug and alcohol abuse. The results from the Paulhus Deception Scales could also be integrated into the algorithm to automatically adjust the severity levels when unreliable responding is indicated.

Other research on a national scale will be required to fully realize the potential benefits of integrating information from the CASA into the correctional planning and treatment delivery process. It will then be possible to conduct larger scale research involving the replication of these results and the linking of the CASA results with other indicators (e.g., in-custody substance use, program participation/non-participation, etc.) to examine the determinants of post-release success.

References

Allison, D., B., & Gorman, B. S. (1993). Some of the most common questions asked of statistical consultants: Our favorite responses and recommended readings. *Genetic, Social & General Psychology Monographs, 119*(2), 155-186.

Andrews, D. A., & Bonta, J. (1998). *The psychology of criminal conduct* (2nd ed.) Cincinnati, Ohio: Anderson Publishing.

Boland, F. J., Henderson, K., Baker, J. (1998). Case needs review: Substance abuse domain. *Ottawa, ON: Correctional Service Canada (R-76).*

Bonta, J. (2000). Offender assessment: General issues and considerations. *Forum on Corrections Research, 12*(2), 14-18.

Bonta, J., Harman, W. G., Hann, R. G., & Cormier, R. B. (1996). The predictions of recidivism among federally sentenced offenders: A re-validation of the SIR scale. *Canadian Journal of Criminology, January 1996*, 61-79.

Brochu, S., Cousineau, M.-M., Gillet, M., Cournoyer, L.-G., Pernanen, K. & Motiuk, L. (2001). Drugs, alcohol and criminal behaviour: A profile of inmates in Canadian federal institutions. *Forum on Corrections Research, 13*(3), 20-24.

Correctional Service Canada (2003). *Standard operating practices (700-04)*. Ottawa, ON: Author.

Cross, S. & Sibley-Bowers, L. (2001). *The standardized tools and criteria manual: Helping clients navigate addiction treatment in Ontario.* Toronto, Ontario: Centre for Addiction and Mental Health.

De Las Cuevas, C., Sanz, E. J., De La Fuente, J. A., Padilla, J. & Berenguer, J. C. (2000). The Severity of Dependence Scale (SDS) as screening test for benzodiazepine dependence: SDS validation study. *Addiction, 95*(2), 245-250.

Del Boca, F. K., & Noll, J. A. (2000). Truth or consequences: The validity of self-report data in health services research on addictions. *Addiction, 95*(11) *Supp. 3*, 347-361.

Edwards, G. & Gross, M. M. (1976). Alcohol dependence: provisional description of a clinical syndrome. *British Medical Journal, 1 May*, 1058-1061.

Feigelson, M. E., & Dwight, S. A. (2000). Can asking questions by computer improve the candidness of responding?: A meta-analytic perspective. *Consulting Psychology Journal, 52*(4), 248-255.

Feingold, A. & Rounsaville, B. (1995). Construct validity of the dependence syndrome as measured by DSM-IV for difference psychoactive substances. *Addiction 90*(12), 1661-1669.

Gossop, M., Darke, S., Griffiths, P., Hando, J., Powis, B, Hall, W., & Strang, J. (1995). The Severity of Dependence Scale (SDS): Psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. *Addiction, 90*(5), 607-614.

Grant, B. A., Kunic, D., MacPherson, P., McKeown, C., Hansen, E. (2003). The High Intensity Substance Abuse Program (HISAP): Results from the pilot programs. *Ottawa, ON: Correctional Service Canada (R-140).*

Hodgins, D. C., & Lightfoot, L. O. (1988). Types of male alcohol and drug abusing incarcerated offenders. *British Journal of Addiction, 83*, 1201-1213.

Hodgins, D. C., & Lightfoot, L. O. (1989). The use of the Alcohol Dependence Scale with incarcerated male offenders. *International Journal of Offender Therapy and Comparative Criminology, 33*, 59-67.

Kroner, D. G., & Weekes, J. R. (1996). Balanced Inventory of Desirable Responding: Factor structure, reliability and validity with an offender sample. *Personality and Individual Differences, 21*(3), 323-333.

McMurran, M. (2001). Offenders with drink and drug problems. In C. R. Hollin (Eds.), *Handbook of offender assessment and treatment* (pp. 481-493). West Sussex, England: John Wiley & Sons, Ltd.

Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behaviour*. New York, New York: Guilford Press.

Millson, W. A., Weekes, J. R. & Lightfoot, L. O. (1995). The Offender Substance Abuse Pre-Release Program: Analysis of intermediate and post-release outcomes. *Ottawa, ON: Correctional Service Canada (R-40).*

Nafekh, M. & Motiuk, L. L. (2002). The Statistical Information on Recidivism – Revised 1 (SIR-R1) Scale: A psychometric examination. *Ottawa, ON: Correctional Service Canada (R-126)*.

Paulhus, D. L. (1998). *Paulhus Deception Scales user's manual.* Toronto, Ontario: Multi-Health Systems Inc.

Pernanen, K., Cousineau, M.-M., Brochu, S., Sun, F. (2002). Proportions of crimes associated with alcohol and other drugs in Canada. *Ottawa, ON: Canadian Centre on Substance Abuse*.

Robinson, D., Porporino, F., & Millson, B. (1991). Patterns of alcohol and drug use among federal offenders as assessed by the Computerized Lifestyle Screening Instrument. *Ottawa, ON: Correctional Service Canada (R-11).*

SAS Institute (1999). *SAS/STAT user's guide version 8, (Vol. 2).* Cary, NC: Author.

SAS Institute (2000). *Statistics I: Introduction to anova, regression and logistic Regression Course Notes.* Cary, NC: Author.

Selzer, M. L. (1971). The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. *American Journal of Psychiatry, 127*, 1653-1658.

Skinner, H. A. (1982). The Drug Abuse Screening Test. *Addictive Behaviours, 7,* 363-371.

Skinner, H. A. & Goldberg, A. E. (1986). Evidence for a drug dependence syndrome among narcotic users. *British Journal of Addictions, 81*, 479-484.

Skinner, H. A., & Horn, J. L. (1984). Alcohol Dependence Scale (ADS): User's guide. Toronto, ON: Addiction Research Foundation.

Swift, W., Copeland, J. & Hall, W. (1998). Choosing a diagnostic cut-off for cannabis dependence. *Addiction 93*(110), 1681-1692.

Topp, L., Mattick, R. P. (1997). Choosing a cut-off on the Severity of Dependence Scale (SDS) for amphetamine Users. *Addiction 92*(7), 839-845.

Turner, C. F., Ku, L., Rogers, S. M., Lindberg, L. D., Pleck, J. H., & Sonenstein, F. L. (1998). Adolescent sexual behaviour, drug use and violence: Increased reporting with computer survey technology. *Science, 280,* 867-873.

World Health Organization. (2004). *Neuroscience of psychoactive substance use and dependence.* Geneva, Switzerland: Author.

APPENDIX A

Offence Categories

1. Theft (e.g., break and enters, shoplifting, auto theft, unlawfully in dwelling, possession stolen property)

2. Robbery (e.g., armed robbery , robbery with violence, extortion)

3. Fraud (e.g., forgery, false pretences, credit card fraud, personation)

4. Drug Offences (e.g., possession, trafficking, import narcotics, cultivation)

5. Assault (e.g., attempt murder, assault causing bodily harm, threatening, common assault, aggravated assault, wounding)

6. Sexual Assault (e.g., indecent assault, rape, incest, gross indecency)

7. Murder (e.g., manslaughter, first and second degree murder)

8. Possession of Weapon (e.g., possession of explosives, dangerous use of firearm, pointing a firearm, use of firearm)

9. Escape (e.g., escape lawful custody, unlawfully at large, fail to appear, breach of recognizance, breach of bail, fail to comply, breach of probation)

10. Kidnapping (e.g., unlawful confinement, abduction)

11. Arson

12. Obstruction of Justice (e.g., assault police officer, obstruct peace officer, resist arrest, contempt of court)

13. Major Driving Offences (e.g., criminal negligence, drive while intoxicated, dangerous driving, driving while ability impaired, fail to remain at scene)

14. Other (e.g., vandalism, causing disturbance, mischief, willful damage, living off avails of prostitution)