Predicting offender recidivism among Swedish participants in the One-to-One CBT programme

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Predicting Offender Recidivism Among Swedish Participants in the One-To-One CBT Programme

Per Besev & Mikael Gajecki

Priestley’s One-to-One CBT programme is intended to reduce criminal recidivism. Data were collected from 1484 programme rounds in Sweden. 776 of these cases contained the data necessary for this study and were used in the analyses. The data included pre- and post-programme test scores on areas addressed in the programme. The purpose of this study was to examine whether the tests or background data of participants have predictive properties for dropout and recidivism and whether test scores differ between sub-groups. To do this, t-tests and logistic regression analyses were performed. There were significant improvements on all scores post-programme. Only age predicted completion, with older participants being more likely to complete the program. Several variables were found to have predictive properties for recidivism. The most potent predictor for non-recidivism was programme completion. The study finds a relation between some of the tests measuring psychological change, and recidivism. This partly supports the theory behind the programme.

The criminal justice system has long been struggling with finding effective ways to reduce recidivism in crime. Up till the 1970's an optimistic attitude of "everything works" dominated the field. This changed in the early 1970's, largely due to an article by Martinson published in 1974. The article was a summary of a report by Lipton, Martinson and Wilks that reviewed a large number of evaluations conducted between 1945 and 1967. Martinson’s conclusions from the report was that rehabilitation was ineffective or of very limited gain. The article received a lot of attention, and it may be argued that its conclusions were widely appreciated due to the political implications. A conservative interpretation of the results implied that the focus should be on the deterring effects of punishment, while the other side argued that crime was best prevented through social efforts and that forced treatment and indeterminate punishments were problematic due to injustice (Sarre, 1999).

The wide acceptance of Martinson’s conclusions led to a pessimistic approach to crime rehabilitation and a renewed focus on deterrence and punishment. The succeeding report was more careful in drawing such far-reaching conclusions as Martinson, but the attitude of "nothing works" had already become a widely accepted truth. At this same time, reviews of offender treatment programmes were conducted in Great Britain, also

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reaching the conclusion that the studies being reviewed were poorly conducted, thus making it impossible to conclude that treatment programmes were effective in reducing recidivism (McGuire, 2004). This attitude of nothing works dominated the field for several years to come, though it was widely challenged, mainly due to the fact that the conclusions drawn from the report were far from clear. Another problem was that, while the effectiveness of rehabilitative efforts had limited evidence, the effects of deterrence and punishment were researched, and evidence of their ineffectiveness was unequivocal (McGuire, 2002).

From 1985 and onwards meta-analytic research has however been able to show that several treatment programmes for offenders are successful in reducing recidivism (McGuire, 2004). Therefore a new attitude has been adopted to find practices that do work. These efforts have resulted in initiatives such as the "What works" initiative in the UK (Home Office - UK, 2009), and the "Blueprints for violence prevention" in the US (Center for the Study and Prevention of Violence - CU Boulder, n.d.), with clearly defined criteria that a programme is required to meet in order to be considered effective.

The predominant term used in this thesis to describe the outcome measure of a programme is recidivism. A definition of this term is therefore necessary. In studies, the terms reconviction and recidivism are often used. Reconviction means that the participant has been convicted for another crime during the followup period after the intervention, whereas recidivism means that the participant has relapsed into criminal behavior. Recidivism therefore can include criminal behaviour that has not been detected by the authorities. In practice it is often hard to find other data than reconviction data (Friendship, Falshaw and Beech, 2003). In this thesis the terms recidivism, reconviction and reoffense are used to mean the same, that is, being convicted for a crime during the followup period.

**Effective components**

In 1994, a quantitative study (Antonowicz & Ross, 1994), examining the essential components in efficacious rehabilitation programmes, was published. The study looked at 44 programmes that were rigorously controlled. Program success was defined as less recidivism than a control group. They found six factors associated with programme success:

1. **A sound conceptual model** - The primary target of an offender program should be to reduce recidivism, and the theory of offending behaviour behind a program should logically suggest the intermediate targets of a program.

2. **Multifaceted programming** - Effective programmes include several different techniques and interventions as opposed to rely on a single method.

3. **Targeting criminogenic needs** - Effective programmes target problems that are known to be linked to recidivism.

4. **The responsivity principle** - A programme is more likely to be effective if it takes in account the learning styles and abilities of the offender and matches intervention accordingly.
5. Role playing/modelling - Role playing and/or modelling are components used in effective programmes

6. Social cognitive skills training - Effective programmes include components that deal with changing the participant’s thinking through cognitive skills training.

Treatment programmes based on a cognitive behavioural theoretical (CBT) model were shown to be most beneficial. Seventy-five percent of treatment programmes that have shown to be effective are based on cognitive behavioural theory (Antonowicz & Ross, 1994). Programmes based on deterrence, psychodynamic or sociological models are less likely to be effective. Programmes that have shown effectiveness are multifaceted. They focus on factors in the client that are known to be associated with recidivism, the "criminogenic needs" of the client. These needs typically consist of cognitive deficits and offending-related attitudes and beliefs (Friendship, Falshaw & Beech, 2003).

Andrews (1989, p. 8-9) formulates the targeting of criminogenic needs as follows: "If recidivism reflects antisocial thinking, don't target self-esteem, target antisocial thinking" and "If recidivism reflects difficulties in keeping a job, don't target getting a job, target keeping a job". Andrews also provides a suggested list of targets connected to recidivism:

- Changing antisocial attitudes.
- Changing antisocial feelings.
- Reducing antisocial peer associations.
- Promoting familial affection/communication.
- Promoting familial monitoring and supervision.
- Promoting identification and association with anti-criminal role models.
- Increasing self-control, self-management and problem solving skills.
- Replacing the skills of lying, stealing and aggression with more pro-social alternatives.
- Reducing chemical dependencies.
- Shifting the rewards and costs for criminal and noncriminal activities in familial, academic, vocational, recreational and other behavioural settings, so that noncriminal alternatives are favoured.
- Providing the chronically psychiatrically troubled with low pressure, sheltered living arrangements.
- Changing other attributes of clients and their circumstances that, through individualized assessments of risk and need, have been linked reasonably with criminal conduct.
- Ensuring that the client is able to recognize risky situations and has a concrete and well-rehearsed plan for dealing with those situations.

Matching offenders to the style of intervention based on capabilities and learning styles was also found to be of importance. Also associated with programme success were such interventions as modelling and role-playing. Another important factor in effective programmes was social cognitive skills training. Behaviourally oriented programmes that did not include a cognitive component were all found to be unsuccessful (it is important to note here, that there were no conclusive data regarding the efficacy of
cognitive therapeutic elements found, as in modifying what a participant thinks, as opposed to cognitive skills training, where the focus is on how a participant thinks). (Antonowicz & Ross, 1994)

Another important finding in the Antonowicz and Ross’ (1994) study was that motivation to participate was not an important factor for success. Most of the studies were based on either mandatory treatments or treatments where the benefit of partaking could be reductions in supervision. They also found that the reductions in recidivism for the programmes found effective ranged from 27-90%, and state that this is an argument for the implementation of adequately evaluated programmes.

Although the connection between these factors and recidivism is known (Andrews, 1989) few studies examine the connection between the change a programme may lead to in these factors and recidivism explicitly. Instead, they study either the change in the factors as measured on tests, or the change in recidivism. One study that had an explicit aim to examine this connection was performed in order to evaluate a pro-feminist treatment for domestic violence offenders (Bowen, Gilchrist & Beech, 2008). They found that though there was some measurable psychological change in the offenders, the level of change achieved had no association with recidivism.

**CBT programmes**
The cognitive-behavioural approaches to reducing recidivism are based on social learning theory, i.e. offenders are shaped by their environment. The idea is that they have not acquired appropriate cognitive skills or that they have learnt ways of behaving that are inappropriate (McGuire, 2004). Looking at crime from this perspective, several factors of importance stand out. CBT programmes tend to incorporate skills training as well as components intended to increase understanding of the participants' motives and consequences of their actions (McGuire, 2004; Priestley, 2000; Antonowicz & Ross, 1994). Another area, related to cognitive skills that treatment programmes for offender populations and maladjusted individuals often focus on, is improving interpersonal problem solving skills (Spivack, Platt, & Shure, 1976, Priestley, 2006, McMurran & McGuire, 2005).

**Swedish implementation**
In an effort to ensure the quality of the programmes offered, the Swedish Prison and Probation Service has adopted the "What works" initiative and consequently has an aim to only implement evidence based treatment programmes (Kriminalvården - "Treatment programmes", 2009). At the moment, there are 9 accredited programmes, and one of the programmes that have been accredited under this initiative is the One-To-One CBT programme for the treatment of criminal behaviour developed by Philip Priestley (Priestley, 2006). Following are descriptions of the areas (Problem-Solving, Locus of Control, Social Skills, Attitudes and Values and Risk Factors) that are worked with explicitly in this programme (see Appendix A for a complete overview of the programme).
Interpersonal problem solving, or social problem solving, is as the name implies focused on solving problems in interpersonal interactions. This is distinguished from impersonal problem solving, which is the trait or skill applied when solving traditional intellectual tasks, such as puzzles, and problems requiring intellectual creativity, i.e. the skill or trait measured by IQ tests. Interpersonal cognitive problem solving, which is the focus for these programmes, seems not to be totally unrelated to impersonal problem solving, but there is enough of a difference not to assume that they are merely two facets of the same skill (Spivack et al, 1976).

There are several studies pointing towards a deficiency in problem solving in "problem" (both psychiatric and criminal offender) populations. Psychiatric patients are less good at solving social problems in that even though they recognize good solutions when presented to them, they are less capable of generating new solutions compared to a normal population (Spivack et al, 1976). Psychiatric patients have also been found to score lower on the problem-solving test MEPS (Means-ends problem solving test) than control subjects (Platt & Spivack, 1972). Hains and Ryan (1983) have shown that delinquents tend to try to solve social problems based on less complete or even inaccurate information. Aggressive, anti-social individuals tend to solve social problems in a hostile way, tend to base their decisions on fewer facts, generate fewer alternative solutions and the solutions are of lower quality (Slaby & Guerra, 1988). In a study of delinquent youths it was found that aggressive, low functioning and maladjusted youths had lower problem-solving scores than their higher functioning, well-adjusted and non-aggressive counterparts (Hains & Herrman, 1989). Intagliata (1978) found that an alcoholic population had inadequate interpersonal problem solving skills compared to a population mean. This study also found that the problem solving skills, as measured by a MEPS-test, could be greatly improved by a 10-session group therapy aimed at enhancing problem solving skills. The clients also used their acquired problem solving skills in order to plan ahead for problems they might encounter after discharge from the clinic.

Two groups of theorists seem to be the most influential when it comes to problem solving. Their theories and applications are much alike, even though terminology and, mainly, area of focus differ somewhat. First there is D'Zurilla and his group of researchers who have taken a clinical approach to problem solving and developed what they call Problem-Solving Therapy. The focus is thus on mental health problems or psychiatric disorders. They use the term social problem solving or interpersonal problem solving. The other group of theorists is Spivack, Platt and Shure (1976), who have chosen another area to focus on, namely the developmental aspects, looking at social problems and maladjustment. They use the term Interpersonal Cognitive Problem Solving (ICPS). This last approach to problem solving has been widely used as a means to understand criminal behaviour and also as means to affect that behaviour through treatment programmes (McMurran & McGuire, 2005). Spivack et al (1976) stated that there are five principal skills associated with ICPS. These skills are:

1. Alternative solution thinking - The capability to come up with different solutions to a problem.
2. Means-ends thinking - The capability to consider the necessary steps to reach a goal.
3. Consequential thinking - The capability to conclude what might be the consequences of one's interpersonal actions.
4. Social cause-and-effect thinking - The ability to link effects causally to a precipitating event.
5. Perspective taking - Seeing the situation from the perspective of another participant in the social interaction.

The following quote summarizes the purpose and procedure for problem-solving training:

"Put at its simplest, problem-solving training or therapy is designed to help individuals to find their way from problems to solutions, using a systematized sequence of methods and steps." (McGuire, 2001, p. 212).

An important point to stress is the difference between actual problem solving and implementing presented solutions. It might be obvious that there is a distinction, but there is also a fine line since a programme based on problem solving will certainly expose the participant to many solutions to different problems, thus making optional solutions drawn from experience more likely and better fitted to a present problem. This, however, is solution implementation and not problem-solving. It won't always be an easy task to distinguish between these approaches other than on a theoretical level (D'Zurilla & Maydeau-Olivares, 1995).

Another important aspect is the difference between identifying solutions to a problem and to employing them. None of the five principal ICPS-skills refers to executing the solution. A concept that is intimately linked with problem solving, and that often has been researched in the area of offender treatment, is Locus of control.

Locus of control
Locus of control is a well-researched psychological concept, and to put it simply it's the individual's view of where the control of possible reinforcers lies. If a person believes that she has some form of control over the outcomes of her actions, control is regarded as internal, as opposed to external control, which is when the individual sees outcomes as being dependent on things that are out of her control (Fournier & Jeanrie, 2003).

Locus of control has sometimes been regarded as a personality trait (Fournier & Jeanrie, 2003), but it's important to stress that this point of view is quite uncommon nowadays. It's better viewed as situation specific and context bound. This view shows in the different Locus of control scales that have been developed, to mention a couple there is the PLOC, Prisoners Locus Of Control Scale (Pugh 1993) and the VLCS, Vocational Locus of Control Scale (Fournier & Jeanrie, 2003).

The first operationalization of the Locus of control construct was the Rotter Internal-External Scale, where Locus of control is regarded as unidimensional, i.e. internal or external. This scale is the most used and it has been used in various areas of research, spanning from work performance to prison inmates (Fournier & Jeanrie, 2003). The Locus of control construct has been around for half a century and is still often used in
One of the classic articles about locus of control is in the top ten list of cited articles in the Psychological Bulletin (Lefcourt, 1992). One major critique against the Rotter I-E Locus of Control Scale is that the external subscale is far from uniform and that the items within it could be seen as pertaining to various different subscales (Fournier & Jeanrie, 2003).

Several developments of the Locus of control construct have been made, and one of the first researchers looking at whether the concept could include more than two dimensions was Hanna Levenson, who in 1972 developed the Levenson Locus of Control Scale (LLOCS) (Levenson, 1973). In the LLOCS, Levenson divided the external control subscale into two, i.e. whether outcome was contingent upon Chance (or fate), or whether other people (Powerful others) were in control of the outcome. The main theory behind this distinction is that whether one considers life as controlled by Chance, thereby being essentially chaotic, or in the hands of Powerful others, will yield very different behavioural and cognitive reactions in the individual. In a study of psychiatric in-patients Levenson found that different patient groups and a control group could not be adequately separated on the internal subscale, but that there were group differences in the other two subscales (Levenson, 1973). She also found that the chance subscale was able to differentiate between patients staying less than ten days and patients staying longer, where neither the internal nor the powerful others subscales differed (Levenson, 1973). She argued that the initial view of external control as something undesirable was more complex and that under some circumstances a belief in the control of Powerful others, actually might be healthy, where a belief in chance may be more problematic (Levenson in Lefcourt, 1981). The Powerful others subscale has been researched in sociopolitical activism, where a distinction between conservative and liberal students’ locus of control is related to their degree of activism. Liberal students who view control as external (i.e. Levenson's Powerful others subscale) are more likely to engage in activism, whereas conservative students who view the control as less external are more likely to engage in activism (Levenson, 1976). This illustrates how intricate the understanding of the implications of locus of control may be.

Locus of control has been studied in regard to criminality, but the findings have been anything but univocal. In a study of 163 prisoners involved in a problem-solving programme, Pugh (1993) found that they displayed a healthy internal locus of control compared to a control group. On the other hand, one of the main conclusions in a study about what predicts recidivism in South Africa (Gaum, Hoffman & Venter, 2006) is that "A shift from external to internal locus of control is essential for successful rehabilitation" (p. 417).

In an evaluation study of an offender treatment programme, the Offense-Focused Problem-Solving Programme, pre and post-test data of Levenson Locus of control Scale were compared and the finding was that the Chance subscale was the only one that was significantly different between pre- and post-test measure (McGuire & Hatcher, 2001). A slight decrease in belief in Chance was observed. Looking at a study of a domestic violence programme, large differences, with lower scores for the treatment group, in the Chance subscale were found post-treatment compared to controls (Bowen et al, 2008).
There are several studies that link locus of control to different areas of problems. The Powerful others subscale has been found to correlate with depression according to the Beck Depression Inventory (Casters & Parsons, 1977) and all subscales are linked to psychiatric complaints (Holder & Levi, 1988), with the internality subscale being negatively linked and both external subscales being positively linked with psychiatric problems according to the SCL-90-R. The Chance subscale has been correlated with sociopathy and the Powerful others subscale correlates with depression (Casters and Parsons, 1977); all three subscales are associated with maladjustment (Holder & Levi, 1988).

Another study tried to find variables that could discriminate completers from dropouts in a domestic violence programme (Bowen & Gilchrist, 2006). One of the many tests used in this study was the Levenson Locus of Control Scale. No significant differences between dropouts and completers were observed in this test. In a study of delinquent adolescents, it was hypothesized that locus of control would differ between aggressive and non-aggressive youths, but no such link was found (Hains & Herrman, 1989).

**Social skills**

As previously described, successful programmes should have a heavy emphasis on skills training. Social skills training can be thought to add to the arena of how to solve interpersonal problems, or stopping them from occurring altogether. Unfortunately there is a lack of consensus in how to define what social skills are, and one, somewhat diffuse definition is simply "behaviors used when interacting with other people" (Henderson and Hollin, 1983, p. 317).

It has been suggested that offenders behave in a delinquent manner because they lack social skills (Sarason, 1968), but there is little empirical support for this view (Henderson and Hollin, 1983). In certain cases a lack of social skills in criminal offenders has been shown, e.g. with sexual offenders (Emmers-Sommer et al, 2004). In a study of adolescent offenders, it was found that social skills were associated with a wide variety of behavioural problems (Veneziano & Veneziano, 1988). The offenders were divided into three groups, based on their social skills level, and the group with least socially skilled adolescents self-reported impulsiveness and dangerousness to a higher extent than did the other groups. They were also rated by staff as more likely to try to escape, being aggressive and showing other forms of misconduct. The adolescent offenders as a whole also had lower mean scores than the population norm on the social skills measure used, the Adolescent Problems Inventory.

According to Priestley (2000) there is not much to prove that social skills training on its own reduces re-offending, but it is often used in combination with other methods in programmes geared towards a reduction in re-offending. Antonowicz & Ross (1994) confirm that social skills training is a vital component in a successful programme. Berman (2004a) found that a programme with a social skills component was associated with pro-social changes in the participants on several measures. Studies have shown significant improvement in social skills after training these specifically (Goldstein, 2003). An example of the effects of such skill training is given in Chandler (1973), who showed that delinquents have deficiencies in their perspective changing, e.g. being able
to retell a sequence of events as seen through the eyes of another person, compared to a non-delinquent group. Chandler devised a training method involving videotaped role-playing to enhance role-taking skills, i.e. acting in a different role than their own, and compared a group receiving this training to a placebo and a non-training group. The result at a follow up was that the experimental group re-offended half as much as the other two groups.

Attitudes and values
A third central component of effective programs concerns the connection between attitudes and values and breaking the law, where there is, however, a controversy. On one hand there are those experts who believe that offending behaviour is a consequence of, or at least accompanied by anti-social values and attitudes. On the other hand, there are experts who maintain the notion that there is no difference in values, or attitudes, but that those who commit crimes find ways of rationalizing their deviations from them (Priestley, 2000). Mills, Kroner & Hemmati (2004) found that criminal attitudes and criminal associates, as measured by the MCAA (Measures of criminal attitudes and associates) have predictive properties for general as well as violent recidivism.

Indeed, in a study of a problem-solving programme aiming to increase internal locus of control in prisoners, Pugh (1993) found that neither internal locus of control nor problem-solving abilities were inadequate in the pre-test scores of the prisoners. This led him to conclude that the problems lying behind repeated criminal offending may be found elsewhere, probably in aspects of values, attitudes and moral reasoning.

Risk factors
Several studies have been conducted to find problem areas that are connected to criminality. Such risk factors have been shown to be cumulative; i.e. the more problems in these areas, the greater risk of involvement in criminal activity. The most important risk factors are number of previous offences and interacting with friends who commit crimes (McGuire, 2002). Alcohol and drug abuse, have also been found to be associated with criminal behaviour, as well as social risk factors, such as criminality within the family, economical problems and family conflicts (Klevens, Roca, Restrepo & Martinez, 2001). Being unmarried, young and male are also risk factors for criminality. Employment status (Wormith & Olver, 2002; McGuire, 2002) as well as mental health (McGuire, 2002) are risk factors that have been linked to recidivism in criminality. It is important to stress the fact that all of these risk factors are only associated with criminality, and the contribution of each of them, as well as the causal links are not fully understood (McGuire, 2002).

ONE-TO-ONE
The One-to-One (OTO) treatment programme was developed by Philip Priestley in Great Britain in 1993 as a means for a probationer to work individually with a client’s criminal behaviour. This behaviour is the sole reason for an individual to be sentenced within the criminal justice system, and therefore this is used as the basis for which interventions are included in the programme. In the OTO-programme the focus lies on finding examples from daily life and on giving homework, which gives the client an opportunity to train in actual execution of the problem solving skills (Priestley, 2006). The format of this program is “one-to-one”, i.e., a counsellor works individually with a
client for up to twenty sessions over a period of several months. The program integrates the abovementioned concepts and measures changes in each specific area over time.

The OTO programme is based on cognitive-behavioural principles and focuses on specific areas. Skills in areas such as interpersonal/social (cognitive) problem-solving, social skills and self-control are trained. Work is also done in the areas of attitudes and values and thinking (as in cognitive restructuring). The main focus is on the problem solving, and the criminal behaviour is looked upon as a problem to be solved. The OTO-programme was the first criminal treatment programme in Swedish criminal justice that was not conducted in a group format. An individual treatment might be more suitable for some participants, and logistic considerations as well as personal characteristics may be considered when choosing an individual treatment format. Different formats of delivery, regarding the length of the programme, have been used (Priestley, 2000), where the format used in Sweden consists of twenty hour-long meetings with the participant (Priestley, 2006).

As problem solving may refer to a wide variety of cognitive processes, it is important to define what is meant by the expression as used in this thesis. Problem solving in OTO is seen as a skill, or rather several different skills, the five ICPS skills as defined by Spivack et al (1976), which combined become an individual's ability to solve a problem. All of the five ICPS skills are addressed and worked with in the OTO-programme. The easiest way to define problem solving is to say that it is what takes place between the problem and the solution (McGuire, 2001).

There is however one issue that complicates the use of offender treatment programmes. However many effective components they may comprise, and that is the problem of participants not completing the programme.

_Treatment non-completion_

One of the major problems with correctional programmes is non-completion. Most studies show that the programmes have a very high dropout rate, ranging from 30-50% dropouts reported for probationers, and from 9-14% in prisons (McMurran & Theodosi, 2007). There is evidence that non-completers have an increased risk of recidivism (Hanson & Bussière, 1998; Edwards et al, 2005) and it turns out that dropping out is associated with increased recidivism, not only compared to completers, but also compared to those who never started the programme, even when compared to subjects matched in regard to risk (McMurran & Theodosi, 2007; Berman, 2004a). The conclusion from this is that it becomes imperative to examine what predicts dropouts.

There is great difficulty in finding characteristics of non-completers that make it possible to single out those likely to drop out of treatment. Even though finding significant differences between completers and non-completers is possible, the differences found are usually small and account for only a small amount of variance. Hamberger, Lohr & Gottlieb (2000) describe a model that is able to account for 7.6% of the variance, making the unaccounted variance of non-completion the overwhelmingly larger part.
What is known about dropout is that offenders deemed as high-risk according to the Statistical Information on Recidivism-scale, are more likely to drop out of a programme (Wormith & Olver, 2002). A study of sexual offenders shows that the biggest predictor of dropout from treatment was previous convictions for non-sexual offences. Also, fathers' unemployment had discriminating properties between completers and non-completers (Edwards et al., 2005). Another dropout study found that cannabis dependence, criminal history (in terms of previous lifetime arrests) as well as during-treatment hostility are factors that independently predict dropout, whereas employment predicts staying in treatment. (Hiller, Knight, Saum & Simpson, 2006). A qualitative study found no difference in motivation to change between completers and non-completers (McMurran & McCulloch, 2007). Another study, however found motivation to be a predictor of dropout, but what the motivation refers to is not clearly defined (Wormith & Olver, 2002). A study trying to find differences between dropouts and completers in a court-mandated treatment for spouse abusers (Bowen & Gilchrist, 2006), found that dropouts are more likely to be younger, not married and more likely to have previous convictions. They were also less likely to be depressed when starting the programme.

**Purpose and questions**

Most evaluations of treatment programmes for offenders focus on one outcome measure only, that is: either recidivism as a binomial variable, or psychological change of some kind (Berman, 2004b). As the main aim of all these programmes is to reduce re-offending, the recidivism view of outcome success is easily understood and adopted. However, it tells us nothing of the link between psychological change and change in recidivism, i.e. what happens within the programme. As one of the characteristics associated with programme success is that the programme is based on a "sound conceptual model" (Antonowicz & Ross, 1994), it is also important to see how this conceptual model holds up to scrutiny. This study examines the connection between psychological change as measured by the tests in this programme and the outcome, i.e. recidivism. This becomes an examination of the theoretical basis for this programme, and leads to this aim and these questions:

**Aim:**
To explore whether background data or test data have predictive properties regarding completion and recidivism and whether scores differ significantly between completers/non-completers and recidivists/non-recidivists.

**Specific research questions:**

1. Do the pre- and post-test scores differ significantly?
2. Are there differences in pre-test scores and background data between completers and non-completers?
3. Are there differences in test scores and background data between recidivists and non-recidivists?
4. Do the pre-tests and/or background data predict non-completion of the OTO programme?
5. Do background data, pre-test, post-test and/or differences between pre- and post-test scores predict reconviction rates?
Method

Sample
The data this study is based upon were collected by the Swedish Prison and Probation Service. The developer of the One-to-One programme, Philip Priestley, obtained the data from the Service and forwarded it for use in this thesis. The same data have been used by the Swedish Prison and Probation Service in their evaluation of the programme, but they have been organized to be usable by them. This means that they may have collected missing data in variables after the data for this thesis was delivered. The original data set consisted of 1484 participants who entered the programme between 2000 and 2008. In order to participate in the programme, the risk for recidivism should be considered to be medium to high. Just about all probation units and about 10 out of 55 prisons offer the programme. An evaluation interview is made in order to assess motivation and fitness, and both the client and the interviewer decide if the client would benefit from the programme (H. Nyberg, personal communication, March 24, 2009).

Cases that did not contain pre- or post-test data were excluded from the data set. 687 cases were excluded, leaving 797 cases. There were several inconsistencies in the data regarding information in the "completed" variable, number of meetings and the post-test data. Some cases were labelled non-completers, had a low number of meetings, but had data on the post-tests. Ten cases showed such inconsistencies and were excluded, leaving 787 cases. Some of the participants were registered for the programme several times. Some of these had the same starting date, but different ending dates. Some of the programme end dates were set to before programme start date, which led to an exclusion of these from the dataset. 11 cases were excluded, leaving a final data set consisting of 776 cases (Figure 1).

Figure 1. Description of the data set
The mean age of the participants when starting the programme (whether completers or non-completers) was 27.92 years with a standard deviation of 9.33 years. Concerning gender, 92.3% of the participants were male. The programme was completed by 483 participants, leaving 293 non-completers (see Table 1 for a more detailed description of sample characteristics). All of the participants were convicted offenders with the opportunity to participate in the programme while serving their sentence, whether probation, prison or electronic monitoring. The sample must be considered an opportunity sample, as the assignment to the treatment is based on the participant’s willingness to participate and the programme leader and the offender’s agreement in this regard after an evaluation interview.

Recidivism was measured, looking at reconviction data in records from the Swedish Prison and Probation Service, either the first of September, 2007 or after a maximum of five years after ending the programme. Follow-up time ranged from 0 to 1827 days. Mean follow-up time was 854.51 days, with a standard deviation of 673.42

Table 1. Characteristics of the sample

<table>
<thead>
<tr>
<th></th>
<th>Valid cases</th>
<th>N</th>
<th>%</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of meetings</td>
<td>686</td>
<td>1</td>
<td>25</td>
<td></td>
<td></td>
<td>13.41</td>
<td>7.47</td>
</tr>
<tr>
<td>No. of previous convictions</td>
<td>144</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
<td>2.45</td>
<td>1.62</td>
</tr>
<tr>
<td>Age at program start</td>
<td>771</td>
<td>15</td>
<td>66</td>
<td>27.92</td>
<td></td>
<td>9.33</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>776</td>
<td>716</td>
<td>92.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>776</td>
<td>60</td>
<td>7.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completer</td>
<td>776</td>
<td>483</td>
<td>62.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-completer</td>
<td>776</td>
<td>293</td>
<td>37.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recidivist</td>
<td>653</td>
<td>215</td>
<td>32.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non recidivist</td>
<td>653</td>
<td>438</td>
<td>67.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Missing values
There are several missing values in the variables. Only for the variables Gender and Client no., there are no missing values; i.e., data are complete for 776 cases. For the variable number of previous convictions there are only 314 cases, which means that data are missing for 462 participants. The other variables vary from 5 to 204 missing values. There are reconviction data for 653 participants, which means that data are missing for 123 cases. The Problem Checklist pre-test has a total of 11 missing values. The Citizen Scale pre-test has 8 missing values. The Alternative Thinking Test, pre-programme, has 16 missing values. The Skill Survey pre-test has 47 missing values. The Levenson Locus of Control Scale (LLOCS) pre-test has 204 missing values. On the post-tests, there are missing values in 7 cases on the Problem Checklist, in 8 cases for Citizen Scale, in 18 cases for the Alternative Thinking Test and in 9 cases for the Skill Survey. The LLOCS post-test has a total of 83 missing cases.

As the authors have neither collected nor entered the data, why the values are missing is unknown. In the case of LLOCS, the difference in missing values between this test and for example the Problem Checklist may mainly be due to the fact that the later version
of the manual does not include the LLOCS. The large number of missing values in the Number of previous convictions, may indicate that some of these missing values in fact are supposed to be 0 (no previous convictions) and not missing values.

**Measures**

The data of interest for this study consist mainly of scores on different tests that are used within the OTO programme. These tests are used as basis for discussions in the treatment sessions, and have different levels of psychometric validity. Most of them have been researched only to a minimal extent. Table 2 shows the measures used in the study with information on no. of items, the construct measured and references to theory.

### Table 2. Measures used in the study

<table>
<thead>
<tr>
<th>Measure</th>
<th>Items</th>
<th>Construct</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Thinking Test (ATT)</td>
<td>4</td>
<td>Capacity to solve problems</td>
<td>Spivack et al., 1976</td>
</tr>
<tr>
<td>Levenson’s Locus of Control Scale (LLOCS)</td>
<td>24 (3 subscales)</td>
<td>Multi-dimensional locus of control. Subscales Internal, Powerful Others and Chance</td>
<td>Levenson, 1973</td>
</tr>
<tr>
<td>Skill Survey</td>
<td>20</td>
<td>Social skills. Questions taken from Goldstein’s Prepare Curriculum</td>
<td>The original test was developed by Goldstein (2003). 20 questions were selected from this test by Philip Priestley (2000)</td>
</tr>
<tr>
<td>Citizen Scale</td>
<td>4</td>
<td>Attitudes and values</td>
<td>The original test was developed by Anne Schneider, and the Citizen Scale subscale was selected by Philip Priestley (2000) for the OTO</td>
</tr>
<tr>
<td>Problem Checklist</td>
<td>110 (11 subscales)</td>
<td>A questionnaire regarding problems in different areas of life</td>
<td>Constructed by James McGuire and adapted for the Swedish OTO by Philip Priestley and the Swedish Prison and Probation Service (Priestley, 2000)</td>
</tr>
</tbody>
</table>
**Alternative Thinking Test.**
The Alternative Thinking Test (ATT) was developed as a means to measure the ability to generate solutions to problems. It is supposed to measure the optional thinking skill as defined by Spivack et al. (1976). The test consists of four different problems that are presented to the test person. The test person then tries to give as many solutions to the problem presented as possible. The number of alternative solutions is the test score. The test scores range from 0 and up, with no official upper limit, though the scores on each item rarely exceeds 12. This makes this test the only one in OTO that tries to measure a skill directly as opposed to measuring the subjects’ opinions about their skills through inquiries.

The ATT has been used in research (as the optional thinking test), and test scores have been found to negatively correlate with self-harm in deliberate self-harm patients with no previous history of self-harm (McAuliffe, Corcoran, Hickey & McLeavey, 2008) and verbal fluency and attention in schizophrenic patients (Chino, Mizuno, Nemoto, Yamashita & Kashima, 2006). In a study of psychiatric patients (Platt, Spivack, Altman & Altman, 1974) it was found that the ATT scores were significantly lower for patients than for control subjects. Pilot studies in Somerset and Cardiff have shown a significant increase in scores for participants in OTO (Priestley, 2000).

**Levenson Locus of Control Scale.**
The Levenson Locus of Control Scale (LLOCS or LOCS) or the Internal, Powerful others and Chance (IPC) view of Locus of control is a well-researched test instrument for multidimensional Locus of Control. As the LLOCS was developed from the viewpoint that external control is not a uniform concept, Levenson addresses the differences between the LLOCS and the Rotter Internal-external scale. Levenson points to five important differences between the Rotter I-E Scale and the LLOCS (Levenson in Lefcourt, 1981). Her scale is presented as a Likert scale whereas Rotter’s scale can be answered with yes and no. The LLOCS questions are personal rather than general. The questions have no room for modifiability of the specific issues. The questions have a high degree of parallelism within three-item sets. The items in LLOCS have been controlled for social desirability whereas it has been shown that the Rotter I-E scale has some problems with social desirability (Hjelle, 1971). It is important to be aware that the subscales are independent, meaning that a person could score either low or high on all three subscales. Factor analysis shows that the three dimensions of the LLOCS constitute different factors and the construct validity is satisfactory according to a study by Ward (1994). A confirmatory factor analysis supporting Levenson's three-factor model was performed in 1997 (Presson, Clark & Benassi, 1997). Further support for the multidimensionality of locus of control can be found in an analysis of three major locus of control scales by Lindbloom & Faw (1982).

The LLOCS scale consists of 24 items that are scored from -3 to +3. Each item belongs to one of the three subscales, Internal, Powerful others or Chance. Thus there are 8 questions per subscale, and for each subscale 24 points are added, which makes the scores on each subscale range from 0 to 48. As these scores are independent, any combination of scores is possible. Hyman, Stanley and Burrows (1991) tested 161
undergraduates with a mean age of 23.1 years; student means and standard deviations for each subscale are shown in Table 3.

Table 3. Student sample LLOCS-scores (Hyman, Stanley & Burrows, 1991).

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>34.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Powerful others</td>
<td>24.4</td>
<td>6.8</td>
</tr>
<tr>
<td>Chance</td>
<td>24.8</td>
<td>6.1</td>
</tr>
</tbody>
</table>

A pilot study examining the differences in pre- and postscores for OTO participants has shown no significant changes in LLOCS scores in any of the subscales (Priestley, 2000). This test has been excluded in the latest version of the programme (from 2008).

**Skill Survey.**

This is an assessment used to determine strengths and weaknesses in the participant's social skill set. The survey consists of twenty items that have been picked out of the fifty presented by Goldstein in the Prepare Curriculum (2003). The items reflect how well the participant sees him-/herself at using a certain skill, and each item is scored from 1 (not good) and 5 (very good). The test results in a score from 20 to 100. The survey is given as a pre- and post-test to reflect changes in self-reported social skills levels (Priestley, 2006). In pilot studies of OTO significant increases in skill levels have been reported for participants in OTO (Priestley, 2000).

**Citizen Scale.**

In the OTO programme the test “The kind of person I am” examines the participant’s attitudes towards him-/herself. The test used in OTO consists of four items, and constitutes what is called the Citizen Scale. This is a subset of a larger test designed by Anne Schneider. The four items are scored from 1 to 7 where each extreme represents the opposite of the other, e.g. "breaks rules" and "obeys rules". The test generates a score between 4 and 28. The Citizen Scale score has been shown to have predictive power on the rate of reconviction, with higher scores linked to a lower reconviction rate (Priestley, 2006). No other psychometric properties of the Citizen Scale have been evaluated as far as the authors of this thesis know. This test is used as a pre- and post-test in order to monitor changes made in the participants’ views of themselves as being “good” citizens during the programme.

**Problem Checklist.**

The Problem Checklist (PCL) consists of 110 items that are used to assess the presence of criminogenic problems in the participant's life. It is originally based on items generated by probation officers in Kent and thereafter modified and translated by the Swedish Prison and Probation Service. The 110 items are divided into 11 subscales which reflect specific problem areas, namely Work and unemployment, Accommodation, Money and financial pressures, Alcohol, Substance use, Gambling, Physical and mental health, Social relationships, Peer group pressure, Family
relationships and Family offending. The division in subscales is not revealed to the participant until the last part has been delivered and the checklist has been scored. All items are scored by the participant from 0 to 10, where 0 means that what the item refers to is not a problem, and 10 means that the problem is very serious. Thus the scores for all subdivisions range from 0 to 100. The checklist is delivered in three parts during the first three sessions of the assessment part of the programme. The checklist is also given in its entirety during session 19 as a post-test to see if there is any reduction in problem perception (Priestley, 2006). Important to note is that one of the subscales in the Swedish version of the test, namely "bostad" or accommodation, was exchanged for a subscale that was considered more relevant to a Swedish setting called "våld" or "violence". In the test data available to us, some of the practitioners answered one of these versions and some answered the other. This makes it impossible to make a comparison over all participants in regard to these two subscales. In one pilot study of OTO lower scores in pre-test was associated with lower reconviction rates, and in another study the scores of perceived problems were significantly lower in all dimensions in post-tests than in pre-tests (Priestley, 2000). Note that these results were for the English version of this survey.

The One-To-One Programme

The structure of the One-To-One programme is briefly outlined in Table 4. For a more detailed description of the programme, please consult Appendix A. The sessions also follow a common structure throughout the programme. Initially any pressing issues that need to be handled are dealt with, and then a review of the exercises given during the last session to be done in between sessions is done. Then the session specific content is worked with, and at the end of the session action plans for the time up till the next sessions are made. Continually relapse prevention is dealt with through the discussion of the possibility of setbacks and whether they really indicate failure.

Table 4. Disposition of the One-To-One programme.

<table>
<thead>
<tr>
<th>Part of the programme</th>
<th>Sessions</th>
<th>Significant parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-programme motivational session</td>
<td>Pre-prog.</td>
<td>The programme leader and the participant get to know each other. The participant is introduced to the programme, and the way it works. The programme leader elicits statements about the participant’s motivation for joining the programme and reinforces them. Practise exercises are given.</td>
</tr>
<tr>
<td>Assessment</td>
<td>1-5</td>
<td>The assessment tests are given. The programme leader analyzes the Antecedents, Behaviour and Consequences of the participant’s offending behaviour, and also builds a personalized theory of the participant’s offending.</td>
</tr>
<tr>
<td>Skills training</td>
<td>6-13</td>
<td>Applied training and work with problem solving, social skills, cognitive restructuring, moral training, goal setting and self management are carried out.</td>
</tr>
</tbody>
</table>
Problem solving and social skills training are further exercised. The programme leader also chooses areas from the skills training part deemed beneficial for the participant for further exercising. This part ends with post-tests given and then the programme leader formally signs the participant off.

**Ethical considerations**
Written consent was given by the participants for the use of data for research purposes. The data were provided to the authors by Philip Priestley, in a file where personal identifiers such as civic registration number and name had been removed. For research purposes data such as age, gender, time of attending the programme and classification of the offence needed to remain in the data file. In the results none of these are presented.

**Statistical analyses**
The statistical analyses were done with the statistical package SPSS 16.0 for Mac. In the analysis of the excluded cases chi-square tests were used to examine whether there were any significant differences in non-parametric data between the excluded subjects and the included. For parametric data independent samples t-tests were used for the same purpose.

In order to establish whether there were any significant differences in the pre- and post-test scores paired samples t-tests were used. In order to examine the probability of significant differences in pre-test-scores between completers and non-completers and also between recidivists and non-recidivists independent samples t-tests were used.

In order to model the relationships between test scores and completion/non-completion of the programme and also to model the relationships between test scores and reconviction/non-reconviction logistic regression was used. The reason for using a logistic regression to be able to create a model with predictive properties is mainly because it is what is recommended in the literature. There is a possibility to use discriminant analysis instead but for this type of calculation the advice is against this because discriminant analysis can produce probabilities outside of the range of 0 to 1, and also this kind of analysis presupposes properties of the data entered that are more restrictive (Howell, 2002). To analyze interaction effects between pre- and post-test data and recidivism, repeated measures mixed ANOVA was used.

In order to control for the effects of mass significance increasing the probability of making type I errors, a Bonferroni corrected probability of $p=0.05/76=0.0007$ was used. This however, is an unnecessarily conservative method according to Lazerle & Mulaik (1977). Instead they advocate the use of a multi-stage Bonferroni correction, in order to at least slightly decrease the risk for type II-errors (false negatives) a Bonferroni correction normally leads to.
Analysis of excluded cases

Several tests were made on available data to determine whether there were any differences between the 687 excluded cases and the 776 cases that remained available for further analysis (for an overview of included and excluded cases see Figure 1). No association between gender and exclusion was found ($\chi^2=2.29$, df=1, $p=0.130$). There were no gender data for 13 participants, and all of these belonged to the excluded group. There was no relation between age and exclusion ($t=-0.645$, df=1324, $p=0.159$). There were missing age data for 155 participants, and 129 of these belonged to the excluded group. There was no association between recidivism and exclusion ($\chi^2=1.558$, df=1, $p=0.212$). There were missing recidivism data for 126 participants, and 3 of these belonged to the excluded group. There is a significant relation between exclusion and number of meetings with the excluded group having fewer meetings ($t=-9.190$, df=1232, $p<0.001$). There were missing no. of meetings data for 247 participants, and 158 of these belonged to the excluded group.

Results

The number of significance tests involving this material is as follows: 16 t-tests pre-/post-tests (paired samples); 18 t-tests for pre-tests in relation to completion/non-completion; one chi-square for gender – completion; one chi-square for gender – recidivism; 34 t-tests for tests in relation to recidivism; and 6 one sample t-tests for LLOCS. The Bonferroni corrected p-value would be $0.05/76=0.0007$. As 27 of the initial significance tests show significance, however, the p-value should be corrected once again in accordance with the multistage Bonferroni procedure, to $0.05/(76-27)=0.001$.

Paired T-tests comparing pre- and post-test data.
All the paired t-tests yielded significant differences pre- and post-test. All of the paired t-tests remain significant when using a Bonferroni corrected p-value of 0.001 (Table 5).
Table 5. Paired t-tests for tests pre- and post-programme

<table>
<thead>
<tr>
<th>Measure</th>
<th>M pre (SD pre)</th>
<th>M post (SD post)</th>
<th>t</th>
<th>Df</th>
<th>p</th>
<th>Diff (SD diff)</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative thinking test</td>
<td>12.27 (4.36)</td>
<td>15.23 (5.78)</td>
<td>-12.20</td>
<td>464</td>
<td>&lt;0.001</td>
<td>-3.06 (5.40)</td>
<td>0.58</td>
</tr>
<tr>
<td>LLOCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>37.17 (4.76)</td>
<td>38.41 (4.61)</td>
<td>-5.19</td>
<td>396</td>
<td>&lt;0.001</td>
<td>-1.24 (4.78)</td>
<td>0.26</td>
</tr>
<tr>
<td>Powerful others</td>
<td>22.86 (7.11)</td>
<td>21.50 (6.99)</td>
<td>4.13</td>
<td>396</td>
<td>&lt;0.001</td>
<td>1.36 (6.58)</td>
<td>0.19</td>
</tr>
<tr>
<td>Chance</td>
<td>25.12 (6.51)</td>
<td>22.72 (7.36)</td>
<td>7.91</td>
<td>396</td>
<td>&lt;0.001</td>
<td>2.40 (6.06)</td>
<td>0.35</td>
</tr>
<tr>
<td>Skill Survey</td>
<td>69.22 (12.00)</td>
<td>75.19 (12.38)</td>
<td>-11.51</td>
<td>471</td>
<td>&lt;0.001</td>
<td>-5.97 (11.27)</td>
<td>0.49</td>
</tr>
<tr>
<td>Citizen Scale</td>
<td>19.76 (4.02)</td>
<td>22.27 (3.88)</td>
<td>-14.02</td>
<td>474</td>
<td>&lt;0.001</td>
<td>-2.50 (3.89)</td>
<td>0.64</td>
</tr>
<tr>
<td>PCL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work &amp; unemployment</td>
<td>29.11 (18.72)</td>
<td>20.29 (17.30)</td>
<td>12.41</td>
<td>470</td>
<td>&lt;0.001</td>
<td>8.82 (15.29)</td>
<td>0.49</td>
</tr>
<tr>
<td>Money and financial pressures</td>
<td>26.76 (20.28)</td>
<td>18.20 (18.50)</td>
<td>12.07</td>
<td>470</td>
<td>&lt;0.001</td>
<td>8.56 (15.39)</td>
<td>0.44</td>
</tr>
<tr>
<td>Alcohol</td>
<td>14.54 (16.18)</td>
<td>9.26 (12.98)</td>
<td>9.50</td>
<td>470</td>
<td>&lt;0.001</td>
<td>5.28 (12.06)</td>
<td>0.36</td>
</tr>
<tr>
<td>Substance use</td>
<td>11.96 (16.84)</td>
<td>6.18 (12.83)</td>
<td>10.18</td>
<td>470</td>
<td>&lt;0.001</td>
<td>5.78 (12.32)</td>
<td>0.39</td>
</tr>
<tr>
<td>Gambling</td>
<td>5.52 (13.42)</td>
<td>3.23 (9.44)</td>
<td>5.55</td>
<td>470</td>
<td>&lt;0.001</td>
<td>2.29 (8.95)</td>
<td>0.20</td>
</tr>
<tr>
<td>Physical and mental health</td>
<td>19.96 (16.31)</td>
<td>11.56 (12.84)</td>
<td>13.74</td>
<td>470</td>
<td>&lt;0.001</td>
<td>8.40 (13.27)</td>
<td>0.57</td>
</tr>
<tr>
<td>Social relationships</td>
<td>16.02 (14.40)</td>
<td>9.38 (11.31)</td>
<td>12.70</td>
<td>470</td>
<td>&lt;0.001</td>
<td>6.64 (11.35)</td>
<td>0.51</td>
</tr>
<tr>
<td>Peer group pressure</td>
<td>21.05 (15.56)</td>
<td>12.39 (12.27)</td>
<td>14.78</td>
<td>470</td>
<td>&lt;0.001</td>
<td>8.66 (12.72)</td>
<td>0.61</td>
</tr>
<tr>
<td>Family relationships</td>
<td>14.55 (14.24)</td>
<td>9.01 (12.04)</td>
<td>10.69</td>
<td>470</td>
<td>&lt;0.001</td>
<td>5.54 (11.24)</td>
<td>0.42</td>
</tr>
<tr>
<td>Family offending</td>
<td>5.34 (8.21)</td>
<td>2.63 (7.33)</td>
<td>5.92</td>
<td>470</td>
<td>&lt;0.001</td>
<td>1.70 (6.25)</td>
<td>0.35</td>
</tr>
</tbody>
</table>
Completers compared to dropouts
The only significant difference in means between completers and non-completers when using a Bonferroni corrected p-value of 0.001 were in age at programme end ($t=3.76$, $df=748$, $p<0.001$). Completer age when ending the programme was in average 2.96 years higher than non-completers.

Recidivist completers compared to non-recidivist completers
There are several differences in means between recidivists and non-recidivists. However, when looking at the data with a corrected p-value of $p<0.001$ in accordance with the multistage Bonferroni correction only 5 significant differences in means remain. These are The Citizen Scale pre-test, Levenson Chance subscale pre-test, The Citizen Scale post-test, the Levenson Chance subscale post-test and number of previous convictions. Recidivists score lower on the Citizen Scale pre-test and they score higher on the LLOCS Chance subscale pre-test. The same results are found in the post-tests of both the Citizen Scale and the LLOCS Chance subscale. Recidivists also have a significantly higher number of previous convictions (Table 6).

Table 6. Differences in means between recidivists and non-recidivists

<table>
<thead>
<tr>
<th>Test</th>
<th>Recidivist Mean (SD)</th>
<th>Non-recidivist Mean (SD)</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenson pre - Chance</td>
<td>23.50 (7.09)</td>
<td>22.05 (7.00)</td>
<td>-3.95</td>
<td>488</td>
<td>.000</td>
</tr>
<tr>
<td>Levenson post - Chance</td>
<td>22.96 (6.98)</td>
<td>20.63 (6.89)</td>
<td>-3.43</td>
<td>366</td>
<td>.001</td>
</tr>
<tr>
<td>The Citizen Scale, pre-test</td>
<td>18.77 (4.25)</td>
<td>19.95 (4.05)</td>
<td>3.43</td>
<td>647</td>
<td>.001</td>
</tr>
<tr>
<td>The Citizen Scale, post-test</td>
<td>21.17 (4.25)</td>
<td>22.64 (3.71)</td>
<td>3.50</td>
<td>441</td>
<td>.001</td>
</tr>
<tr>
<td>Number of previous convictions</td>
<td>3.26 (1.88)</td>
<td>2.11 (1.36)</td>
<td>-3.62</td>
<td>61.64</td>
<td>.000</td>
</tr>
</tbody>
</table>
Completers’ Locus of Control compared to student sample

Doing a one sample t-test for the LLOCS, using the study by Hyman, Stanley and Burrows (1991) as population mean, gives the result shown in Table 7 below. All the scores differ significantly from the student sample described above. Using a Bonferroni corrected p-value of 0.0007 the differences survive except for the Levenson Chance subscale pre-test, which is no longer significant. Correcting the p-value further (p=0.0010) in accordance with the multi-stage model does not alter the findings (see Table 7).

Table 7. Comparison of completers’ Locus of Control to norm data

<table>
<thead>
<tr>
<th>Test</th>
<th>Student test mean (SD)</th>
<th>OTO test mean (SD)</th>
<th>t</th>
<th>Df</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenson pre I</td>
<td>34.4 (5.4)</td>
<td>37.06 (4.83)</td>
<td>13.18</td>
<td>571</td>
<td>.000</td>
</tr>
<tr>
<td>Levenson post I</td>
<td>34.4 (5.4)</td>
<td>38.38 (4.66)</td>
<td>17.06</td>
<td>399</td>
<td>.000</td>
</tr>
<tr>
<td>Levenson pre P</td>
<td>24.4 (6.8)</td>
<td>23.01 (7.18)</td>
<td>-4.64</td>
<td>571</td>
<td>.000</td>
</tr>
<tr>
<td>Levenson post P</td>
<td>24.4 (6.8)</td>
<td>21.48 (6.98)</td>
<td>-8.37</td>
<td>399</td>
<td>.000</td>
</tr>
<tr>
<td>Levenson pre C</td>
<td>24.8 (6.1)</td>
<td>25.42 (6.76)</td>
<td>2.19</td>
<td>571</td>
<td>.029</td>
</tr>
<tr>
<td>Levenson post C</td>
<td>24.8 (6.1)</td>
<td>22.76 (7.36)</td>
<td>-5.54</td>
<td>399</td>
<td>.000</td>
</tr>
</tbody>
</table>

Gender

There was no relationship identified between gender and recidivism ($\chi^2=1.38$, df=1, p=0.279), nor between gender and non-completions ($\chi^2=1.03$, df=1, p=0.311).

Predictors of completion

A logistic regression analysis was performed with completion as the Dependent Variable (DV), trying all pre-tests and age as predictor variables. A total of 554 cases were included in the analysis, and the full model was significantly reliable ($\chi^2=64.94$, p<0.001). The model accounts for between 11.1% and 15.9% of the variance. Overall, 73.8% of the predictions of completion status were correct, with 95.7 of the completers correctly predicted, but only 18.5 % of the dropouts. The only variables that are significant in predicting dropout are age at starting the programme with an Exp(B) of 0.40, and age at ending (completing or dropping out of) the programme, with an Exp(B)
of 2.57, that is for every increase of 1 year in age, the chance for completion increases by 2.57.

**Predictors of recidivism among completers**  
A logistic regression analysis was performed with recidivism as DV, entering pre-test and post-test scores, the difference between pre and post-test scores, and the categorical variables of programme completion and age as predictor variables. As the predictor variables were as many as 50, a forward conditional analysis was used in order to find the model best predicting the DV. The best-fit model included end age, the locus of control (LLOCS) subscale chance at pre-test, the Problem Checklist subscale money and financial problems post-test, and the difference between pre and post-test Skill Survey, as predictor variables. An enter method logistic regression including only these four variables was performed in order to include a maximum of cases with valid data (see Table 8).

A total of 365 cases were analyzed and the full model was significantly reliable ($\chi^2=33.73$, df=4, p<0.0001). This model accounted for between 8.8% and 12.5 % of the variance, with 94.5% of non-recidivists successfully predicted but only 17.9% of recidivists accurately predicted. Overall, 71.0% of the predictions were accurate. The table shows that older completers are less likely to be reconvicted (with an odds ratio of .96), and having more financial problems post-treatment is associated with being reconvicted (with an odds ratio of 1.02). A larger change in the skills survey score is associated with not being reconvicted (with an odds ratio of 0.97).

Table 8. Predictors of recidivism among completers (n=365)

<table>
<thead>
<tr>
<th>Variables in the Equation</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenson pre - Chance</td>
<td>.03</td>
<td>.02</td>
<td>3.13</td>
<td>1</td>
<td>.077</td>
<td>1.04</td>
</tr>
<tr>
<td>Difference Skill Survey</td>
<td>-.03</td>
<td>.01</td>
<td>5.71</td>
<td>1</td>
<td>.017</td>
<td>.97</td>
</tr>
<tr>
<td>End age</td>
<td>-.04</td>
<td>.01</td>
<td>7.57</td>
<td>1</td>
<td>.006</td>
<td>.96</td>
</tr>
<tr>
<td>PCL – post Money and financial pressures</td>
<td>.02</td>
<td>.01</td>
<td>11.72</td>
<td>1</td>
<td>.001</td>
<td>1.02</td>
</tr>
<tr>
<td>Constant</td>
<td>-.87</td>
<td>.67</td>
<td>1.67</td>
<td>1</td>
<td>.196</td>
<td>.42</td>
</tr>
</tbody>
</table>

**Predicting recidivism among completers and non-completers**  
The above regression analyses exclude clients who have not participated in the programme since there are no post-test data for these clients. Therefore, an analysis using only pre-test data, age and completion status as predictor variables and recidivism as DV was chosen. A total of 554 cases were analyzed and the full model was significantly reliable ($\chi^2=64.93$, df=18, p<0.0001). This model accounted for between 11.1% and 15.9% of the variance, with 95.7% of non-recidivists successfully predicted but only 18.5% of recidivists accurately predicted. Overall, 73.8% of the predictions were accurate. The significant variables are: the PCL pre-test subscale money and financial pressures, PCL pre-test subscale Physical and mental health, LLOCS pre-test...
subscales Chance and completion status\(^2\). More perceived financial problems are associated with being reconvicted (odds ratio 1.02). More perceived health problems are associated with not being reconvicted (odds ratio 1.02). Higher scores on the LLOCS Chance subscale are associated with being reconvicted (odds ratio 1.05), and programme completers are less than half as likely to be reconvicted (odds ratio 0.36) (see Table 9).

Table 9. Predictors of recidivism among completers and non-completers (n=554).

<table>
<thead>
<tr>
<th>Variables in the Equation</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative thinking test, pre-test</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.06</td>
<td>1</td>
<td>0.799</td>
<td>0.99</td>
</tr>
<tr>
<td>Levenson pre – Internal</td>
<td>0.03</td>
<td>0.02</td>
<td>2.14</td>
<td>1</td>
<td>0.144</td>
<td>1.03</td>
</tr>
<tr>
<td>Levenson pre – Powerful others</td>
<td>0.01</td>
<td>0.02</td>
<td>0.66</td>
<td>1</td>
<td>0.418</td>
<td>1.01</td>
</tr>
<tr>
<td>Levenson pre - Chance*</td>
<td>0.05</td>
<td>0.02</td>
<td>5.80</td>
<td>1</td>
<td>0.016</td>
<td>1.05</td>
</tr>
<tr>
<td>Skill Survey, pre-test</td>
<td>0.00</td>
<td>0.01</td>
<td>0.29</td>
<td>1</td>
<td>0.588</td>
<td>1.00</td>
</tr>
<tr>
<td>The Citizen Scale, pre-test</td>
<td>-0.04</td>
<td>0.03</td>
<td>1.70</td>
<td>1</td>
<td>0.192</td>
<td>0.96</td>
</tr>
<tr>
<td>PCL pre - work and unemployment</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.12</td>
<td>1</td>
<td>0.724</td>
<td>1.00</td>
</tr>
<tr>
<td>PCL pre –money and financial pressures</td>
<td>0.02</td>
<td>0.01</td>
<td>8.15</td>
<td>1</td>
<td>0.004</td>
<td>1.02</td>
</tr>
<tr>
<td>PCL pre - alcohol</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.92</td>
<td>1</td>
<td>0.337</td>
<td>0.99</td>
</tr>
<tr>
<td>PCL pre – substance use</td>
<td>0.00</td>
<td>0.01</td>
<td>0.16</td>
<td>1</td>
<td>0.691</td>
<td>1.00</td>
</tr>
<tr>
<td>PCL pre – gambling</td>
<td>-0.01</td>
<td>0.01</td>
<td>1.12</td>
<td>1</td>
<td>0.290</td>
<td>0.99</td>
</tr>
<tr>
<td>PCL pre - physical and mental health</td>
<td>-0.02</td>
<td>0.01</td>
<td>4.22</td>
<td>1</td>
<td>0.040</td>
<td>0.98</td>
</tr>
<tr>
<td>PCL pre – social relationships</td>
<td>0.02</td>
<td>0.01</td>
<td>2.74</td>
<td>1</td>
<td>0.098</td>
<td>1.02</td>
</tr>
<tr>
<td>PCL pre – peer group pressure</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.05</td>
<td>1</td>
<td>0.816</td>
<td>1.00</td>
</tr>
<tr>
<td>PCL pre – family relationships</td>
<td>-0.01</td>
<td>0.01</td>
<td>1.45</td>
<td>1</td>
<td>0.228</td>
<td>0.99</td>
</tr>
<tr>
<td>PCL pre - family offending</td>
<td>0.02</td>
<td>0.01</td>
<td>2.43</td>
<td>1</td>
<td>0.119</td>
<td>1.02</td>
</tr>
<tr>
<td>Completion status</td>
<td>-1.03</td>
<td>0.24</td>
<td>18.05</td>
<td>1</td>
<td>0.000</td>
<td>0.36</td>
</tr>
<tr>
<td>agestart</td>
<td>0.14</td>
<td>0.14</td>
<td>1.12</td>
<td>1</td>
<td>0.290</td>
<td>1.16</td>
</tr>
<tr>
<td>ageend</td>
<td>-0.17</td>
<td>0.14</td>
<td>1.57</td>
<td>1</td>
<td>0.210</td>
<td>0.84</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.42</td>
<td>1.26</td>
<td>12.6</td>
<td>1</td>
<td>0.261</td>
<td>0.24</td>
</tr>
</tbody>
</table>

\(^2\) No of previous offences could not be included because this resulted in only 144 valid cases for this analysis.
Measures predicting recidivism
To see if there was an interaction effect between pre- and post-test data and recidivism, a repeated measures ANOVA design was used. The main effects are already described above, and the only variable yielding a significant interaction effect was on the Skills Survey. There is a main effect of time for testing ($F_{(1,23)}=89.86, p<0.0001$) and there was a significant interaction between time for testing and recidivism ($F_{(1,23)}=6.65, p=0.010$). This interaction is shown in the graph below, indicating that the effect of time for testing was greater for non-recidivists ($n=115$) than for recidivists ($n=325$). Using a Bonferroni-corrected p-value of $p=0.0007$ however, the significance of this interaction effect does not survive (Figure 2).

Figure 2. Interaction between time of testing and recidivism for Skills Survey
Discussion

Results in summation
Among the data sample, 25.7% of the completers re-offended, and 49% of the non-completers re-offended. Participant age predicts completion and noncompletion with older participants being more likely to complete the programme.

For participants having completed the programme all of the tests changed in the desired, pro-social direction, with effects ranging from small to medium, with most being in the medium range. Social skills appeared to improve more over time among non-recidivists than among the recidivists; this finding was, however, non-significant following Bonferroni correction.

The entire studied population perceive a higher internal control over events at the same time as they ascribe less control to other powerful people already at programme start compared to a US student sample. This difference is even greater after having gone through the programme. The belief of chance as an influence over occurrences in life, however doesn’t differ from the norm before the programme but post-programme is reduced so that it does.

Recidivists tend to think of themselves as less “good citizens” and tend to attribute control over events in their lives more to chance, both before and after the programme. They also have more previous convictions, compared to non-recidivists.

When looking at the entire studied group, there are several predictors of recidivism. More perceived financial problems is a predictor for recidivism, whilst more perceived health problems is a predictor of non-recidivism. More belief in Chance according to the LLOCS is also a predictor of recidivism.

Looking only at completers, older participants at programme end are less likely to recidivate, as are participants who have a greater increase in perceived social skills post-test compared to pre-test. Participants with more perceived financial problems post-test are also more likely to recidivate.

Completion status was found to be the most potent predictor of recidivism with an odds ratio of .358 and completing the programme is associated with not being reconvicted.

Discussion of the results
The main findings in the results of the analysis will be discussed in three separate categories: the differences between the assessment tests pre- to post-programme, the predictive qualities (or lack there of) of the test data and background data for dropping out of the programme, and the ability to predict criminal recidivism on the basis of background data and assessment test scores.

The finding that all of the tests differ significantly pre- to post in the desired direction, with effect sizes ranging from a Cohen’s $d$ of 0.19 to 0.64 suggests that there might be
benefits of the programme, within the areas addressed by the programme. As there is no control group to compare with, it is hard to draw any final conclusions from the pre- to post-test differences, as for instance there may be test-retest effects. Another problem with these results is the fact that they are not corrected for social desirability. Some of the tests are also quite closely linked to programme interventions, which may lead to participants training for the test rather than the actual skill.

The instruments used in this study are not useful for separating completers from non-completers, nor to predict completion. There is a difference in age, with programme completers having a slightly higher mean age than non-completers. Trying to predict dropout through logistic regression, variables significantly predicting dropout are programme start age and programme end age. The fact that the instruments are not useful in predicting dropout or even in separating completers from non-completers does not mean that there are no differences, only that this study is not able to pin-point them. Earlier studies have shown different results in regard to initial differences between completers and dropouts, for instance that dropouts tend to be unmarried, younger and have a larger number of previous convictions (Bowen & Gilchrist, 2006), and that the participants’ fathers tend to be unemployed (Edwards et al, 2005).

The results of this study indicate that if there are any initial differences, these are not easily detected, and they do not express themselves as results in tests used to measure the skills worked with within the programme.

Recidivism was analyzed using three methods: t-test differences between recidivists and non-recidivists, logistic regressions for completers only and logistic regressions for all the participants. The completer regressions and t-test differences will be discussed based on instrument and the logistic regression for all the participants is discussed separately.

Recidivism and Locus of control.
The differences found in the Chance subscale of the LLOCS, indicate that recidivists have a higher belief in chance locus of control than non-recidivists. It is important to note that this does not imply that non-recidivists have a higher belief in an internal locus of control, as no differences were found in this subscale and the sub-scales are completely independent of each other. The fact that recidivists have a higher belief in Chance is not unexpected, as this finding is in accordance with previous studies (McGuire & Hatcher, 2001; Bowen et al., 2008) and that the Chance subscale has been found to correlate with sociopathy (Casters & Parsons, 1977). The finding that criminal history is a risk factor for both criminality and recidivism is a well-established finding (McGuire, 2002), and the difference in previous convictions between recidivists and non-recidivists in this study supports this.

A higher belief in Chance is a predictor of recidivism. As stated above, this finding is not surprising as it is in accord with previous findings. The fact that it is the Chance subscale that has these predictive properties is interesting, and not less so with the knowledge that this is the only subscale that does not differ significantly from a US student sample. It indicates that for the particular group studied, even an average belief in Chance locus of control may be negative. During the cognitive restructuring parts of
the programme, the participant's locus of control is addressed, and focus lies on whether the participant externalizes control. According to this study, internal or powerful others loci of control are not problematic, but only the chance locus subscale is of importance in relation to re-offending. Therefore it may be wise to consider addressing this part of locus of control instead of working with external locus of control as a uniform concept.

The LLOCS scores indicate slightly better adjusted subjects than a U.S. student population on the two subscales Internal and Powerful others, and the sense of internal control is enhanced post-treatment, while the sense of external control decreases. Locus of control seems to be healthy post-treatment in all three subscales, in accordance with Pugh's (1993) findings in his study of prisoners There is, however, a difference in Chance locus of control between recidivists and non-recidivists, and the logistic regression indicates that Chance locus of control has predictive properties for re-offending. It is important to note that the norm value used is based on US students, thus it is not automatically valid in Sweden and as a populations mean. This can be part of the explanation for this finding. Another possibility, however, is that it is vital for a population of criminal offenders not to believe in a chance locus of control, but that the mean doesn't necessarily differ from the normal population.

Recidivism and social skills.
Acquiring social skills during the treatment was also found to be a predictor of not recidivating. The Skills survey tries to determine strengths and weaknesses in the participant's social skill set, and each of the skills associated with the questions in the test is worked with within the OTO-programme. The finding that an increase in social skills according to the clients' answers on the social skills survey has predictive properties for recidivism, is an indication that the way a client can make use of the social skills training within the programme, could have an effect on the outcome. The interaction effect found, that the effect of time for testing is greater for the non-recidivists than for recidivists is in accordance with this finding. However, this finding did not survive the Bonferroni correction, thus should be considered not significant but indicates a trend that could be further explored in larger studies.

Recidivism and attitudes.
Recidivists' and non-recidivists' scores differ significantly on the Citizen Scale, pre- and post-test. The Citizen Scale is used to measure attitudes regarding oneself and antisocial behaviour. Recidivists score significantly lower on this test than do non-recidivists and this suggests that they view themselves as less pro-social. This finding is in accordance with the Somerset study (Priestley, 2000) and with the fact that the questions supposedly have predictive properties in regard to recidivism (Priestley, 2006) and it may be argued that this further supports the view that a person's values are an important aspect of criminality as Pugh stated (1993).

Recidivism and risk factors.
Another important finding is that financial problems predict recidivism. This holds true both when looking at all participants and when looking at completers only. In OTO
problem-solving is a major part, and the assessment part, where the PCL is given, is the foundation for further work in the programme. Thus problems in this area, if present, are addressed in the problem-solving exercises. However, specific work with financial problems, and vocational status is not included in the programme. The fact that the Money and financial problems subscale in the PCL has predictive properties here as well as with all the subjects included, indicates that this is an important issue to address. It is also interesting to see that when looking only at completers the post-test of this subscale predicts recidivism, which suggests that the problem lies in having a bad financial situation post treatment. This indicates the value of including specific interventions dealing more directly with this in the programme. The authors draw parallels to a method used in treating substance abuse named The Community Reinforcement Approach (Meyers and Smith, 1995), where the therapist acts as a coach in working with job searching skills and other skills, such as how to talk to persons at relevant departments, for instance in order to restructure the participant's debts. In CRA the participants are also encouraged to form job searching clubs, giving more opportunities for exercising and practising these skills. Whether this is feasible in the setting of probation and prison, and if it is a good fit for the OTO programme needs to be further explored.

The finding that perceived bad health is associated with non-recidivism may be interpreted in different ways. It may be that the criminal lifestyle is a hard one, and that a person leading that kind of life has to have some health to endure it. The fact that the PCL subscale Mental and physical health doesn't separate between mental and physical health makes it hard to really understand what the finding stands for. It is also important to remember that this is based merely on pre-tests and that there is a substantial difference pre- to post-test in this area.

Recidivism and background variables.
Lower age is a predictor of recidivism and is associated with non-completion, which in turn is a predictor of recidivism. This underlines the fact that age is an important variable to consider. However, trying to affect a person’s age at programme end would be very hard, except for by prolonging the treatment so that it lasts until the client has reached an age with better prospects, which of course isn't viable. The implications of this could however be that an older population should be directed to OTO, whereas a younger population could be offered another programme better suited for young offenders. Recidivists have more previous convictions than non-recidivists, which is not surprising, as previous findings indicate that number of previous convictions is one of the most important risk factors related to criminality (McGuire, 2001).

Trying to predict recidivism using the entire sample of this study, means that the post-test variables can not be used. Therefore these predictions will differ some from the logistic regressions looking only at the completers. One variable possible to use in this logistic regression is the completion status variable. It turns out that this variable is the most potent in predicting recidivism, with an exp (B) value of .358. It is not easy to draw conclusions from this. The fact that completers and dropouts are only separated by age and the fact that completion is the strongest predictor of programme success (non-recidivism), could be seen as a clear indication of the programme being valuable as a means to reduce recidivism in crime. The decision to exclude number of previous
convictions from this analysis was based on the fact that this would have minimized the number of included cases to 144. There is a risk that this exclusion has contributed to the potency of completion as a predictor for non-recidivism. The effects of the programme on recidivism, thus needs further investigation, preferably through an experimental design with matched controls and random assignment to treatment or waitlist/TAU.

There is a clear difference in recidivism between completers and non-completers, which is expected looking at the previous finding. How this would relate to a control group is impossible to know, but previous findings indicate that non-completers have higher levels of recidivism than control subjects (McMurran & Theodosi, 2007; Berman, 2004a).

**Applying the logistic regression models**

To put the logistic regressions to use, there is a need to decide if there is anything to offer the potential recidivists in order to lower the risk for re-offence. There may be things within the programme that could be used to enhance the treatment for these clients, but probably there would have to be an addition to the original protocol. Therefore, a cut-off deciding how many potential recidivists may be offered this addition will be based on cost-efficiency. Including all the participants in order to include all recidivists may not only be problematic due to cost inefficiency, but it is also important to stress that it is unknown what effects this would have on the programme. It is important that the clients feel that the interventions of the programme are relevant and appropriate, and addressing issues that are not relevant for some, in order to offer the recidivists additional interventions, may very well feel inappropriate for the non-recidivists. The logistic models may be altered in regard of cut-off leading to including more of the recidivists, but misinterpreting more of the non-recidivists as potential recidivists. How to decide where to have the cut-off for a possible intervention, is not easy. As mentioned above, both cost efficiency and the risk of making the programme less valuable to the non-recidivists should be considered before putting the logistic regressions to use in this way.

**Limitations**

**Measures.**

Gathering information about the tests used for measures in the programme proved difficult, as it was hard finding the original texts describing the tests. For the Citizen Scale as well as the Problem Checklist there was no success. The Citizen Scale is covered in a book that was not to be found upon a search of libraries in Scandinavia and therefore could not be delivered within the time frame of writing this thesis. The text referring to the Problem Checklist was not found in any format except for the coverage in the One-to-One manual.

As mentioned earlier, the Alternative Thinking Test is the sole test used to measure progress in problem-solving ability. There is however a problem with using the ATT in a manner where the pre-test results are compared with the post-test results, and that is that the four questions used in the pre-test and are different from the four questions in the post-test. As no study has been conducted to check the psychometric properties of the test, there is no way of knowing whether the results on pre and post-test questions
would be the same everything else equal. A simple way to check for this would have been to reverse the order of the questions for half of the participants.

Finding studies where the ATT has been used poses a challenge due to the fact that the test is known under several names, such as Alternative Thinking Test, Options and Optional Thinking Test. Also there is a problem with comparing studies of OTO with other studies where ATT has been used, since there is no standardized set of questions. Other studies may have used different questions, due to the fact that there are only a couple of suggestions for problem scenarios outlined in Spivack et al. (1976). Some of the studies researched for this thesis use another reference, which is Measures of interpersonal problem-solving for adults and adolescents by Platt & Spivack, 1977. This text from the Hahnemann University in Philadelphia was not available for the writing of this thesis, and the same was often the case for lecture notes and other sources of information referred to in other studies.

It is worth noting that ATT is intended to measure only one aspect of problem solving, i.e. generating as many solutions as possible to a given problem, and the score reflects the quantity of solutions, not the quality of the individual solutions as such. Whether the skill of coming up with many alternatives is linked to social adjustment seems to be another issue, however. Spivack et al. (1976) point out that it when it comes to children, and also in adolescents the results on the "Alternative Thinking Test" are linked to social adjustment, whereas there is no such link when it comes to an adult population. Spivack et al. (1976) use another test called Means Ends Problem Solving (MEPS), measuring other facets of problem-solving, and do link results from this test to maladjustments in an adult population. The alternative thinking aspect is perhaps therefore not the most important one, nor does it reflect the problem solving skill as a whole. On the other hand, increasing the number of alternative solutions to a problem has been shown to lead to an improvement of the quality of the solutions (D'Zurilla & Nezu, 1980). This implies that quantity in some cases might lead to better quality.

LLOCS has been validated and norms generated for US students. There are no norms for a Swedish population and comparisons with the US student sample may be problematic. Thinking about where the participant puts his or her locus of control is explicitly addressed in the OTO work on cognitive restructuring. It could be argued that where a person believes the locus of control to lie is of interest for several reasons. One of these is the pointlessness in trying to solve a problem that one can not affect. The more you find yourself to be in control of the outcome, the more likely you may be to use your problem-solving skills in a particular situation. An association between locus of control and perceived problem-solving skills has been found in male university students (Johnson & Kilmann, 1975).

The Social Skills Survey asks about the participant's perceived skilfulness in specific areas that are worked with in OTO, and as such has merit in identifying where there have been changes. Regarding The Citizen Scale, what is measured is the participant's perception of how he/she rates him-/herself in four areas relating to laws, following rules, cooperation and honesty. These areas are worked with during the cognitive restructuring and also the morals work and role rotating exercises probably influence the participant's attitudes in a way that can be measured by this test.
It is quite possible to compare scores on tests before and after a programme's completion and see whether there have been changes, even when the tests in themselves have not been subjected to normative studies or validated. During the work of this thesis, the only test that was found to be validated and normed is LLOCS. Information on how scores from The Citizen Scale correlated with reconviction from the pilot study is available, providing a possibility for comparison.

However the tests ask pretty straightforward questions about the participant's view on aspects of their personality or of their skillfulness in specific areas, e.g. The Citizen Scale, Social Skills Survey and PCL. Therefore, although it may be up for debate whether these are the best questions to ask, the tests have quite a good face validity. As earlier mentioned there have been no checks for social desirability for these tests as far as the authors of this thesis could establish, and this is a factor that may affect how individuals report data. Another aspect is the fact that individuals vary in how easy they find expressing their view on a certain skill or trait. The fact that normative studies have not been conducted on the tests makes it hard to infer anything about the magnitude of any reported changes in scores. Comparing the scores to a normal population would be helpful in determining if there is a significant difference and whether this difference remains post-test or if there is a clinically significant change.

The reasons for choosing these specific tests as opposed to other tests for measures are not elaborated in the underlying texts of the programme. There probably isn't a plethora of tests available to measure the desired aspects, and the tests included in OTO are easy to use within the framework of a programme, such as OTO. The authors of this thesis are unaware of there being tests with better researched psychometric properties that measure these specific areas. The fact that the presumed connection between the tests and key behaviours related to recidivism is somewhat unclear, of course poses a problem.

There is a possibility, that the studied group does not differ from a norm group on the tests used in the programme similar to what Pugh (1993) found, or as the LLOCS scores of this study show, in fact may have "better" scores than a norm. Even if this is the case, a change in locus of control may be valuable for this population, as found in this study on the LLOCS Chance-subscale, indicating that this population within certain areas may not have deficits, but rather need to be "better" than the normal population. This would make it meaningless to discuss clinically significant changes in these areas. Further examination of this issue would be interesting.

All the measures within the OTO-programme are used as aids in making the assessment forming the basis for the rest of the OTO-programme. They are supposed to give the programme leader a hint of where to lay the focus of the interventions. The fact that the tests have not been subject to normative studies becomes a problem in order to use them for this purpose. The programme leader is further on given the opportunity to discuss the issues that the tests try to measure with the client. However, a certain score on a certain test or test subscale, is not helpful in determining if the specific skill or problem this test is meant to measure is in fact a problem that warrants further exploration. Even a use of the means from this study as an aid to determine what the
scores stand for would be better than no norms at all. Using the means and standard deviations from this study, the programme leaders would be able to see how a certain score differs from the norm of the group of criminal offenders. Whilst this does not tell the programme leader whether this is a problem related to offending for a certain client, it would certainly be useful information in the work of building a personalized theory of the participant's offending. As some of the tests are related to re-offending, deviations from the norm on these specific tests may be of special interest in the assessment part of the programme.

**Design and implementation.**

One problem with this study is the fact that the subjects have not been randomly chosen for inclusion in the study. In fact, the sample would more correctly be described as an opportunity sample. As described earlier, the persons offered participation in the programme are just about everyone that fits the criteria for being eligible for the programme. As the sample is an opportunity sample, and there is no control group, it is hard to generalize the results to the whole population. Another problem is that it would be very hard to match a control group, since the eligible clients not partaking in the programme either have chosen not to do so, or have been considered inappropriate by the evaluation interviewer. It is known from previous studies that non-completers differ from completers and even from controls in regard of recidivism (McMurran & Theodosi, 2007; Berman, 2004a). If this is the case within the sample of this study is unknown, but the knowledge that this may be so makes it impossible to view them as control subjects to the completers.

As the data was collected by the probation or prison officers who delivered the programme, there is no way of knowing how accurate the data collection was. It is reasonable to suspect that some probationers are more meticulous, and it may even be the case that some probation districts put more emphasis on the data collection. A lot of cases had to be excluded from this study due to missing data, which could indicate that there may be inaccuracies that can not be easily spotted in the remaining data. Another thought regarding this is that, even if the analysis of excluded cases in this study did not show significant associations except for in the number of meetings department, there may be skewness within the data collection. The most important aspect of the analysis of excluded cases, however, would be the relation between exclusion and recidivism, which is not significant.

There is a possibility that these exclusions could be based on some underlying unknown variable leading to a systematic error, but the analysis revealed no such differences. Perhaps there is a connection between missing values and site of entry, or programme leader, which would imply that there were different standards to which data entry were held. However, with the data provided, no such analysis was possible.

**Data considerations.**

Most studies of criminal programmes use a binomial recidivism variable. The initial idea for this thesis was to study recidivism with a multi-nominal variable. However, the limitations of the data set regarding the number of previous offences and the types of previous offences made it impossible to explore some interesting questions regarding recidivism, such as if there are differences in recidivism for different types of offences,
or whether programme completion can be associated with recidivism in crimes of a less severe nature (for more information on data considerations see Appendix B.).

Doing the amount of significance tests that are made in this study increases the risk of making a type I error quite substantially. The option of reducing the numbers of hypotheses tested is of course often suggested as a way of minimizing this risk. The number of significance tests done was limited to as few as possible without jeopardizing the value of the study. One of the main points in this thesis, however, was to have a broad approach, where all the test results available were compared to see what differences there were. This is more of an exploratory approach, as opposed to pinpointing the search to certain specific tests as guided by theory. A common approach to this problem is making a Bonferroni correction of the probability level for type-I errors. The Bonferroni correction is however very conservative and statistical theoreticians have argued that it is in fact too conservative. Lazerle and Mulaik (1977) came up with a solution called a multistage correction, which was applied to the data in this study. However, in this study no results that didn't survive the Bonferroni correction survived the multistage approach. Thus the actual results presented as significant after correction are also significant with the more conservative approach.

**Implications of the limitations.**

How the limitations of this study should affect the interpretations of the results is difficult to say. However, the concordances between the findings of this study and those of previous studies suggest that the data from the study sample are valid, despite the numerous limitations described above. Perhaps these limitations do not influence the results in a harmful way.

**Conclusions**

The theory behind criminal treatment programmes in general and the OTO-programme in particular, is that psychological change in various aspects, mediates the outcome of the programme (in terms of recidivism). In OTO, the focus lies on the areas of problem-solving, values, motivation, social skills and certain problem areas. Addressing these areas, and making change happen within each of them, is supposed to lead to a change in outcome, i.e. less recidivism. Looking at the pre- and post-test data, it is clear that all of the measures used to measure these different areas change in the desired direction. As there is no control group, it is impossible to know what this change means. There is also a finding that there are links between some of these tests and the outcome of the programme. The link between the difference pre- to post-test in the skills survey and recidivism, suggests that training social skills could in fact be a beneficial intervention. The difference between recidivists and non recidivists in the Citizen Scale-survey, may lead to the conclusion that attitudes and values are areas of interest in a criminal treatment programme. Looking at the problems that are associated with recidivism, mainly financial problems stand out. This aspect is not clearly linked to the theory behind the programme and not directly worked with within the programme, but is measured pre- and posttreatment. Chance locus of control is associated with recidivism, but looking at the theory behind the programme one could argue that the internal-external dimension also should be of interest, which is not found. However, the finding of this study, that Chance locus of control predicts recidivism, partly supports the theory on locus of control behind the programme.
The basis for the OTO-programme, however, is problem-solving, and the test used to measure this aspect, the Alternative Thinking Test, is unable to discriminate between recidivists and non-recidivists, and has no predictive properties whatsoever. This finding makes it impossible to conclude that changes in problem-solving ability intermediates to the desired outcome. However, the authors of this thesis would argue that the instrument used to measure problem-solving (ATT) is not the most adequate for the purpose of this study. There is indeed a minimal number of alternative solutions one must be able to come up with, in order to solve a problem efficiently, but there are other aspects of problem-solving that are as or more vital to the process. A test that has been used on adult populations, and has shown differentiating properties for maladjustment is the MEPS (Means-Ends Problem Solving test). This test is based on the same theoretical foundation as the ATT, and developed by the same scientists, but tries to measure another aspect of problem-solving, namely Means-Ends problem solving thinking. Another approach would be to consider the recommendations of D’Zurilla and Maydeau-Olivares (1995) and use the IDEA (Inventory of Decisions, Evaluations, and Actions) if interested in an outcome measure or the SPSI-R (Social Problem-Solving Inventory-Revised) if interested in a process measure of social problem solving. The main advantage of the ATT, is the fact that it is easy to administer and score and of course that it measures an actual skill and therefore will be free from bias and social desirability.

Bowen et al. (2008) found no connection between the amount of psychological change in a treatment programme and outcome measures. This study does find some important relations that partly support the relation between psychological changes that takes place during the treatment programme and recidivism. The relation, however, is far from clear or unambiguous and it is important to note that no support for the theory of problem-solving deficits as related to offending was found in this study, perhaps due to the fact that the test used to measure problem-solving within OTO is not well suited.

It is hard to draw any far-reaching conclusions based on the results of this study. However, they are sufficiently interesting to warrant further examination of the program with a stronger research design.

Summarizing the results, these findings stand out:

- Pre- to post-test scores differ significantly in the desired direction. As there is no control group, this should be interpreted with caution.
- Lower age predicts non-completion of the programme.
- Several variables from tests have predictive properties for recidivism. The most important predictor however, is programme completion, with the caveat that previous offences could not be included in the analysis.

Recommendations:

- To use normed and validated tests in future research.
- Improve stringency in data collection.
- Use a test measuring more aspects of problem solving.
- If possible, use an experimental design with random assignment to treatment, or as close to it as possible.
• Age-appropriate interventions, maybe another program for younger offenders.
• Practical interventions to increase possibilities for less financial problems. For example through job searching clubs and debt restructuring.
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Appendix A

Overview of the ONE-TO-ONE programme

Before the actual programme begins, there is a pre-programme motivational session. This motivational session set is designed to get the participant acquainted with the programme, to try some exercises and to establish what the participant’s motivation for change is.

The attitude and way of working with motivation on the programme leader’s part in this session and throughout the programme are based on Motivational Interviewing as described by Miller & Rollnick (2002), i.e. a non-confrontational attitude with reflective and empathic reflecting. Discrepancies in how the participant acts, and what the participant wants in a longer term are highlighted. The programme leader also encourages the participant’s own statements about motivation for change.

After an introduction to the ideas behind the programme, an analysis of the problematic qualities of offending behaviour is made. What problems does this behaviour cause for the participant? Again self-motivating statements about change are reinforced.

A decision balance is established with pros and cons of the offending behaviour.
An exercise in problem-solving and empathic thinking is given, and any efforts are reinforced, with a strong emphasis on there not being any right or wrong answers.

A short questionnaire with questions regarding social skills and an exercise where the participant finds good things about him-/herself is given, and the session focuses on establishing goals or action plans for the future.

The first part of the programme is called Assessment (sessions 1-5). In the beginning of each session, a review of the assignments from last session is done. The major part of the assessment part is made up of administering the assessment questionnaires. The responses to the questionnaires are examined with the participant. They are checked for consistency with the participant’s own perception of the particular area being examined. Also a connection is made to the future training of lacking skills. There is a continued focus on summarizing, reflecting and also on reinforcing the participant’s statements of motivation for change.

Self-management skills are presented in the form of Stop & Think, where cues normally associated with offending are relearned to be signals for using coping skills. Problem-solving is introduced with the 5WH-exercise, where the participant uses a structured approach to gather more information about the problem.

These skills are incorporated in the ongoing Analyses of Offences, where a number of offences are analysed to establish Antecedents, Behaviour and Consequences. Triggers are identified and also what are called choice points, i.e. points where different decisions could have been made. Other circumstances regarding the offence are also analyzed, such as lack of appropriate skills and thinking style of the participant.
Significant others in the participant’s life are identified so they can be recruited by the participant to aid in the change process.

Action plans are established with encouragement for setting SMART (Specific, Measurable, Achievable, Rewarding and Time-limited) goals until the next session. Also relapse prevention is handled by explaining the “abstinence violation effect”, where one slip can cause the participant to deem participation useless and want to give up.

The last session of this part, number five, consists of a summary, where the programme leader summarizes the criminogenic factors, triggers and patterns that are relevant to the participant’s situation, and links these to specific exercises yet to come. The programme leader assembles this information and builds a theory of the participant’s offending.

The second part of the programme is called Skills Training (sessions 6-13). This part has a major focus training skills in the areas of social skills, problem-solving, self-control and also thinking in socially acceptable ways.

The format from the earlier sessions, where the first part consists of a review of earlier assignments and handling any pressing issues that need to be handled. At the end of the sessions action plans with goals for the future are set based upon the content of the session.

Sessions 6 and 7 are focused on problem-solving. Stop & Think is continued with the goal of relearning cues for offending behaviour to become signals for coping. Skills for learning to test the quality of information are taught in a way where the participant learns to categorize information in Facts, Opinions and Guesses. As with all parts this is related to the participants offending, and is learnt to be used in conjunction with Stop & Think. Defining a problem in a very detailed way is exercised and different ways of generating many solutions to a problem are exercised, e.g. brain-storming. Learning to evaluate the options in terms of their consequences follows.

Setting goals and defining steps to goals are identified on a visual Goal Ladder, where the patient puts the most desired state at the top and the least desired at the bottom. Sub-goals are identified and put on the steps of the ladder.

In session 8 of this part, moral reasoning and role-taking are introduced. The moral reasoning exercises are done as a discussion around stories with moral dilemmas. The purpose is to expand the participant's ability to reason around morals and to see the problems from different views.

Discussions about the offence as if the offender was the victim of the offence, how to make amends for the crime perpetrated and also exercising role-rotating taking on pre-decided roles follow in this session. Role rotating is further exercised in sessions 9, 10, 11 and 12.
Cognitive restructuring follows in session 9, with addressing neutralizations, i.e. thoughts that make it okay to commit a crime, even though one knows it really isn’t. Working with thoughts that lead to offending is done both by replacing them and by identifying thought errors made and disputing them. In this segment there is a possibility to address different kinds of dysfunctional thinking, such as having an external locus of control, or attitudes towards oneself in regards to rules and laws. These aspects are directly measured pre- and post-programme in the LLOCS and the Citizen Scale, respectively.

Social skills training is introduced in sessions 10 and 11. The first practical skill exercised is Active Listening, where the participant gets to experience the difference between poor listening (as in inattentive listening) and a more active listening style. The participant then gets to practice technical aspects of Active Listening, i.e. verbal and nonverbal following, giving feedback and asking questions.

Based on what is deemed appropriate for the participant the programme leader then chooses two skills out of: Skills Training (based on the Skill Survey), Assertion and Negotiation to work with. The programme leader is instructed not to work with more than two out of these three choices.

Skills Training here means working with skills on the basis of the problem areas found in the Skill Survey during the assessment, by means of role playing and model learning.

Assertion as a skill is trained to be an alternative to passivity or aggression as a way to handle stress and pressure. The participant finds alternative verbal responses to communicate what he/she wants. This is done in role playing, discussion and with a video camera.

Negotiation is trained to give the participant a way of reaching an agreement verbally with someone without giving in, forcing the other or just withdrawing. The participant learns how to identify the gap in positions between him/her and the other party, and how to come up with different solutions for bridging the gap. This is practised with role playing and often with a video camera.

The focus of session 12 is on self-management. Stress management is introduced where the first part is identifying stressful situations and getting to know them as signals for coping instead of offending. The participant is taught to use earlier taught methods for coping, and in addition learns one of three new methods for handling stress, i.e. conscious breathing, soothing imagery and progressive relaxation.

The participant then gets to explore self-talk and the difference between coping and non-coping self-talk. Coping self-talk is exercised and the participant is encouraged to use rewarding self-talk when the participant has managed well in a difficult situation.

In session 13 the formulation completed in session 5 is reviewed, as is all the work done in sessions 6-12. The formulation is discussed and reformulated as necessary, the participant’s current views on the positives and negatives of offending are examined and new goals are established for subsequent sessions.
During the final part of the programme, Applications (sessions 14-20), focus is on repeating skills taught in the skills training part. The work with action plan activities between sessions continues, and relapse prevention is continually discussed, as this is seen as an ever-present threat and active measures are needed to prevent this. Certain elements are fixed in this part. Role playing is exercised briefly in sessions 14-18, with the intention of continually developing the participant’s empathic skills. Applied problem-solving as in Stop & Think are exercised in sessions 14, 16 and 18. In addition, the programme leader chooses one or two skill areas that they assess that the participant needs to exercise more. The areas are: Cognitive Re-structuring, Self-management, Values & attitudes and Social skills. A maximum of five repeats from each of the areas can be chosen, and a minimum of two. Session 19 is dedicated to doing the post-tests, this time all of them in one session.

Session 20 begins with a review of the participant’s current life situation, and then the participant gets feedback on the tests. The programme leader summarizes the work done during the course of the programme and commends the participant on the work done.

Finally, the programme leader signs the participant off and gives the participant a certificate of completion of the programme. The participant is informed that there may be two follow-up meetings within the following six months designed to follow up on the participant’s progress and to assist with relapse prevention. It is however unclear whether these follow-up meetings are used in the Swedish Prison and Probation Service (Priestley, 2006).

Programme integrity is strictly maintained, and the lessons are meant to be followed in their predetermined order (Kriminalvården - "Ackreditering av Brotts- och Missbruksrelaterade programme i svensk kriminalvård", n.d.). There are periodical checks done on how well the programme leader maintains programme integrity, that the programme leaders’ style of delivery is consistent with the idea behind the programme, and on the skills displayed and used by the programme leader (Kriminalvården, 2008). These checks are done, based on video taped sessions, initially when the programme leader applies for certification, and then once a year (H. Nyberg, personal communication, April 14, 2009).
Appendix B

Data considerations
Decisions had to be made about entries in the data set where there was ambiguity regarding the representation of missing data. Entries in tests where a score of 0 isn’t possible, i.e. The Citizen Scale and Skills Survey, but where a score of 0 was reported were removed to indicate that the data was really missing. It is hard to find an alternative reason for entering a score of 0 for a test where this score isn't really a possibility.

In the reported scores on the Alternative Thinking Test there is a gap where no participants are reported to have scores between 1-3, but there are several reports of a score of 0, which would mean that the participant delivered no solution whatsoever. This seems highly unlikely and thus it was inferred that these zero-scores really represent missing data. Should this data really represent entries where no solutions were provided by the participant, this would lower the means calculated and this would have amounted to different results. But this was deemed unlikely for the reasons given earlier.