HM Prison & Probation Service

The Chromis programme: Exploratory research using multiple case studies

Jenny Tew and Alice Bennett, Psychology Services, Her Majesty's Prison and Probation Service and Louise Dixon, School of Psychology, Victoria University of Wellington

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1. Summary

Chromis is a Her Majesty's Prison and Probation Service (HMPPS) accredited prison programme that aims to reduce violence in adults whose level or combination of psychopathic traits disrupts their ability to engage in treatment and change. At the time of publication Chromis had recently stopped running within HMPPS. However, the approaches of the programme continue to inform the work of the unit where it was delivered and informed the development of subsequent interventions that continue to run across HMPPS. It is also the case that many Chromis participants are still serving sentences and continue to attract attention as a result of their history and the nature of their offending. As such, research into the effectiveness of Chromis and its approach which has informed their risk reduction work remains relevant for the service.

This study makes use of a multiple case study design to review changes in four areas that are markers for treatment success and important to stakeholders across a purposeful sample of five men who had completed treatment and progressed from the prison unit. These areas are: risk factors targeted by the programme, institutional behaviour, engagement in interventions and regimes and protective factors.

For each individual, information from a range of sources was reviewed from the point of sentence up until the date of data collection (dates ranged between October and November 2011). Sources included treatment files, adjudication records, contact logs, psychometric and risk assessment information, interviews with programme participants and focus groups with relevant treatment staff.

Each case study was approached as a separate study, however findings were considered and reported across cases with regard to the four areas of interest. Statements about each area were made where they could be supported by multiple sources of information. Potentially significant information provided by one data source was also noted. Cross case analysis was then conducted.

The study found indicative evidence that individuals can and do engage in Chromis. It is also notable that all participants appeared to have gained benefits from completing Chromis, linked but not confined to, the overall aim of reducing violence. Changes in recorded incidents of physical aggression, self-reports of anger, adjudications and changes in violence risk assessment outcomes all pointed towards positive developments in this regard. From

discussions with case study individuals they reported they were better able to delay action; thinking of consequences and considering alternatives. Relating skills to achieving their own goals seemed critical in achieving this. Developments in relationships with staff, particularly uniform staff also seemed important to supporting improved institutional behaviour for individuals.

This research had a number of limitations and further work is needed to build the evidence base for programmes to reduce violence in individuals with high levels of psychopathic traits within prison. While caution needs to be used when extrapolating findings from multiple case study projects to wider groups, this study provides promising findings that may be less apparent from larger scale less individualised approaches.

2. Context

2.1 The Chromis programme

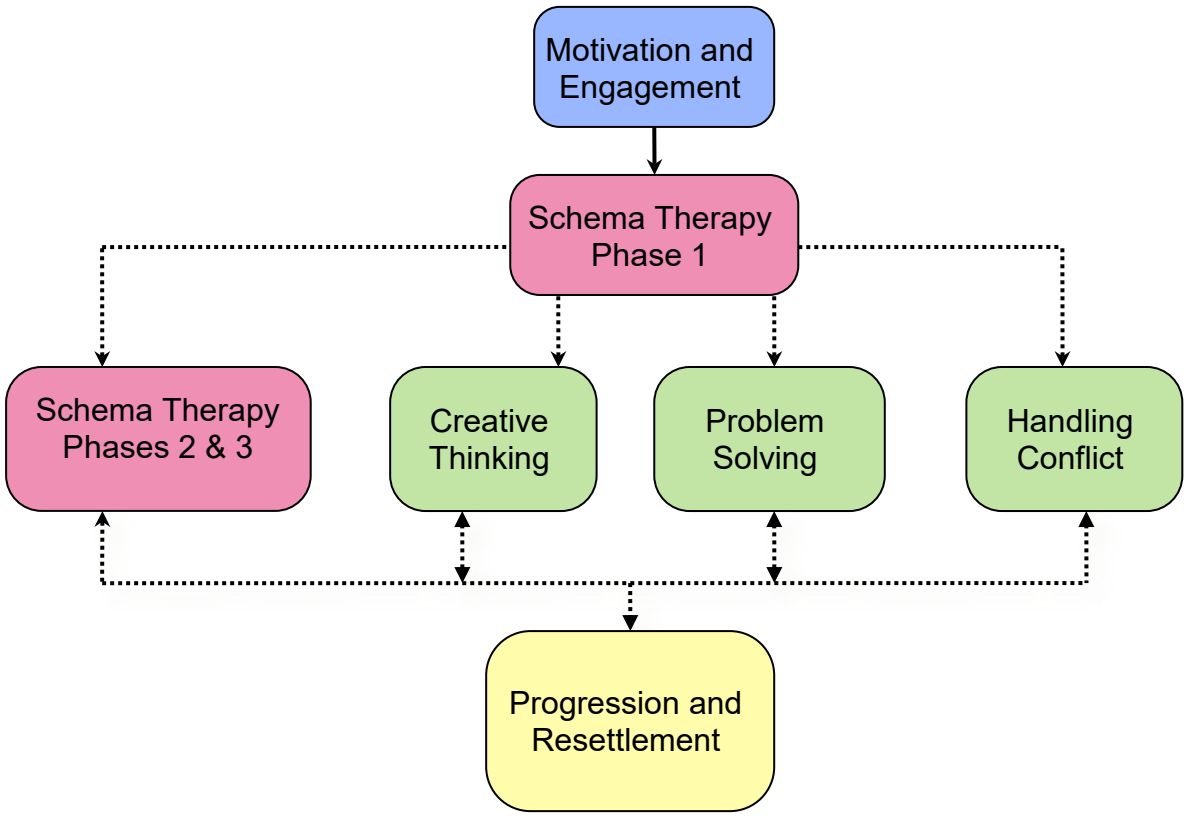
Chromis is a prison based treatment programme aimed at reducing violence in people whose level or combination of psychopathic traits disrupts their ability to engage in treatment and change. It does not aim to change personality traits but to work with these to reduce individuals' risk of violent offending. To do this it does not require participants to be motivated to change, however, it necessitates them to be open to learn new skills that will provide them with strategies for self-management.

Chromis comprises of five separate components; each with specific treatment targets aimed at addressing the risk and needs of violent men with high levels of psychopathic traits (see Figure 2.1). Chromis initially aims to genuinely motivate and constructively engage participants in treatment rather than emphasising compliance. It does this by identifying what they really care about and by focusing treatment goals on achieving these aims pro-socially. A formulation is then completed that explores the development and maintenance of unhelpful schema, beliefs and consequent behaviours. This helps to inform which components an individual needs to complete and in which order. There are three cognitive skills components that aim to give participants a chance to learn and develop skills relating to their thinking and interpersonal skills and problem solving. There is also a Schema Therapy component (CST), which is based on cognitive behavioural therapy for personality disorders (Davidson, 2007). This makes use of behavioural experiments in the participants' life to test out beliefs and practice new skills.

Although Figure 2.1 depicts components following a particular order this is not a necessity as they can be sequenced according to individual requirements. Gaps can be taken between the components to allow for consolidation of learning or to attend other interventions. There is also flexibility within components, for example some sessions can be run individually or in small groups depending on individual need. The time taken to complete Chromis therefore depends on individual need and progress, but is likely to be between two and half to three years, including assessment and preparation for progression.

Chromis considers psychopathy as a responsivity issue (Andrews & Bonta, 2003) and has been specifically designed to enable participants high in psychopathic traits to genuinely engage in treatment. As part of this, the programme is based on a set of core principles.

Figure 2.1: The Chromis programme



which underpin the assessment, treatment and progression strategy. These principles are also embedded into the wider therapeutic environment of the Westgate unit at HMP Frankland where Chromis ran. This provided opportunities for the generalisation of skills and a continuity of approaches across other interventions on the unit. The principles are; personal relevance, control and choice, future focused, novelty and stimulation, collaboration and transparency, and status and credibility. These are explained in more detail in Tew and Atkinson (2013).

Between 2005 and 2014, 118 men had started the initial Motivation and Engagement (M&E) component of Chromis and of these 25 had completed the programme (at the time of data collection for this study five individuals had completed the programme, progressed from the unit and remained in contact with the criminal justice system). This is positive considering the length of the programme and its integration with other interventions on the unit. Twenty eight men had either deselected themselves from treatment or had been deselected from the unit where Chromis ran by staff. Deselection could be for behavioural or security reasons or as a result of clinical issues such as refusing to engage in treatment, not being able to cope with treatment or transferring to complete treatment in a secure health setting. Some individuals who left the unit subsequently returned and re-engaged in treatment. Around half of those

who had left before completing treatment were considered to be unlikely to return as a result of having been left for over three years. The remaining 65 individuals were still engaged in treatment.

In terms of the population who attended Chromis, the average age of admission was 36 years, 91 percent were serving indeterminate sentences, 88 percent had offending histories that include convictions for violent offences, 42 per cent had sexual offences and 20 per cent had arson offences. Considering ethnicity, 93 percent classified themselves as white, 4 percent as black, 2 percent as Asian and 1 percent as mixed ethnicity.

2.2 The delivery context

Chromis was accredited by the Correctional Services Accreditation Panel (CSAP)[1] in 2005. Around this time, the Dangerous and Severe Personality Disorder initiative (DSPD) was also being developed. The background of the DSPD has been well documented (e.g. Howells, Krishnan & Daffern, 2007). Part of this service was a purpose built unit within HMP Frankland called the Westgate Unit. It is within this unit that Chromis was delivered between 2006 and 2019. In 2008 the Ministry of Justice completed a review of the DSPD programme (Ministry of Justice, 2008). As a result of this review a new joint strategy was developed between the Department of Health and the National Offender Management Service (NOMS).[2] Also in 2011, the Department of Health and Ministry of Justice consulted on an implementation plan for a new approach to working with people who have severe personality disorders, which moved away from the previous DSPD programme.[3] This new strategy was co-commissioned by the Commissioning and Commercial Directorate in NOMS and NHS Specialised Commissioners and became known as the Offender Personality Disorder Pathway (Joseph & Benefield, 2010, 2012).

Within the new configuration of services the Westgate Unit continues to provide services although the nature of their population has shifted over time. At the time of publication Chromis had recently stopped running within the Westgate unit following a review of their interventions and the needs of their current population. However, the whole treatment

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1 CSAP is now known as the Correctional Services Accreditation and Advice Panel (CSAAP). This is an Advisory Non-Departmental Public Body, which was established to advise the Home Secretary on programmes aimed at reducing offending.

2 NOMS is now known as Her Majesty's Prison and Probation Service (HMPPS)

3 see http://www.dh.gov.uk/health/2011/10/offender-personality-disorder-consultation-response/ for more details.

approach of Westgate is underpinned by the same core principles and model of change that were employed by Chromis. Participants took part in a range of treatments while on the Westgate unit which was interspersed between Chromis components depending on their needs. As such, individuals' time in treatment was likely to be significantly longer than the time required to complete Chromis.

Many Chromis participants are still serving sentences and continue to attract attention as a result of their history and the nature of their offending. The approaches of the programme also informed the development of further interventions that continue to run across HMPPS. As such, research into the effectiveness of Chromis and its approach, which has informed their risk reduction work and continues to be used with others, remains relevant for the service.

2.3 Structure of the report

The report that follows is divided into the following chapters. Chapter three describes the aims of the research and chapter four the approach taken. Findings are summarised in chapter five and these are discussed in chapter six, along with their implications. The limitations of the research and suggestions for further work are outlined in chapter seven and final conclusions are made in chapter eight.

3. Aims of the research

While Chromis has a strong theoretical underpinning it is important to evaluate the extent to which it is achieving its aims. To effectively evaluate the impact of a programme, methodologies such as randomised control trials or quasi-experimental designs offer the most robust findings (Harper & Chitty, 2005). The nature of the Chromis programme did not allow such methods to be implemented at this time. The complex nature of the client group, high secure setting, limited sample size, the flexible nature of the programme and its integration into the wider unit treatment regime all presented challenges to a robust demonstration of treatment success. A multiple case study design, following case study protocols that take steps to address validity issues and which relate back to the theory base for the programme, offered one of the most effective way to answer questions about treatment success in Chromis participants at the time that this study started (2011).

This study aimed to review changes across case studies in four areas considered to be markers for treatment success that are important to key stakeholders. These areas are, engagement, institutional behaviour, risk and protective factors. Previous research has found that those with high levels of psychopathic traits have difficulties engaging in interventions (Thornton & Blud, 2007). With this in mind, an important aspect of considering the effectiveness of Chromis was to review how well participants actually engaged in the programme. Chromis participants were likely to spend considerable time in custody post treatment and many had additional treatment needs that will not have been address via Chromis, for example needs related to sexual offending. However, they were individuals who were likely to have been disruptive in custody and disengaged from services designed to help them address their offending behaviour. Improvements in institutional behaviour and engagement in regimes and services were therefore of significant benefit to participants and the service.

There was also reason to believe that these areas, alongside risk factors targeted by the programme, could serve as proxy measures for changes in risk of re-offending for some individuals. For example, in a report to the Offender Personality Disorder Team Wong (2011) recommended that rate of institutional misconduct should be employed as medium term outcome measures for individuals on the Personality Disorder Pathway. Based on findings from previous studies by French & Gendreau (2006) and Smith & Gendreau (2007), Wong suggested that institutional misconduct should be a proximal indictor of reoffending in the community. Wong also proposes outcome measures for treatment for this population to

include participation and completion rates and outcomes of measures of change in risk or behaviour.

While this report provides some information about each individual case study the focus is on cross case analysis to build a knowledge base about Chromis.

4. Approach

A multiple case study design was employed (Stake, 2006; Yin, 2014). If case studies follow explicit procedures, use a variety of evidence and multiple methods then they have been reported to produce credible findings which can be generalised to relevant wider groups (Yin, 2014). They can also be used in formative evaluation work to refine the initiative concerned (Yin, 2014). Using a multiple case study design combines the advantages of case studies, being able to gain in depth insight into changes over time, with the ability to look at changes across cases or for the average case (Van den Noortgate & Onghena, 2007). This method has advanced the development of new processes such as assessments and interventions (e.g. Webster, 2006) primarily because it can accommodate differences across cases while also allowing generalisations to be achieved (Johnstone & Cooke, 2010). This method can identify particular areas of strength or areas for development in a process that might otherwise be hidden within larger scale outcome studies. Indeed, individuals with high levels of psychopathic traits are often grouped together in research considering responsiveness to treatment, yet these individuals form a heterogeneous group with different areas of need and difficulty and who may respond differently to treatment (Chakhssi, de Ruiter & Bernstein, 2010). Therefore multiple case study design arguably provided a good starting point for evaluating a new intervention, particularly one such as Chromis which was designed to be responsive to the needs of complex individuals and that was embedded in to a complementary regime. It could also help to inform the design and focus of future evaluation studies.

Ethical approval for this study was obtained from NOMS (now HMPPS) and from the University of Birmingham Science, Technology, Engineering and Mathematics ethical review committee. Given the case study approach, particular attention was given to the anonymity of participants throughout the research and publication process. Individuals carrying the label of past recipient of DSPD treatment already attract a lot of attention throughout the criminal justice system. As such, care was taken to ensure that this research did not identify individuals thereby removing any potential impact on their progression.

4.1 Participants

A purposeful sample of five individuals formed the case studies for this project. All individuals who had completed treatment and progressed from the unit but remained in contact with the criminal justice system at the time of the study were included to offer breadth of information regarding changes observed beyond the treatment environment. When the study started two

individuals had completed Chromis and progressed into the community and three had completed Chromis and moved out of a high security prison, but remained in custody.

The five case study participants had an average age of 29.6 years (SD = 5.6) when they started Chromis, which is younger than the average age of individuals who had started Chromis. Four classed themselves as White British and one as Black British African. Two were serving determinate sentences and three had life sentences. Two had index offences of murder, one of robbery, one of arson and one for offences relating to kidnap and drug and weapon possession. They had an average Psychopathy Checklist Revised (PCL-R; Hare, 2003) score of 29.2 (SD = 5.5), with an average Factor 1 score of 10.6 (SD = 2.7) and Factor 2 score of 14.9 (SD = 1.8) (see Annex A for more details of the individuals and Annex B for details on the PCL-R).

4.2 Pilot

Prior to starting the case studies a short pilot was conducted to help ascertain what records were available, how these could best be accessed and how data could be extracted and recorded. Alongside this the lead researcher spoke to three current Chromis participants about what aspects they felt the study should focus on and what information could best support this.

4.3 Data Collection

For the main study the researcher met with each participant to explain the procedure, answer any questions and elicit their views on what had been significant areas of importance for them during treatment. All participants provided areas that they thought the project should consider which were used alongside file information to help plan each case study. Consent was obtained from individuals prior to interview.

This study made use of a range of data sources in order to understand each individual and their experience of Chromis as fully as possible. Key data sources included; contact notes from the point of sentence until the time of data collection, Westgate assessment documents, Chromis treatment logs, post programme reports for Chromis components, psychometrics, assessments such as HCR-20 and VRS (see Appendix B for further details) which were repeated throughout someone's time on Westgate, adjudication records, incidence of self-harm, drug testing results, interviews with individuals and a focus group with Chromis facilitators who had worked with each individual.

While there was a large amount of consistency across cases in the data collected there were some differences. For all cases their adjudication history and changes in anger and aggression were noted. In addition to this the researcher reviewed each individual's treatment planning document and ascertained their own views and the views of treatment staff about what their key areas of need were and what was focused on in treatment. While individuals had a number of treatment needs, a judgement was made about the main two areas (after anger and aggression) for each individual and these were focused on. Reviewing relevant data for the individual meant that the areas focused on were not necessarily consistent across cases but each study did capture the relevant findings for the individual. For example, self-harm was a significant issue for one individual but this was not a relevant area for all cases. These individual needs obviously represent an overlap between someone's institutional behaviour and their risk of reoffending. As evidence of the factor was largely collected from their institutional behaviour they were therefore considered within this area of the study.

4.3.1 Case Files

Specific aspects of behaviour were tracked for individuals from case files. To achieve this, definitions of behavioural acts were provided (e.g. incidents of verbal and physical aggression) in a coding dictionary (see appendix C for the final coding dictionary for the study). A sample of records was double coded by the second author. Following this process, coding was discussed between the authors to refine and finalise the coding dictionary. Files were then reviewed using the coding dictionary to mark the frequency of each act. Entries were checked to remove any duplication of coding for an incident. In addition to this 20 percent of the records were double coded to assess the reliability of the coding dictionary. The inter-rater reliability for the coders was found to be good (Landis & Koch, 1977).[4] It was noted that some aspects of behaviour were easier to capture than others and so focusing specifically on an identified difficult area, impulsivity, the inter-rater reliability was still found to be good.[5] All five individuals completed the Chromis components in the same order. As such, incidents of behaviours could be split into time frames; from the start of sentence until moving to Westgate, time on Westgate pre-treatment, the M&E treatment phase, the cognitive skills treatment phase, the CST treatment phase, on Westgate post-treatment and after leaving Westgate. This allowed change over time to be considered. To address the issue of variable time periods, Cooke's equation to compare actual rates to expected rates of

[4] kappa = .80 ($p<0.001$), 95 CI (.73, .87)

[5] kappa = .72 ($p<0.001$), 95 CI (.61, .83)

behaviours was used (Cooke, 1997) (see appendix C). This follows the method used by Taylor (2003) to assess violent incident rates at Whitemoor DSPD unit.

4.3.2 Interviews

Four of the five case study participants agreed to be interviewed as part of this study. Interviews were semi-structured and explored their experience of attending Chromis, their engagement, their relationships with others and their views on the structure and content of the programme.

A focus group was also conducted with Chromis staff who had worked with the five individuals. Staff who were still at the treatment site and who had had the most contact with participants across Chromis components took part. This included the clinical lead for Chromis. These were again semi-structured and were designed to understand staffs' experiences of working with the individuals, their perceptions of how they engaged, any particular strengths or difficulties they felt they had and what progress they felt they had made.

Interviews and focus groups were recorded and transcribed verbatim. The information was used in this study to help understand the individual's experience of Chromis in relation to the four areas of consideration.

4.3.3 Psychometrics

A battery of psychometric tests was administered alongside Chromis as part of the treatment process. These provided an assessment of change[6] in particular criminogenic[7] needs that the programme addressed. These were administered prior to involvement in the initial M&E component, pre and post the block of three cognitive skills components and pre and post the final CST component. The pre M&E and post CST administrations provided a pre and post assessment across Chromis as a whole. It should be remembered that between these two administration periods individuals may also have completed other interventions and so they may have represented change across treatment on Westgate as a whole rather than being

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6 Clinically significant change is identified by a t-score change of at least 5. Using the area under the curve statistic, a score 5 points above 50 is higher than 69% of that population. Therefore, a score that is more than half a standard deviation from the mean is seen as a clinically meaningfully difference from that mean and therefore relevant for interpretation. This method of interpretation is supported by the Correctional Services Accreditation and Advice Panel (CSAAP).

7 Criminogenic refers to those areas that research has shown directly relate to an individual's likelihood of committing crime.

specifically attributed to Chromis. Further details of the Chromis measures considered in this study can be found in Appendix B.

In addition to the Chromis psychometric battery this study used the Working Alliance Inventory (WAI; Hovath, 1994. See Annex B for details) to consider individuals' working alliance with staff as defined by Bordin (1979). Each individual was asked to identify a Chromis facilitator and a current member of staff that was significant for them. They were then asked to complete two questionnaires, one considering their relationship with each person. The facilitator and current staff member they identified were also asked to complete the questionnaire to provide their view of their relationship with that individual. Separate consent was obtained from individuals for completing these questionnaires. Where individuals were not willing to complete the WAI the principle researcher identified a consistent facilitator and their offender manager or offender supervisor and asked them to complete the questionnaire.

4.3.4 Risk assessments

Individuals had a HCR-20 and VRS completed (see Annex B for details) as part of their assessment of suitability for the treatment unit where Chromis ran. The dynamic aspects of assessments were then reviewed at points throughout their time in treatment, by staff not involved in their current treatment, as an indication of progress. This study reviewed change over time for individuals and notes their overall change between their first and final assessment.

4.4 Analysis

Each case study was seen as a separate study and findings were then reviewed across the cases. For each case, the sources listed above were reviewed, using the methods outlined, to see what could be learnt about each of the four key areas of interest for Chromis. Statements about each area were made where they could be supported by multiple sources of data. Potentially significant information provided by one data source was also noted.

Cross case analysis was then conducted. The findings and statements made about each case were compared and areas of similarity and difference were noted. Where differences were highlighted the original data for the cases were reviewed to consider possible reasons for this. These cross case findings led to a number of assertions about the Chromis programme being made.

Considering the area of engagement, Tetley, Jink, Huband and Howells (2011) identified six aspects of the concept that should be measured. These were considered for Chromis for each individual. For each aspect of engagement component session notes and post programme reports were reviewed. Definitions were created for which entries would be counted (see Appendix C). Counts of relevant entries were then made. The WAI was completed to consider the issue of working alliance and the grading of this can also be found in Appendix C. Considering the area of institutional behaviour, for each aspect reviewed any relevant psychometrics, and risk assessment items were identified. Definitions were also created for how case note entries could be coded for each area. The relevant sources and definitions for each area reviewed and how these were graded can be found in Appendix C. Considering the area of risk, the psychometrics and risk assessment tools were reviewed for each individual as outlined above. Finally, considering potential protective factors, in addition to aspects within institutional behaviour and engagement that related to potential protective factors, work and relationships were considered.

For all areas, for ease of reviewing the data, definitions were created for counts of incidents in order to allow changes on assessment measures to be graded. Definitions for grading can be found in appendix C. These findings were then reviewed alongside the interview and focus group information for each case to see what could be learnt about each area. Findings across cases were then reviewed.

5. Results

Individual case study summaries can be found in Appendix A. For each area the case findings are presented and similarities and differences across cases are considered.

5.1 Engagement

Before considering how Chromis participants might have changed over time it was first important to consider if and how they engaged in the programme. Data was collected and coded as per the coding and grading dictionary in Appendix C.

Table 5.1.1: Case study findings from records for aspects of engagement

	Case 1	Case 2	Case 3	Case 4	Case 5
Attendance	Excellent	Good	Good	Good	Good
Complete on time	Yes	Yes	Yes	Yes	Yes
Between session tasks	Excellent	Average	Average	Good	Good (just off average)
Contributes to sessions	Good	Good	Good	Good	Good
Supports others	Good	Good	Excellent	Average	Excellent
Therapeutic alliance	Excellent	Excellent	Good	Excellent	Good

As can be seen in Table 5.1.1, records indicated that individuals' engagement in Chromis, was generally of a good standard. A key finding was that all individuals completed all components of Chromis. This is not to say that engagement was perfect and it became apparent that it was beneficial that Chromis naturally accommodated fluctuations in engagement, in line with the control and choice principle (Tew & Atkinson, 2013).

While records did not indicate any problems in attendance, staff recalled that two individuals had difficulties with attendance at times; cases two and five. However, staff felt that all individuals had good and bad days in terms of their engagement in sessions. They felt that it was important for these individuals to be able to exercise choice and for the staff to be consistent in their approach to them when they attended and wanted to take part. This may have contributed to these periods not being as prolonged as they may have been and to individuals engaging in a more genuine way when they did attend.

Discussions with individuals and with staff suggested that it was generally factors outside of treatment that had a negative impact on engagement, whereas aspects of Chromis generally appeared to help with engagement. External factors included things such as the death of a relative, and receiving reports that did not support parole. Considering factors related to treatment, the main area appeared to be participants' relationships with staff. This said all individuals were very clear that it was down to their own motivation that they completed treatment. As may be anticipated, it seems that the relevance of treatment to the individual was a key factor in encouraging positive engagement. This entailed finding aspects of the individual's life that they were not happy with and relating material to their current situation. Doing this enabled them to see immediate benefits of treatment and to use current problems in treatment rather than them being barriers to engaging. Records and interviews highlighted that individuals generally understood the material and concepts covered in Chromis components, but it was their motivation or ability to apply these to themselves that was more variable.

It was interesting that two individuals who were noted by staff as having periods of poor engagement were also those who were seen to be genuinely trying to change aspects of their behaviour. This is not to say that other individuals were not trying to change, but illustrates that good engagement may not always relate to change. When looking across cases it became apparent that it is possible for individuals to engage in Chromis, in terms of attending sessions and completing tasks, but for this to be potentially quite superficial. Case four was consistently highlighted by staff and through records as having made little progress during Chromis components and being particularly difficult to engage. However his engagement, as considered in this research, did not stand out as being significantly different from others. Indeed, his therapeutic alliance with a facilitator who was part of the focus group was rated excellent through the WAI. Likewise, case five attended and completed the final CST component but staff noted that he did not engage in the material or make any meaningful progress during this period as he was focused on the fact that he had not been recommended for parole. Furthermore, case three, who had apparently completed out of session tasks regularly and to a reasonable standard, spoke openly about not liking written work and not feeling these tasks benefitted him at all.

One notable observation for this population considering their personality traits was that individuals could and did support each other in various ways. While all participants spoke about preferring individual treatment to group treatment some also shared that they would ask fellow participants they trusted for help with things rather than staff, or that they felt positive about being asked for help themselves. It was notable that an individual who was not

particularly overtly positive about his experiences on Chromis spoke clearly about receiving help from a fellow group member and feeling very proud when someone else asked him for help in how to complete diary entries. Records indicated that all individuals could be verbally supportive of others in sessions, challenging individuals in constructive ways or giving appropriate praise. Staff recognised that, through feedback from other participants, two individuals in particular had positive reputations on the unit for being supportive and respectful of others.

The final CST component of Chromis appeared to be a notable turning point for individuals. This component requires individuals to acknowledge areas of difficulty that require change and brings together all of the skills that have been developed throughout earlier components. For most individuals this appeared to increase relevance and therefore engagement. However, for one individual this was where it became more apparent that they had no motivation to change and meaningful engagement, from the perspective of facilitators, became more of a struggle. It was also where another individual particularly struggled to get involved in sessions. While this was due to an issue outside of treatment rather than Chromis itself, the more intimately challenging nature of CST may have further contributed to this.

Considering engagement before and after Chromis it appeared that some of the issues were enduring for individuals. Consistent findings included, engagement not always being linked to progress, issues outside of treatment impacting on engagement and individual motivation and relevance being key. For example, Case four who appeared to engage in Chromis but for whom this seemed quite superficial (according to records and facilitators) was one of two individuals who had engaged in a number of interventions prior to Chromis and received very positive reports from these. Also, for case two, who was involved in treatment post Chromis, records indicated that he could engage well unless issues from outside impacted on him. For example withdrawing from a drug relapse prevention course when he felt that the prison was colluding with child services to prevent child contact, or withdrawing from hospital based treatment that would involve him staying after his release date.

As a result of all of the data reviewed for each case, and a review of the cross case findings, the following assertions could be made about Chromis regarding participant’s engagement.

Table 5.1.2: Assertions about Chromis related to engagement

Assertion	Cases
Participants engaged in Chromis and completed the programme.	1,2,3,4,5
Chromis accommodates fluctuations in engagement, which is beneficial.	2,3,5
It is factors outside of treatment that had most notable negative impact on engagement.	1,2,3,5
Participants were able to and did support each other.	1,2,3,5
Relevance of material to individuals' current life was important for engagement.	1,2,3,4,5
Participants could 'engage' but be superficial or have no motivation to change.	4,5
CST was a notable turning point for good or bad.	1,2,3,4,5
Observations related to engagement in treatment were evident post Chromis.	2,5

5.2 Institutional behaviour

Given that participants are likely to have time left to serve after completing Chromis changes in their institutional behaviour is of particular relevance to both them and the service. Data were collected and coded as per the coding and grading dictionary in Appendix C.

Table 5.2.1: Case study findings from records related to institutional behaviour

	Case 1	Case 2	Case 3	Case 4	Case 5
Anger and aggression	Some Improvement	Improved	Improved	Improved	Improved
Individual tracked area 1	Some Improvement	Improved	Some Improvement	Some Improvement	Some Improvement
Individual tracked area 2	Some Improvement	Improved	No change	No change	Improved
Adjudications	No change	Improved	Some Improvement	Improved	Improved

As can be seen in Table 5.2.1, all individuals showed improvements in their institutional behaviour over time. Specific areas tracked for each case can be found in the case summaries in Appendix A. When considering institutional behaviour, behaviour in the community while on licence for the two individuals who had been released was included. Improvements were not only seen through the records reviewed, but were also supported by information from interviews and staff descriptions of changes in behaviour. Given the aims of Chromis, a particularly relevant finding across cases was the reduction in physical aggression post treatment. Across all cases there was only one incident of physical aggression post Westgate, although the low predicted rate of physical aggression for three individuals is noted. Expected numbers of incidents based on pre-Westgate behaviour

ranged from 0 to 11 with two individuals expected to have no incidents and one individual expected to have just one.

These changes seemed to culminate in a general shift of individuals becoming less volatile. This was maybe with the exception of case four who, although uniform staff made reference to him being less volatile with staff, records and other staff felt his behaviour remained largely consistent throughout. He was also one of the two individuals who had more than expected acts of physical aggression during treatment. For case one this seemed to relate to particular difficult events in their lives outside of treatment. There was evidence of individuals applying skills from treatment to manage things differently, which appeared to contribute to their improved stability.

As might be expected, individuals all had ongoing problematic behaviour post treatment. Individuals often did not directly acknowledge this themselves, focusing more on how they had changed for the better. However, staff and contact logs highlighted the issue. Individuals showed higher levels of verbal aggression post Westgate than was expected from their pre Westgate behaviour. Considering individual aspects of behaviour that were tracked through case files across time, some aspects of behaviour could be more clearly tracked than others. For example, incidents of self-harm or incidents related to drug use were clearer and more likely to be recorded than incidents related to impulse control. However, reviewing this data alongside the discussion group with staff and assessment tools was helpful. While some individuals showed a higher number of expected incidents in their case records post treatment relative to their pre-treatment behaviour all participants showed a reduction in severity of behaviours. For example, considering rule and boundary breaking for case two entries pre-treatment included behaviours such as taking a member of staff hostage where as entries post treatment were, for example, for being late signing in at the hostel, or trying to get overnight visits with his girlfriend when he was not eligible for these. It is also of note that while recorded incidents of impulsivity, problem solving or drug related behaviours may have increased for some individuals they were now managing to remain on normal location and were attracting fewer adjudications. The possible exception to this was case five, who during the course of the study was actually recalled from the community back to a category B prison. However, it is of note that this was not for further offences but problems complying with his licence linked to his ongoing battles with drug relapse. While clearly concerning, was a positive shift from his previous behaviour. The individual was himself able to highlight changes in his risk relate behaviours to those involved in his sentence management. This suggests low level rule violation, less serious than re-offending and with some individual ownership and insight, but nevertheless requiring external action in the form of a recall.

While problematic behaviour was tracked and appeared to remain in some form, it became apparent that for most cases there was also a gradual introduction of, and increase in, positive entries relating to their behaviour. For example, starting to see entries relating to case five volunteering that they had relapsed with their drug use and seeking support from staff. Also, case one proactively seeking support to manage thoughts about self-harm rather than making threats to self-harm or avoiding large meetings due to anxiety and later attending and even taking the lead in these meetings on occasions.

Related to individuals' improved institutional behaviour was the fact that all individuals appeared to develop improved relationships with uniform staff. Having worked with uniform staff in treatment individuals spoke of being more prepared to engage with uniform staff in their progression environments, something that was supported by records. For most cases there appeared to be particular relationships that had helped to shift their overall perception and therefore their approach to uniform staff, but for case four this was not apparent.

As a result of all of the data reviewed for each case, and a review of the cross case findings, the following assertions could be made about Chromis regarding participants' institutional behaviour.

Table 5.2.2: Assertions about Chromis related to institutional behaviour

Assertion	Cases
Chromis participants showed improvements in 'institutional' behaviour over time.	1,2,3,4,5
Chromis participants applied some skills from treatment to life on the unit on occasions.	1,2,3,4,5
Chromis participants had ongoing difficulties post treatment but these were less extreme than pre treatment.	4,5 most striking but also 1,2,3
Chromis participants had improved relationships with uniform staff.	1,2,3,4,5
Chromis participants became less volatile.	1,2,3,5

5.3 Risk factors

Considering changes in risk factors related to treatment and re-offending there were consistent findings across all five cases. All individuals appeared to make improvements in areas related to risk over the course of Chromis. However all of them also continued to have difficulties in relevant areas at the point of ending treatment. This may be expected given the clear interplay between factors related to risk and institutional behaviour for individuals. As can be seen in table 5.3.1 all five cases showed some improvements in risk assessment

(HCR-20 or VRS) scores over the course of treatment. They also all made clinically significant improvements in some risk areas as measured via psychometric assessments. While there are some obvious cautions relating to self-report assessments with individuals with high levels of psychopathic traits it was interesting to note that for two individuals improvements in these measures related to times that staff identified as periods where they had made the most progress. For example staff identified case three as making more progress in CST when he was not in a group with certain individuals and case four as being able to quickly understand skills and issue within cognitive skills components but struggling in CST.

Table 5.3.1: Changes in assessment scores over the course of treatment for cases

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**
HCR-20	Improved	Same	Improved	Some improvement	Same
VRS	Improved	Some improvement	Improved	Same	Improved
Psychometrics Cog Skills	-	Improved	Same	Some improvement	Improved
Psychometrics CST	Some improvement	Some improvement	Improved	Same	Improved
Psychometrics Chromis	-	Improved	Improved	Improved	Improved

In interview, individuals all felt that they were able to address the areas that they needed to work on in treatment. They were able to talk about things that they had learnt and how they had handled some situations differently as a result of this. Staff also identified changes that every individual made over the course of treatment that related to their areas of risk. This was however particularly limited for case four, something that didn't show up as a notable difference in the measures considered.

A likely consequence of this apparent improvement in assessments of risk and improved institutional behaviour, which are inter-related, was each individual's progressive move after completing Chromis. A notable finding was that the two individuals who appeared to have the most significant violence histories (cases two and three) had notable improvements in the quantity and extent of their violence, the main aim of Chromis. This was shown through their case notes and interviews with the individuals and staff. For case two staff particularly commented that this person had always assaulted others but had learnt through treatment that he could exist without it.

While these are very promising findings it was clear that all individuals continued to show evidence of personally relevant risk factors through treatment and in their progression environments. Discussions with staff, post programme reports and contact logs from progression environments all highlighted ongoing difficulties for all individuals. One notable observation was that for the two cases where drug use was a particularly prominent behaviour, despite improvements, the use of drugs continued post treatment and was particularly influential. Case three had had positive drug tests shortly before a parole board and case five had ongoing battles with drug relapse in the community contributing to his eventual recall. While drug use per se is not directly addressed within Chromis it is considered within treatment and the broader regime on the unit.

As a result of all of the data for each case, and a review of the cross case findings, the following assertions could be made about Chromis regarding participants' risk.

Table 5.3.2: Assertions about Chromis related to risk factors.

Assertion	Cases
Chromis participants showed improvements in assessments focused on risk (HCR-20 & VRS).	1,2,3,4,5
Chromis participants showed improvements in risk factors as measured by psychometric assessments.	1,2,3,4,5
Despite improvements, Chromis participants all showed ongoing difficulties relating risk at the point when they completed treatment.	1,2,3,4,5
Chromis participants had constructive progressive moves post treatment (linked to risk and institutional behaviour).	1,2,3,4,5
Where drug use was an issue this remained an issue post Chromis.	2,3,5

5.4 Potential protective factors

Across all cases there appeared to be an improvement in potential protective factors over time in treatment and in progression environments. Looking at the generic protective factors suggested by CSAAP, (2012)[8] there is an overlap between potential protective factors and other areas considered in this study. As such, improvements in attitudes, problem solving, self-management, and engagement outlined above could all be seen as potential protective factors. For example, an individual who described buying himself a play station to help keep himself out of trouble on the unit was describing the development of an adaptive coping

[8] Housing, employment, strong pro-social relationships, non-criminal identity, pro-social activities, sobriety, problem solving and emotional management skills, maturation.

strategy that is potentially protective for him. In addition to these, Chromis participants showed developments in some work and relationships, areas that could also act as protective factors.

All five individuals had significant previous work problems as identified by the relevant item in the HCR-20. Two of these showed notable improvement through the VRS dynamic item considering work ethic and the other three showed some shift in a positive direction in the stage of change for this item. Related to this, four of the individuals spoke positively about how they occupied their time in their new environments. This included things such as involvement in education and finding employment they liked. Records and staff supported these assertions. For example, case four spoke about completing education courses that he was not keen on attending in order for him to progress to courses that he found more interesting, an approach which he felt was quite new for him. Case two, who was living in the community, spoke about building himself a reputation through his work, which he liked.

Related to participants' institutional behaviour being less volatile, their ability and motivation to work towards longer term goals seemed to help them make choices to manage current situations in a more pro-social way. These longer terms goals could be considered potential protective factors for them. All individuals who were interviewed spoke about wanting to get out of prison and wanting to stay in the community. For example, case one and two both spoke about making decisions about how to handle things in the interests of their longer term aim of getting released. It was interesting to note that case five, who was recalled during the course of the study, was described by staff as seeming to have little motivation to leave prison compared to the others. His anxiety about leaving was well documented. These generally improved attitudes towards sentence progression formed a potential protective factor. Case four, who was described by Chromis staff as not seeming to believe that he needed to change, appeared to have developed an improved work ethic but no other potentially protective factors.

Four Chromis participants had improved relationships over time. This related to relationships with staff, particularly uniform staff, and for some, relationships with their family. This was apparent across interviews with participants and staff, and contact logs. Items relating to supportive relationships on the HCR-20 and VRS showed little change over time. All participants had struggled to work with uniform staff in treatment but having to manage this appeared to contribute to them holding more positive attitudes toward talking to uniform staff and asking for help, even in their progression environments. Given the length of time three individuals still had to serve and the ongoing management in the community for the other

two, developments in relationships with staff represents a potentially significant protective factor for this group. Case two had built up a family on release who were a clear focus for him in his interview. Case one reportedly tried not to engage in destructive activities, such as self harm, because he promised family that he would not.

Staff felt that as a result of the work completed in treatment they had gained a better understanding of each individual, their risk and how they could best work with them, although they acknowledged that this was not always easy to do in practice. There was a notable amount of planning and communication involved around individuals' progression. This knowledge, communicated via reports and verbally, appears to have been helpful to staff in the progression environments, contributing to suitable management processes to continue to support and engage individuals.

As a result of all of the data for each case, and a review of the cross case findings, the following assertions could be made about Chromis regarding potential protective factors for participants.

Table 5.4.1: assertions about Chromis related to potential protective factors

Assertion	Cases
Chromis participants showed an improvement / development in potential protective factors over time which was evident in treatment and in new environments.	1,2,3,4,5
Chromis participants' motivation for achieving their own aims seemed key.	1,2,3,4,5
Chromis participants developed social competencies and problem solving skills over time.	1,2,3,5
Chromis participants developed improved relationships with staff and some family.	1,2,3,5
Chromis participants' ability to keep themselves occupied / work showed signs of improving over time.	2,3,4,5
The treatment process helped staff to better understand individuals and therefore contribute to potentially protective environments.	1,2,3,4,5

6. Discussion and Implications

In order to better understand the impact of Chromis on participants, five case studies were completed to review changes in key areas for stakeholders. These areas can clearly overlap, for example, changes in institutional aggression relate to institutional behaviour, a risk factor targeted by the programme, and engagement in interventions and regimes. Findings and their implications were therefore considered as a whole.

There appears to be evidence that individuals can and did engage in Chromis. While it is acknowledged that participants were all people who had completed treatment, this is positive given that some participants had previous difficulties engaging meaningfully in treatment and the clear fact that any benefits of Chromis can only be realised if individuals participate in, and preferably, complete the programme. Given that individuals who appeared to be genuinely motivated to change appeared to have fluctuating engagement, more so than an individual who was seen to have little motivation to change, it seems important that Chromis was able to accommodate variable, and at times problematic, engagement. The difficulties experienced engaging in treatment remained post Chromis and so needed to be recognised and considered as part of an individual's progression plan.

Considering changes in institutional behaviour and relevant risk factors, while all participants had some ongoing difficulties, they all made progress that was evident beyond the treatment environment and they could all be managed within normal regimes post treatment. In general, participants appeared to be better able to delay action. This enabled them to select alternatives to violence to manage new situations. At least part of their motivation for this seemed to be keeping in mind longer term goals of their own that required them to not respond violently. This resulted in more stable behaviour and therefore potentially better access to opportunities within the regimes. This also impacted on the development of potential protective factors of improved work ethics, the ability to keep themselves constructively occupied and developing some positive relationships.

A notable finding across the cases was that individuals seemed more prepared to interact with uniform staff over the course of treatment and in their new environments and in some cases developed helpful relationships with them. This also enabled them to get support, access more opportunities and potentially contributed to less volatile behaviour towards staff.

All participants showed improvements in measures of risk over the course of treatment. Risk relevant treatment changes can predict meaningful reductions in violent recidivism (Howells, 2004; Lewis, Olver & Wong, 2013; Wilson, Desmarais, Nicholls, Hart & Brink, 2013). These could therefore be seen as positive indicators that Chromis impacted by reducing violence for these individuals.

Despite this it was evident that changes made by individuals were not necessarily apparent in assessment tools but were noted through contact notes and interviews. Changes for participants could be quite subtle but still important and have a big impact for them and those around them. For example, staff particularly commented that while they felt case three made progress in treatment he was starting at such a level of difficulty and need that he was still way above the norm at the end of treatment. Also, for case four, while he was seen to make little progress it was notable that his pre-treatment records included incidents of weapon use, fire setting and assaults in custody. Post treatment, while there were concerns about his behaviour, he was living on main prison location with no adjudications or incidents of overt aggression.

While all individuals had ongoing difficulties it is argued that the observed changes should not be underestimated, particularly considering each case's level of risk, treatment needs and complex personality profiles prior to treatment. This study suggests a need for staff to maintain a realistic view of what success looked like for Chromis participants and to recognise and acknowledge progress when it occurred. It was notable that while individuals had ongoing difficulties these were less extreme post treatment than their behaviours pre-treatment. Even where apparent negative or backward steps were observed, when considered in context of their previous behaviour this was still an indication of overall progress. For example, case five had been recalled to custody before the end of this study. However, he had not committed any further offences and had continued to engage in services regarding his struggles to manage in the community. This is in contrast to previous times in the community when he had disappeared and contact had only been regained following him being caught for further offences.

While there were many similarities across cases it was also evident that individuals had different experiences of Chromis and responded differently to this experience. While one individual spoke of struggling to understand what was required from particular written tasks in Chromis, all participants were considered to understand the principles and skills of treatment. Differences were apparent in their motivation or ability to put treatment into practice in their daily lives and this seemed to be where the core focus of work was needed. Unsurprisingly,

the need for treatment to be relevant to the individual was critical. This appeared to be achieved through the individual identifying something in their life that they were not happy about. While the key seemed to be an issue that the individual themselves wanted to change, identifying this seemed to enable them to consider and work on other areas. The one individual, case four, who had not been able to identify something that they wanted to develop or change was the individual who did not appear to be able to progress in any of the areas that staff felt needed to be addressed. This indicates that spending time on identifying and understanding motivation at the outset was important. Following this study the delivery site changed their approach to Chromis treatment components. They previously completed cognitive skills components with individuals first, to help develop a therapeutic alliance before moving on to the CST component, which necessitated more personal self-disclosure. However, they changed complete the formulation phase of CST first (as shown in Figure 1) to help further individualise treatment from the outset.

Considering change in treatment, one individual in particular, case four, stood out as appearing to make little progress as a result of engaging in Chromis. This was the one individual who had a diagnosis of narcissistic personality disorder. This individual did still complete treatment which is in contrast to the findings of Bennett (2015) who found narcissistic personality disorder to be significantly correlated with non-completion. However, this could be seen as compatible with the idea that those with narcissistic personality disorder particularly struggle in treatment. In line with this staff did speak generally about those with particularly high levels of overall psychopathy along with a narcissistic personality disorder diagnosis particularly struggling when it came to the CST phase of treatment. Those with high levels of narcissism appear to be the individuals who particularly struggle to engage in treatment and make changes. More work is therefore needed to investigate the nature of this and if they could be better supported.

While individuals were less explicit about the extent of their problematic behaviour it was notable that participants' views were not wildly at odds with staff or records. It was also interesting to note that files and individuals did not appear to convey the extent of their problematic behaviour during treatment in the same way that staff did during the focus group. It might be expected that staff focus on the key areas in reports in a motivational manner for the participant. However, this highlighted the importance of seeking further information relating to Chromis participants in order to more fully understand them. It appeared to be important for successful ongoing sentence progression for the difficulties that individuals had to be openly discussed as part of progression planning, while still remaining encouraging, in line with the principle of transparency underlying Chromis. This also relates to the need for

staff involved with these individuals to balance optimism for treatment with a realistic view of ongoing needs. It was always intended that multiple sources would be required to understand and assess change for participants and progression sites need to be aware of this.

This study provides indicative positive findings in support of Chromis and its approach to working with this population. This research complements other studies that have been completed. For example, participants' experiences of Chromis have been explored using interpretive phenomenological analysis (Tew, Bennett & Dixon, 2014) with the interview data from this study. This provided some understanding of why and how some changes might have occurred for individuals; highlighting factors they considered to have helped and hindered their engagement in treatment. This multiple case study project has been able to use a range of data sources to further understand how the individuals engaged and any changes that have occurred.

7. Limitations and further work

Although this study has enabled a detailed look at changes in key areas for Chromis participants it is important not to overstate the conclusions that can be drawn from this exploratory study in terms of implications for the Chromis population as a whole. As sample sizes increase it will be important for further studies to be completed that look at the impact of treatment for participants on a wider scale. This would provide a valuable accompaniment to understanding the details of change at an individual level.

It should be remembered that the cases reviewed here did not just take part in Chromis while on Westgate and so some findings may be considered more reflective of the impact of the whole Westgate regime. Given that Westgate works to the same core principles and model of change as Chromis then findings provide some indicative evidence of the positive impact of working with individuals with high levels of psychopathic traits in this way.

Every effort was made to obtain all relevant data for individuals, however, there was some missing data for cases, either because this did not exist, for example not all participants completed all psychometric assessments at all testing points, or because it could not be accessed. For example, contact notes for case two's period of time in a secure hospital were not available. Other sources, such as interviews and alternative reports were used to provide an overview where some primary information sources were missing.

The counts of behaviours were taken from files and so their accuracy is affected by the accuracy of how records are kept. While every effort was made to ensure all files were reviewed, it is possible that not all were located and so information may be missing. This is most likely to apply to individuals' time pre-Westgate and would therefore provide more information about incidents for this time period. This would mean that these findings underestimate changes in behaviour for these individuals and therefore downplays the potential impact of treatment. The coding of behavioural data was also dependent on the researcher interpreting reports that may not accurately reflect their actual behaviour. It was also the case some behaviours may be more prone to being recorded or more easily distinguished than others, for example self-harm relative to impulsive behaviour.

It is also important to note that individuals progressed from Westgate to different environments offering different levels of support, intervention and monitoring. These regimes will also have impacted on their post treatment behaviour and the amount of information

available to consider in the study. For example there was considerably more information available for the individual who engaged in an intensive daily treatment programme in the community relative to someone who remained on a normal prison wing or who reported weekly to their offender manager. That said, these differences reflected differences in staff's perceptions of ongoing difficulties for the individuals, and the appropriate responses by the criminal justice service to this.

This study has provided valuable information relating to changes over time for Chromis participants, taking into account the individualised nature of the programme. Participants were selected who could offer the most information in this regard and so this study has focused on people who have successfully completed treatment and progressed to a different environment. While helpful this is also a limitation when investigating improvements made by participants. A possible next stage of the evaluation process could be to consider changes across participants more widely, including those who fail to complete Chromis. Looking at those who do not complete treatment may help to further identify critical factors for engagement. It is noted however that these factors and corresponding engagement levels may or may not relate to change for individuals. In this study, it was not that case that individuals who reported better levels of engagement made more positive changes and those who had more problematic engagement made less change. It also remains the case that a longer term aim for evaluation would be to consider the impact of Chromis on levels of re-offending.

8. Conclusions

Given the heterogeneous nature of the Chromis treatment population and the responsive nature of the programme the multiple case study has proved a useful approach to start to understand the engagement and changes for participants. This study suggests that participants can and do engage in Chromis and that they can gain benefits, linked to but not confined to the overall aim of reducing violence, as a result of this engagement. Changes in incidents of physical aggression, self-reports of anger, adjudications and changes in violence risk assessments all point towards positive developments in this regard. From discussions with individuals it was apparent that in general they were better able to delay action; think of consequences and consider alternatives. Relating skills to achieving their own goals seemed critical in achieving this. Developments in relationships with staff, particularly uniform staff, also seemed important in supporting improved institutional behaviour for individuals.

This study has provided indicative positive findings in support of working with this complex population through the approach taken by Chromis. However, it has also highlighted that further work is needed to better understand the difficulties experienced by some participants with a view to seeing if they can be better supported through the treatment process. The evidence base for this intervention and approach should be further developed through larger scale studies that will provide a wider understanding of the long term impact of the programme on participants.

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Appendix A
Case study summaries

Table 1: Background summary for case study 1

Age (at time of study)	36
Ethnicity	White British
Offending	Index Offence: Arson Sentence: Life with a 3 year tariff that expired 16 years ago Previous Offending: previous conviction for sexual offences
Personality assessments	IPDE[9] – 2 definite diagnosis (Anti-social and Borderline) PCL-R[10] – Total = 30, Factor 1 = 11, Factor 2 = 14.9 *Definite items*: manipulative, lack of remorse / guilt, poor behavioural controls, early behavioural problems, lack of realistic long term goals, irresponsibility, failure to accept responsibility, juvenile delinquency, *Probable items*: Grandiosity, need for stimulation / proneness to boredom, pathological lying, shallow affect, parasitic lifestyle, impulsivity, *Not applying*: Glibness and superficial charm.
Previous Interventions	Anger Management course –1995 Cognitive Skills course –1997 Anger control course –1996, started but withdrew after 2 days. Personal development course – 2001 Stress management course – 2003 Enhance Thinking Skills – 2003
Individual areas tracked	1 = Poor attitudes 2 = Self Harm
Pathway through treatment[11]	Spent 8 years 8 months on the unit Psycho Education, **Motivation & Engagement**, **Creative Thinking, Problem Solving, Handling Conflict**, Emotional Modulation, Social Competence, Relationships & Intimacy, **Chromis Schema Therapy**, Progression & Maintenance
Progression	Had left the unit 1 year 10 months before the study. Came from a category A establishment and progressed to a category B establishment.

9 IPDE REF See appendix B

10 PCL-R REF See appendix B

11 Chromis components are in bold

Table 2: Background summary for case study 2

Age (at time of study)	33
Ethnicity	White British
Offending	Index Offence: False Imprisonment, Attempted Kidnap, Possession of an Offensive Weapon and Possession of Class A Drugs Sentence: 11 years Previous Offending: 105 previous convictions spanning a range of offence categories
Personality assessments	IPDE – 2 definite diagnosis (Anti-social and Paranoid), 1 probable diagnosis (Schitzotypal) PCL-R – Total = 28, Factor 1 = 10, Factor 2 = 18 *Definite items*: conning and manipulative, callous lack of empathy, lack of remorse / guilt, failure to accept responsibility, need for stimulation / proneness to boredom, irresponsibility, lack of realistic long term goals, impulsivity, early behavioural problems, revocation of conditional release, criminal versatility, juvenile delinquency *Probable items*: poor behavioural controls, parasitic lifestyle, shallow affect, pathological lying *Not applying*: Glibness and superficial charm, Grandiosity, sexual promiscuity, many short term marital relationships.
Previous Interventions	Says previously declined offer of help with substance misuse as did not think this was a problem.
Individual areas tracked	1 = Rule and boundary breaking 2 = Incidents related to drug use
Pathway through treatment	Spent 4 years 6 months on the unit Psycho Education, **Motivation & Engagement**, **Creative Thinking, Problem Solving, Handling Conflict**, **Chromis Schema Therapy**, **Progression & Maintenance**
Progression	Had left the unit 3 year 3 months before the study. Had been in the community 2 years 1 month at the time of the study. Came from a category A establishment and progressed to a medium secure unit and then back to Westgate until his release.

Table 3: Background summary for case study 3

Age (at time of study)	43
Ethnicity	White British
Offending	Index Offence: Murder Sentence: Life with a tariff of 9 years that expired Previous Offending: 14 previous convictions. Mostly acquisitive, criminal damage and failing to surrender to custody.
Personality assessments	IPDE – 4 definite diagnosis (Anti-social, schizoid, borderline and Paranoid) PCL-R – Total = 27.1, Factor 1 = 8, Factor 2 = 15.6 *Definite items*: need for stimulation / proneness to boredom, lack of remorse / guilt, shallow affect, callous lack of empathy, poor

	behavioural controls, early behavioural problems, lack of realistic long term goals, impulsivity, revocation of conditional release *Probable items*: conning and manipulative, parasitic lifestyle, failure to accept responsibility, juvenile delinquency, criminal versatility *Not applying*: Glibness and superficial charm, Grandiosity, pathological lying, sexual promiscuity (not scored), many short term marital relationships (not scored) irresponsibility (not scored)
Previous Interventions	Engaged with psychologists discussing offence and related issues – 1992. Withdrew from CSCP 1997 & 2001. Tried anger management 3 or 4 times before completing in 1998. Made limited progress. Reasoning & Rehabilitation – 1998
Individual areas tracked	1 = Impulsivity 2 = Incidents related to drugs
Pathway through treatment	Spent 5 years 9 months on the unit Psycho Education, **Motivation & Engagement**, **Creative Thinking,** Emotional Modulation, Iceberg, Social and Interpersonal Competencies, **Problem Solving, Handling Conflict**, **Chromis Schema Therapy**, **Progression & Maintenance**
Progression	Had left the unit 2 year before the study. Came from a category A establishment and progressed to a category B establishment. Received D category status during the study.

Table 4: Background summary for case study 4

Age (at time of study)	35
Ethnicity	White British
Offending	Index Offence: Murder Sentence: Life with a tariff of 16 years Previous Offending: 13 previous convictions including acquisitive offences, robbery, wounding, possession of a weapon
Personality assessments	IPDE – 4 definite diagnosis (Anti-social, Narcissistic, borderline and Paranoid), 1 probable diagnosis (histrionic) PCL-R – Total = 37.9, Factor 1 = 15, Factor 2 = 16.7 *Definite items*: Glibness and superficial charm, Grandiosity, need for stimulation / proneness to boredom, pathological lying, conning and manipulative, lack of remorse / guilt, callous lack of empathy, parasitic lifestyle, poor behavioural controls, sexual promiscuity, early behavioural problems, lack of realistic long term goals, impulsivity, failure to accept responsibility, many short term marital relationships, juvenile delinquency, criminal versatility *Probable items*: shallow affect, irresponsibility *Not applying*: revocation of conditional release (not scored)
Previous Interventions	7-session Individual Violence Programme – 1999 2 day Stress management – 2001 2 day Drug awareness – 2001

	Enhanced Thinking Skills – 2001
Individual areas tracked	1 = Impulsivity 2 = Poor problem solving
Pathway through treatment	Spent 7 years on the unit Psycho Education, **Motivation & Engagement**, Iceberg, **Creative Thinking,** Emotional Modulation, **Problem Solving, Handling Conflict**, Social and Interpersonal Competencies, relationships & Intimacy, **Chromis Schema Therapy**, **Progression & Maintenance**
Progression	Had left the unit 1 year 5 months before the study. Came from a category A establishment and progressed to a category B establishment.

Table 5: Background summary for case study 5

Age (at time of study)	44
Ethnicity	Black British African
Offending	Index Offence: Robberies and attempted robbery Sentence: 14 years Previous Offending: 39 previous convictions including acquisitive offences, robberies, drug possession and assaults.
Personality assessments	IPDE – 3 definite diagnosis (Anti-social, borderline and avoidant), 1 probable diagnosis (paranoid) PCL-R – Total = 23, Factor 1 = 9, Factor 2 = 12 *Definite items*: conning and manipulative, lack of remorse / guilt, callous lack of empathy, parasitic lifestyle, poor behavioural controls, early behavioural problems, failure to accept responsibility, juvenile delinquency, criminal versatility *Probable items*: need for stimulation / proneness to boredom, shallow affect, impulsivity, irresponsibility, revocation of conditional release *Not applying*: Glibness and superficial charm, Grandiosity, pathological lying, sexual promiscuity, lack of realistic long term goals, many short term marital relationships
Previous Interventions	None
Individual areas tracked	1 = Impulsivity 2 = Incidents related to drug use
Pathway through treatment	Spent 5 years 8 months on the unit Psycho Education, **Motivation & Engagement**, **Creative Thinking,** Iceberg, **Problem Solving,** Emotional Modulation, **Handling Conflict**, Social and Interpersonal Competencies, **Chromis Schema Therapy**
Progression	Had left the unit 1 year 9 months before the study. He had been in the community for 1 year 1 month at the time of the study. Came from a category A establishment and progressed to a category B establishment.

Where PCL-R items were omitted this was done within the scoring guidelines of the PCL-R (Hare, 2003) and assessments were pro-rated.

Appendix B
Chromis assessment measures

Chromis psychometric battery measures included in this study

Barratt Impulsivity Scale (BIS-II; Barratt, 1994). The Barratt scale is a 30-item self-report questionnaire. There are three subscales measuring motor impulsivity, cognitive impulsivity and non-planning impulsiveness. Participants rate each of these items on a four-point scale (where 1 equals rarely/never and 4 equals almost always/always).

Social Problem Solving Inventory Revised (SPSI-R; D'Zurilla et al., 2000). The SPSI-R is a 52 item self-report measure assessing strengths and weaknesses in problem-solving abilities. It measures two adaptive problem solving dimensions; Positive problem orientation and Rational problem solving and three dysfunctional dimensions; Negative problem orientation, Impulsivity/carelessness style and Avoidance style. The Rational problem solving scale as four subscales, namely; Problem definition and formulation, Generation of alternative solutions, Decision making and Solution implementation and verification.

Novaco Anger Scale and Provocation Inventory (NAS-PI; Novaco, 1994). The NAS-PI is divided into two parts. Part A comprises the Novaco Anger Scale. This contains 60 items divided into 3 scales that focus on (1) cognition, (2) arousal and (3) behaviour, related to anger and the experience of anger. Part B is based on the Novaco Provocation Inventory. This contains 25 items divided into 5 subscales to provide an index of anger intensity and generality across a range of potentially provocative situations. These subscales examine primarily cognitive aspects of anger: perceived disrespect of oneself by others, perceived sense of unfairness, frustration, a tendency to see others as self-centred and insensitive, and sensitivity to incidental annoyances.

Locus of control questionnaire (LOC; Levenson, 1972). This is a self report questionnaire that assesses the extent to which a participant believes what happens to him is determined by external influences or whether he has control over his experiences. It is an 18 item scale where participant's respond on a five point likert scale from 0=strongly disagree to 4= strongly agree.

Psychological Inventory of Criminal Thinking Styles (PICTS; Walters, 2002). The PICTS is a self report questionnaire consisting of 80 items measuring the eight (over-lapping) primary cognitive features of lifestyle criminality. These are; Mollification, cut-off, entitlements, power

orientation, sentimentality, super-optimism, cognitive indolence, discontinuity. There are also 2 validity scales; confusion and defensiveness.

Historical, Clinical, Risk Management tool (HCR-20)

The HCR-20 (Webster et al. 1997) is a set of structured professional guidelines for the evaluation of violence risk, and was initially designed for assessing the potential for violence in individuals suffering from mental and personality disorders. It forms a checklist of 20 risk factors for violent behaviour, which are categorised into past/present/future. There are 10 'Historical' items (past, relatively static), 5 'Clinical' items (current, dynamic), and 5 'Risk Management' items (future, dynamic and situational).

Violence Risk Scale (VRS)

The VRS (Wong and Gordon, 2000) measures a variety of static and dynamic risk factors for violence. There are 6 static factors and the 20 dynamic factors rated on a four-point scale to reflect the extent of the problems identified. Dynamic risk factors are rated according to the degree to which they are present, and the individual's preparedness and motivation to change.

Psychopathy Checklist Revised (PCL-R)

The PCL-R (Hare, 2003) is a 20 item tool assessing personality traits associated with psychopathy in a range of settings. It uses interviews, files and information from third parties to assess personality traits and behaviours related to the concept of psychopathy. Each item is scored on a three point scale with 0 indicating the absence of the trait, 1 indicating a potentially or partly applicable trait and 2 indicating a definitely applicable trait. Total scores range from 0 to 40. Hare (2003) developed a two factor model for the PCL-R where the superordinate factor of psychopathy divides into two factors. Factor 1 is characterized by selfishness, callousness and remorseless use of others, and Factor 2 is characterized by a chronic unstable and anti-social lifestyle and social deviance.

International Personality Disorder Examination (IPDE)

The IPDE (Loranger, 1999) assess the personality disorders described in the Diagnostic and Statistical Manual of Mental Disorder 4th Edition and the International Classification of Diseases 10th Edition. The IPDE is still compatible with the 5th edition of the Diagnostic and Statistical Manual of Mental Disorder. It consists of a self administered screening questionnaire and a semi-structured interview. The screening questionnaire helps to identify individuals where there is a suggestion of the presence of a personality disorder for further

assessment with the clinical interview. Scoring guidelines are provided with the interview and assessors assign a definite, probable or negative diagnosis for each personality disorder.

The Working Alliance Inventory (WAI)

The WAI (Horvath, 1994) is a 36 item questionnaire with items measured on a 7 point scale ranging from ‘never applies’ to ‘always applies’. There is a client version, a therapist version and an observer version of the measure. Where possible the therapist and client versions were completed for each individual.

Appendix C
Definitions for data coding

Coding of Engagement data

Aspect of Engagement	*Definition*
Attendance	Records of attendance for each Chromis component. From session logs the number of attended sessions and the number of sessions missed and rearranged due to the participant. Where session logs were not available post programme reports were consulted to get an overview of attendance for the component.
Completion on time	Record of the number of completed Chromis components based on post programme reports.
Completion of between session tasks	Taken from Chronis component session logs. The number of completed and non-completed tasks. This is about physically completing the task and not about the quality of the work produced. Where session logs were not available post programme reports were consulted to get an overview for the component.
Expected contribution to therapy sessions	Taken from Chromis component session logs. The number of positive and negative comments regarding personal disclosure, and contribution to tasks.
supportive and helpful to other participants.	Session notes and post treatment reports. Marking number of positive and negative comments regarding being supportive and helpful to other participants in each session within each component.

Grading of Engagement data

Grade	*Definition*
Excellent	only positive comments, attended all sessions,
Good	More positive comments than negative ones, missed no more than 8 sessions over all
Average	The same number of positive and negative comments (within 2)
Poor	More negative comments than positive comments
Unacceptable	only negative comments
Completed on time	Yes = Completed all identified components during time in treatment. No = Failed to complete all identified components during time in treatment.
Alliance	Measured using the Working Alliance Inventory (WAI). Total is out of 252. Scale is out of 84. The overview takes the average where both participant and facilitator scores were available. Also compared strength of participant and staff views. Overview is based on total score: Excellent 252 – 189 Good 188 – 125 Average 124 – 61 Poor – below 60

Coding of data for institutional behaviour

Term	*Source*	*Coding*
Anger and Aggression	Incidents of verbal aggression from contact logs from date of sentence to date of data collection	An entry was counted if it included comments relating to raised voice, shouting, swearing, being abusive, being argumentative, agitated towards a particular individual, threats of future consequences, ranting, angrily challenging, having an outburst, having a confrontation with someone. Also, specific allegations of bullying unless specifying a physical element, verbal incidents that include an individual walking or storming off and written threats. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
	Incidents of physical aggression from contact logs from date of sentence to date of data collection	An entry was counted if it related to a physical act towards another individual including actual hitting, physical acts towards belongings including smashing up belongings, throwing belongings, slamming doors, hitting tables, incidents that result in the individual needing to be restrained by staff. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
	NAS-PI	Whether or not there was clinically significant change on the anger scale and the provocation scale pre and post treatment as a whole was noted. Other testing sessions were checked to see what could be learnt about where any change occurred (e.g. pre and post cognitive skills components and pre and post CST component).
	VRS item D6 Interpersonal aggression	Score and stage of change for initial assessment and subsequent re-scores was noted. Code as slight improvement if move from Pre Contemplation to Contemplation between first and last assessment (no score change) and code as improvement if move from Pre Contemplation or Contemplation to Preparation, Action or Maintenance between first and last assessment (score reduction).
	VRS item D7 Emotional control	Score and stage of change for initial assessment and subsequent re-scores noted. Code as slight improvement if move from Pre Contemplation to Contemplation between first and last assessment (no score change) and code as improvement if move from Pre Contemplation or Contemplation to Preparation, Action or Maintenance between first and last assessment (score reduction).

Term	*Source*	*Coding*
Self Harm	Incidents of self harm from contact logs from date of sentence to date of data collection	An entry was counted if it was about an actual act of self harm including cutting and hitting. Does not include discussions with staff about thoughts of self harm unless accompanied by an actual act of self harm as this is seen as gaining support in a positive manner. Does include using threats of self harm (e.g. saying you are going to self harm while locked up if staff don't do X). A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below
Poor Attitude	Incidents of poor attitude from contact logs from date of sentence to date of data collection	Entries were counted if they were comments about being rude to staff when asked to do things, being derogatory and disrespectful to others, being described as showing an unacceptable attitude in activities, having to be challenged about his attitude by staff, refusing to do things asked of him. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
	VRS item D3 criminal attitudes	Score and stage of change for initial assessment and subsequent re-scores was noted. Code as slight improvement if move from Pre Contemplation to Contemplation between first and last assessment (no score change) and code as improvement if move from Pre Contemplation or Contemplation to Preparation, Action or Maintenance between first and last assessment (score reduction).
	PICTS	The number of scales that showed clinically significant change pre and post treatment as a whole was noted. Other testing sessions were checked to see what could be learnt about where any change occurred (e.g. pre and post cognitive skills components and pre and post CST component).
Rule and boundary breaking	Incidents of rule and boundary breaking from contact logs from date of sentence to date of data collection	Entries were counted if they were comments about incidents relating to actually breaking rules or trying to push boundaries (e.g. asking different people to try and get to do something not allowed to do), doing things against what asked to do by staff (e.g. going to use the phone when told to return to his cell). A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.

Term	*Source*	*Coding*
Incidents related to drug use	Incidents related to drug use from contact logs from date of sentence to date of data collection	Entries were counted if they were entries relating to the use of any non-prescribed drugs, trying to manipulate access to prescribed medication, suspicion behaviour (e.g. seeming under the influence or seen passing packages to known drug associates), admittance of drug use, positive drug tests, and refusing to take drug tests. Does not include entries where talk about managing urges to use drugs and relapse prevention as these were seen as seeking support in a positive way. These times were counted if they included an admission of drug use. Entries related to the use of hooch were included. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
	VRS item D12 substance abuse	Score and stage of change for initial assessment and subsequent re-scores was noted. Code as slight improvement if move from Pre Contemplation to Contemplation between first and last assessment (no score change) and code as improvement if move from Pre Contemplation or Contemplation to Preparation, Action or Maintenance between first and last assessment (score reduction).
Impulsivity	Incidents related to impulsivity from contact logs from date of sentence to date of data collection	Entries were counted if they related to cognitive or behavioural impulsivity. Includes entries relating to not completing tasks, changing plans suddenly (e.g. attending things and then deciding to leave or not attending as a response to something else happening on the unit), doing things not compatible with longer term goals (i.e. comments on not reflecting on consequences), demanding things when they want them, packing their kit to move when not actually moving, comments from staff about impulsivity e.g. 'wants everything done yesterday'. Behavioural outcomes driven by anger were not counted (e.g. throwing property) as they were coded under physical aggression. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
	HCR-20 item C4 Impulsivity	Score was noted for initial assessment and subsequent re-scores were noted. Coded as improved if reduced from being coded to being not present. Coded as some improvement if reduced but was still coded as partly present. Coded as the same if there was no change in scores.

Term	*Source*	*Coding*
	VRS item D17 Impulsivity	Score and stage of change for initial assessment and subsequent re-scores was noted. Code as slight improvement if move from Pre Contemplation to Contemplation between first and last assessment (no score change) and code as improvement if move from Pre Contemplation or Contemplation to Preparation, Action or Maintenance between first and last assessment (score reduction).
	BIS	The number of scales that showed clinically significant change pre and post treatment as a whole was noted. Other testing sessions were checked to see what could be learnt about where any change occurred (e.g. pre and post cognitive skills components and pre and post CST component).
Poor problem Solving	Incidents related to drug use from contact logs from date of sentence to date of data collection	Entries were counted if they related to manipulation and rule breaking. Included threats (e.g. if I can't have / get X I will do Y). Included negative comments about finding ways around things to get what he wants when told no. A count was then made of the number of entries in each time period and the expected number of incidents during and post treatment were calculated as per Cooke's equation below.
Adjudications	Custody adjudication record	A count was made of adjudications pre transfer to the unit, while on the unit and post transfer from the unit. The expected number of incidents during and post treatment were calculated as per Cooke's equation below. A note was also made to the number of incidents during each phase of treatment to see if the rate changed over time during treatment.

Grading of institutional behaviour data

Grade	*Definition*
Improved	All sources show improvement.
Some improvement	There are more sources showing improvement than no change or deterioration combined.
No change	All sources show no change or there is an even split between positive and negative change being seen.
Some deterioration	There are more sources showing deterioration than no change or improvement combined.
Deteriorated	All sources shows deterioration.

Cookes equation to find the expected number of incidents based on pre-treatment behaviour. This was used with counts of incidents coded from individuals contact logs.

$$Ae = T2.\ A0 / T1$$

Ae = expected number of episodes post entry into the unit,

A0 = observed number of incidents before transfer to the unit,

T1 = time in previous setting

T2 = time in the unit.

Grading Risk data

Data	***Grade***	***Definition***
Psychometrics	Improved	All measures showing scales with clinically significant change
	Some improvement	More measures showing scales with clinically significant than ones showing not.
	Same	all measures showing the same or more showing the same than those with some clinically significant change
HCR-20 and VRS	Improved	Reduced by at least 6 points
	Some improvement	Reduced by at least 3 points
	Same	Stayed the same or reduced or increased by less than 3 points
	Some deterioration	Increase of at least 3 points
	Deteriorated	Increase of at least 6 points