

Accepted Manuscript

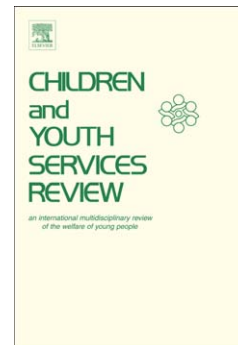
Evolve Therapeutic Services: A 5-year outcome study of children and young people in out-of-home care with complex and extreme behavioural and mental health problems

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PII: S0190-7409(16)30265-1
DOI: doi: [10.1016/j.chilyouth.2016.08.017](https://doi.org/10.1016/j.chilyouth.2016.08.017)
Reference: CYSR 3054

To appear in: *Children and Youth Services Review*

Received date: 28 March 2016
Revised date: 24 August 2016
Accepted date: 24 August 2016



Please cite this article as: Klag, S., Fox, T., Martin, G., Keegan, F., Turner, D., Raeburn, N., Bergh, W. & Eadie, K., Evolve Therapeutic Services: A 5-year outcome study of children and young people in out-of-home care with complex and extreme behavioural and mental health problems, *Children and Youth Services Review* (2016), doi: [10.1016/j.chilyouth.2016.08.017](https://doi.org/10.1016/j.chilyouth.2016.08.017)

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Title: Evolve Therapeutic Services: A 5-year outcome study of children and young people in out-of-home care with complex and extreme behavioural and mental health problems.

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Abbreviated Title:

Evolve Therapeutic Services 5-year outcome study: Intervention for out-of-home-care population with complex and extreme needs

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Abstract

Background: Little evaluation research has been conducted on the effectiveness of services and intervention provided to children in out-of-home care. This study evaluated an innovative Queensland, Australia program employing a collaborative wrap-round model of care in combination with a flexible intervention approach, individually tailored to children and young people in out-of-home care presenting with complex and extreme behavioural and mental health problems.

Method: The sample consisted of 664 children and young people. Two clinician-rated measures, the CGAS and HoNOSCA, were used to assess young people's functioning via a pre-post treatment design.

Results: Results revealed significant improvements across a range of problems areas: general functioning and adjustment; disruptive, antisocial and aggressive behaviour; overactivity, poor attention and concentration; non-accidental self-injury; problems with scholastic and language skills; non-organic somatic symptoms; emotional symptoms; peer and family relationships; self-care and independence; and school attendance.

Conclusion: Findings provide good evidence for the effectiveness of the therapeutic intervention program. Implications for future research are explored.

Keywords: children and young people, out-of-home care, foster care, intervention, therapeutic model, outcome study, CGAS, HoNOSCA, mental health, maltreatment, neglect, abuse, trauma, behavioural and emotional problems

Children and young people (C/YP) in out-of-home care represent one of the most vulnerable and disadvantaged groups in Western societies, including Australia (Osborn & Bromfield, 2007; Tarren-Sweeney, 2008). An Australian study (Tarren-Sweeney & Hazell, 2006) of all 4-9 year old children in foster or kinship care in New South Wales indicated more than half of boys and girls experienced clinically significant and complex psychiatric disturbances. These results are consistent with other research indicating that exposure to maltreatment and neglect, combined with other associated risk factors (e.g., prenatal substance use/misuse), place those in out-of-home care at increased risk for developmental and mental health disorders across all facets of their life and lifespan. Negative outcomes include attachment difficulties (a core feature of many in care), anxiety, depression, post-traumatic stress, conduct problems (including defiance, anger and aggression), sexual reactive problems, inattention/hyperactivity, and suicidal behaviour (Briere et al., 2001; Osborn, Delfabbro & Barber, 2008; Oswald, Heil, & Goldbeck, 2010; Sawyer et al, 2007; Tilbury, Osmond, Wilson, & Clark, 2007). Negative long-term outcomes include drug and alcohol use/misuse, poor physical health, homelessness, criminality and incarceration (Richardson, 2005), highlighting the devastating costs to individuals across their entire lifespan.

Child abuse also results in enormous economic costs to communities, from expenses of foster placements, mental and physical health services, loss of productivity, criminal justice services (e.g., crime and incarceration), and unemployment. Taylor and colleagues (2008) calculated an annual cost of \$4 billion in 2007 for all individuals ever abused in Australia and a lifetime estimate of \$6 billion for all Australian children abused for the first time in 2007.

Mental health needs for children in care are qualitatively and quantitatively different from children in the general population, with experts stressing the need for highly specialised trauma and attachment-informed, multi-agency approaches (Golding, 2010; Tarren-Sweeney, 2010). Add to this, over the past ten years, numbers of C/YP in out-of-home care in Australia has almost doubled from 18,241 (June 2000) to 35,895 (June 2010) (AIHW, 2011; Sammut, 2011). In Queensland, from 2000 to 2010 the number of those in out-of-home care increased from 3011 to 7350 (AIHW, 2011).

Despite the seriousness, complexity, disproportionately high utilisation rates of therapeutic services and the burgeoning numbers, little research has been conducted on effectiveness of intervention and/or program models offered (Courtney, 2000; Cantos & Gries, 2010). Further, due to the complex needs of those in out-of-home-care it has been suggested that mainstream mental health services struggle to meet the needs of this population (Bellamy, Gopalan, & Traube, 2010). Thus, more evaluation research is essential to clarify appropriate intervention /program models for this population, and provide high-quality information for policy-makers to guide decisions about program funding.

In 2004, concerns regarding a clear unmet need for therapeutic services within the out-of-home-care population were identified within the Queensland, Australia Crime and Misconduct Commission (CMC) report 'Protecting Children: An Inquiry into Abuse of Children in Foster Care'. The CMC report recommended that "more therapeutic treatment services are made available to children with severe psychological and behavioural problems" (Recommendation 7.5; CMC, 2004, p.194). A target group of 17% of C/YP in care were identified as having particularly high levels of complex and extreme psychological and behavioural problems requiring urgent intervention.

Following the report recommendations, Evolve Therapeutic Services (ETS) was established as a tertiary level mental health intervention service.

Program Description

The Evolve Interagency Services (EIS) program is an interagency partnership between Queensland Health, the Department of Communities, Child Safety & Disability Services, and the Department of Education, Training & Employment. The key focus of EIS is to provide planned and coordinated therapeutic and behaviour supports to C/YP in out-of-home care, aimed at improving their emotional wellbeing and the development of skills to enhance participation in school and in the community. EIS is distinguished from other programs as it combines two fundamental principles of operating under a 'child centred focus' and an 'interagency collaborative' framework.

ETS is the Queensland Health component of the EIS (Evolve) program. Eligibility criteria includes: the child is under 18 years of age, presents with severe and/or complex psychological and/or behavioural problems (i.e. a chronic trauma history, extreme behavioural problems across multiple settings, at risk of harming self/others and multiple placement breakdowns), and is in out-of-home care under and on interim or finalised Child Protection Orders. Referrals to Evolve can only be made by Department of Communities, Child Safety Services.

ETS is grounded in well-established theoretical perspectives (child development, systemic theory, trauma, attachment, psychodynamic theory and grief and loss) and is a collaborative 'wrap-around' model of service. Provision of service is achieved through a flexible use of appropriate evidence-informed individual and systemic therapeutic interventions and a coordinated and sustainable partnership with key government and non-government and private sector agencies. Clinical interventions include a comprehensive assessment of the bio/psycho/social/cultural aspects of the child/young

person and their significant others, and attachment and/or trauma focused therapies, which may include dyadic work (where the focus is on the facilitation of therapeutic attachment relationships between the child/young person and their carer), individual therapy, family-based intervention or the use of other treatment modalities.

Interventions are targeted not only towards young people, but can extend to carers, biological parents, youth workers, educational staff, and other professionals involved. Systemic interventions include assisting and facilitating (where needed) the development of a regular cohesive stakeholder group, involving all relevant stakeholders and where clinical appropriate the young person, with a focus of (1) having a shared understanding of the child's strengths and needs, (2) working collaboratively in the child's best interests, and (3) developing and reviewing developed therapeutic goals. Other systemic interventions include provision of carer support including foster carer training, specialist consultation-liaison services, and specialist professional development and training.

ETS interventions are medium to long-term (ie. 12-18 months); however crisis and short-term interventions may be utilised to stabilise the system and child/young person, so longer term or more intensive work is possible. Overall intervention provided is sensitive to the developmental stage and cultural differences of the child, and focuses on increasing actual/perceived safety for those referred. Refinement of the Evolve model has continued over time, based on accumulation and dissemination of specialist knowledge and skills.

ETS teams are situated within Queensland Health Child and Youth Mental Health Services (CYMHS) and are managed within Hospital and Health Service structures, and as such sits within a continuum of service delivery by mental health services. Currently there are ten teams located throughout Queensland. The vast

majority of funded staff are frontline qualified and registered allied health workers (e.g. Psychology, Social Work, Nursing, Occupational Therapy). Most clinical staff have post graduate, including Masters and PhD qualifications. The present study evaluates the ETS component of the Evolve program, and its impact on functioning and wellbeing of C/YP in out-of-home care with severe and complex psychological and behavioural problems between 2006-2011. Demographic and clinical symptom profiles, functioning and mental health problems are described. Treatment efficacy was compared from pre to post treatment on two well-established measures, the *Health of the Nation Outcome Scales for Children and Adolescents* (HoNOSCA; Gowers et al., 1999a) and the *Children's Global Assessment Scale* (CGAS; Shaffer et al., 1983). For logistical, ethical and practical reasons, it was not possible to employ an experimental design.

Method

Sample

Ethics approval was obtained from the Children's Health Queensland Health and Hospital Services Human Research Ethics Committee. The total sample (2006-2011) consisted of 664 C/YP. Due to missing/invalid data (i.e., data collected outside required timeframes), sample sizes across different data analyses vary.

Data sources

Data was collected during treatment, stored in the Queensland Health Mental Health Clinical Information Application (CIMHA) and made available by the Queensland Health Mental Health Information Unit (MHIU). Mental health diagnoses in accordance with the International Statistical Classification of Diseases and Related Health Problems (ICD) and confirmed by the treating teams Consultant Psychiatrist were obtained directly from each ETS team. Access to confidential client data was

approved under delegation of the Director General, Queensland Health, and in accordance with Section 284 of the Public Health Act 2005.

Measures

The Health of the Nations Outcome Scale for Children and Adolescents (HoNOSCA, Gowers et al., 1999a), is a 15-item clinician-rated measure designed specifically for assessment of child and adolescent outcomes in mental health services. It includes 13 clinical/psychosocial items (disruptive/aggressive behaviour, overactivity and attentional difficulties, non-accidental self-injury, alcohol or substance/solvent misuse, scholastic and language skills, physical illness/disability problems, hallucinations and delusions, non-organic somatic symptoms, emotional and related symptoms, peer relationships, self-care and independence, family life and relationships and poor school attendance) and two items relating to knowledge about the child and/or young person's difficulties, management and services available. Each item is scored on a five-point scale from 0 (no problems) to 4 (severe problems) based on the previous two weeks, with a detailed glossary for each point of the scale and item (Gower et al., 1999b). Pre/post HoNOSCA items were completed by clients' clinicians. A rating of 2, 3, or 4 indicates clinically significant problems requiring active monitoring or intervention. The scale is a valid measure of global psychiatric outcomes in C/YP, and is sensitive to change (Bilenberg, 2003; Garralda, Yates, & Higginson, 2000).

The Children's Global Assessment Scale (CGAS; Shaffer et al., 1983) is clinician-rated and provides a global level of adjustment and functioning on a scale of 1-100. Scores greater than 70 indicate no clinically significant functional impairment, scores less than 70 are associated with increasingly severe dysfunction. C/YP referred to clinical services generally have scores of less than 61 (Bird et al., 1990). The CGAS has good psychometric properties and is sensitive to change (Steinhausen, 1987).

Procedure

All ETS clinicians received formal and regular training in administration and interpretation of HoNOSCA and CGAS in order to maintain inter-rater reliability. Baseline data was included if it has been collected within the first four months of allocation to ETS. This timeframe was chosen as coinciding with completion of a comprehensive mental health assessment providing the foundation for treatment planning. Completion data (the last data collection occasion for each client) was included only if collected within five months prior to official case closure.

Data analysis

Data was analysed using SPSS 21. Frequency analyses created a clinical profile of ETS clients' complexity, severity and mental health issues at admission. Outcomes were assessed by comparing pre and post treatment CGAS and HoNOSCA mean scores using repeated-measures t-tests. For estimates of differences in the proportion of clients in the clinical range between pre and post-treatment the McNemar test was used. Given severity and complexity, patterns of change were explored in detail for clients whose CGAS and HoNOSCA scores moved from (1) clinical to non-clinical ranges, and vice versa, (2) improved/deteriorated within the clinical and non-clinical range, and (3) remained the same from pre to post treatment.

Results

Missing values were excluded from analyses. Twenty percent of CGAS scores and 30% of HoNOSCA scores were missing. Missing data was random across ETS teams which indicates no bias in the data. Exploration of the normal probability plot for each individual distribution at pre and post treatment suggested the assumption of normality for t-tests was met overall. A minor number of deviations from normality

were observed, but did not require further transformation according to recommendations by Conlon (2000).

Demographic Profile of ETS Clients. Demographic data was available for all C/YP ($n = 664$). Mean age was 10.6 years at admission to ETS (range 1-17 years), with 69.3% of clients aged 7-14 years. Only 5.8% were aged four years or younger. Of the total cases, 409 (61.6%) were male and 255 (38.4%) female. A high percentage of ETS clients (26.9%) were of Aboriginal and/or Torres Strait Islander background: 162 (24.4%) Aboriginal, 7 (1.1%) Torres Strait Islanders, and 9 (1.4%) identified as Aboriginal and Torres Strait Islander.

Treatment Duration. Data was available for all 396 ETS clients accepting and completing treatment. According to the model of service (Evolve Interagency Services Manual; Department of Communities, 2008), the recommended treatment duration is 18 months. The overall mean treatment duration of ETS clients was 19.2 ± 11.1 months, with 57.8% completing treatment within the recommended duration of 18 months, 33.8% completing within 19 -36 months, 7.1% completing in 37-48 months, and 1.3% in treatment for more than 48 months.

Reason for Closure. Case closure data was available for all clients completing treatment in 2010 and 2011. In 2010 61.0% of 136 young people completed treatment successfully, with only 13.0% disengaging. Similarly, in 2011, 60.3% of 121 young people successfully completed treatment, with 16.5% disengaging.

Clinical Profile of ETS clients

Mental Health Diagnoses. ETS clients are characterised by a range of complex and severe mental health problems. The majority (93.9% of 636) met diagnostic criteria for at least one major mental health disorder (ICD-10; F-Codes; WHO, 2010), with 41.5% diagnosed with multiple mental health disorders. Diagnoses were grouped into 14 major categories. As can be seen (Figure 1), 49.1% of ETS clients were diagnosed with attachment disorders, the most common mental health issue at admission.

Insert Figure 1 here

Subsequent diagnoses were PTSD (20.8%), Mood Disorders (17.8%), Conduct Disorders (17.1%), Disturbances of Activity and Attention (17.1%), Developmental and Intellectual Impairment (16.9%), Emotional and Behavioural Disorders (14.6%) and Anxiety and Stress Disorders (8.0%). A small percentage of C/YP were diagnosed with Childhood Disorders (4.9%), Disorders in Social Functioning (4.4%) and Substance Misuse (2.2%), with 1.5% receiving a diagnosis of Mental Disorder not otherwise specified (MDNOS).

CGAS. Data was available for 623 clients. The mean CGAS score at the start of treatment was 46.9 ± 10.9 indicating that ETS clients experienced significant impairment in general functioning. As can be seen (Figure 2), 98.4% of young people had CGAS scores in the clinical range (70 or less) and 78% had GCAS scores of 50 or less indicating moderate to severe impairment in functioning for the majority of ETS clients.

Insert Figure 2 here

HoNOSCA. Sample sizes for individual HoNOSCA items ranged from $n = 575$ to $n = 593$ due to missing values. A high percentage of young people scored in the clinical range (i.e., scores of 2, 3 or 4) on six main HoNOSCA items (Figure 2). These were problems with emotional and related symptoms, problems with family life and relationships, problems with peer relationships, problems with disruptive, anti-social or aggressive behaviour, problems with overactivity, attention and concentration, and problems with scholastic or language skills. For the remaining HONOSCA items, a smaller percentage scored in the clinical range (Figure 2).

To determine case complexity at entry, the number of young people with clinical level scores across multiple baseline HoNOSCA items was calculated. Figure 3 reveals that 92.4% had four or more HoNOSCA items rated in the clinical range before commencement of intervention.

Insert Figure 3 here

Pre and post treatment comparisons

Repeated measures t-tests were conducted to measure changes from pre to post treatment on the CGAS and HoNOSCA items. Given problems associated with conducting multiple comparisons, a Bonferroni correction was used. A total of 14 pre/post score comparisons (one for the CGAS and one for each of the 13 clinical HONOSCA items) were conducted, requiring an adjustment of the probability below which statistical significance could be claimed, from .05 to 0.003.

Overall, there were statistically significant changes in CGAS scores from 48.2 to 57.8 ($t(315) = -12.6, p < .001; n = 316$), suggesting improved general adjustment and functioning for ETS clients at the end of treatment (Table 1). In addition, repeated measures analysis measured changes in consumer functioning for age, gender and

Indigenous status. There was a significant interaction of time and age ($F(4,314)=3.941$, $p=.004$) with consumers aged 2 to 10 having greater improvement in functioning than 11 to 18 year olds. There was no significant interaction of time and gender ($F(1,315)=1.105$, $p=.294$), or time and Indigenous status ($F(1,315)=2.553$, $p=.111$).

Similarly, statistically significant change occurred in 10 of 13 HoNOSCA items (Table 1) indicating improvements at post treatment in disruptive, antisocial or aggressive behaviour, overactivity, attention or concentration problems, non-accidental self-injury, problems with scholastic and language skills, problems with non-organic somatic symptoms, problems with emotional and related symptoms, problems with peer relationships, problems with self-care and independence, problems with family life and relationships, and poor school attendance.

A trend towards significance was found for HoNOSCA Item 7 (Problems associated with hallucinations, delusions and abnormal perceptions), $t(257) = 2.1$, $p = .032$. No significant change was observed for HoNOSCA Item 4 (Problems with alcohol, substance and solvent misuse) or HoNOSCA Item 6 (Physical illness and disability problems).

The McNemar test, a non-parametric test, was used to assess difference in the proportion of clients in the clinical range on CGAS and HoNOSCA between pre and post treatment

Insert Table 1 here

CGAS. Scores <70 were allocated to the clinical range whilst scores ≥ 70 were allocated to the normal range (Shaffer, Gould, Burd, & Fisher, 2000). A statistically significant proportion of young people (17.7%) moved from the 'clinical' category to

‘non-clinical’ from pre to post treatment (95.9% in the clinical range down to 78.2%); McNemar, $p < .001$, $n = 316$) (Table 1).

HoNOSCA. HoNOSCA scores were categorised as ‘clinical’ (2-4) or ‘non-clinical’ (0-1). The McNemar test revealed a statistically significant proportion of C/YP moved from ‘clinical’ to ‘non-clinical’ from pre to post treatment for 11 of 13 HoNOSCA items. See Table 1 for detailed results.

CGAS and HoNOSCA data were explored for any improvements/deteriorations across and within the clinical and non-clinical ranges. Table 2 provides an overview for clients whose CGAS and HoNOSCA scores:

1. **significantly improved** (scores changed from clinical to non-clinical range),
2. **improved** (scores improved either within the clinical or non-clinical ranges),
3. **remained the same within the clinical range**
4. **remained the same within the non-clinical range**
5. **significantly deteriorated** (scores moved from non-clinical to clinical range)
6. **deteriorated** (scores deteriorated within either clinical or non-clinical ranges).

For example, for HoNOSCA Item 1 (disruptive, aggressive and antisocial behaviour), 62.6% of clients improved overall, 32.8% moved from the clinical to non-clinical range; a further 29.8% had improved scores within either the clinical or non-clinical range. For 18.7% of clients, scores on HoNOSCA item 1 remained substantially the same. A small proportion (11.1% overall) of young people deteriorated; 4.8% in the non-clinical range, and 6.3% of clients who began within the clinical range.

The overall clinical profile demonstrated that ETS clients had clinically significant problems with self-care and independence (40.1%) as well as school attendance (42.1%). Conversely, only a small proportion had problems with

hallucinations, delusions and abnormal perceptions (7.5%), alcohol, substance or solvent misuse (11.7%), and physical illness or disability problems (11.8%).

Insert Table 2 here

Discussion

This appears to be the first research completed on a large scale state-wide program for complex and severe mental health problems in C/YP in out-of-home care. The overall higher percentage of male (61.6%) compared to female clients (39.4%) reflects the well-documented gender difference in externalising behaviour problems (one of the main eligibility criteria of ETS) (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Mean age was 10.6 years at admission to ETS (range 1-17 years), with 69.3% of clients aged 7-14 years. One quarter of ETS clients were of Aboriginal and/or Torres Strait Islander descent.

ETS clients remained in treatment for an overall average of 19.2 months, with 57.8% completing treatment within the recommended duration of 18 months, Over 40% of young people required treatment much longer than this (up to 48 months); this may not be surprising given the needs of this often highly traumatised group. If services are unable to meet these needs, the alternative is for these young people to grow into adulthood with probable escalation of their personal, mental and social problems. Given known difficulties with engagement and maintenance of clinical interventions for this complex group (Taylor, Kaminer, & Hardy, 2011), 61% of our clients completed treatment successfully with dropout rates around 15% . A review of general Child and Adolescent Mental Health Services showed only 29.0% of clients complete treatment, with 49.0% disengaging (Johnson, Mellor, & Brann, 2008). Future research needs to examine the comprehensive ETS approach more closely to discern which elements

encouraged retention and therapeutic improvement. The two most common diagnoses were attachment disorders and/or PTSD. These figures are consistent with prior out-of-home care research (Lake, 2005; Barth, Crea, John, Thoburn, & Quinton, 2005; Gabbay, Oatis, Silva & Hirsch, 2004). As expected, CGAS scores revealed significant impairment in general function, with nearly all young people having scores in the clinical range at start of treatment. HoNOSCA scores further highlighted the complexity of initial clinical presentation, revealing clinically significant problems for the majority of those referred.

Our overall treatment outcomes show statistically significant improvements, with a statistically significant proportion of C/YP moving from the clinical to non-clinical range on both the CGAS and 11 of 13 HoNOSCA items. Specifically, consumers aged 2 to 10 showed greater improvements on the CGAS than their older counterparts. Scores on the CGAS and HoNOSCA improved for a large proportion of ETS clients across all problems areas. Conversely, despite the comprehensive and wraparound nature of the ETS program, results unfortunately suggested a deterioration in functioning for some young people over the course of intervention. One possible explanation relates to challenges in being able to successfully engage with clients and/or stakeholders.

There are several limitations to the study. The main limitation, as with many intervention studies with this population, is the unethical nature of withholding treatment or providing potentially less effective interventions. Another limitation was that no control group was employed to provide comparison. It is therefore not possible to attribute the observed treatment effects to the ETS intervention alone, as other confounding variables may, at least in part, explain the observed effects. Second, the study would have been enhanced by collateral information from other informants like

foster carers and teachers who might have had a wider view of the outcomes of service delivery. A linked problem is that ratings were provided by one rater only; the client's primary clinician. However, the study was retrospective over 5 years, over ten community teams, thus it could be argued this makes unusually positive or biased reporting unlikely. Although all clinicians were trained in the use of the CGAS and HoNOSCA when they commenced employment with ETS, in most cases they did not receive regular refresher training. In addition, to improve consistency, we believe it would make sense to plan for two raters independently scoring young people. While HoNOSCA and CGAS are well-established and reliable treatment outcomes measures, a more comprehensive evaluation of the ETS program, with additional outcomes measures, is needed to confirm the benefits of the program. For example, a more comprehensive evaluation could determine the effectiveness of intervention in improving specific psychological/behavioural domains of this population, such as emotion regulation, social competence and attachment.

Future research is also needed to evaluate the collaborative stakeholder approach employed by ETS: precisely what are the most useful processes, practices and strategies? Further information on the sample such as type of care, length of time in care and care trajectory need to be collected in the future to observe outcome differences. Due to the overrepresentation of Indigenous children in the child protection system and in ETS additional analyses could be conducted for Indigenous consumers. Future research needs to include a cost-benefit analysis to provide policy makers and funding bodies with information needed to justify the expense of the intervention and thereby ensure continued operation, evaluation and refinement of the program.

Clinically these findings reinforce the presenting complexity in terms of mental health, functionality and intervention response required for those children/young people

in OOHC. Further, the results obtained demonstrate the effectiveness of collaborative, inter-departmental, and systems approaches for improving and sustaining health and wellbeing for a very vulnerable population.

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References

- Australian Institute of Health and Welfare (2011). *Child protection Australia 2009-10* (Child Welfare Series No. 51). Canberra, Australia: Author.
- Barth, R. P., Crea, T. M., John, K., Thoburn, J., & Quinton, D. (2005). Beyond attachment theory and therapy: Towards sensitive and evidence-based interventions with foster and adoptive families in distress. *Child and Family Social Work, 10*, 257-268.
- Bellamy, J., Gopalan, G., & Traube, D. (2010). A national study of the impact of outpatient mental health services for children in long-term foster care. *Clinical Child Psychology and Psychiatry, 15*, 467-479.
- Bilenberg, N. (2003). Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA). Results of a Danish field trial. *European Child & Adolescent Psychiatry, 12*, 298-302.
- Bird, H. R., Yager, T. J., Staghezza, B., Gould, M. S., Canino, G., & Rubio Stipek, M. (1990). Impairment in the epidemiological measurement of childhood psychopathology in the community. *Journal of the American Academy of Child and Adolescent Psychiatry, 29*, 796-803.
- Briere, J., Johnson, K., Bissada, A., Damon, L., Crouch, J., Gil, E., Hanson, R., &

Ernst, V. (2001). The Trauma Symptom Checklist for Young Children (TSCYC) Reliability and association with abuse exposure in a multi-site study. *Child Abuse and Neglect*, 25, 1001-1014.

Conlon, E. (2000). *Issues in Quantitative Research Workbook*. Southport, Australia: Griffith University.

Cantos, A. L., & Gries, L. T. (2010). Therapy outcome with children in foster care: A longitudinal study. *Child and Adolescent Social Work Journal*, 27, 133-149.

Courtney, M. E., (2000). Managed care and child welfare services: What are the issues? *Children and Youth Services Review*, 22, 87-91.

Crime and Misconduct Commission (CMC) (2004). *Protecting children: An inquiry into abuse of children in foster care*. Brisbane, Australia.

Evolve Interagency Services (2008). *Evolve Interagency Services Manual Version 6.2*. Brisbane, Australia: Author.

Gabbay, V., Oatis, M.D, Silva, R.R. & Hirsch, G. (2004). Epidemiological aspects of PTSD in children and adolescents. In Raul R. Silva (Ed.), *Posttraumatic stress disorder in children and adolescents: Handbook*. (1-17). New York: Norton.

Garralda, M. E., Yates, P., & Higginson, I. (2000). Child and adolescent mental health

service use. HoNOSCA as an outcome measure. *British Journal of Psychiatry*, 177, 52–58.

Golding, K. (2010). Multi-agency and specialist working to meet the mental health needs of children in care and adoption. *Clinical Child Psychology and Psychiatry*, 15, 573-587.

Gowers, S., Harrington, R., Whitton, A., Lelliott, P., Beevor, A., Wing, J., & Jezzard, R. (1999a). Brief scale for measuring the outcomes of emotional and behavioural disorders in children: Health of the nation outcomes scales for children and adolescents (HoNOSCA). *British Journal of Psychiatry*, 174, 413-416.

Gowers, S., Harrington, R., Whitton, A., Beevor, A., Lelliott, P., Jezzard, R., & Wing, (1999b). Health of the Nation Outcomes Scales for Children and Adolescents (HoNOSCA): Glossary for HoNOSCA score sheet. *British Journal of Psychiatry*, 174, 428-431.

Johnson, E., Mellor, D., & Brann, P. (2008). Differences in dropout between diagnoses in child and adolescent mental health services. *Clinical Child Psychology and Psychiatry*, 13, 515–530.

Lake, P. M. (2005). Recognizing reactive attachment disorders. *Behavioural Health Management*, 25, 137-145.

Osborn, A., & Bromfield, L. (2007). Young people leaving care (Research Brief No. 7). Melbourne, Australia: Australian Institute of Family Studies. Retrieved from <http://www.aifs.gov.au/nch/pubs/brief/rb7/rb7.html>

Osborn, A., Delfabbro, P., & Barber, J.G. (2008). The psychosocial functioning and family background of children experiencing significant placement instability in Australian out-of-home care. *Children and Youth Services Review*, 30(8), 847-860.

Oswald, S. H., Heil, K., & Goldbeck, L. (2010). History of maltreatment and mental health problems in foster children: A review of the literature. *Journal of Paediatric Psychology*, 35, 462-472.

Richardson, N. (2005). *Social costs: The effects of child maltreatment* (Resource Sheet No. 9). Retrieved from <http://www.aifs.gov.au/nch/pubs/sheets/rs9/rs9.html>.

Sammut, J. (2011). *Do not damage and disturb: On child protection failures and the pressure on out of home care in Australia*. Policy Monographs; 122. Saint Leonards, Australia: The Centre for Independent Studies.

Sawyer, M.G., Carbone, J.A., Searle, A.K., & Robinson, P. (2007). The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia*, 186(4), 181-184.

Shaffer, D., Gould, M. S., Brasic, J., Ambrosini, P., Fisher, P., Bird, H., & Aluwahlia,

- S. (1983). A Children's Global Assessment Scale (CGAS). *Archives of General Psychiatry*, *40*, 1228–1231.
- Shaffer, D., Gould, M. S., Burd, H., & Fisher, P. (2000). *Children's Global Assessment Scale*. Washington, DC: American Psychological Association.
- Steinhausen, H. C. (1987). Global assessment of child psychopathology. *Journal of the American Academy of Child and Adolescent Psychiatry*, *26*, 203–206.
- Tarren-Sweeney, M. (2008). The mental health of children in out-of-home care. *Current Opinion in Psychiatry*, *21*, 345-349.
- Tarren-Sweeney, M. (2010). It's time to re-think mental health services for children in care, and those adopted from care. *Clinical Child Psychology and Psychiatry*, *15*, 613–626.
- Tarren-Sweeney, M. & Hazell, P. (2006). Mental health of children in foster and kinship care in New South Wales, Australia. *Journal of Paediatrics and Child Health*, *42*, 89-97.
- Taylor, L., Kaminer, D., & Hardy, A. (2011). Risk factors for premature termination of treatment at a child and family mental health clinic. *Journal of Child and Adolescent Mental Health*, *23*, 155-164.

Taylor, P., Moore, P., Pezullo, L., Tucci, J., Goddard, C., & De Bortoli, L. (2008).

The cost of child abuse in Australia. Melbourne, Australia: Australian Childhood Foundation and Child Abuse Prevention Research Australia.

Tilbury, C., Osmond, J., Wilson, S., & Clark, J. (2007). *Good practice in child protection*. Frenchs Forest, Australia: Pearson Education Australia.

World Health Organisation. (2010). *ICD-10 Classifications of Mental and Behavioural Disorder: Clinical Descriptions and Diagnostic Guidelines*. Geneva: World Health Organisation.

ACCEPTED MANUSCRIPT

Key points:

- Children in out-of-home care are between three and four times more likely to have clinically significant mental health issues compared to children in the general population. However, little evaluation research has been conducted on the effectiveness of services and intervention provided to this population.
- The current study evaluates an innovative and theory-driven Australian intervention program that employs a collaborative wrap-round model and flexible and varied intervention approach to treat children and young people in out-of-home care with complex behavioural and psychological problems.
- Findings provided good evidence for the effectiveness of the intervention, revealing significant improvements across a range of problem areas, including functioning, adjustment, and behavioural, emotional and relational difficulties.

Ethics Approval:

This study has been approved by the Children's Health Queensland Hospital and Health Service Human Research Ethics Committee with reference number:

HREC/09/QRCH/48. On admission to the program, carers of the child or young person provide informed consent for the consumer to take part in research.

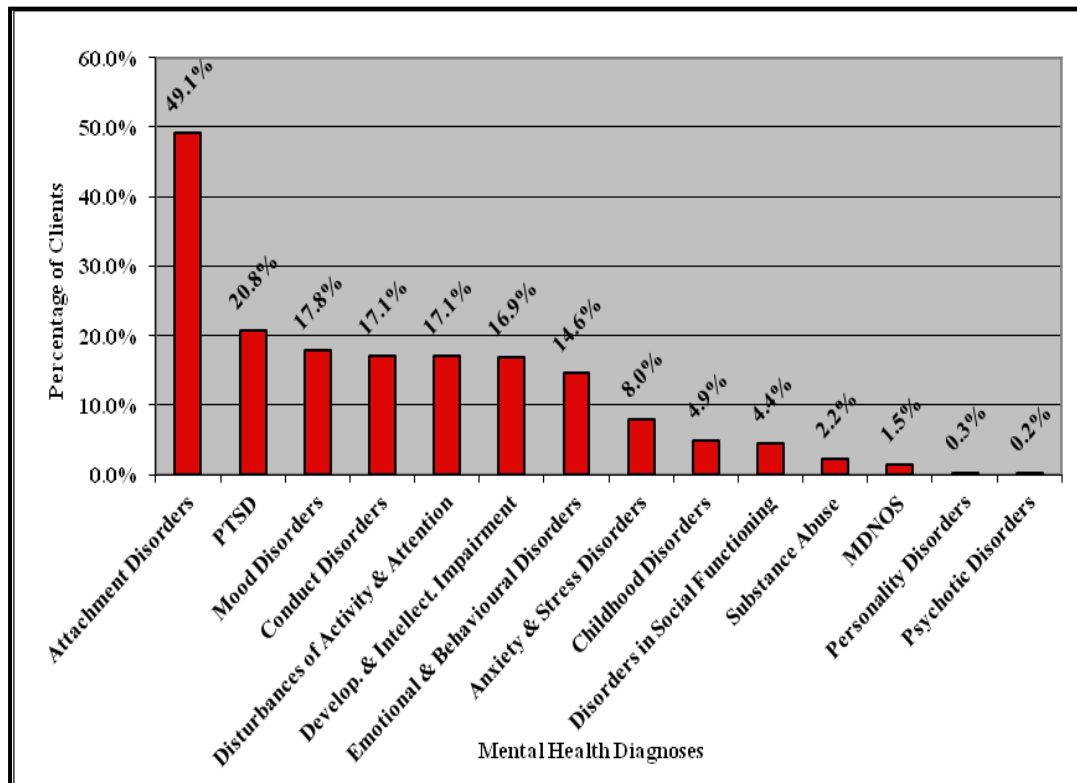


Figure 1. Percentage of clients in each category of mental health disorders ($n = 636$).

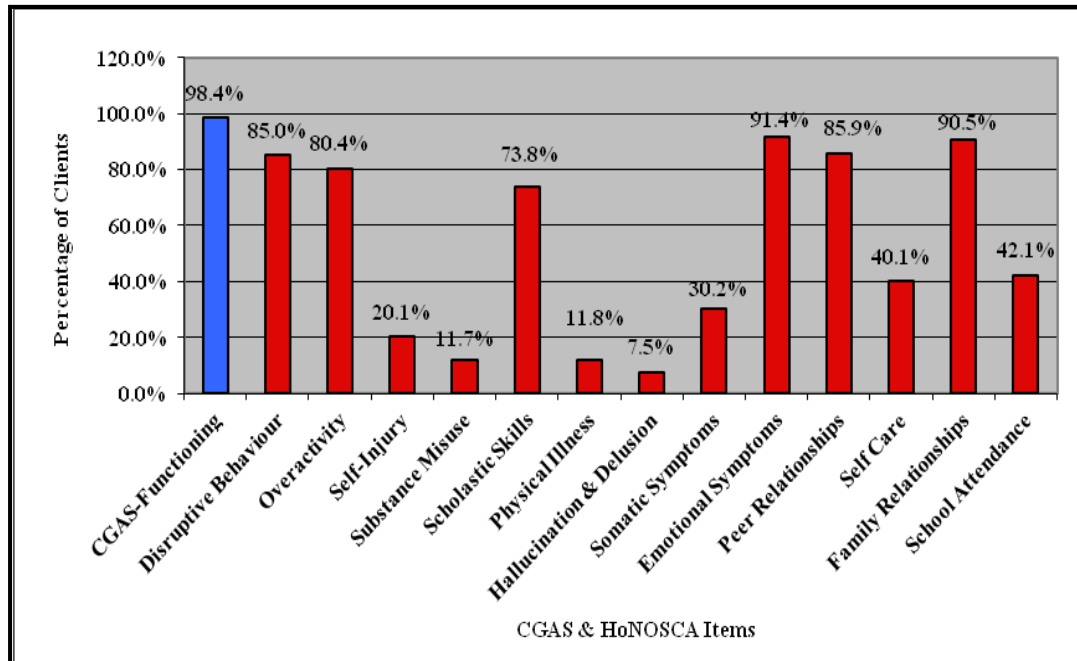


Figure 2. Percentage of clients who scored in the clinical range on the CGAS and HoNOSCA.

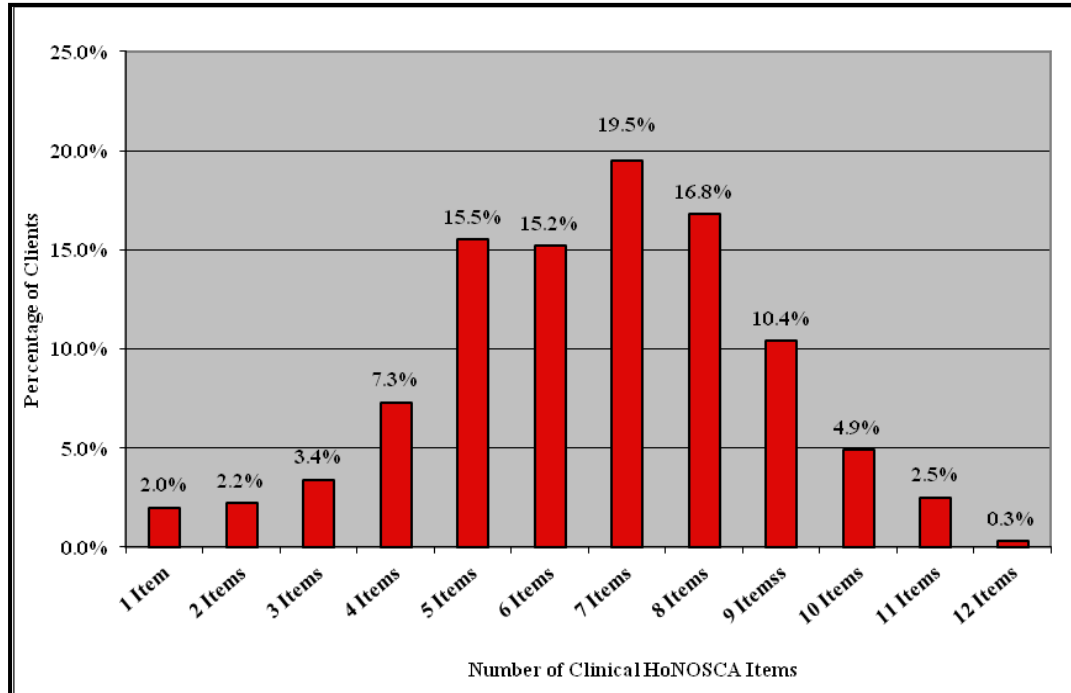


Figure 3. Percentage of ETS clients with clinically significant scores on multiple HoNOSCA items ($n = 593$).

Table 1

Sample size (*N*), means (*M*), standard deviations (*SD*), and significance levels for repeated-measures *t*-tests, and percentage of clients in the clinical range at pre (%Clinical Pre) and post (%Clinical post) and McNemar significance level for CGAS and HoNOSCA items.

| Variables | <i>N</i> | Mean-Pre | Mean-Post | SD-Pre | SD-Post | <i>t</i> -value | <i>p</i> -value | %Clinical Pre | %Clinical Post | McNemar |
|---|----------|----------|-----------|--------|---------|-----------------|-----------------|---------------|----------------|-----------------|
| CGAS | 316 | 48.2 | 57.8 | 10.0 | 11.9 | -12.6 | <i>p</i> < .001 | 95.9% | 78.2% | <i>p</i> < .001 |
| Item 1 - Disruptive, antisocial or aggressive behaviour | 268 | 2.55 | 1.58 | 1.2 | 1.2 | 12.4 | <i>p</i> < .001 | 80.6% | 53.3% | <i>p</i> < .001 |
| Item 2 – Problems with overactivity, attention or concentration | 264 | 2.37 | 1.65 | 1.1 | 1.1 | 9.4 | <i>p</i> < .001 | 79.3% | 58.9% | <i>p</i> < .001 |
| Item 3 – Non accidental self-injury | 261 | .51 | .17 | .9 | .6 | 5.3 | <i>p</i> < .001 | 16.4% | 4.8% | <i>p</i> < .001 |
| Item 4 – Alcohol, substance or solvent misuse | 262 | .38 | .35 | .9 | .8 | .48 | <i>p</i> = .63 | 10.8% | 10.8% | <i>p</i> > .05 |
| Item 5 – Problems with scholastic or language skills | 255 | 2.2 | 1.56 | 1.3 | 1.3 | 7.0 | <i>p</i> < .001 | 74.1% | 48.7% | <i>p</i> < .001 |
| Item 6 – Physical illness or disability problems | 267 | .31 | .30 | .7 | .7 | .36 | <i>p</i> = .72 | 11.6% | 10.1% | <i>p</i> > .05 |
| Item 7 – Problems associated with hallucination, delusions, or abnormal perceptions | 259 | .20 | .11 | .6 | .5 | 2.1 | <i>p</i> = .032 | 7.1% | 3.0% | <i>p</i> < .05 |
| Item 8 – Problems with non-organic somatic symptoms | 249 | .88 | .43 | 1.2 | .8 | 5.8 | <i>p</i> < .001 | 31.1% | 13.8% | <i>p</i> < .001 |
| Item 9 – Problems with emotional & related problems | 267 | 2.78 | 1.99 | .9 | 1.0 | 10.3 | <i>p</i> < .001 | 90.8% | 69.3% | <i>p</i> < .001 |
| Item10 – Problems with peer relationships | 267 | 2.59 | 1.76 | 1.1 | 1.2 | 10.5 | <i>p</i> < .001 | 85.6% | 56.8% | <i>p</i> < .001 |
| Item 11 – Problems with self-care & independence | 264 | 1.24 | .85 | 1.1 | 1.0 | 4.7 | <i>p</i> < .001 | 40.2% | 27.1% | <i>p</i> < .001 |
| Item 12 - Problems with family life & relationships | 267 | 2.97 | 2.03 | 1.0 | 1.2 | 11.5 | <i>p</i> < .001 | 90.5% | 71.5% | <i>p</i> < .001 |
| Item 13 – Poor school attendance | 249 | 1.26 | .72 | 1.6 | 1.3 | 4.9 | <i>p</i> < .001 | 38.7% | 21.5% | <i>p</i> < .001 |

Table 2

Percentage of clients with clinically significant CGAS and HoNOSCA scores pre treatment; percentage of clients post treatment whose scores changed from clinical to non-clinical and vice versa (i.e., significant improvement or deterioration); percentage of clients whose scores did not change from pre to post treatment; and percentage of client whose scores improved/deteriorated within the clinical/non-clinical range.

| | Clinically Significant at Pre | Clinically Significant Improvement at Post | Significant Improvement at Post | Total Improvement at Post | Same in Clinical Range | Same in Non-Clinical Range | Clinically Significant Deterioration at Post | Deterioration at Post | Total Deterioration at Post |
|----------------------|--------------------------------------|---|--|----------------------------------|-------------------------------|-----------------------------------|---|------------------------------|------------------------------------|
| CGAS | 95.9% | 16.8% | 57.5% | 74.3% | 6.0% | 0.3% | 2.9% | 16.5% | 19.4% |
| Disruptive Behaviour | 80.6% | 32.8% | 29.8% | 62.6% | 18.7% | 7.6% | 4.8% | 6.3% | 11.1% |
| Overactivity | 79.3% | 26.9% | 25.8% | 52.7% | 24.2% | 9.5% | 6.8% | 6.8% | 13.6% |
| Self-Injury | 16.3% | 13.7% | 10.3% | 24.0% | 0.7% | 69.1% | 2.7% | 3.4% | 6.1% |
| Substance Misuse | 10.8% | 5.7% | 4.2% | 9.9% | 2.3% | 73.7% | 9.9% | 4.2% | 14.1% |
| Scholastic Skills | 74.1% | 31.5% | 19.3% | 50.8% | 18.1% | 13.8% | 7.1% | 10.2% | 18.1% |
| Physical Illness | 11.6% | 7.5% | 5.7% | 13.2% | 2.2% | 73.4% | 6.0% | 5.2% | 11.2% |
| Hallucination & Del. | 7.1% | 5.8% | 4.3% | 10.1% | 0.4% | 85.3% | 1.9% | 2.3% | 4.2% |
| Somatic Symptoms | 31.1% | 23.6% | 11.2% | 34.8% | 4.0% | 49.2% | 5.6% | 6.4% | 12.0% |
| Emotional Symptoms | 90.8% | 27.7% | 31.5% | 59.2% | 27.3% | 2.2% | 5.6% | 5.6% | 11.2% |
| Peer Relationships | 85.6% | 32.7% | 24.7% | 57.4% | 24.3% | 6.0% | 4.1% | 8.2% | 12.3% |
| Self-Care | 40.2% | 25.0% | 14.8% | 39.8% | 7.2% | 31.0% | 11.0% | 11.0% | 22.0% |
| Family Relationships | 90.5% | 23.6% | 38.6% | 62.2% | 22.1% | 1.9% | 4.1% | 9.7% | 13.8% |
| School Attendance | 38.7% | 28.2% | 10.1% | 38.3% | 4.8% | 43.3% | 7.2% | 6.4% | 13.6% |

Highlights

- An outcome study of children and young people in out-of-home care with complex mental health problems attending a therapeutic mental health service
- Functioning and mental health symptoms were assessed for 664 children or young people
- Statistically significant improvement in functioning for consumers at discharge with consumers aged between 2 and 10 having the greatest improvement
- Statistically significant improvement in antisocial behaviour, attention, scholastic skills, emotional symptoms, peer and family relationships, self-care and school attendance at discharge