

Evidence Based Outcomes

A Decade of Treatment

Based on a Theoretical Framework of Attachment



Bayfield Treatment Centres

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Introduction

Evidence-based outcomes are the integration of best research evidence with professional expertise and our client's presenting issues.

Best research evidence means clinically relevant research, often from the best practices literature, but specifically from client centered clinical research into the accuracy and precision of diagnostic psychometric and sociometric instruments, the power of prognostic markers, and the effective treatment strategies combined with the safety of the clients we serve. New evidence from clinical research both invalidates previously accepted treatments and replaces them with new treatment strategies that are more effective.

Professional expertise refers to the ability to use our mentoring, teaching, therapeutic and clinical skills and past experience to identify each child and family's unique presenting situation and to work in partnership with referring agencies to achieve the best possible outcomes.

Client's presenting issues mean the unique presenting situation, concerns and expectations each client brings to Bayfield and must be integrated into treatment decisions.

When these three elements are integrated, Bayfield's staff, clients and their family form a therapeutic alliance with the referring agency to optimize outcomes and quality of care.

Bayfield has been measuring and collecting relevant data since 1999. This quantitative study provides fifty findings to be used for improving program development, training, organizational development and strategic planning.

Dataset

The Bayfield Treatment Centres outcome research dataset consists of 417 children. These children have been tested within the first 30 days of admission and every nine months for the past eleven years on a series of standardized, reliable and valid clinical and educational instruments.

The children in the dataset include 382 continuous records of every child placed in Bayfield from January 1, 1999 to Sept 4, 2008. There are 28 children who were placed before 1999 that are in the dataset because they were in residence when testing began. The average age on admission to Bayfield was 12.9 years. All children are males.

Ten children served by Bayfield have been tested continuously on 11 different occasions. 354 children have been tested twice, 262 children have been tested three times; and 190 have been tested four times.

A special dataset, named the pre-post group, was generated from the full repository. These 252 children were admitted, served and discharged between the years 2000 and 2010. They were assessed using the outcome measures for the first time on average 32 days after admission, every nine months thereafter and were assessed, on average, 44 days before they were discharged.

Clinical Profile

Adversity Experienced Before Admission

Using a standardized list of 15 types of adversity that lead to a serious degree of outcomes for children, we found children admitted to Bayfield experienced:

- an average of 4.49 distinct types of adversity
- a median of 4 distinct types, meaning that 50% of children had more than 4 and 50% had less than 4
- six or more distinct types of adversity in 25% of children

According to the literature on a similar set of risk factors, children who have four or more different types of risk factors have a 70% probability of being unable to function as young adults. (Werner, 1989; Werner & Smith, 1992). Although each single stressor, such as the experience of sexual abuse has consequences to the child's mental health and social functioning, it is the combination of stressors that overwhelms the child's ability to adapt and develop into a functioning young adult (Bronfenbrenner, 1979).

Finding #1: [children show multiple types of adversity in their background](#)

Children admitted to Bayfield have multiple types of serious degrees of adversity in their background that has a significant emotional effect on their developmental ability to adapt and develop the necessary skills to function as young adults.

ADVERSITY EXPERIENCED DIRECTLY BY THE CHILD

The types of adversity experienced by the child directly before admission to Bayfield include:

- 79% have a history of school failure from primary grades
- 64% have a history of sexual abuse
- 47% have spent years living in poverty¹ before admission to CAS care
- 36% have a history of physical abuse
- 20% abused drugs and alcohol
- 5% have diagnosed brain damage, such as epilepsy

¹ It isn't poverty in itself which places children at risk, but the chain reaction of continued stressors and compounding behaviour problems, each more risky than the last (Guerra, 1995; Gelles, 1987).

Finding #2: a high percentage of children with long term school failure

The most common risk factor of children admitted to Bayfield is a history of school failure dating from primary grades, affecting 79.4% of children admitted.

Several studies (O'Donnell, 1995; Tremblay, 1992) found that failure in school bonding as indicated by poor school achievement and generalized complaints of learning problems is a powerful predictor of conduct disorder, substance abuse and aggression.

Finding #3: a high percentage of children with sexual abuse

Children admitted to Bayfield have an unusually high rate of sexual abuse (64%); in contrast, 17% of children admitted to other Ontario Association of Residences Treating Youth (OARTY) residences have a history of sexual abuse.

The outcome of sexual abuse includes risky sexually precocious behaviour (Cosentino, 1995), problems in physical self concept, poorer scores on measures of global mental health adjustment (Braydon, 1995) depression, anxiety and dissociative symptoms (Kendall-Tackett, K., Williams, L. & Finkelhor, D. 1993) had higher rates of early childbearing, provided poorer prenatal care, gave birth to smaller babies, and were more likely to exhibit substance abuse during pregnancy. In a study of sexually abused children in foster care (Stevens-Simon, 1994), over 75% of the children scored in the clinical range on both internalizing and externalizing bands of the Achenbach CBL (Thompson, 1994).

ADVERSITY IN THE FAMILY

A close family relative, i.e., people that lived with the child carried the following types of adversity:

- 63% of these children's mothers have a substance disorder
- 55% of these cases the child's mother was hospitalized
- 53% also have a father with a substance abuse disorder
- 45% of the fathers or step-fathers were sent to jail
- 34% have a close family relative with a substance abuse disorder
- 34% have a close family relative who was in jail
- 21% have a close family member who was raped
- 12% have a close family relative who was admitted to a psychiatric hospital
- 10% have a parent diagnosed with intellectual deficits
- 3% of children have a close family relative who committed suicide, and in 60% of these cases it was their father who committed suicide
- 3% of children are currently coping with domestic violence

- 1% of children are currently coping with an individual who is sexually assaulting other family members

Finding #4: [95% of children have serious family problems in addition to abuse](#)

Ninety-five percent of children admitted to Bayfield have one or more of the following family issues with a close family member:

- in jail
- substance abuse disorder
- in psychiatric hospital
- intellectual deficits
- raped
- teen parent

Finding #5: [74% of children were abused physically or sexually or both](#)

Seventy-four percent of children admitted to Bayfield have been victims of physical or sexual abuse or both. This means that the vast majority of children admitted to Bayfield have complex trauma, which requires a specialized treatment response (Cook, A., Blaustein, M., Spinazzola, J, & van der Kolk, B., 2009).

Finding #6: [no correlation between abuse and learning disabilities](#)

A chi-square analysis shows there is no correlation between a history of abuse and learning disabilities. Since 79.4% of children have life-long school problems, this issue must be treated with evidence based instruction and behavioural and social rehabilitation in the classroom. The lack of a correlation between the history of abuse and the history of school failure indicates the two risk factors are independent. In other words, the school problem is not simply a result of abuse; rather it is separate and distinct.

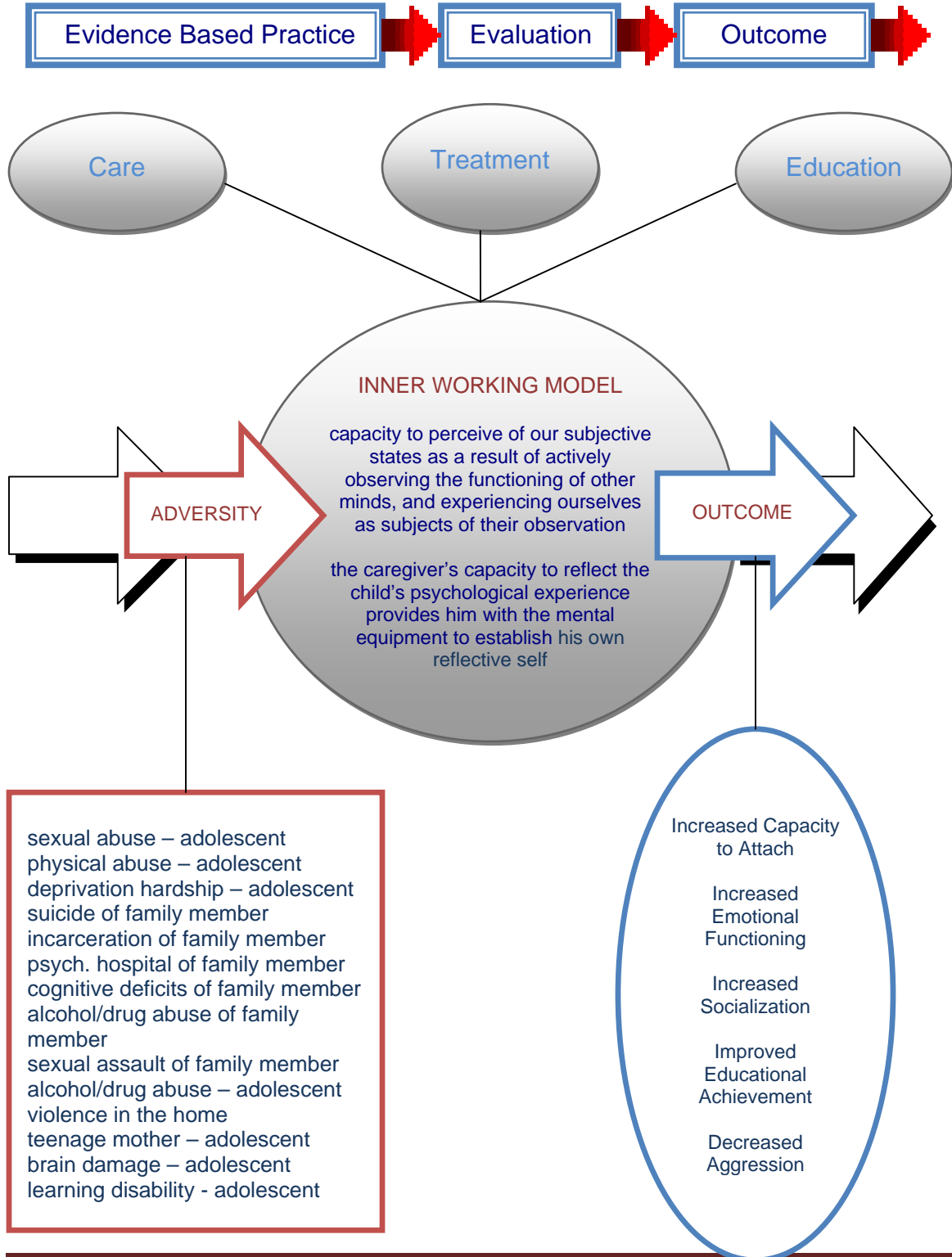
In contrast, a history of physical abuse and a history of sexual abuse are highly correlated ($\chi^2 = 8.355$, sig = .003, n = 344). This means that you cannot treat one problem without simultaneously treating the other.

DEGREES OF ADVERSITY

Listed in the lower left hand box of Figure 1 are the fifteen adversities that effect a child’s capacity to advance through normal developmental stages. The overwhelming degree of adversity presented by children admitted to Bayfield defines the treatment plan. As indicated earlier, children admitted to Bayfield for treatment have experienced an average of 4.49 adversity characteristics. The trauma and adversity are related to attachment and school

Figure 1

BAYFIELD THEORETICAL FRAMEWORK
Inner Working Model



failure. Bayfield's primary service objectives are to create opportunity for secure attachment and academic success.

Clinical Functioning Level on Admission

The clinical functioning of children are assessed on admission using the following evidence based instruments:

- (1) *Conners' Global Index*: measures hyperactivity, inattention and impulsiveness
- (2) *Children's Global Assessment Scale*: measures how well the child functions in his major life roles
- (3) *SA-45*: measures psychiatric symptoms.
- (4) *FAB-C*: measures emotional problems, anti-social attitudes and behaviour
- (5) *Objective Stressors Checklist*: identifies and counts how many things the child is distressed about
- (6) *Caring Scale of the PBI*: measures how much the child feels loved and cared about by the "closest person" in his life, a critical element of attachment
- (7) *Over-Protection Scale of the PBI*: measures how much the child feels over-protected or treated unfairly by the closest person in his life.

HYPERACTIVITY, INATTENTION AND IMPULSIVENESS

Certain behavioural symptoms are much more predictive of poor outcomes than others. The two strongest predictors (Rutter & Sandberg, 1985) are poor peer relationships, measured by the FAB-C and hyperactivity/inattention, measured by the Conners' Global Index.

Finding #7: 48% show abnormally high scores for hyperactivity

Forty-eight percent of children admitted to Bayfield score above 65 on the CGI. This subgroup have an average score of 77.7 (SD = 7.7). These children experience clinical significance related to hyperactivity, inattention and impulsiveness. The high scores are indicative of ADHD or it may indicate a child under psychological distress.

SOCIAL ADAPTATION TO MAJOR ROLES OF LIFE

Some children fail to adapt to the social demands of being home with parents and siblings, being in school with teachers and peers, or being in the community at play or with adults. The failure to fit in socially and perform the major roles of family member, student and community member is the strongest predictor in childhood of lifelong dysfunction (Sroufe & Rutter, 1984).

Finding #8: 85% have abnormal scores on social adaptation

Eighty-five percent of children admitted to Bayfield scored below 61 on the CGAS, indicating a failure to adapt to the demands of social living. The CGAS has low levels of correlation with the CGI and psychiatric measures. Failure to adapt socially does not mean that the child has an emotional overlay or behavioural issues. The low scores on the CGAS are a separate and independent clinical issue. In Bayfield's theoretical framework of the child's inner working model, the development of successful social interaction depends on a secure attachment.

The average score of the sub group with social adaptation problems is 44.5. The exemplar for someone in this range of the CGAS is copied below:

Moderate degree of interference in functioning in most social areas or severe impairment in functioning in one area, such as might result from, for example suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, poor or inappropriate social skills, frequent episodes of aggressive or other antisocial behaviour with some preservation of meaningful social relationships

EMOTIONAL AND COGNITIVE PROBLEMS

As indicated in the data above, the parents and close family relatives of 95% of the children display evidence of psychiatric disorders and serious antisocial behaviour. The clinical profile of the children indicates that they are on a path to similar outcomes. Bayfield uses two evidence based instruments for measuring this domain. Bayfield also collects extensive behaviour data in the Morning Sun Information System (MSIS).

Finding #9: 30% of teenagers have symptoms of psychiatric illness

The SA-45 is a measure of psychiatric symptomatology. It is the most widely used instrument for psychiatric epidemiology surveys in the adult population (Borduin et al, 1995). The SA-45 has norms for adolescents. Only 60% of children admitted to Bayfield were age appropriate to be administered the SA-45 on admission.

Thirty percent of teenagers admitted to Bayfield have emotional and cognitive symptoms of a psychiatric disorder. The mean score on the global severity index of the SA-45 for this high risk group is 68.4 (SD = 6.6). The scales of the SA-45 indicate that the highest clusters of symptoms reveal:

- paranoia
- obsessive-compulsivity
- hostility
- depression
- interpersonal problems

Finding #10: 39% of pre-adolescents have emotional and cognitive risk factors

The FAB-C is an instrument for assessing a pre-adolescent for emotional problems, such as anxiety, low self-esteem, anti-social attitudes, negative peers, conduct problems and lying.

The test is appropriate only for pre-adolescents and 34% of children were administered the FAB-C on admission. No child is ever administered both the FAB-C and the SA-45 at the same time. Thirty-nine percent of the children administered the FAB-C displayed symptoms of clinical significance as measured by the total problem scale. The average score was 68.5 (SD= 5.7).

STRESS

The process of admission to CAS care and placement in a treatment centre is a stressful process over and above the years of abuse and adversity that preceded the CAS intervention. For this reason, Bayfield administers a semi-structured questionnaire to identify and count the immediate concerns of the child. Our clinicians engage the child in dialogue and deliberation about the concerns identified.

Research has found that the sheer number of discrete stressors is predictive of stress related adverse outcomes (Guerra, 1995; Wheaton, 1983, Wheaton, 1996). Some stressors are obviously more devastating than others, but even daily hassles in a context of too much worry can produce violence and other inappropriate outcomes for children and adults.

Bayfield set a cut-point for “too much to worry about” at four discrete stressors.

Finding #11: 39.4% of children have 4 or more “things to worry about”

Ninety-eight percent of children completed this interview on admission and 39.4% self-identified four or more things that they were worried about on admission. The children who were across the threshold of too much to worry about identified an average of seven unique concerns. It is an essential aspect of personalized service for Bayfield staff to listen to each child’s concerns, many of which are not part of the reason for the referral.

ATTACHMENT

Longitudinal studies have found that four or more of any single serious stressor or adverse condition in the child’s history meant they had better than a 66% probability of not being able to function independently by the age of 18 years. Of the group of high-risk individuals who made the transition to adulthood without major problems, about 33% of the original high-risk cohort had a long-standing warm, responsive attachment figure in their lives (Werner, 1989 and 1992).

Having a secure attachment is widely regarded as the most important component of resilience for a child. There are other components of resilience, including school bonding, academic success and positive peer relationships (O’Donnell, Hawkins & Abbott, 1995). Even these are dependent on the existence of secure attachment (Sanders & Fulton, 2008).

The concept of attachment as experienced by an adolescent is measured by the Parental Bonding Instrument, based on norms from cross-cultural studies around the world. There are two scales:

- The Caring Scale measures how much the youth feels loved by the “closest person in his life”; the normal range is >45
- The Over-protection scale measures:
 - a region of scores (<45) indicates a youth who feels his parents/caregivers did not provide enough structure
 - a region of scores that indicate (>55) indicates that he feels his parents/caregivers provided too many rules and treated him unfairly
 - a region of score between 45 and 55 indicates he feels his parents/caregivers are fair and applied an appropriate level of supervision

The normal range of these two scales of the PBI were identified by the test authors as separate indicators of a secure attachment. The instrument has shown good predictive and construct validity.

Finding #12: 22% of children feel very unloved

Twenty-two percent of children feel that the “closest person in their lives” does not care about them. This is a devastating thought for a young person to hold. The mean standard score for this group is 34, which is 1.5 standard deviations below the norm.

The caring scale of the PBI is not correlated with any other measure, except for the over-protection scale of the PBI. Its independence is what makes it such a powerful resilience factor. No matter what problem the child has, it will not affect whether or not he feels loved and cared about. However, feeling cared about improves the child’s ability to cope with his problems and make changes for the better (Sanders & Fulton, 2007 and 2008).

Finding #13: 61% of children feel that they were under- or over-protected

Being under- or over-protected undermines the child’s sense of fairness and safety. Sixty- one percent of children admitted to Bayfield identified this issue.

Twenty-seven percent (27%) feel their parents did not protect them adequately. Their average standard score on this scale is 40.7. This is 1 standard deviation below the norm. This group of children appear to be neglected in their own homes.

One third of children admitted to Bayfield feel that their parents over-protected them, had too many rules and were treated unfairly. The average standard score for this group was 63.7, or 1.5 standard deviations above the norm.

Finding 13.1: neglected children have serious emotional and behavioural problems

This group of children are more likely to have a score on the CGI that is abnormal ($\chi^2 = 4.064$, sig = .03, n = 264). They also have much higher scores on the SA-45 indicating more psychiatric symptoms (means 58.4, 53.5; f-ratio = 12.986; sig = .000; n = 225).

Finding 13.2: over-protected children have serious emotional and behavioural problems

Children who are over-protected show:

- higher hyperactivity scores (means = 68.2, 63.4; f-ratio = 7.308; sig = .007; n = 263).
- more psychiatric symptoms (means = 60.3, 55.5; f-ratio = 14.986; sig = .000; n = 225).
- feel very unloved (means = 46.2, 53.5; f-ratio = 28.682; sig = .000, n = 262).

Finding 13.3: 66.9% of children have attachment issues on admission

Two thirds of the children have attachment issues on admission including children who feel very unloved, neglected or over-protected.

BASELINE ATTACHMENT SCORES

The baseline attachment scores reflect one of the common results of adversity. The reverse is also important; one third of children have a secure attachment with someone when they are admitted. Given that 99% of the children have either trauma, long-term school failure or severe adversity within their family, the data on attachment shows that a secure attachment can co-exist with severe problems in life.

The Bayfield Way (Sanders & Fulton, 2008) is to develop a secure attachment with all children to provide the inner strength to cope with numerous difficulties.

Academic Functioning on Admission

“Bayfield School’s mission is to prepare each student for a meaningful place in their community by developing the learning skills necessary for success in school and in life. As such, we teach the importance of work ethic, responsibility and other key interpersonal/social skills critical to a healthy and productive life. While the development of academic knowledge and skills is a key objective of the program, the culminating goal is to “prepare each student to learn” so they can be successful in the public school system as they return to their home community upon the completion of treatment.

Bayfield School is a private school inspected bi-annually by the Ontario Ministry of Education. We undergo an inspection, accreditation and licensing process in which our program delivery is reviewed to ensure that our policies and practices are consistent with Ontario Ministry of Education policy in relation to curriculum content and delivery, assessment and evaluation of student learning, and reporting and record keeping. Bayfield School has held a license to operate a private school in the province of Ontario since 1982.

Each student is offered a variety of academic, vocational and experiential learning opportunities during each school day, based on the individual needs of each student, in an educational environment that affords a low student to teacher ratio. This includes academic core subjects in math, language, science, social studies, history and geography at the elementary level, and a variety of compulsory and optional courses at the secondary level in a variety of grades for a total of 39 available secondary level courses. The curriculum is designed to meet the guidelines of the Ontario Ministry of Education and secondary credits successfully completed are applied to meet the requirements necessary to earn an Ontario Secondary School Diploma."

The academic functioning of children is assessed with the Wechsler Individual Achievement Test (WIAT). On average, the children in this study were functioning at:

- the 12th percentile in math
- the 22nd percentile in reading
- the 26th percentile in oral learning

In Math, 69% of children were below the 10th percentile. Only 5% of children admitted to Bayfield are above the 50th percentile in math.

In Reading, 47% of children below the 10th percentile.

In Oral Learning, 38% of children were functioning below the 10th percentile.

Only 16% were functioning above the 50th percentile in oral and reading skills and less than 4% were above the 90th percentile in either subject.

Finding #14: [children are significantly behind academically](#)

The results described above are based on a standardized test using Canadian norms. Less than 10 children admitted to Bayfield over the decade are within 10% of their peers academically and no child was functioning above the average student in school.

The Consequences of Different Stressors

An analysis of variance was completed on all of the measures used with each type of adversity one by one to observe the specific effect for each type of adversity

Finding #15: [poverty and substance abuse have a different effect on different children](#)

Poverty and parental substance abuse have a devastating impact on children clinically, however in this research, the clinical impact varied by the child. In other words, there isn't a common outcome for children exposed to poverty or parental substance abuse.

Finding #16: some risk-factors affect the systems or clinical measures systematically

- (1) Children are more likely to report more distress in a semi-structured interview of “things” bothering them (means = 4.4, 3.2; f-ratio = 10.305, sig = .001, n = 331), if they have:

- a history of physical abuse
- a history of sexual abuse
- a close family member in jail
- a close family member who was raped
- a mother who started parenting in her teens

The five risk-factors cited above have one consequence in common; they result in an increase in the child’s self-identified list of immediate concerns. Secondly, these risk factors are most often associated with complex trauma. We consider a high level of concern reported on the objective stressors checklist to be an indicator of trauma.

- (2) Children who had abused drugs and alcohol before admission to Bayfield:
- perceived themselves as unloved to a much greater extent than other children (means = 47.3, 57.2; f-ratio = 8.163; sig = .005; n = 215)
 - receive fewer days of service before being discharged (means = 757, 1,031; f-ratio = 8.012; sig = .005; n = 275)

Substance abuse in adolescence is very difficult to treat; this may be due to the high degree of insecure attachment associated with this risk-factor.

- (3) Children with a history of a parent in a psychiatric hospital are more likely to perceive their attachment relationship to be over-controlling and unfair (means = 57, 52; f-ratio = 4.455, sig = .036, n = 215).

This is another type of negative attachment outcome related to a specific class of adversity. A mentally ill parent may create the feeling in a child that he is over-controlled and treated unfairly.

- (4) Children with a history of a parent with intellectual disability are much more likely to be emotionally disturbed as reflected in two tests:
- the SA-45 global severity index (means = 63.2, 57.1; f-ratio = 6.569; sig = .011, n = 203)
 - the FAB-C total problem score (means = 64.8, 57.5; f-ratio = 7.005; sig = .009, n = 118)
- (5) Children who have a brain-related diagnosis or chronic condition have several unique effects:

- more hyperactive and impulsive behaviour as measured by the Conners' Global Index (means = 75.4, 65.4; f-ratio = 9.975; sig = .002; n = 343)
 - less adapted socially relative to their social roles as measures by the CGAS (means = 43.3, 48.2; f-ratio = 3.184 ; sig = .075; n = 339)
- (6) Children with a life-long history of school failure have several unique effects:
- more hyperactive and impulsive behaviour as measured by the Conners' Global Index (means = 65.9, 61.8; f-ratio = 4.937; sig = .027; n = 343)
 - less adapted socially relative to their social roles as measures by the CGAS (means = 47.3, 50.4; f-ratio = 4.678; sig = .031; n = 339)
 - more likely to report more distress in a semi-structured interview of "things" bothering them (means = 3.9, 2.7; f-ratio = 8.204, sig = .004, n = 331)

Three types of adversity related to organic factors of the brain, i.e., overt brain damage, life-long school failure and a parent with diagnosed brain damage, display psychiatric symptoms more consistently than the other risk factors. This statistical result mirrors the emerging view in psychiatry that mental disorders and various forms of social, behavioural and emotional symptoms are closely tied to organic dysfunction in the brain itself (Melillo & Leisman, 2004).

The Clinical Profile of Children with Native Identity

"Eagle Rock Lodge is a specialized Program designed to meet the needs of our native youth. We believe in providing holistic care to address the physical, emotional, spiritual, recreational and psychological needs of our children and youth. Many of our children have lost a sense of belonging to a family, community, and/or the larger world as a whole. Bayfield works to create a sense of connectedness to one's family, community and world by encouraging the creation of strong, healthy attachments with significant caregivers, creating a relationship with community members and an appreciation for how our actions impact others.

The Native culture is rich with symbolism and values that teach mutual respect, stewardship of each other and the planet, and interdependence in that we are all pieces of a larger environment. Building on these traditions Bayfield provides a therapeutic milieu that reinforces these values and creates opportunities for success and learning as well as promoting healing, wellness, balance and harmony."

Finding #17: 26% of children identify as being Native

Twenty-six percent of children admitted to Bayfield identify with Native culture and 30% of the native children are also within a visible minority group due to mixed racial backgrounds. Twenty-four percent of children are from visible minority groups. All variables in the database were analyzed using an ANOVA or chi-square procedure as appropriate.

Finding #18: admission of Native children are at a younger age but the length of treatment is the same

Native children were admitted at a younger age (means = 11.7, 12.8; f-ratio = 11.317; sig = .001;

n = 199). There is no difference between Native children and non-Native children on length of stay.

Finding #19: Native children show few differences on clinical measures

There were no differences between Native children and non-Native children on the following:

- their rating of the care they received from Bayfield using the NIMH scale
- their composite score on individual questions of the quality of care
- all clinical measures except for the FAB-C
- exposure to most types of adversity with two exceptions stated below

Native children appear to be more emotionally disturbed as measured by the FAB-C total score (means = 60.9, 55.5; f-ratio = 5.104; sig = .027; n = 76). Native children show greater levels of adversity.

Finding #20: Native children have greater levels of adversity

- a. Native children experienced more types of serious adverse events (means = 4.6, 4.0; f-ratio = 4.150; sig = .043; n = 179) than non-Native children.
- b. Native children are more likely
 - to have lived in poverty ($\chi^2 = 9.443$, sig = .003, n = 179)
 - to have parents with a substance disorder ($\chi^2 = 12.351$, sig = .000, n = 179)

Finding #21: Native children are further behind academically

Native children had lower age standardized academic scores on

- Reading (means = 71.9, 81.2.0; f-ratio = 7.648; sig = .007; n= 122)
- Math (means = 65.5, 77.0; f-ratio = 8.559; sig = .004; n = 125)
- Oral Learning (means = 77.2, 88.4; f-ratio = 7.867; sig = .006; n = 125)

Finding #22: Native children improve faster than other Bayfield youth in 10 months

By the second wave of testing, 10 months after admission, Native children had made significant progress on all age standardized scores and there was no difference between Native children and other children in math scores using the ANOVA routine as criteria. Native

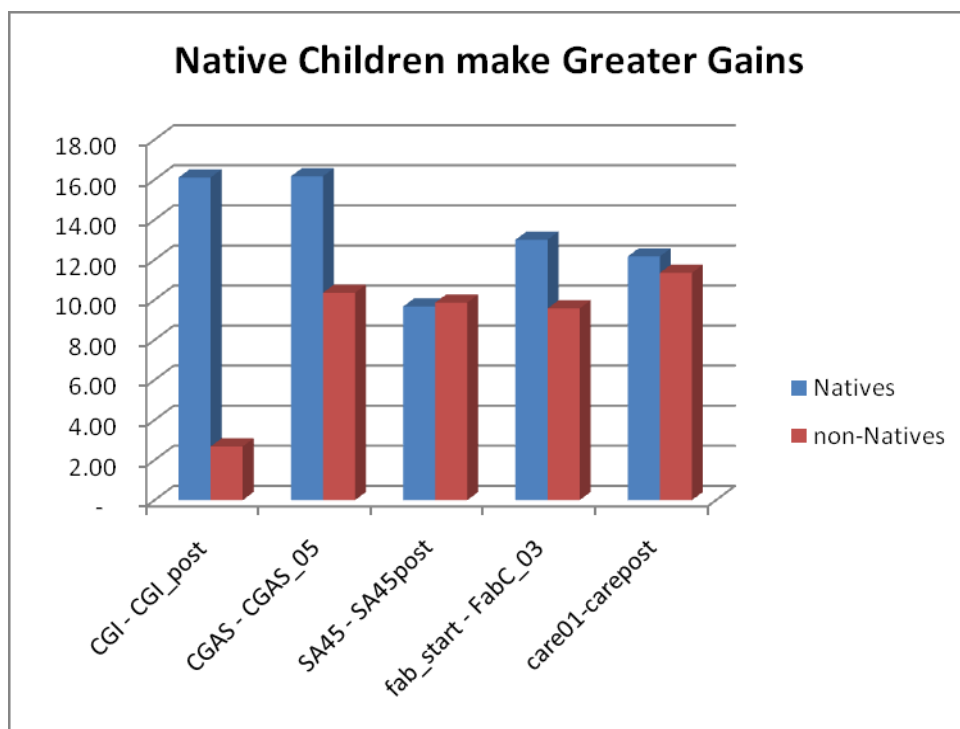
children also showed the same degree of improvement on their grade scores in reading, math and oral learning over the first year of service.

Finding #23: Native children make substantial gains clinically

A t-test of the difference in scores between time one and the last test before discharge was completed on two groups:

- children with Native identity
- non-Native children

All change scores shown on the graph are statistically significant, except for the CGI score for non-Native children. Allowing for the margin of error, Native children and non-Native children are virtually tied in the change scores for the SA-45.



Current Population versus the children discharged

There are 417 children who have been tested consistently across a decade of service. Many children have been admitted during this decade and 76% of the children have been discharged; 24%, or 98 children, are still in treatment.

An ANOVA routine was used to assess the hypothesis that the children who are still in treatment are different in some way compared to the children who have been served and are now discharged. The ANOVA examined eleven data points.

Finding #24: no differences between the current population and the children discharged

There were no differences between the current population and the children discharged in nine out of eleven clinical test scores at time one and the age of the child at admission; therefore our findings apply to the children in treatment.

- (1) *Conners' Global Index*: measuring hyperactivity and impulsiveness
- (2) *Children's Global Assessment Scale*: measuring how well the child functions in his major life roles
- (3) *FAB-C*: measuring emotional problems, anti-social attitudes and behaviour
- (4) *Objective Stressors Checklist*: measuring how many things the child is distressed about
- (5) *Caring Scale of the PBI*: measuring how much the child feels loved and cared about by the "closest person" in his life, a critical element of attachment
- (6) *Types of Adversity Scale*: measuring how many different types of adversity the child was exposed to in his life prior to Bayfield
- (7) *client satisfaction data* on
 - a. how the children "rate the service on a scale of 1 to 10"
 - b. the composite score on detailed questions related to the quality of care.
- (8) *Age of admission* to Bayfield

There were significant differences between the current population and the discharged group in two areas:

- (1) *SA-45*: measuring psychiatric symptoms. The discharged group have more psychiatric symptoms (means = 57.9, 54.9; f-ratio = 4.03; sig = .0458; n = 251).
- (2) *Over-Protection Scale of the PBI*: measuring how much the child feels over-protected or treated unfairly by the closest person in his life. The discharged group felt more over-protected or treated unfairly: (means = 53.2, 48.4; f-ratio = 9.32; sig = .0025).

Discussion:

There is no difference between the discharged group and the group that is still in treatment on 9 out of 11 variables. Although the average scores in both variables and sub groups are within the normal range, the ANOVA results mean that there were higher percentages of children in the discharged group who had abnormal scores in terms of psychiatric symptoms and attachment issues related to being treated fairly.

On balance, the profile of the children discharged is similar to the children still in treatment in most respects and therefore, we can generalize the pre-post findings across the total population.

Clinical Outcomes

Clinical outcomes were computed for children who were served and discharged. On average, children were assessed within one month of discharge. As a result, the dataset includes a true pre-post comparison (n = 252).

Data Analysis Plan

There are several tests that have a range of scores indicating no problem, or a “normal” child. Movement up or down within the normal range is of no clinical significance. For example, the SA-45 is a checklist of psychiatric symptoms. A raw score on the global severity index from 0 to 26 would be in the normal range. This allows for adolescents to admit to *feeling blue* (q.2) or *having the urge to beat, injure or harm someone* (q. 34), some of the time without being considered disturbed. It is normal for a teenager to go through periods of anger, fear, sadness and misery. In order to be classified as disturbed on the SA-45, a teenager would have to admit to a lot of symptoms, experienced on many occasions.

Therefore, we split the scores *at time one* into two groups:

- scores that are in the normal range
- scores that are in the clinical range

A series of statistical tests including a t-test of the difference in means, ANOVA and regression analysis were used to determine if there was a statistically significant change from the first test compared with each test in sequence and ending in the “post” treatment test. A statistically significant change means the difference was large enough to rule out chance variation in scores. We also assessed the clinical significance of the change by dividing the difference in scores by the pooled standard deviation. This is referred as the *effect size*.

We studied whether or not children in the normal range at time one deteriorated over time and fell into the clinical or emotionally disturbed range.

Three clinical scales and all educational scales were evaluated with an alternative strategy in addition to the split groups. These scales have no effective ceiling on how “well” the child is functioning. Therefore, a child in the normal range on these scales can still improve. With this type of scale, we used the total group and assessed change using a full battery of statistical routines. The three clinical scales in this category are:

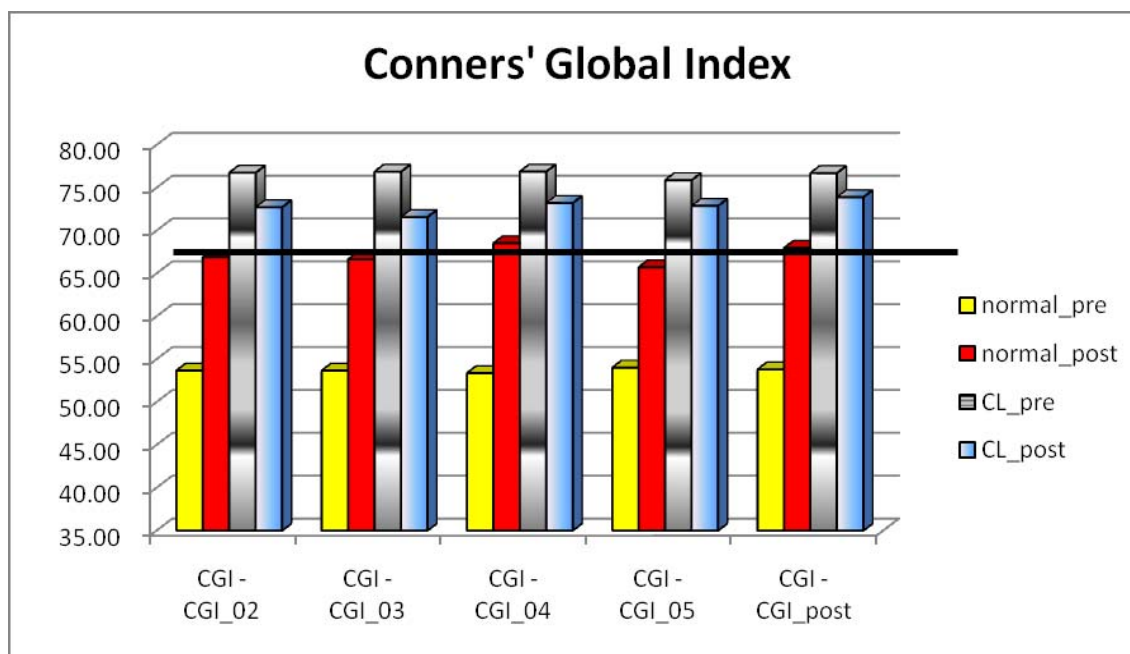
- the Caring Scale of the PBI
- the Children’s Global Assessment Scale
- the Adult Support for Daily Living Scale

Hyperactivity, Inattention and Impulsivity

Forty three percent of children were in the clinical range on the Conners’ Global Index at time one. The cut-score for the clinical range was ≥ 66 . The average score for the children in

the clinical range was 76.74. The children improved within nine months to 72.71. ($t = 3.069$, $sig = .003$, $n = 108$). This level of change represents a moderate effect size ($D = .394$). There was no significant improvement after that point. On average, the children remain a clinical concern.

The group who started in the normal range on the Conners' Global Index deteriorated to a significant degree (mean diff -14.17 ; $t = 10.41$; $sig = .000$; $n = 140$). The group in the clinical range are displayed in the graph below with the prefix "CL" in the legend.



The symptoms of hyperactivity, inattention and impulsivity are an important indicator of lifespan outcomes. These are also symptoms of brain related dysfunction (Melillo & Leisman, 2004). It is clear from the graph that children in the normal range move in a more symptomatic direction to the edge of normalcy. The clinical threshold is indicated on the graph by the horizontal line. This change occurs during the first nine months of treatment and remains stable throughout their stay.

In a similar fashion, children in the clinical range become less symptomatic but remain in the clinical range. The major change occurs in the first nine months and remains stable after that point. The changes in the first nine months are statistically significant, meaning this is not due to random variation.

Finding #25: less hyperactivity over time with a moderate treatment effect

The improvement in scores in the CGI in the first nine months equals a moderate effect. This is a good outcome for treatment based on Lipsey's criteria (Lipsey, 2009).

There are two problems with the results: (1) there is a strong negative effect for children who were normal at time one; (2) the positive effects for children in the clinical range did not

continue past the second wave of testing. This pattern is indicative of brain health issues. This may be improved by taking proactive action to promote brain health (Melillo & Leisman, 2004).

Social Role Functioning

A large proportion of children (85%) admitted to Bayfield have serious social problems preventing them from successfully performing the major roles of life in family, school and community. This was measured by a score below 61 on the Children's Global Assessment Scale.

The average score at time one for the children below the clinical threshold was 44.60. Across five waves of testing, the children continued to acquire more skills with the treatment effect increasing from high moderate (Cohen's $D = .61$) to a large effect (Cohen's $D = .93$). The average "last score" obtained before discharge, i.e., the "post score", was 50.93. All changes were statistically significant with values for the t-scores of the differences above 6 and at a significance of .000.

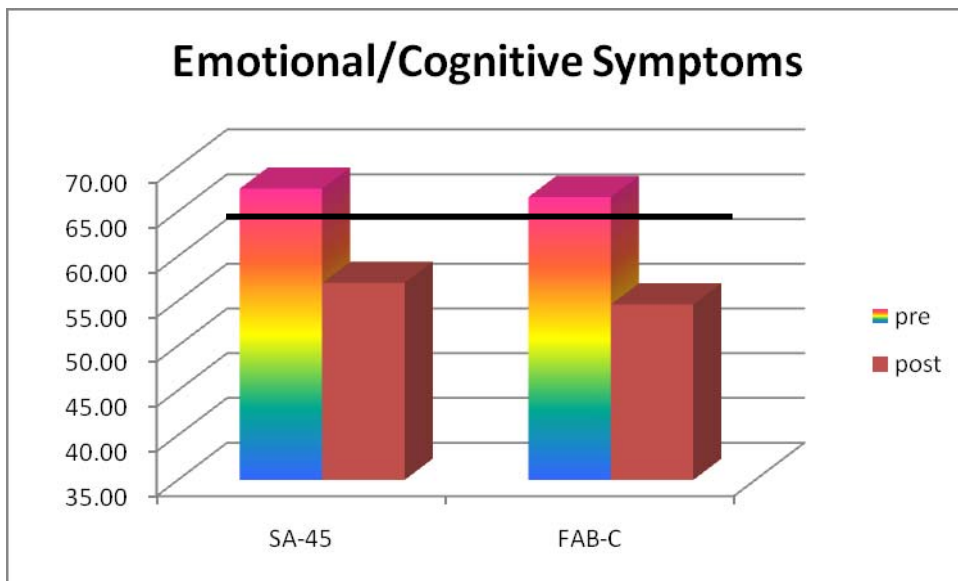
Finding #26: children are successfully adapting socially with large treatment effects

Children admitted to Bayfield are making significant gains in their ability to adapt socially to the major roles in their lives.

Emotional and Cognitive Symptoms

Emotional and cognitive symptoms are measured by the SA-45 and the FAB-C. The SA-45 is used for adolescents and the FAB-C is used for pre-adolescents. Both tests produce standardized norm-referenced scores. The SA-45 is a smaller version of the SCL-90 which is the instrument used for the American Psychiatric Epidemiological Surveys. It measures a variety of psychiatric symptoms, which are a combination of emotions and thoughts endorsed by the respondent. The FAB-C is an instrument suitable for school age children. The questions concern the feelings and thoughts of children in a language that is understandable to their age group. The FAB-C total problem scale is highly predictive of later psychiatric problems.

The SA-45 and the FAB-C identified a similar percentage of children in their respective age group that were at-risk of psychiatric disorder, 30% and 39% respectively. The children at risk of psychiatric disorder show a very large treatment effect in the reduction of symptoms (Cohen's $D = 1.7$ and 1.5 respectively). In both tests, the children moved from the clinical range to the normal range within the first nine months and continued to improve until discharge. The graph below displays the pre-post data. The heavy black line is the clinical threshold score.



Finding #27: [emotional and cognitive symptoms show very large treatment effects](#)

Children placed in Bayfield move into the normal range on measures of emotional and cognitive symptoms of psychiatric disorder within the first nine months and remain in the normal range throughout their stay. The pre-post change when converted to an effect size is significant as illustrated by the graph above.

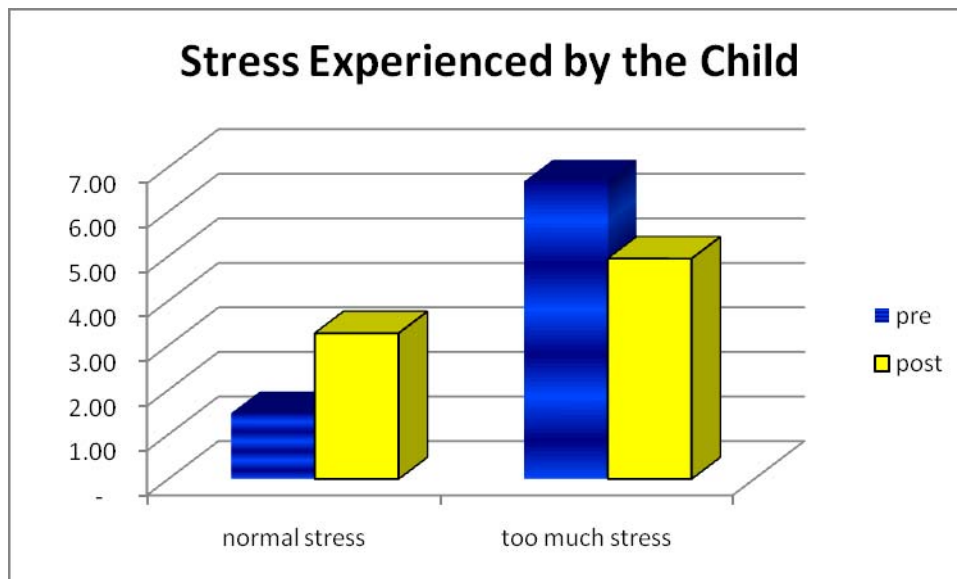
The group of children who scored in the normal range on the SA-45 or the FAB-C at time one did not change over time; there was no deterioration in emotional or cognitive well being.

Stress

The degree of stress that the child experienced while at Bayfield was measured using a semi-structured interview, the Objective Stressors Checklist, that identified and counted the number of things the child was worried about. A large group of children (39.4%) identified four or more distinct things that they are worried about.

The children under too much stress steadily improved. By discharge, the level of stress as measured by the Objective Stressors Checklist had improved with a moderate treatment effect (Cohen’s D = .55) from an average of 6.68 on admission to 4.95 on discharge.

In contrast, the children (60.6%) who had fewer than four things to worry about acquired more stress over time, although they did not cross the “too much stress” threshold. The average changed from 1.48 stressors on admission to 3.27 on discharge, which is a large negative treatment effect (Cohen’s D = .85).



Finding #28: [stress levels improve for the highly stressed group](#)

Children who were under too much stress, as defined by a threshold score of 4 things to worry about, improved significantly with a moderate treatment effect. The pattern was a gradual step-by-step improvement until discharge.

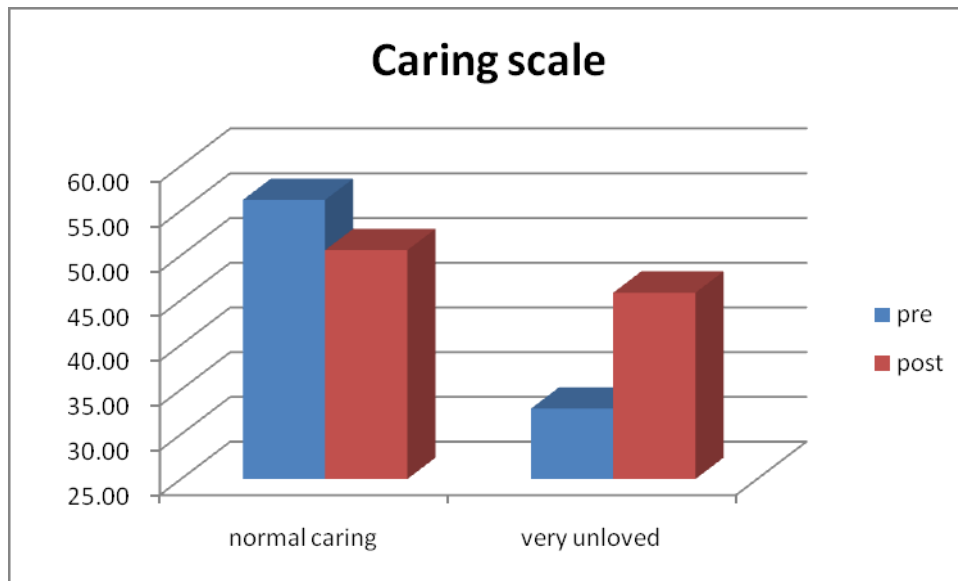
Children who began treatment with far fewer worries (mean = 1.48) became more distressed over time. The level of distress increased to its peak in the first nine months and gradually diminished at discharge to an average of 3.23 things to worry about. The children who were normal on admission are likely showing an iatrogenic effect (inadvertent adverse effect), although it appears to be manageable.

Attachment: the Caring Scale

Almost a quarter of children placed (22%) felt that no-one in their history cared about them or showed any affection for them. Their average t-score of 34, based on world-wide norms, suggests many of these children appear to feel less loved than 99% of all children. This is a grave burden for these children to carry.

The children who felt a complete lack of affection from all prior caregivers improved significantly at Bayfield. The pattern was a significant improvement in the first nine months and showed little change until discharge. The caring scale moved to an average of 46 and is in the normal range. The effect size was .25, showing a small treatment effect. Although the difference in average scores was large, the pooled standard deviation was also large, subsequently lowering the effect size.

The children who were in the normal range maintained their perception of feeling loved, but their scores dropped to the global average score of children.



Finding #29: [children who felt nobody loved them, feel normal again](#)

Children who felt nobody in their life loved them or showed any affection for them have changed their perception upon discharge from Bayfield. They now feel loved and their standardized scores are in the normal range.

Attachment: neglected

Twenty-seven percent of children felt that their parents did not provide enough supervision and gave them too much freedom according to the over-protection scale of the PBI. A score of less than 45 on the over-protection scale indicates a child that feels under-protected or neglected by their parents. The average score for this group was 40.7, or one standard deviation below the population norms.

Finding #30: [children who felt under-protected improved with a large effect](#)

Children who felt neglected improved to the normal range, ending with a score of 50.9. This is a large treatment effect (Cohen's $D = 1.05$).

Attachment: treated unfairly

One third of the children felt their parents over-protected them and imposed too many rules, restrictions and expectations on them. A score that is equal to or greater than 55 indicates a child in the abnormal range for this indicator of attachment.

Finding #31: [children who felt over-protected improved with a moderate effect](#)

The average score for this group was 64.11 and improved to 57.12. The effect size equals .60, or a moderate treatment effect.

Quality of Care

The quality of care provided was measured in two ways:

- (1) Measuring the degree the client felt cared about and treated fairly using the *Parental Bonding Instrument* (PBI); an evidence-based, internationally normed instrument.
- (2) Asking the clients to assess their care using a reliable and valid instrument developed by the Joint Commission on Quality of Care in Mental Health, US government, NIMH; the instrument is called the *Perception of Care*.

The Perception of Care instrument measured the client using a four point scale from “never” to “always” on the following parameters. The average scores are expressed as a percentage of the number of questions posed.

- explaining things in a way the client can understand (83%)
- involving the client in decisions about his/her care and treatment (76%)
- listening to the client (78%)
- working as team (86%)
- spending enough time with the client (79%)
- treating the client with respect and dignity (84%)
- giving the client reassurance and support (86%)
- being helpful (74%)

The average response was 80% for all eight areas. In addition, clients were asked to rate the care on a ten point scale that produced an average score of 6.9. Finally clients were asked if they would recommend the treatment resource to other children with mental health needs. Seventy-five percent said “Yes”.

Finding #32: [the client’s self-rating of Bayfield is highly correlated with attachment](#)

The rating scale is correlated with the over-protection scale of the PBI ($r = -.427$; $\text{sig} = .038$; $n = 24$). Children who feel that they are treated fairly report the highest rating.

Finding #33: [children “doing well clinically” report the highest rating](#)

The rating scale is correlated with social competence (CGAS) at the time of discharge ($r = .5187$, $\text{sig} = .038$, $n = 22$). The rating scale is also correlated with the hyperactivity (CGI) at the time of discharge ($r = -.4864$, $\text{sig} = .0253$, $n = 21$). Children who are socially competent or who are not hyperactive report the highest rating.

Inconsistent responders

A “clinical range” was set for all measures as just outside the test developers’ upper boundary of “normalcy”. Beyond normalcy there is a wide range of scores varying from borderline disturbed to very disturbed. A high standard for Bayfield was determined by setting the clinical range to the lowest level of disturbance.

Within this context, we observed a pattern of inconsistent clinical outcomes that indicate some children complete their treatment as normal on most variables, and in the clinical range on one or two variables.

Finding #34: 9% of children were in the clinical range on all variables on discharge

Nine percent of children were in the clinical range on all variables, i.e., attachment, hyperactivity, social competence, emotional/behavioural problems. This group of children are referred to as non-responders. In contrast, 30% of seriously disturbed children, in systematic reviews, are found to be non-responders with the best available treatment. Children at Bayfield appear to be achieving a better outcome than the average outcome of a study of 5,000 children in treatment (Carr, 2000).

Finding #35: 14% of children were normal on all variables on discharge

Fourteen percent of children were normal on all variables at the point of discharge. These are the children who are “unqualified successes” of post-treatment.

Finding #36: 77% of children were inconsistent responders on discharge

Seventy-seven percent of children were in the normal range on all but one or two measures when discharged. Most had made substantial improvement even if they did not reach the normal range. Hyperactivity is the most frequent measure to be in the clinical range.

The outcome data demonstrates children are making a clinically substantial improvement, as measured by the effect size, and the changes are statistically significant, meaning that it cannot be explained by random variation. This is true for the majority of children served by Bayfield. However, some children developed more symptoms during treatment and others made improvements but were still in the clinical range; these children are referred to as inconsistent-responders. By pinpointing the profile of inconsistent responders, Bayfield staff will be able to identify these children earlier in the treatment cycle, increase the service intensity and change treatment strategies to improve the outcomes.

Outcome studies have identified the profile of children and youth who are most likely to succeed - the flip side of the inconsistent responders (Connor, Miller, Cunningham & Melloni, 2002). The reliable responders to residential treatment centres are:

- youth who have less severe dysfunction
- better personal and social adjustment
- an acute (as opposed to a chronic) onset of problems

- greater academic ability
- an absence of associated learning problems
- a greater capacity for interpersonal relationships
- higher rates of anxiety and depression and lower rates of conduct problems

The children served by Bayfield have the profile of children who do not respond well to treatment. The *Bayfield Way* is beating the odds for most of its children. In the next section, the authors make recommendations to expand the possibilities for transforming the lives of children.

Inconsistent responders on attachment measures

The following percentages of children served and discharged from Bayfield were inconsistent responders in the sense that they ended their treatment in the abnormal range on one of the attachment measures. Some of these children began in the abnormal range and improved but not enough to be normal; some never improved and some began in the normal range and developed symptoms of poor attachment. Children deteriorate when they are loaded with risk factors and the emotional, cognitive and behavioural symptoms of children-at-risk are often expressed later in adolescence.

- (1) 15.9% of children were discharged feeling that no-one cared about them
- (2) 18.7% of children were discharged with the feeling that their parents/caregivers cannot protect them
- (3) 33.7% of children were discharged with the feeling that their parents/caregivers are over-protecting them and imposing too many restrictions

The children in (2) and (3) are in mutually exclusive groups. The chi-square analysis for group (1) with groups (2) and (3) is very significant. ($\chi^2 = 4.70^{\text{neglected}}$, $19.724^{\text{over-protected}}$; sig = .020, .000; n = 205).

Finding #37: [inconsistent responders to attachment are independent of other clinical measures](#)

The only clinical measure with a significant chi-square value to any of the inconsistent-responders to attachment was the CGI. Inconsistent responders on hyperactivity are significantly correlated with inconsistent responders to over-protection scale (group #3). ($\chi^2 = 4.966^{\text{CGI non-responders}}$; sig = .018; n = 201).

Finding #38: [Some children do not respond to the caring outreach of staff](#)

Twenty-four percent of the original cohort of children who felt unloved, were discharged without much improvement. Twenty-two percent of children who scored in the average range on the caring scale when first admitted, deteriorated while in care, and ended up with a score indicative of someone who felt uncared for.

This group was identified and analyzed further, in relation to all measures. The only variable which distinguishes the inconsistent responders is the number of types of adversity in their background. (means = 4.22_{responders}, 5.25_{non-responders}; f-ratio = 9.373; sig = .003; n = 205)

Finding #39: Children who do not respond to caring initiatives have significantly more adversity

This finding means that the staff at Bayfield must be more proactive with children who carry five or more different types of adversity in their background. They need to experience more social events in which they receive more affection.

Inconsistent responders to treatment for hyperactivity

The largest proportion of inconsistent responders applies to the clinical problem of hyperactivity, inattention and impulsivity. Fifty percent of children had a score in the clinical range on this test at the time they were discharged. Robert Melillo and Gerry Leisman (2004) have documented the scientific evidence that ADHD is primarily caused by brain dysfunction and can be helped by measures to improve brain health.

Finding #40: Inconsistent responders relative to hyperactivity show poor social adjustment

Inconsistent responders on the CGI are correlated with inconsistent responders to the CGAS ($\chi^2 = 4.966$ _{CGI poor-responders}; sig = .018; n = 201). This correlation demonstrates that hyperactivity, inattention and impulsivity have clinically significant adverse social consequences.

40.5% of children had a CGAS score below 50 at the time of discharge. This group is defined as inconsistent responders *to* our efforts to improve social role functioning. 71% of inconsistent responders to the CGAS are also inconsistent responders to the CGI.

In order to improve the child's social competence, we must first reduce the level of hyperactivity, inattention and impulsivity.

Finding #41: 1/3rd of inconsistent responders to hyperactivity issues have attachment issues

One third of the inconsistent responders of the CGI are also inconsistent responders on the over-protection scale of the PBI. A likely hypothesis for this outcome is as follows: *a feeling on the part of the child that his world is unfair and over-controlling results in behaviour such as hyperactivity and inattention.* If this hypothesis is true, then by extension, one third of the hyperactivity inconsistent responders are indicative of psychological distress. This leaves about two thirds of the hyperactivity inconsistent responders where an explanation of brain function is the more probable hypothesis.

Children who have clinically high scores on the over-protection scale of the PBI need to be identified early in treatment. Staff must reshape the child's perception that the world is unfair and over-controlling; this would also have a secondary benefit of reducing some of the psychological distress and co-morbid hyperactivity. One of the ways of changing this

perception is to provide opportunities for the children to feel empowered and able to control aspects of their environment.

Inconsistent responders to treatment for inadequate social functioning

Social role functioning is measured by the Children's Global Assessment Scale. A score of under 50 on this scale is indicative of a moderate degree of interference in functioning in most social areas or severe impairment in functioning in one area; 40.5% of children had a CGAS score below 50 at the time of discharge. An analysis of variance comparing inconsistent responders to responders (59.5%) found the following pattern.

CGAS inconsistent responders:

- (1) Show more hyperactive, inattentive and impulsive as measured by the CGI (means 68.09^{inconsistent responders}, 60.46^{responders}; f-ratio = 20.83; sig = .000; n = 252).
- (2) Show greater levels of depressive symptoms as measured by the SA-45. (means = 12.06^{inconsistent responders}, 10.04^{responders}; f-ratio = 6.74; sig = .010; n = 141).
- (3) Show greater levels of hostility as measured by the SA-45. (means = 11.96^{inconsistent responders}, 9.37^{responders}; f-ratio = 9.20; sig = .003; n = 141).
- (4) Show a high correlation with poor responders on the global severity index of the SA-45 ($r^2 = 18.682$ ^{CGAS inconsistent responders}; sig = .000; n = 200).

Finding #42: the poor response on the CGAS may be caused by ADHD symptoms

The strong relationship with CGI scores may indicate that hyperactivity, inattention and impulsivity prevent the child from learning social competence. The highly significant ANOVA result indicates that the CGI->CGAS interaction is the strongest factor in the explanatory model.

Finding #43: CGAS inconsistent responders suggest early onset mental illness

Inconsistent responses on the CGAS are also correlated with high scores on depression and hostility using the SA-45. These symptom clusters are markers for early onset of clinical depression. Clinical depression will adversely affect the child's ability to cope with the demands of society to function socially at home and school. Social demands increase as children become older, helping to explain why children appear to get worse over time on the CGAS.

Inconsistent responders to relief of psychiatric symptoms

17.9% of children are inconsistent responders to treatment designed to relieve psychiatric symptoms in the sense they had an average global severity index score of 66.31, or in the clinical range (min = 62, max =78). An analysis of variance across all clinical variables found few significant relationships that might explain this outcome.

[Finding #44: 45% of teenagers in the clinical range at admission and discharge](#)

Specifically, the inconsistent responders to relief of psychiatric symptoms included children who were above the clinical threshold at the time of admission (means = 62.75, 56.49; f-ratio = 8.101; sig = .005, n = 120). In fact, 45% of the teenagers who were above the clinical threshold on the SA-45 still had symptoms on discharge, although they were improved.

[Finding #45: 25% who were not symptomatic on admission developed symptoms](#)

Twenty-five percent of teenagers who tested normal on admission developed psychiatric symptoms during treatment and were discharged with symptoms above the clinical threshold. All children admitted to Bayfield are at-risk of a mental disorder, given the amount of adversity in their background and the genetic risk-factors from family members who have mental illness. Developmentally and chronologically some children will realize symptoms during their treatment at Bayfield.

[Finding #46: a clinical profile internal to the SA-45 predicts response to treatment](#)

The following symptom profile predicts inconsistent responders to the SA-45:

- phobia (means = 9.10, 6.56; f-ratio = 15.342; sig = .000; n = 125)
- psychoticism (means = 10.15, 7.89; f-ratio = 7.455; sig = .007; n = 125)
- hostility (means = 13.20, 10.03; f-ratio = 6.756; sig = .010; n = 125)
- obsessive compulsive (means = 13.50, 10.89; f-ratio = 5.818; sig = .017; n = 125)
- paranoia (means = 13.20, 10.72; f-ratio = 4.369; sig = .039; n = 125)
- anxiety (means = 10.90, 8.90; f-ratio = 3.992; sig = .048; n = 125)

High scores on six out of nine symptom scales predict inconsistent responders for relief of psychiatric symptoms. This means that having symptoms across the spectrum is the true indicator of prognosis. Michael Rutter came to the same conclusion in his research (Rutter & Sandberg, 1985).

[Finding #47: hyperactivity and poor attachment do not predict response to treatment](#)

We found inconsistent responders of relief of psychiatric symptoms are not predicted

- by any attachment variable, (pre or post)
- by hyperactivity levels on admission
- by the child's level of distress on admission
- by the number of different types of adversity in the background

Inconsistent Responders

Bayfield assesses children on a broad set of measures at the time of admission and every nine months targeting the following domains as indicators of outcomes:

- hyperactivity, inattention and impulsivity
- social competence in performing the roles of life
- degree of adult support required to enable child to function
- emotions, cognition and anti-social behaviour
- attachment
- history of adversity and trauma
- distress about current circumstances
- client satisfaction with the standard of care
- academic achievement in math, reading and oral learning

Bayfield measures child progress across a broad spectrum of outcomes and therefore we have good data on inconsistent responders. Inconsistent responders are the invisible children in the service delivery system. Few agencies have the capacity to identify their inconsistent responders. Bayfield has this capacity and has identified two recommendations to place the needs of these children on the front row of service.

- (1) Target children with 5 or more types of adversity and increase the intensity and duration of experiences focusing on affection and positive psychology.
- (2) Target children who feel their world is unfair, has too many expectations and is too restrictive and help them to feel visible, heard and empowered.

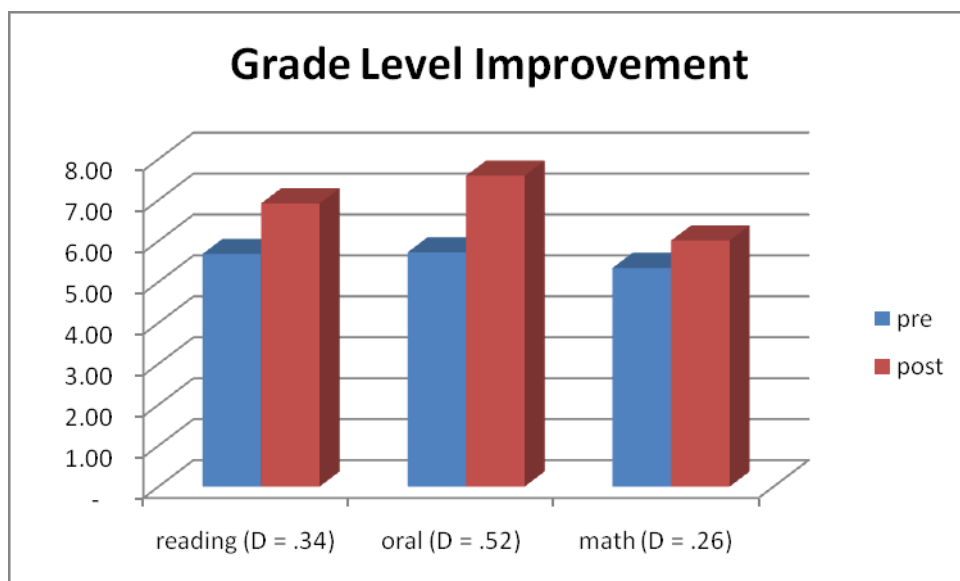
Academic Outcomes

Academic outcomes were measured at the start and end of the academic year using the *Wechsler Individual Achievement Test*. The components of the learning assessment include:

- a. Reading achievement level: standard score
 - i. Reading comprehension
 - ii. Reading decoding
 - iii. Reading grade level
- b. Mathematical achievement level: standard score
 - i. Mathematics numerical operations
 - ii. Mathematics reasoning

- iii. Mathematics grade level
- c. Oral Language achievement level: standard score
 - i. Oral language: listening comprehension
 - ii. Oral expression
 - iii. Oral language: grade level

The pre-post academic outcomes of children treated and discharged by Bayfield are displayed in the graph on the next page. The effect size for each subject area is listed by the label. This data shows that Bayfield has a small treatment effect for reading and math grade level improvement and a moderate effect for oral grade levels.



Finding #48: [reading standard scores improve substantially in year one](#)

The standard scores reflect age-related norms in Canada for each subject. This data shows that the greatest changes occurred in year one.

Reading standard (means = 72.48^{year_1}, 82.36^{year_2}; t-score = 2.132; sig = .035; df = 118). The reading skills of children moved from the 8th percentile to the 12th percentile in one school year. Prior to their admission to Bayfield, these children were falling further and further behind their peers in school. Bayfield School has stopped the regression and started these children on the road to recovery.

Finding #49: oral learning standard scores improve substantially in year one

Reading standard (means = 85.35^{year_1}, 88.99^{year_2}; t-score = 4.75; sig = .000; df = 195). The reading skills of children moved from the 16th percentile to the 23rd percentile in one school year.

Finding #50: math standard scores have stopped the path of regression

The math standard scores which average 72.5 or the 4th percentile has been maintained. This means children are learning math concepts at the same rate as their peers in society, but they are not catching up to their peers in math as they are in reading and oral learning.

Commentary and Future Research

Bayfield has collected outcome data across a wide range of domains, since 1999. Bayfield is succeeding on all measures for the whole group of children with a positive effect size and at statistical significance. Beneath the average outcomes there is an inconsistent response. Although our children are succeeding, we have fallen short in recognizing the treatment strategies for the final one or two measures. The findings in this study may help us to reach these children.

The authors have articulated fifty findings to be used for clinical training, strategic planning, developing programs, organizational change and to bench mark our progress in pursuit of the Bayfield Way.

The next step in the evaluation is to study the *praxis of treatment*. We have a clear theory of change and have conducted several evidence-based outcome studies over the past decade. We have started an exploration over the bridge of praxis to help us understand what enroute transformation occurs with our children, from a theoretical framework based on attachment to our evidence based outcomes. The Bayfield Way, The Making of a Lexicon (2008) has prepared a solid foundation to increase our understanding of how to best serve the children we treat. Stuart and Gharabaghi (2010) conclude that clients are the experts of their lived experiences, and giving them a voice and a choice of the services they need for healing is a key value.

The second phase of this project will follow the path of individual children. The findings above are the result of studying the average scores over time for each group of children with attachment issues. However, there is a concerning variation within the average. A minority of children actually regressed relative to the measures.

The path of individual children who did not respond positively to treatment, i.e., the path of inconsistent responders, was studied separately. The additional conclusions derived from the inconsistent responders were:

- (1) A minority of children in Bayfield who start treatment with abnormal scores on any given measure do not move into the normal range on that measure.
- (2) A minority of children in Bayfield who start in the normal range on any given measure deteriorate and end their treatment in the abnormal range on that measure.

- (3) The children who are inconsistent responders often have recognizable features that would allow staff to identify children at risk of a poor response early in treatment and improve outcomes for this group. In other words, the inconsistent response, measure by measure, is related to individual characteristics of the child and is not systemic.
- (4) We propose a qualitative analysis following the path of individual children may shed some light on how we can better serve the children we treat.

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