Exploring the Relationship between Strengths of Youth, their Level of Functioning, and

Internalizing or Externalizing Symptom Expression

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Abstract

Mental health assessments produce profiles specifying the nature and severity of youths' symptoms and impairments. Interest in developing more comprehensive mental health profiles has motivated efforts to also assess youth's strengths. Youth mental health service recipients self-reported, and were rated by caregivers, for strengths in a comprehensive number of settings and contexts using the Strengths Assessment Inventory (Rawana & Brownlee, 2009a). Youth and observer subscale ratings had a moderate to high level of internal consistency with most sufficient for research measurement, and some approaching the level recommended for clinical purposes. Agreement between youth and caregiver ratings were greatest for youths' strengths at school and from being involved in their community. Strengths scores were matched to youths' archived mental health data. Logistic regression indicated internalizing youth in the sample were more likely than peers with externalizing presentation to report strengths at home, at school, relating to their use of free time and their time spent with friends. Internalizing youth were also more likely to report strengths related to being optimistic for the future, and possessing goals and dreams. Caregivers' ratings of youths' strengths were not found to be associated with youth's presentation of internalizing or externalizing issues. The study demonstrates youth in clinical samples self-reported strengths in particular areas are related to the nature of their self-reported mental health symptom presentation. A number of recommendations are made for future research on quantitative strengths assessment for clinical purposes.

Exploring the Relationship between Youths' Strengths, Level of Functioning, and Internalizing or

Externalizing Symptom Expression

Youth mental health assessment entails identification of symptoms as well as the nature

and severity of functional impairment (American Academy of Child and Adolescent Psychiatry,

1997). Psychometric tests are one method available to practitioners collecting information for

clinical decision making (Murphy & Davidshofer, 2005). Assessment joins together test scores,

technical knowledge, and clinicians' efforts to understand clients (Groth-Marnat, 2003).

Standardization of assessment accommodates evidence-based practice and the evaluation of

innovative mental health strategies (Barwick, Boydell, Cunningham, & Ferguson, 2004).

Assessments typically begin with the documentation of youths' presenting issues.

Measures such as the Child Behavior Checklist (CBCL: Achenbach & Rescorla, 2001), the

Behavior Assessment Scale for Children 2nd Edition (BASC: Reynolds & Kamphaus, 2004), and

the Brief Child Family Phone Interview (BCFPI: Cunningham, Boyle, Hong, Pettingill, &

Bohaychuk, 2009) screen for symptoms of psychopathology (Myers & Winters, 2002). These

types of measures assist in the prioritization and planning of mental health services

(Cunningham, et al. 2006).

Mental health assessment is not limited to symptom evaluation alone. The third DSM

(American Psychiatric Association, 1980) introduced functional impairment as a critical

diagnostic component (Lewandowski, Lovett & Gordon, 2009; Üstün & Kennedy, 2009). The

DSM's axis-V Global Assessment of Functioning (GAF: American Psychiatric Association,

2000), the Children's Global Assessment Scale (CGAS: Shaffer, et al. 1983), and the Child and

Adolescent Functional Assessment Scale (CAFAS: Hodges, 2000) each assess deficits in, or the

disintegration of, ones capacity to meet challenges in daily life. Administered repeatedly

functional impairment instruments track changes in client functioning over time (Hodges, Xue,

& Wotring, 2004). When implemented regionally they provide a common metric for

determining whether impairments are addressed in treatment and can help identify characteristics

of youth, and service providers, associated with positive treatment outcomes (Barwick, Boydell,

Cunningham, & Ferguson, 2004).

For more than a decade in Ontario the Ministry of Community and Social Services, and

the Ministry of Health and Long-Term Care, have mandated standardized collection of mental

health information using two measures (Raphael, Weir, Weston, Lines, & Pettingill, 1999).

Across the province BCFPI (Cunningham, et al. 2009) and CAFAS (Hodges, 2000) profiles for

youth receiving mental health services represent a provincial screening and outcome

measurement system (Barwick, Boydell, Cunningham, & Ferguson, 2004). While the breadth of

information collected is considerable, such a system constitutes a screen for mental illness rather

than a completely comprehensive evaluation of individual youth (Murphy& Davidshofer, 2005).

Assessment of positive and personally meaningful characteristics or competencies, called

strengths, is seen as a means of developing more balanced and complete client mental health

profiles (Snyder, Ritschel, Rand, & Berg, 2006). Some research suggests active cultivation of

strengths is associated with improved client outcomes (Cunningham, Duffee, Huang, Seinke, &

Naccarato, 2009). Informal assessment and implementation of such strengths are a potential

factor in successful treatment delivery (Duckworth, Steen, & Seligman, 2005). Efforts to

measure strengths in a standardized fashion has motivated development of the Behavioral and

Emotional Rating Scale 2nd edition (BERS-2: Epstein, Mooney, Ryser, & Peirce, 2004), the

Values in Action Inventory of Strengths for Youth (VIA-Y: Park & Peterson, 2006), and the

Strengths Assessment Inventory (SAI: Rawana & Brownlee, 2009a).

In the present study archived BCFPI and SAI subscale scores for 31 youth mental health

service recipients between the ages 8 and 19, as well as caregiver rated SAI subscale scores for

14 youth service recipients were assessed. The relationship between the strengths and the mental

health needs of youth is a preliminary research area. To date strengths have been demonstrated

to share a negative association with the measurement of both symptom expression severity and functional impairment (Harniss, Epstein, Ryser, & Pearson, 1999; Walrath, Mandell, Holden & Santiago, 2004). Separate areas of strength youth, or their caregivers, report and their relationship to the nature of presenting mental health issues has not yet been subjected to quantitative research. Like similar research in the area of resiliency, the current study explores the profiles of strength for youth with clinical mental health issues (Prince-Embury & Steer, 2010). Efforts were taken in the design of the present study so interpretation of results would be reported in terms of identifying areas of strength unique to youth within the clinical sample associated to the nature of their symptom expression type or their gender.

Earlier considerations of the relationship between strengths and symptom expression type are expanded by measuring strengths in multiple distinct contexts or settings using a larger and more comprehensive set of strengths. While previous research has demonstrated a negative associations between symptom severity and strengths scores (Epstein, Mooney, Ryser, & Peirce, 2004), this research explores whether youth with qualitatively different types of mental health issues self-report, or are rated by a caregiver, to possess unique profiles of strength. In the process of preparing to test the relationship between strengths and symptom type or gender, the internal consistency of self and observer rated areas of strength as well as the inter-rater agreement between youth and caregivers ratings are also assessed.

Symptom Screens and intake, the Brief Child Family Phone Interview

In conducting assessments clinicians work first to determine whether clients exhibit clinically significant psychopathology, and then attempt to differentiate its expression from other manifestations of mental illness (American Academy of Child and Adolescent Psychiatry, 1997). Because the symptoms of psychopathology are often distressing, assessment often covers some of the issues motivating individuals to first access services. The rationale behind assessing

psychopathology lies in the notion that categorization can help clinicians choose the most appropriate of available treatments (Murphy & Davidshofer, 2005).

Standardized instruments for the purpose of making clinical decisions first began to gain popularity in the mid-20th century, allowing quantitative assessment of clinical data as well as an objective means for measuring treatment need and outcome (Myers & Winters, 2002). A standardized response format allows measures to be completed quickly and makes possible their psychometric evaluation. Individual scores can be compared to population norms indicating whether responses are more similar to those seen among referred or non-referred peers (Wicks-Nelson & Israel, 2006). Use of standardized symptom instruments is empirically supported within both clinical groups and the general population (Frick & Kamphaus, 2001).

The BCFPI (Cunningham, et al. 2009) is a mental health screen and outcome interview completed over the telephone, Internet, or on paper. The measure can be completed by parents or teachers on the behalf of children aged 3 to 18, or completed as a self-report instrument by youth who are 12 to 18 years old (Cunningham, Boyle, Hong, Pettingill, & Bohaychyk, 2009). BCFPI content mandated for collection by service providers in Ontario includes 36 mental health symptom questions, 3 regarding self-harm behaviors, and 15 regarding the impact of the reported issues on youth and family functioning. The measure also collects basic demographic information, asks standardized questions regarding abuse and neglect, as well as additional questions to evaluate potential service access barriers (Cunningham, Pettingill, & Boyle, 2006). Implementation of the BCFPI is overseen by Children's Mental Health Ontario (formerly The Ontario Association of Children's Mental Health Centres), with assistance from 'BCFPI Incorporated', and the 'Offord Centre for Child Studies' at McMaster University (Barwick, Boydell, Cunningham, & Ferguson, 2004).

The BCFPI's mental health symptom questions are used to calculate six mental health subscales, each being six questions in length. These subscales are titled 'Regulation of

Attention, Impulsivity and Activity', 'Cooperativeness', 'Conduct', 'Separation from Parents',

'Managing Anxiety', and 'Managing Mood'. These scales independently assess key symptoms

of Attention Deficit and Hyperactivity Disorder (AD/HD), Oppositional Defiance Disorder

(ODD), Conduct Disorder (CD), Separation Anxiety Disorder (SAD), Generalized Anxiety

Disorder (GAD), and Major Depressive Disorder (MDD) respectively. Individual items on the

BCFPI elicit respondent ratings of their frequency on a three-point scale with the response

anchors *never*, *sometimes*, and *often*.

Normative scores for 6 to 18 year old youth from both clinical and population samples on

the BCFPI's mental health, child functioning, and family impact scales were derived from a

province wide epidemiological study (Cunningham, et al. 2009). The data used to construct the

BCFPI was originally used to develop the Revised Ontario Child Health Study Scales (OCHS-R:

Boyle et al., 1993). BCFPI items selected from the older OCHS-R measure were those that most

closely matched DSM-IV diagnostic symptom criteria for the disorders covered on the BCFPI's

mental health subscales. In confirmation of its screening utility the BCFPI was subsequently

field tested on a novel sample of 10916 youth outpatients aged 6 to 18 served by 74 separate

mental health service providers throughout Ontario (Cunningham, Pettingill, & Boyle, 2006).

Standardized checklists and rating-scales, like the BCFPI, help distinguish youth with

notable issues from those who are not seriously affected. They are less precise, however, within

clinical populations when used to distinguish between discrete mental disorders (Myers &

Winters, 2002). Comparative accuracy of different mental health screens is complicated by the

independent measurement error of contrasted instruments (Boyle, et al. 2009). Additionally,

substantial comorbidity in presentation of psychopathology by clinical populations complicates

attempts at discrete diagnostic categorization (Lilienfield, 2003).

Despite the limited capacity of symptom screening instruments to place youth in specific

and independent diagnostic groups, evidence exists for two comparatively more stable and

distinct broadband syndromes or symptom clusters. Classification of disorders as internalizing

or externalizing is based on statistical demonstration that particular symptoms co-occur more

often than they appear in isolation or with other symptoms (Achenbach, 1998). These unique

and separate symptom manifestations represent qualitatively distinct mental health issues.

Children with internalizing issues are characterized by emotional difficulties they direct

inwardly, while those with externalizing issues exhibit behaviours that put them in conflict with

others (Wicks-Nelson & Israel, 2006).

The collapsing of items or scales, whose underlying constructs are identical or closely

related, into a larger composite measure is a common psychometric practice. The BCFPI mental

health subscales together provide a measure of overall symptom severity, while subscales for

AD/HD, CD, ODD and GAD, SAD, MDD combined provide independent scales which measure

the severity of youths' externalizing and internalizing symptoms (Cunningham, Pettingill, &

Boyle, 2006). Subscale scores are more reliable and less subject to measurement error than the

individual components from which they are constructed (Murphy & Davidshofer, 2005). Scores

provided by mental health screens measure symptom severity, which reflects the total number of

symptoms endorsed (Winters, Collett, & Myers, 2005).

It is important to note that symptom severity scores do not communicate the specifics of

youths' presenting issues, as different patterns of symptom expression can produce identical

scores on such measures. Clinical decisions regarding client placement, treatment, and outcome

status also need to consider the specific issues youth originally presented. Interpretation of

BCFPI profiles includes a review of clients' standardized scores and the item-by-item responses

leading to their generation (Cunningham, Pettingill & Boyle, 2006).

The BCFPI is described as a replacement for, rather than an addition to, traditional intake

interviews (Barwick, Boydell, Cunningham & Ferguson, 2004). However, due to the

instruments elicitation of the perspective of a single respondent, developers stress it is not a

diagnostic tool (Cunningham, Pettingill & Boyle, 2006). Remote completion of the BCFPI over the phone, or increasingly the internet, improves the flexibility with which the interview can be completed. Furthermore the BCFPI accommodates respondent narrative information at the beginning and end of the interview, as well as in regards to each of the standardized questions asked. In addition to being normed on the population in which it is used, the BCFPI streamlines intake assessment by covering much of the information that would be collected by clinicians in person during an initial session (Cunningham, Pettingill, & Boyle, 2006). The BCFPI's ability to screen for childhood psychopathology has been demonstrated to be comparable to that of other widely used instruments (Boyle, et al. 2009).

Because of its standardized nature the BCFPI has been proven useful as a clinical research tool. To date the BCFPI has been used to categorize youth by both the type and severity of their mental health symptoms. Cameron, Frensch, Preyde, and Quosai (2011) looked at 109 youth with clinical issues, specified by the BCFPI 'conduct' subscale, at intake and follow-up. These youth had been placed in either residential or intensive family treatment which in analysis provided a successful predictor of subjects' follow-up contact with the justice system and reports of delinquency. Outside Ontario, BCFPI subscales have been used to demonstrate association between clinical symptom severity and non-suicidal self-harm among a population sample of British Columbian youth (Nixon, Cloutier, & Jansson, 2008). The BCFPI's other concerns 'selective mutism' scale features six pilot questions that determine the contexts in which that phenomenon occurs (Cunningham, Pettingill, Boyle, 2006). This measure was used by Edison, et al. (2010) to identify youth for a selective mutism group in a study examining control characteristics in the parents of anxious, non-anxious, or selectively mute children and reported results supporting established theories suggesting caregivers intervene on behalf of children when the child fails to meet performance demands and when either of the pair experiences heightened anxiety. In a non-clinical sample of 715 youth Tsar (2011) used the self-report

anxiety and depression subscale of the BASC-2 (Reynolds & Kamphaus, 2004) to measure internalizing issues alongside the BCFPI's parent report subscales 'regulation of attention, impulsivity, and activity', and 'conduct', to determine the relationship between these issues and youths academic achievement both concurrently and at follow-up after a one year interval.

The Child Adolescent Functional Assessment Scale and Impairment Measurement

While symptoms are a major component of mental health assessments, they are not the only aspects considered by clinicians. The severity or nature of symptom-expression reveals limited information regarding clients' current limitations (Winters, Collett, & Myers, 2005). Youths' level of functional impairment is a key part of assessment and has been used to determine individuals' service eligibility (Lundh, Kowalski, Sundberg, Gumpert, & Landén, 2010). Often functional impairment, rather than maladaptive behaviours or emotions, are what motivates service entry (Gordon, et al. 2006). Without consideration of functional impairments, diagnoses based on symptoms alone can lead to the unnecessary labelling of individuals and overestimation of the prevalence of disorder (Faraone, Sergeant, Gillberg, & Biederman, 2003). Functional impairment has for some time been a recognized indicator of the intensity and cost of services required by individuals (Hodges & Gust, 1995).

Like symptom checklists, instruments that assess functional impairments have their own advantages and shortcomings. Functional impairments are specific deficits in various contexts which occur concurrently with the symptoms of a mental disorder (Winters, Collett, & Myers, 2005). Within the World Health Organization's taxonomic system the functional impairment aspect of psychopathology is referred to by the more intuitive term disability (Üstün & Kennedy, 2009). Global scales of functioning, while scored quickly and easily, confound impairment with symptom severity and diagnostic status (Bird, et al. 1996). Multidimensional measures, on the other hand, provide information regarding clients' impairments in different settings or situations. Measures of youth functioning are in demand as evidence-based practice increasingly comes to

consider improvements in documented functional impairments, along with symptom amelioration, in assessing treatment outcome and effectiveness (Winters, Collett, & Myers, 2005).

The Child and Adolescent Functional Assessment Scale (CAFAS: Hodges, 2000) quantifies the extent to which mental health and substance use issues impair youth functioning. In Ontario CAFAS use is mandated at treatment outcome to assess the effectiveness of services and maintain provider accountability (Barwick, Boydell, Cunningham & Ferguson, 2004). The measure assesses youth in eight functional domains providing an indication of their level of impairment in *school/work role performance*, *home role performance*, *community role performance*, *behaviour toward others*, *moods/emotions*, *self-harmful behavior*, *substance use*, and *thinking*. Possible scores on these CAFAS scales are 30, 20, 10, and 0, which reflect *Severe*, *Moderate*, *Mild*, and *Minimal or No* level of impairment. Summed together these scores provide a global measure of impairment ranging from 0 to 240, with higher scores indicating greater overall impairment. Two additional CAFAS subscales assess caregiver resources, including their capacity to provide for youth's *material needs* and to offer adequate *family/social support*. Caregiver focused scale scores are not included in the calculation of the measures total score, as they represent the functioning of youths' caregivers not youth themselves (Hodges, 2000).

Unlike the BCFPI, and most other psychometric instruments, CAFAS subscale scores are neither the mean nor sum of responses to the items from which they are constructed. Clinicians complete the CAFAS using information on clients gathered from reliable sources including informants, official records, or clinical observations. To complete the CAFAS clinicians review the measures 198 behavioural descriptors for any which describe accurately the youth being assessed. This process begins for each subscale with a review of the descriptors nested under the *severe* level of impairment. If no descriptor accurately describes youth at that level the clinician next reviews descriptors within the same subscale nested under the *moderate* impairment

heading. The degree of impairment assigned a descriptor endorsed by the rating clinician as accurately reflecting the assessed youth determines their level of impairment for each subscale (Hodges, 2006).

CAFAS development used a sample of 984 children of military personnel stationed at bases in North Carolina, Georgia, and Kentucky who had been referred for mental health assessment. Subjects had CAFAS profiles filled out by lay or professional evaluators at four separate points in time with 373 participants still involved at the final collection point (Hodges & Wong, 1996). Winters, Collett, and Myers (2005) report no normative data exists for the CAFAS, but suggest this does not detract from its use in determining the intensity of services required. Collection of CAFAS profiles across Ontario over the last decade has amassed sufficient data to establish normative total and subscale impairment scores. The measure's developers indicate localities utilizing the CAFAS should develop local norms for the instruments total score (Hodges, 2004). CAFAS developers also report that, in its piloting, the measure did not demonstrate differential levels of impairment based on gender, age, ethnicity, or parental level of education (Hodges & Wong, 1996). This characteristic justifies the measures widespread utilization within the heterogeneous populations of youth treated by child and adolescent mental health service providers.

In Ontario CAFAS standards require completion of profiles for all youth 6 to 17 years old receiving services. CAFAS profiles must be completed by a clinician familiar with the youth in question. In Ontario CAFAS training and implementation is overseen by the Community Health service Resource Group at The Hospital for Sick Children (Barwick, Boydell, Cunningham & Ferguson, 2004). Though the CAFAS mandate specifies the instrument as an outcome measure, collection of data for the purpose of measuring change at the end of treatment requires completion of an entrance CAFAS. Entry CAFAS profiles are collected when clinicians possess adequate information to accurately rate youth, and as close as possible to the commencement of

their treatment. Clinicians rating the CAFAS at entry report the functional impairment of the youth for the month preceding their entrance to active mental health services (CAFAS in Ontario, 2002).

In Ontario, annual reports provided by mental health service providers offer a wide range of data regarding the total and subscale scores for youth of different ages and from distal geographic locations receiving services. In a sample of more than 10000 youth who were receiving treatment from either community or hospital based mental health service providers the average total CAFAS service entry score was 64. Entrance scores for separate subscales vary considerably from one another. Average impairment ratings for subscale scores across the province for *school* and *home* role performance, as well as *behaviour towards others* and *moods and emotions*, range between *moderate* (20) and *mild* (10). In contrast the average scores for *community role performance*, *self-harm*, *substance use*, and *thinking* for this large sample were rated on average as areas of *mild* (10) to *minimal or no* impairment (0) (CAFAS in Ontario, 2009).

There is no established mechanism for comparing pre-post CAFAS profiles to document reductions in functional impairment, though different methods have been suggested (Hodges, Xue, & Wotring, 2004). Data mandated for collection in Ontario on the CAFAS is shared across the province as the CAFAS common dataset. Required information for the CAFAS dataset include youths' case and background information, disclosure of substance, developmental, or chronic medical diagnoses, time of the CAFAS assessment, and the identity of the rating clinician. This information is collected and archived with youths scores on the eight youth and two caregiver subscales, description of youths living arrangement during the rating period, and indication of whether services currently provided are required (CAFAS in Ontario, 2008).

Rather than measuring functioning overall, assessment in mental health focuses upon the presence or absence of impairment. Bates (2001) points out that endorsement of functioning at

the 'minimal or no impairment' level of the CAFAS has no influence on either the measures

total, nor sub-scale, scores. This means for youth rated on the home role performance subscale

as "*frequently directing profane language at household members*" the resulting impairment

rating would be *moderate*. Such ratings provided by the CAFAS are, however, insensitive to any

and all other descriptors at lower levels of impairment on the measure, even when they also

accurately describe the current functioning of the individual assessed. Youth having their

functioning in a domain based on a single descriptor means the CAFAS measures youths'

greatest level of impairment within, and across, settings and situations. Investigations of service

provider perspectives regarding adoption of the CAFAS in Ontario suggest the measure is

positively regarded and considered clinically useful (Boydell, Barwick, Ferguson & Haines,

2005).

Use of the CAFAS by Cameron, Frensch, Preyde, and Quosai (2011) indicated degree of

impairment in community role performance at intake to services predicted school absences, and

accounted for considerable variability in school achievement difficulties at follow-up. Pre-post

CAFAS change has been used by service providers to evaluate therapeutic strategies, and to

indicate whether improvements in client functioning occur outside the context of treatment

programming (MacQuarrie & Weiss, 2007). The CAFAS has also been used to identify the

degree and patterns of functional impairments amongst youth sharing particular experiences,

such as exposure to inter-parental violence demonstrating exposure to such is associated with

greater impairments (Olaya, Ezpeleta, de la Osa, Granero, & Doménech, 2010).

Strengths Assessment Inventory and the Measure of Positive Characteristics

Around the time the BCFPI and CAFAS were being adopted in Ontario (Raphael, Weir,

Weston, Lines, & Pettingill, 1999), the now widely popularized positive psychology perspective

was also beginning its debut. Seligman and Csikszentmihalyi (2000) advocated for the empirical

study of individuals redeeming characteristics. Strengths-based mental health assessment adopts

the position youth with mental health issues despite their deficits still possess strengths. Consideration of youths' strengths in mental health assessment provides clinicians a more comprehensive overview on clients and might positively influence outcomes by fostering client treatment motivation (Epstein, Mooney, Ryser, & Pierce, 2004).

The potential of strengths in assessment is recognized within youth mental health practice. Though their use for such purposes is not mandated for report and dissemination throughout Ontario, both the BCFPI and CAFAS contain content which could be considered strengths-based. The parental BCFPI form asks seven questions related to 'protective factors'. This content includes respondents' report of youths' participation in supervised activities, frequency of family recreation, participation in spiritual activities, and the existence of a reliable person with whom they may confide (Cunningham, Pettingill, Boyle, 2006). On the CAFAS 200 descriptors each linked to one of the measures subscales can be marked by clinicians as representing either a strengths or treatment goal for the youth assessed (Hodge, 2006). This CAFAS content is labelled as optional, and its endorsement has no impact on either the measures impairment scores nor is it used in the calculation of a separate strength metric.

The accreditation requirements' of Children's Mental Health Ontario (2004) makes reference to these measures, as well as the role of strengths, in mental health assessment and service delivery. These guidelines make reference to strengths describing the CAFAS and BCFPI as measures which can be used to fulfill these service standards. In particular accreditation requirements regarding intake and assessment standards suggest that mental health assessments should measure the strengths, as well as weakness, of youth and their families when identifying mental health concerns. However, the *protective factors* and *strengths/goals* measures of the BCFPI and CAFAS, while described as means to fulfill these accreditation requirements are not part of the common provincial assessment dataset.

The Strengths Assessment Inventory (SAI: Rawana & Brownlee, 2009a) is a checklist for youth ages 10 to 18. The SAI's construction was influenced by a developmental perspective on youth mental health, the positive psychology of Seligman and Csikszentmihalyi (2000), and specifically by the 'strengths-perspective' or 'strengths-based approach' (Weick, Rapp, Sullivan & Kisthards, 1989; Saleebey, 2006). The SAI yields a comprehensive profile of the self-reported strengths individuals believe they possess in various domains of functioning, and with an observer version of the measure caregivers ratings of youths strengths in these same areas (Rawana & Brownlee, 2009b). Individual strengths are defined in the SAI as developed competencies or characteristics recognized as valuable by the individual assessed and those around them (Rawana & Brownlee, 2009a). Areas of strength measured by the SAI are easily interpreted and integrated into assessment reports and treatment plans. The SAI was designed as a complimentary component to other information commonly collected in assessment and is intended to help produce more comprehensive clinical profiles, which might positively impact the self-efficacy and treatment engagement of youth accessing services (Rawana & Brownlee, 2009b).

The SAI produces two separate sets of total and subscale scores from the same pool of questions. The measures content was first derived from a literature review of the strengths-based perspective, child and adolescent development, and positive psychology. Initial content was subsequently shared with youth and community stakeholders whose feedback was used to revise the measure into its current format. Completion of the SAI entails respondents' endorsement of the perceived presence and frequency of individual strengths using response anchors *not at all*, *sometimes*, *almost always*, and *does not apply*. Nine core content strength scales, reflecting contextually related strengths, were rationally derived and appear on the SAI as youth's strengths *at home*, *at school*, *during free time*, *with friends*, *from knowing* (themselves), *keeping clean and healthy*, *being involved*, from their *faith and culture*, as well as their *goals and dreams*. These

nine content scales are of differing lengths and in total comprise 105 individual strength items. An additional 19 questions assess the supplementary areas of *strengths on the job*, and *strengths with dating*, which become increasingly important as youth grow older.

The second set of SAI subscales were produced through principal component analysis of the tests rationally developed content, creating additional measures of statistically independent areas of strength. The empirical strengths scales use 78 of the 105 core content scale items to provide both a total empirical strengths score, and scores on 12 subscales measuring areas of strength which are in some respects distinct from those covered by the content scales. Empirical subscales assess youths *competent coping skills*, *commitment to family values*, *respect for* [their] *own culture*, *optimism for the future*, *community engagement*, *functional classroom behaviour*, *creativity*, *well-being*, *health consciousness, pro-social attitude*, *activity engagement*, and *peer connectedness* (Rawana & Brownlee, 2009a).

Although it was piloted on 572 youth, the SAI does not use normative scoring because such methods are incompatible with a strengths-based approach (Rawana & Brownlee, 2009a). Because its intent is to measure present strengths the SAI ensures clients who are unlike their peers can still have their strengths assessed in a meaningful fashion (Brownlee, Rawana, MacArthur, & Probizanski, 2009). SAI subscale scores are reported as percentages that indicate youth or caregiver endorsement in relation to the entirety of a given subscales content. Subscales with scores in excess of 80% are labelled *Well-established strengths*, those between 50% and 79% *Established strengths* and those 49% or less *Developing strengths*. The profile of strengths produced by the SAI also features a list of youths' *top strengths* in each measured domain including all questions endorsed *almost always* by respondents. Identification of top strengths provides a way of documenting specific characteristics or competencies youth perceive and value highly in themselves, providing a point of contrast to the CAFAS where clinician raters assess youths' functioning in relation to their most severe impairment.

Independent Psychometric Properties

The value of a psychological test hinges upon its reliability and validity (Groth-Marnet, 2003). The relationship between symptoms, impairment, and strength is important in understanding the unique and shared contribution of these attributes to youth mental health assessment. Before the relationship between these constructs can be explored the psychometric adequacy of the separate measures used to gauge them should be established. Both the instruments adopted for standard use across Ontario (BCFPI and CAFAS), as well as the Strengths Assessment Inventory, each possess acceptable psychometric properties for research purposes.

Reliability is a first requirement in establishing the adequacy of any psychometric measure (Murpy & Davidshofer, 2007). In his checklist for evaluating rating scales Streiner (1993) lists internal consistency, test-retest reliability, and inter-rater reliability, as characteristics which should be determined and reported in the seminal publications introducing instruments. Reliability coefficients span a range of +1.0 to -1.0 with .7 sufficient for tests used in research and .9 in clinical settings (Groth-Marnet, 2003).

The most readily and easily assessed form of reliability is internal consistency, measured with Chronbach's Alpha which is the mean of all split-half correlations of a measure with itself (Murpy & Davidshofer, 2005). Internal consistency indicates a scales measurement of a solitary attribute, with lower coefficients indicating either inclusion of multiple unrelated constructs to the measure or a sample which is providing inconsistent responses to test content (Streiner, 1993). On the BCFPI internal consistency was calculated initially using OCHS-R epidemiological study data. The mental health questions on the BCFPI in the OCHS-R population sample had subscale coefficients that ranged from .56 to .83, with .86 for internalizing and .87 for externalizing subscales. Amongst the clinical sample coefficients ranged from .73 to .85, and were .88 for both internalizing and externalizing combined scales.

Subsequent BCFPI field study of 10916 youth showed this level of internal consistency was maintained outside the OCHS-R dataset (Cunningham, Pettingill, & Boyle, 2006).

CAFAS total impairment scores during the Fort Brag Evaluation Study produced moderate internal consistencies between .63 and .68 (Hodges, 1997). Bates (2001) review of the CAFAS suggests internal consistency estimates may be attenuated because descriptors at different levels of impairment cannot be endorsed together. The multidimensional nature of the CAFAS, and the independence of the different functional areas assessed, may also account for the modest internal consistency of its total score (Winter, Collett, Myers, 2005). Internal consistency of CAFAS subscales is likely greater as they cover more restricted content domains than the measures total impairment score.

The Strengths Assessment Inventory as completed by 572 students from one high school and three primary schools yielded an internal consistency coefficient for the total strengths measure of .95, with coefficients for its subscales ranging from .72 to .85. In contrast the total empirical strengths scale had an internal consistency of .94 with subscales ranging from .6 to .86. These findings indicate the Strengths Assessment Inventory has an intermediate to high internal consistency in a student sample between 9 and 18 years old (Rawana & Brownlee, 2009a).

In addition to the reliability of their structure, measures must be evaluated for their temporal stability (Streiner, 1993). Test-retest reliability coefficients reflect the consistency of test scores across time (Murphy & Davidshofer, 2005). Test-retest reliability is particularly important when scores are meant to be used clinically to assess change in individuals (Myers & Winters, 2002). The test-retest reliability of the BCFPI subscales was also assessed using data from the OCHS-R epidemiological study. An interval between data collection points of 1 to 3 months for youth aged 6 to 11 yielded coefficients ranging from .66 to .78, and averaging .71. For youth 12 to 17 these subscale test-retest reliabilities ranged from .54 to .78, averaging .67 (Cunningham, Pettingill, Boyle, 2006). Boyle, et al. (2009) looking at parent ratings of 320

youths' internalizing and externalizing BCFPI scores initially, and again approximately one and a half months later, yielded a test-retest reliability of .5 for both scales. The BCFPI manual suggests the measures test-retest reliability, and its sensitivity to change, are sufficient to detect improvements in children receiving mental health services (Cunningham, Pettingill, Boyle, 2006).

Hodges (1995) examined the CAFAS's one-week interval test-retest reliability on ratings provided by two professionals using a standardized telephone interview with the mothers of 56 referred youth. On the CAFAS the *school/work*, *home*, and *community* role performance subscales are at times assessed collectively as a *role performance* subscale which is assigned its rating according to youths' greatest level of impairment on any of those three subscales. Test-retest reliability over a one-week interval for the *role performance* subscale was .84. Over the same period test-retest reliabilities for the *behaviour towards others* subscale was .82, for *moods/emotions* was .91, for *thinking* .89, and the substance abuse subscales reliability was not reported. Findings reported indicate evidence of fairly strong test-retest reliability (Bates, 2001).

The Strengths Assessment Inventory test-retest coefficients were evaluated with the same community school sample used to calculate its internal consistency. Over a one to two week interval reliability coefficients for *total content* and *empirical strength* scales were both .85. On the 9 core content subscales test-retest reliability ranged between .58 and .82 while the supplementary scales, *strengths on the job* and *strengths with dating*, had test-retest coefficients of .61 and .14. The 12 empirical strengths subscales in the same sample produced test-retest reliability coefficients ranging from .47 to .82. Overall, the Strengths Assessment Inventory seems to have moderate to good test-retest reliability across a one to two week interval (Rawana & Brownlee, 2009a).

A common component of many standardized measures is the completion of identical forms by different respondents (Wicks-Nelson & Israel, 2006). Inter-rater reliability is a

measure of the agreement between two raters of an individual assessed at the same point in time (Streiner, 1993). Standardization between the delivery of clinical interviewer's administration of the BCFPI, as well as clinicians rating client CAFAS profiles, helps ensure the scores reached by different mental health professionals are equivalent.

In Ontario Children's mental Health Ontario oversees BCFPI training with support from BCFPI incorporated and McMaster universities' Offord Centre for Child Studies (Barwick, Boydell, Cunningham, & Ferguson, 2004). Unfortunately, no published studies have reported the level of agreement vs. disagreement on BCFPI combined, total problem, or sub-scale ratings provided by youth, parents, or teacher pairs completing the interview. Clinicians are advised to use parent data primarily, with teacher and youth reports seen as an alternative perspective. Unpublished field data suggests parents report greater symptom expression than youth self-disclose. Teacher reports of youth symptoms as well are more similar to those of parents than youth (BCFPI.com, personal communication, August 18, 2011).

CAFAS training is overseen by the Community Health Service Resource Group at the Hospital for Sick Children (Barwick, Boydell, Cunningham, & Ferguson, 2004). Acceptable reliability is achieved through ensuring raters use the same rules and definitions set out in the CAFAS self-training manual (Hodges, 2006). Using 20 training vignettes the scores provided by lay/student, or trained/professional raters, correlated within groups and across subscales at between .74 and .99. Inter-rater reliability averaged .84 for combined role performance, was .87 for behaviour toward others, .83 in moods/emotions, and .98 for substance abuse (Hodges & Wong, 1996). Bates (2001) cautions these coefficients may be misleading since they reflect rater agreement on the level of rated impairment, not for the descriptors used to rate youth at that level.

The Strengths Assessment Inventory is available in two forms, one for youth aged 10 to 18 and the other an observer version for caregivers or another adult familiar with the rated youth.

Both forms contain identical content, with the youth report being the primary instrument and the observer version useful for gathering an additional individuals' perspective. The level of agreement between youth and parents, or teachers, regarding rated strengths has not yet been investigated with the SAI. However, other strengths instruments developed have shown a level of agreement between teachers and caregivers, as well as caregivers and youth, reportedly superior to that seen between such informant pairs on deficit measures (Friedman, Leone, & Friedman, 1999; Synhorst, Buckley, Reid, Epstein & Ryser, 2005).

To assess test reliability researchers design and execute a study then report their findings. In comparison validation of psychometric measurement is a much slower and more complicated process that makes use of substantially more subjective techniques (Murphy & Davidshofer, 2005). When instruments are reliable, they are thought to accurately be measuring an underlying construct. Subsequent validation of instruments determines whether scores provide estimates of what developers initially aimed to measure (Streiner, 1993). Murphy & Davidshofer (2005) suggest content and construct validation procedures are appropriate for determining the relationship between scores and the target attribute, also called measurement validity.

Evidence of content validity includes demonstration the behaviours sampled by a measure are representative of all behaviours related to the underlying construct intended for quantification (Murphy & Davidshofer, 2005). On the BCFPI content validity was established through the OCHS-R items chosen and their coverage of key symptoms for particular DSM-IV disorders (Cunningham, Pettingill, & Boyle, 2006). Though it is not evidence of the content validity of the BCFPI in regards to all known symptoms that indicate psychopathology, this approach has provided adequate coverage of critical symptoms for select DSM diagnoses most common in clinical youth populations.

Hodges and Gust (1995) attribute the origin of some CAFAS content to the North Carolina Functional Assessment Scale (NCFAS: Bickman, Heflinger, Pion, & Behar, 1992).

Originally for adults NCFAS items were modified for a younger population through the input of

forty professionals in the areas of child psychopathology, normal development, and the special

needs of ethnic populations (California Department of Mental Health, 1997). The CAFAS

covers a broad range of areas of youth functioning, as well as specific behaviours, providing

several levels of information for treatment planning and evaluation (Winters, Collett, & Myers,

2005).

   For the Strengths Assessment Inventory construction began with review of the literature

on strengths and the developers' knowledge of the topic. This review resulted in a prototype

Strengths Assessment Inventory that was circulated to community stakeholders including youth,

their caregivers, and the professionals who work with them. Feedback from these stakeholders

was used to revise scales and their content. Solicitation of feedback and revision was repeated

until domains indicated by youth and other stakeholders to be important were judged to have

been adequately covered. The result of this process was manifestation of the instruments content

subscales and total strengths metric. Individual SAI strengths and their parent subscales seem to

measure similar aspects of strength. Median item-total correlation of the SAI's validation sample

was between .43 and .72, are presented as preliminary evidence for the content validity of the

measure (Rawana & Brownlee, 2009a).

   Content validity relates to a measures adequate coverage of a content domain. Construct

validity in contrast demonstrates a relationship between scores with variables hypothesized to

have an association with the targeted construct (Murphy & Davidshofer, 2005). Determination

of a measures' construct validity entails consideration of the variable measured and its purported,

hypothesized, or empirically established relationship with other constructs. Preliminary evidence

of psychometric instruments construct validity often comes in the form of concurrent validity

with other established measures of the same construct**.**

Research has indicated there is greater presentation of depressive symptoms among adolescent compared to younger children (Ford, Goodman, & Meltzer, 2003), as well as a greater occurrence of hyper-activity, inattention, and impulsiveness amongst younger than adolescents (Barkley, 2003). Girls exhibit a greater disposition to the presentation of internalizing issues (Ford et al, 2003: Lewinsohn, et al. 1994) while boys in turn are comparatively more prone to the development of externalizing problems (Maughan, et al. 2004). Higher BCFPI 'regulation of attention, impulsivity, and activity' scores among pre-adolescents, higher 'mood management' scores in adolescent cases, and the attribution of higher internalizing scores to girls and externalizing scores to boys suggest BCFPI scores are in alignment with established research (Cunningham, Pettingill, Boyle, 2006).

With the CAFAS concurrent validity has been demonstrated through the measures relationship with the CGAS (Shaffer, et al. 1983). Hodges (1997) CAFAS manual describes the correlation between CAFAS total impairment and CGAS scores, during the Fort Bragg Evaluation Project across data collection periods, as ranging from -.72 to -.91. Negative correlations demonstrate convergence between these measures as high CAFAS scores reflect greater impairment and high CGAS scores lesser impairment. Hodges and Wong (1996) demonstrated the CAFAS shares a modest relationship with total scores across four different data collection points with the Child Behavior Checklist (Achenbach & Edelbrock, 1983), the Child Assessment Schedule Parent version (Hodges, 1990), and the Burden of Care questionnaire (Brannan, Heflinger, & Bickman, 1995). The CAFAS and these measures demonstrate mild positive correlations of between.36 and .63, suggesting a moderate to medium relationship between key symptoms and family cohesion with youth's level of impairment (Hodges & Wong, 1996).

The relationship of CAFAS total scores to accepted indicators of functioning has also aided in establishment of the instruments construct validity (Winters, Collett, & Myers, 2005).

CAFAS total scores are predictive of parent, teacher, and youth reports of difficulties with peers or authority figures, behaviours such as attacking or threatening others, and suicidal ideation. Total scores are also related to youths contact with the justice system demonstrated through scores positive association with parental reporting of youth arrests, convictions, and probation status. Similar predictive power is seen between CAFAS scores with teacher and parent report of youths' dislike of school, skipping of classes, and the frequency of disciplinary action (Hodges & Wong, 1996).

For the Strengths Assessment Inventory Initial validation suggests the measures content and empirical scales have a coherent structure with inter-correlations between subscales revealing moderate positive relationships. Since separate subscales all measure strength they correlate positively, but not so highly as to preclude their measurement of distinct areas of strength. Content subscales, as well as strengths on the job, showed correlations with the total strength score at between .5 and .78. Empirical subscales correlated with total empirical strengths from .38 to .74. The supplemental strengths with dating subscale correlated with total strengths considerably lower at .17, possibly because it was left unfinished by many younger respondents in the validation sample. Correlations between individual subscales making up both the content and empirical scales ranged between -.11 to .58 and .01 to .54. Overall SAI's subscales share a modest relationship with one another, yet remain independent enough for consideration as measuring separate aspects of strength as well as components of a global strength construct (Rawana & Brownlee, 2009a).

Concurrent completion of other measures with the Strengths Assessment Inventory, resulting in both converging and diverging associations between scores, provides additional preliminary evidence of the measures construct validity (Rawana & Brownlee, 2009). To the student sample, which completed the SAI the Piers-Harris Children's Self-Concept Scale 2 (PH-2: Piers & Herzberg, 2002) and the Behavioural and Emotional Rating Scale 2nd edition (BERS-

2: Epstein, 2004), that collects data similar to that assessed by the SAI, were also completed. Correlations between the PH-2 and BERS-2 scales with SAI total strength metric resulted in two medium positive correlations of .51 and .59. For the SAI empirical strengths scores these measures correlated at .56 and .57.

Demonstration of the divergent concurrent validity of the SAI is established through demonstration of a negative relationship between scores on the SAI and the Connors Comprehensive Behavior Rating Scale (Conners, 2008), which assesses concerns in behavioural, emotional, social, and academic contexts. Strengths Assessment Inventory content and empirical total strength scores produced significant moderate negative correlations with the Connors measure of -.39 and -.44. Measures with subscales assessing similar contexts or situations were reported to share the greatest correlations. The strengths at school SAI subscale correlated with the BERS-2's school functioning score at .65 and with the PH-2's intellectual and school status at .57. By comparison unrelated subscales showed a lesser association with one another, including the SAI's strengths at school subscale and the PH-2's Freedom from anxiety measure (.28), or with the BERS career strengths (.15). Overall the Strengths Assessment Inventory demonstrates acceptable initial evidence of construct and content validity (Rawana & Brownlee, 2009).

Independence and relatedness of symptom expression, functional impairment, and strength

In assessment separate instruments should provide unique information regarding individual youth. Symptom expression, functional impairment, and strengths are conceptually separable, but this does not preclude their simultaneous expression within a given case. Isolated expression of such characteristics is actually not uncommon. Subclinical expression of mental health symptoms is not unusual among youth in the general population (Leadbeater, 2010). As many as 15% to 20% of individuals at some point in their lifetime experience a significant functional impairment, with some being to the order of magnitude seen in quadriplegia, chronic depression, or blindness (World Health Organization, 2011). Though their measurement has a

considerably shorter history a key philosophy of strengths-based assessment is the notion every

individual, without exception, possesses strengths (Weick, Rapp, Sullivan & Kisthards, 1989;

Saleebey, 2006).

Whether separate psychometric instruments, and the attributes they assess, share a

relationship is tested whenever data from such measures is gathered at approximately the same

time from a single sample. The attribute assessed by a test is defined by the details of the

operational definition of its target construct (Murphy & Davidshofer, 2005). Even with their

adequate and distinct operational definitions, the content and underlying attributes of different

measures is not necessarily independent. Impairment, symptom, and strengths instruments cover

mutually exclusive concepts. However youth described in a particular way by one measure may

still have an increased or decreased propensity towards expressing certain characteristics

assessed by other measures. Two areas requiring consideration are the specific content and

subdomain areas covered by these and similar measures, as well as published research which has

already reported the level of association between strengths, functional impairment, and symptom

measures. Sufficient ground exists to question whether these characteristics are in all cases

completely independent.

Explication of a measured construct is intended to confine test content to prevent

measurement of unrelated constructs (Murphy & Davidshofer, 2005). The BCFPI is an attempt

to incorporate key aspects of intake interviews in a standardized and streamlined format

(Cunningham, et al. 2008). The measures 36 mental health questions are a norm referenced

empirical screen for the severity of symptoms overall, internalizing and externalizing issues, and

for specific disorders commonly affecting mental health populations (Boyle, et al. 2009).

The behaviours and emotions constituting symptoms of psychopathology are typically

defined by their aberrant nature, and a relative absence in the general population (Wicks-Nelson,

Israel, 2006). However, eccentric, abnormal, and deviant behaviours do not alone in themselves

indicate a mental health issue. To fully qualify for a clinical disorder identified signs and symptoms must be accompanied by distress, impairment, or represent a clear and present danger to the youth or those around them (American Academy of Child and Adolescent Psychiatry, 1997). The CAFAS gauges the impairment aspect of psychopathology, by documenting the areas where youths' ability to function is compromised (Hodges, 2006).

Separating symptom expression from functional impairment can be a challenge. Conceptually distinction is most readily demonstrated by the terminology used by the World Health Organization. The WHO's counterpart to functional impairment in the DSM system is disability, which is defined in the "International Classification of Functioning, Disability and Health" (World Health Organization, 2011). Disabilities are limitations in various settings associated with an underlying illness (Üstün & Kennedy, 2009). An area of the DSM-IV-TR, which provides a concrete example of functional impairment, are the ratings provided for the severity of disability associated with a major depressive episode. Two individuals expressing identical depressive symptoms can experience different degrees of concurrent functional impairment. One individual may be mildly impaired and described as having the "capacity to function normally, but with substantial and unusual effort" while another experiences a "clear and observable disability' in [their] capacity to meet minimal levels of functioning as required in occupational, social, other relevant contexts" (American Psychological Association, 2000).

The BCFPI, used in Ontario primarily as a screen for psychiatric morbidity, also assesses youth functioning. Questions on the measures *Child Functioning* scale gauge how the issues reported by informants have affected social participation, the quality of relationships, and school participation and academic achievement (Cunningham, Pettingill, Boyle, 2006). BCFPI content in the OCHS-R study population sample produced correlation coefficients between its *child functioning* and *mental health* subscales of between .17 and .35. *Child functioning* correlated at .39 and .29 with the measures *externalizing* and *internalizing* scales. In the clinical OCHS-R

sample *child functioning* scores correlated positively at between .15 and .61 with mental health subscale scores and at .54 and .45 with the *externalizing* and *internalizing* measures. These findings suggest the BCFPI's measurement of functional impairment and symptom severity share a mild to moderate association.

CAFAS scores are also related to symptom measurement. The CAFAS self-training manual, in describing the *moods/emotions* subscale, explains it includes descriptors that might appear to be internalizing symptoms (Hodges, 2006). However, although this content refers to youth with depression or anxiety its focus is how one's ability to function has been affected by these characteristics. Other CAFAS descriptors, such as "deliberate and severe damage to property" in or out of the home, "attempted or accomplished sexual assault or abuse of another person", or "poor judgement or impulsive behaviour resulting in dangerous or risky activities or getting in trouble more than other youth", are difficult to separate from criterion symptoms of externalizing disorders. Youth reported to physically attack others, use weapons in altercations, commit theft, or have destructive tendencies are exhibiting symptoms of externalizing issues as measured by the BCFPI. However it is the possibility of peer and community rejection, and the potential for subsequent incarceration, in response to these sorts of behaviours that constitute functional impairments.

Functioning and symptoms have been demonstrated to share a relationship when assessed with other established measures. Amongst a clinical youth sample of three thousand CAFAS and CBCL profiles indicated the existence of a concurrent relationship between symptom severity and functional impairment (Rosenblatt & Rosenblatt, 2002). Results indicated CAFAS role performance, and behaviour towards others subscales, possess a mild correlation with parent reported CBCL externalizing scores at .32 and .29. The *moods/emotions* subscales greatest correlation was .29 with CBCL parent reported internalizing symptom scores. Youths self-reported externalizing issues correlated with CAFAS subscales *behaviour towards others* at .26,

'*role performance* and *substance use* at .24. Self-reported internalizing scores, on the other

hand, correlated best with the subscales *moods/emotions* at .27 and *thinking* at .12. The measures

were associated less strongly in Rosenblatt and Rosenblatt's (2002) study than previous

investigations, perhaps because it was the first time this relationship was assessed within a

heterogeneous clinical population rather than a controlled research sample. Relationships were

reportedly strongest when comparisons were made between areas upon the measures that study

authors believed to be related (Rosenblatt & Rosenblatt, 2002).

More recently consideration of the CAFAS total scales relationship to the internalizing

and externalizing measures of the BCFPI have been undertaken, again demonstrating overlaps in

measurement between symptom and impairment instruments. Urajnik (2011) in a sample of

almost two thousand youth reported bivariate correlation coefficients between total CAFAS and

BCFPI mental health scores of .29, and differentially for internalizing and externalizing scores at

.12 and .34. The relationship intervening impairment and symptoms is sufficient enough it

would seem to allow CAFAS subscale scores to be used in research situations as the

classification criteria for adolescent subjects' placement in mixed internalizing-externalizing or

pure externalizing groups (Grimbos & Granic, 2009).

Study of the symptom-impairment relationship has included data collected correlating

additional measures of these same constructs. Markon (2010) used revised Clinical Interview

Schedule (Lewis & Pelosi, 1990), 12-Item Short-Form Health Survey (Ware, Kosinski, & Keller,

1996) and Activities of Daily Living measure (Bebbington et al., 2000) data in a structural

equation model to determine the existence of a continuous linear relationship between

internalizing symptoms and functional impairment. This research indicates there is no point at

which youths' expression of additional symptoms results in an exponential or non-linear

fluctuation in their level of co-occurring impairment. Previous research from the same authors

demonstrated the expressions of externalizing symptoms were themselves also continuous

(Markon & Krueger, 2005). However continuity of the relationship between externalizing issues and associated impairments has not been determined. It is possible, because they are largely characterized by social violation and harm to others, externalizing issues might share a continuous but nonlinear relationship with functioning. In this case, greater symptom expression would increase exponentially individuals' risk of impairment (Markon, 2010). More specific relationships between the discrete issues and impairments within specific contexts have also been established. ADHD symptom expression, as might rationally be assumed, is more closely associated with impairments within the contexts of an academic setting than other areas (Gordon, et al. 2006: Tsar, 2011).

Like the constructs they measure scale content is also useful in determining whether different instruments might assess identical, similar, or independent characteristics. On the BCFPI questions cover topics including but not limited to youths' tendency to vandalize property, defy and talk back to adults, to be unusually anxious regarding their performance, or to not be as happy as other children. These questions are loaded on the instruments 'conduct', 'cooperativeness', 'managing anxiety', and 'managing mood' scales measuring criterion symptoms of conduct disorder, oppositional defiance, generalized anxiety, and major depression. Vandalism is the deliberate damaging of property, the occurrence of which is also rated on the CAFAS *community role performance* subscale as a mild, moderate, or severe impairment. The level of impairment applied to destructive behaviours is based on whether it was an isolated incident, repeatedly occurs, or is judged by the rating clinician to have caused "*severe damage*". Youth who defy caregivers or school staff when rated on the *school/work* or *home* role performance subscales of the CAFAS will be scored as at least mildly impaired in those contexts. Such youth are likely to be rated by a caregiver or educator on BCFPI externalizing content as ones who sometimes or often "[are] defiant or talk back to adults", or who "[have] difficulty following directions or instructions".

The strengths profiles of youth with clinically serious symptoms and functional impairments may influence how strengths could be most effectively used in the provision of future mental health services. In the following section, Consideration is given to an operational definition of strengths, research which has considered its association with the measurement of impairment or mental health symptom expression in youth samples, and comparison of the content of and scoring of different strengths metrics in use are reviewed. Being a significantly newer concept and having received less consideration than symptoms and impairments respectively, relatively little is known about how strengths might be related to symptoms expression type or functional impairment.

If abnormality is used as a defining characteristic a considerable negative association between strengths and symptoms seems a reasonable expectation. Strengths and psychopathology could both be loosely defined as gross deviations from normality. For example, while anxiety can manifest as a clinical disorder, the actual experience of anxiety is not necessarily a psychiatric disorder when it occurs in appropriate contexts and is not unusually long in its duration, overly frequent, or more intense than what might be considered motivating. Likewise an individual's strength, or strengths within an area or context, might be judged based on whether this capacity is noteworthy in relation to peers' performance in this same regard or area. As an example, strength in mathematics might be defined by ones superior academic performance compared to their peers in this subject area. However, the approach taken to the measurement of strengths has not defined them on the basis of individuals' performance compared to their peers, but instead on the value or importance placed by individuals in those characteristics or competencies. This means that even children who are struggling academically, if they enjoy such activities and are motivated to do them, can still be thought of as having strengths in this area.

The operational definition of strengths provided by the BERS is that they are "skills, competencies, and characteristics that create a sense of personal accomplishment…" (Epstein & Sharma, 1998). For the SAI the strengths are defined as valued characteristics or competencies (Rawana & Brownlee, 2009a). Given these terms, strengths and the expression of symptoms might not overlap after all. While it is possible individuals may feel indifference towards their symptoms that they are valued or help youth feel accomplished is unlikely. At the same time it is possible youth might perceive certain possible pathologies in a positive light. One might feel accepted by peers when they take part in gang activities such as theft, vandalism, or assaults. In light of this, definitions of strengths routinely include a caveat that they do not violate acceptable social norms. The BERS specifies that strengths "contribute to satisfying relationships with family members, peers, and adults" (Epstein & Sharma, 1998). On the SAI strengths are supposed to be jointly valued by the youth, as well as the surrounding society (Rawana & Brownlee, 2009a).

As preliminary as research in this area is, published literature has begun to suggest the existence of an association between strengths and symptoms. In establishing the convergent validity of the second edition of the Behavioural and Emotional Rating scale Epstein, Mooney, Ryser, & Peirce (2004) correlated the subscale scores of 42 students on the BERS-2 (Epstein, 2004) with their total problems, internalizing, and externalizing scores on the Youth Self Report form of the Child Behaviour Checklist (Achenbach, 1991). Findings indicated an overall moderate negative relationship between total problems and total strength with a correlation coefficient of -.4. Examination of youths internalizing and externalizing scores separately with overall strengths scores revealed two moderate correlations of equivalent magnitude and direction. Consideration of the separate areas of strength measured by the BERS did however reveal differential associations between areas of strength and the broad type of psychopathology to which they were correlated. Youths' internalizing scores had a smaller negative association

than did their externalizing scores with the BERS-2 'School Functioning' subscale, producing correlations of -.31 as opposed to -.54. Youths externalizing scores also showed a weaker relationship with BERS Intrapersonal and Affective strengths subscales than internalizing scores, yielding coefficients of -.05 compared to -.39 and -.19 as opposed to -.34 (Epstein, Mooney, Ryser, & Peirce, 2004). More than demonstrating strengths and psychopathology to share an overall negative relationship such findings hint at the possibility youth's strengths in various contexts may be related to the type of symptoms they express.

The Strengths Assessment Inventory, and its relationship with the subscales of Conners Child Behaviour Rating scale mentioned earlier, also demonstrates a differential relationship between overall strengths and various forms of psychopathology. In some cases no relationship is evident, for example correlations between SAI total content and empirical strengths scales with Connors subscales *Separation Fears* (.05/-.02), *Conduct Disorder* (.08/.06), *Separation Anxiety* (.006/-.08), and *Obsessive Compulsivity* (.04/.02). Still total content and empirical strengths scores in this same sample did share mild negative correlations with the Connors scales for used to assess *Aggressive Behaviours* (-.32/-.36), *Major Depression* (-.33/-.32), and *Generalized Anxiety* (-.22/-.22). A negative relationship between strengths and pathology measured by the Connors was expected and reported by developers as initial evidence of the criterion validity of the SAI (Rawana & Brownlee, 2009a).

Given the emerging indication strengths and symptoms may share some type of association it is possible that some BCFPI and SAI content is mutually exclusive, accounting for the negative association sometimes seen between the two. How might youth who describes themselves on the BCFPI's as "distractible or having trouble sticking to activities", "fail[ing] to finish things [they] start" or "[to have] difficult[ies] following directions or instructions" be expected to respond to SAI questionings referring to whether they "pay attention in class", if "when [their] teachers asks [them] to complete work in class, [they] finish on time." or that they

"can work on [their] own when the teacher asks [them] to"? Likewise youth who endorse BCFPI

content such as "…not as happy as other children", "destroys things belonging to others", or to

"engage in vandalism", might reasonably be assumed as highly unlikely to in turn endorse as

strengths that they are "happy about life" or that they have "respect [for] community property".

        At the same time it is possible youth with particular issues, like those who report they

sometimes or *often* worry "…about doing better at things", "…about their past behavior" or

"…about things in the future" may be more likely than youth who do not report these

experiences to endorse SAI strengths that indicate "[They] want very much to achieve their goals

and dreams", that they "…know that [their] life will change as [they] get older, and [they] can

think about and plan for this", or that "if there is something [they] are not good at, [they] try to

get better or find something else [they] can do better'. Likewise a reported tendency to 'fidget'

or 'jump from one activity to another" may have little to no bearing over youths' propensity to

become "involve[d] in school sports" or their perceptions of themselves as individuals who "like

to try doing new things". Whatever the case care is needed when considering the possibility

particular strengths and symptoms might be positively associated to ensure the seriousness of

youths difficulties are not downplayed as a result (Saleebey, 1997).

        Where the content of measures is arguably mutually exclusive, simultaneous presentation

of non-reconcilable strength and symptoms might be accounted for in a number of ways, such as

by informants misreporting, divergence in respondent perspectives of behaviours, or the

situational expression of characteristics in some settings but not others. Particular areas assessed

by the SAI like youths strengths during their free time, with their friends, from their faith and

culture, in their engagement in activities within their community, or in their optimism for the

future, consist of behaviours and characteristics which are hard to predict in light of various

symptoms and have received little consideration in research and clinical practice. Youths

tendency to argue with adults, to act impulsively, or to feel hopeless are difficult to use in the

rational inference of whether these youth may or may not also like to bake, play a musical instrument, or engage in outdoor activities. Indeed strengths which are difficult to discount or attribute on the basis of youths symptom expression may prove the most interesting material featured on strengths-based assessment instruments, and may eventually prove to be somewhat informative to clinical practice.

In considering strengths potential relationship with functional impairment, revisiting the operational definition of both variables is helpful. Compared to the contrasting of strengths and symptoms, the equivalence or separateness of strengths and impairment is somewhat more difficult to discern. Youth are rated by the CAFAS for the extent to which their functioning in various areas is disrupted by the problems they experience (Hodges, 2006). Again, the BERS and SAI refer to sets of skills, competencies, or characteristics, further specified by their being valued by the individual expressing them and others around them (Epstein & Sharma, 1999; Rawana & Brownlee, 2009a).

Rawana and Brownlee (2009a), in describing how to go about interpreting Strengths Assessment Inventory profiles, encourage clinicians to consider how youths endorsed strengths might be used either to replace disruptive behaviour or to promote more positive functioning. The labels applied to particular BERS and SAI subscales that consist of academic strengths are *school functioning* and *functional classroom behaviour* (Epstein, 1999; Rawana & Brownlee, 2009a). Use of the words functioning and functional to label these scales suggests that strengths, in certain instances, can also be characteristics of youths' level of functionality or competency. Despite both touching upon the broad concept of youths functioning however, strengths measures cover individuals' competencies as well as characteristics that are valued but not necessarily related to functioning, while impairment assessment instruments like the CAFAS assess only deficits.

The relationship between impairment and strength has been explored through the bivariate association of parent completed BERS (Epstein & Sharma, 1998) and CAFAS (Hodges, 2000) scores from a clinical sample of more than 1800 youth between 5 to 17 years old at their intake to service (Walrath, Mandell, Holden & Santiago, 2004). The goal of this analysis was to explore for a relationship between strengths and impairment, to determine whether youth with greater functional impairments also exhibited strengths, and whether this relationship varied on the basis of youths demographic characteristics.

The results indicated that youth with greater levels of impairment exhibited lower total strength scores. Correlations between total impairment on the CAFAS and total strength and subscales scores on the BERS of about -.4 were reported. Demographic characteristics did not seem to be related to youths expressed strengths with the exception of a non-significant trend suggesting a possible gender interaction with strength expression among girls much lower when they were rated as markedly or severely impaired (Walrath, Mandell, Holden & Santiago, 2004) This study found that differences between scores for overall strengths, as well as individual areas of strength, were statistically significant between youth rated at different levels of functional impairment. The authors pointed out, however, that even youth rated at more severe levels of impairment were reported by caregivers to exhibit near average BERS total and subscale strengths scores. It was concluded on this basis that strengths and impairment appear to be separate constructs rather than opposite points along the same continuum, but that as separate constructs there exists between them a moderate negative relationship.

Winters, Collett & Myers (2005) in their review article of functional assessment instruments describe the BERS as a "level of functioning measure" suggesting that strengths are still considered in terms of youth's functionality. It is not unreasonable to entertain the possibility that, although one type of measure considers both competencies and characteristics, and the other only deficits, responses to the content of both types of measure may preclude or

herald the endorsement or absence of similar functional characteristics on the other. The inclusion of non-functional characteristics on strengths measures, included because they are valued by the youth means the two types of measures do not merely reflect different approaches to assessing youths functioning. The CAFAS self-training manual describes the *school role* performance subscale to cover issues regarding youths' poor academic work, poor attendance, and problematic behaviour (Hodges, 2006). The Strengths Assessment inventory's Strengths at School subscale identifies strengths in functional academics, academic achievement, classroom behaviour, engagement in school activities, and attitudes toward school (Rawana & Brownlee, 2009a).

Additionally the BERS 'school functioning' subscale is described by developers as focusing on youths 'competence in school and classroom tasks" (Epstein, 1999). Youth rated as "chronically truant/absent, resulting in negative consequences" on the CAFAS school role performance subscale might reasonably be assumed less likely to be self-identify or be reported by a caregiver as possessing the strengths that they *almost always* or *sometimes* "arrive on time for class", "attend [their] classes", or "arrive on time for school". When a child is rated on the CAFAS as receiving a "lower than a 'C' average", "failing at least half of their courses", or "failing all or most classes" (Hodges, 2000) it seems increasingly unlikely they would self-report or be judged by an observer to value "reading at [their] grade level or higher", "study[ing] for tests", "[doing their] homework" (Rawana & Brownlee, 2009a) or "demonstrate competence in math skills" (Epstein, 1999).

Similar comparisons can be drawn between content from the subscale 'strengths at home' on the SAI, and 'family involvement' on the BERS, with descriptors upon the 'home role performance' subscale of the CAFAS. Items on the SAI strengths at home subscale assess aspects of family cohesion, involvement in family activities, family support, as well as youth's compliance with rules and responsibilities in the home (Rawana & Brownlee, 2009a). Youth

who "do the chores [they] are asked to do" and that "follow the rules [of the home]" are said to be demonstrating strengths in the home. Similar content on the BERS includes content regarding compliance, positive relationships with other members, and social participation (Epstein, 1999). Typical compliance with reasonable household rules is also a CAFAS descriptor for *minimal or no impairment*. Youth who must be coerced into completing household obligations, or who do not comply with the rules set by caregivers are impaired to a level dependent on the determined severity and frequency of their non-compliance and failure to take responsibility.

There are clearly items on the CAFAS and SAI or BERS to which a given youths ratings might appear to represent opposite ends on a shared spectrum of functionality. However, it would not be accurate to say on this basis these instruments assess separate ends of the same construct. Strengths are more than instances of functional adequacy, as their measurement covers present characteristics that are widely regarded as positive and which the individuals exhibiting them recognize as valuable. Both the BERS and SAI definitions' of strength make reference to competency (Epstein, 1999; Rawana & Brownlee, 2009). Being considered competent entails more than an individual's ability to function at a level commensurate with what is generally expected in a given context. Instead competent individuals have mastered particular traits, skills, and characteristics as the result of sustained effort and time. The mastery associated with competency requires the skills associated with them to be those which individuals were motivated to attain.

An explanation for why functionality and strengths at times are difficult to separate may be attributable to instances where individuals value their capacity to meet the demands of routine roles and obligations requiring basic functional adequacy. This is why an area, such as academics, can simultaneously be considered a functional domain as well as an area in which individuals can express strengths. A youth accomplishing what is required of them in an educational setting, but who is indifferent to academics overall, could be described as

functioning adequately in their role as a student. Meanwhile one who also accomplishes what is required of them in this setting, and also derives enjoyment or self-satisfaction from this, could be described as having academic strengths.

Consideration of the SAI's content subscale 'strengths at school' and its empirical subscale 'functional classroom behavior' highlight further the difference between functioning and competency. In the empirical measure youths tendency to 'take notes', 'pay attention in class', 'study for tests', to 'use listening skills', 'complete work in class on time', to complete 'homework' and to work 'on [their] own when required' are skills and characteristics the presence of which describes youth who are meeting the formal expectations of an academic environment. These areas of functioning are also strengths when the youth expressing them regard them in a positive and useful light.

Questions which are loaded upon the SAI strengths at school measure, but not included on the 'functional classroom behavior' subscale, cover descriptors regarding strength characteristics rather than academic competencies such as youths' positive relationships with school staff or their involvement in school sports or clubs. If we consider academic strengths which are not also 'functional classroom behaviours' it becomes apparent individuals can express attributes or characteristics that can be regarded academic strengths, though they might simultaneously lack other abilities more commonly considered necessary to adequate functioning in a scholastic setting. The BERS 'school functioning' queries whether youth 'exhibit an interest in school activities' an item which does not necessarily relate to academic performance per se, but is a potential positive characteristic youth might have within an educational environment (Epstein, 1999).

Present study

The primary aim of this research is to identify areas of strength within a clinical sample unique to youth expressing different types of mental health symptoms. Clinicians' ratings of

impairments in a number of similar areas are also evaluated for their ability to separate youth on the basis of their symptom expression type. Strengths and impairment ratings in various domains are also evaluated for whether they separate the clinical sample accessed on the basis of youths' gender.   Being the first time Strengths Assessment Inventory data from a clinical sample has been collected the instruments internal consistency and the level of youth-caregiver agreement are also evaluated.

Efforts were taken in the design of this study to limit the potential for findings to be interpreted in a manner highlighting youths' deficits. Correlational and direct regression analysis of strength and mental health measure scores is problematic for identifying strengths of youth receiving mental health services because strengths measures have routinely been validated, at least partially, through demonstration of their negative association with measures assessing psychopathology. Seligman and Csikszentmihalyi's (2000) introduction to positive psychology criticized researchers for too narrowly focusing on individuals' negative qualities.

Moving beyond a deficit-based focus is not accomplished merely through adoption of standardized tests featuring positive content. For the assessment of strengths in clinical settings to align with the philosophy of strengths-based practice, in particular the view all individuals possess strengths (Saleebey, 1997), strength measures should document present strengths without allowing their absence to be interpreted as deficits. Unfortunately up to this point strengths-assessment research seems to have, perhaps unintentionally, emphasized an absence of strengths among youth in clinical samples and the negative measurement associations between strengths and factors commonly considered during assessments. Despite how clinicians eventually go about assessing and implementing strengths in practice their utility will likely be contingent upon their possession by, and meaningfulness to, clients receiving mental health services. Professionals will need to be thoughtful in their incorporation of individuals' strengths in service provision, and will need to develop strategies for engaging clients in generating ways in which

their personal strengths might be applied both in and out of treatment (Rawana & Brownlee, 2009b).

Strengths research has not reached the stage where clinicians can decide on its basis how to best help clients make use of, or expand, their present strengths. It is possible, however, for the strengths characteristics of youth accessing mental health services to be quantitatively assessed. For the present study significant findings reflect instances where youth in one symptom expression group in the present sample were more likely than those in the other to self-report, or be reported by a caregiver, as possessing strengths in particular contexts measured by the subscales of the SAI. Whether clinician rated functional impairments in the areas covered by the CAFAS separate the clinical group by symptom expression type is analyzed in a similar fashion.

Analyses of the association between symptom expression type and distinct areas of functional impairment and strength are unique contributions to the research literature on youth mental health. While separate symptom severity scores have been correlated with CAFAS impairment scores (Rosenblatt & Rosenblatt, 2002) there has been no consideration given to whether impairments in separate areas have a differential likelihood of occurrence in groups of youth demonstrating predominantly internalizing or externalizing symptoms. Comparison of symptom groups is also done on the basis of strengths ratings based on Strengths Assessment Inventory prorated subscale scores, an ideal metric for evaluating strengths within a clinical sample. With prorated scores strengths on the SAI which respondents endorse as '*does not apply*' are given a score equal to the mean of remaining strengths on the subscale from which they originated (Rawana & Brownlee, 2009a). Prorated scores should account for instances where the reduction in strengths scores associated with the absence of a competencies measured by the SAI is confounded with functional impairments in similar contexts and settings as measured by the CAFAS. Additionally pro-rated scores can account for whenever a particular strength

characteristic listed on the SAI is unimportant or irrelevant to a given youth. Pro-rated scores

allow youth to identify, and be assessed on, the strengths they possess and value. In cases where

the content of strengths measures is less flexible youth may be unintentionally assessed

negatively on the basis of strengths they fail to endorse. Prorated scores are ideal for

determining the relative strengths of heterogeneous groups of youth who may share little in

common aside from the broad nature of their mental health symptoms and a need for services.

Comparison of the different areas of strength reported by youth with markedly different

issues is a novel approach to strengths assessment research, with potential to influence future

investigations and perhaps eventually treatment delivery methods. Following Rawana &

Brownlee's (2009b) framework for strengths-based assessment and intervention, the Strengths

Assessment Inventory (SAI: Rawana & Brownlee, 2009a) is used to profile areas of self and

observer rated strength unique to children and adolescents in service exhibiting symptoms of

either a predominantly internalizing or externalizing nature. Given the relationship between type

and severity of expressed internalizing and externalizing symptoms with functional impairment

in multiple areas (Rosenblatt & Rosenblatt, 2002) youths' clinician rated functional impairment

information on the CAFAS is given similar consideration. While the intent of the current work is

to identify areas of strength shared by youth with different presenting issues the relationship

between impairment and strengths in different areas are also considered for their distinct

association with youths' gender.

The present research's use of archived clinical data reduces the burden placed upon

clinicians assessing and working with the youth included in the study, as the design did not

require the collection of data not already being collected by the service provider (Cameron,

Frensch, Preyde & Quosai, 2011). Use of archived data and comparison of groups within a

clinical sample, rather than a control group, was not only important methodologically but also

improved the feasibility of the study and the ease with which it was conducted. Also of note is

that the region which the sample was collected from was ideal, as the catchment area of the service provider covers a heterogeneous group of youth from both rural and urban communities, a feature which was reasonable grounds for excluding this site in a previous clinical research study (Steele, et al. 2010).

Method

Participants

After acquiring ethical approval from both the university where the present study was designed, and the children's mental health service provider which collected the targeted data, a database containing 241 Strengths Assessment Inventory responses was released to the researcher. First 31 null entries wherein youth or a caregiver did not complete at least 75% of the items on two or more SAI content subscales were removed. A number of youth and caregivers in the dataset provided strengths ratings of themselves, or the same dependent, on multiple occasions. Multiple self or observer ratings of the same individual were spotted using a unique client ID number system used by the mental health service provider. In approximately half of the cases in the database provided client ID numbers were missing, or invalid values had been entered in their place. Youths' birthdate and gender was used to supplement client ID numbers in identifying which youth without client IDs, or with different client IDs, were potentially the same individual.

When youth or observers had completed the measure multiple times the earliest posted SAI scores were the ones chosen for use in the reported analyses. It is possible that multiple entries for the same youth by observers reflected independent ratings of different caregivers, however detailed account of the caregiver providing responses was not indicated in the dataset provided, and so all observer ratings for a given youth were treated as though they came from the same respondent. In a number of instances cases with identical gender and birthdate, and either lacking or being represented by one valid and one or more invalid client ID numbers, were

STRENGTHS OF INTERNALIZING OR EXTERNALIZING ISSUES dropped from the study database. Though such cases might possibly have been different youth who coincidentally shared the same gender and birthdate, in all cases youth were excluded on this basis they also had invalid client ID numbers which made it impossible to retrieve their name from the mental health service providers' archives to confirm if they represented an independent case. As a result another 37 cases were removed as duplicate self or observer reports of the same youth.

After screening 116 youth and 57 caregiver responses to the SAI remained, item responses along with indication of the rated individuals' gender and birthdate were compiled into two separate databases for self and observer reports. These item responses were used to assess the internal consistency of the SAI's content and empirical strengths subscales. All SAI data collected by the mental health service provider used in the present study were completed by youth in the two years between July of 2010 and 2012. For the 116 youth who rated themselves the mean age when the SAI was completed was 14.8 years (range = 8.3 - 18.5), with 70 girls (mean age = 15.2, range = 11.2 – 18.5) and 46 boys (mean age = 13.7, range = 8.3 – 17.9). Caregiver ratings of 57 individual youths strengths were completed by caregivers between November 2010 and July 2012 with youth in that sample being 14.9 years old on average (range = 9.6 to 18.1) with 28 representing caregivers ratings of girls (mean age = 15.4, range = 10.7 – 17.6) and 29 ratings of boys (mean age = 14.4, range = 9.6 – 18.1). These two samples were also subjected to a series of binary logistic regression analyses to determine whether individual areas of strength measured by the SAI had a greater likelihood of self-report by boys or girls, or on the basis of caregivers' ratings.

From the self and caregiver strengths ratings available 25 cases where both had completed SAI profiles for the same youth were identified. In these paired cases the mean age was 14.9 (range = 10.2 – 17.6), represented by 10 boys with a mean age of 14.2 (range = 10.2 - 17.1) and 15 girls who were on average 15.3 years old (range = 10.7 – 17.6). These paired

ratings were used to evaluate the inter-rater agreement between youths self-reported and caregiver observed strengths subscale ratings.

Valid client ID numbers from both the observer and youth sample were used to retrieve clinician rated CAFAS profiles for 72 youth completed between May 2010 and June 2012. CAFAS subscale scores for youth's impairments were accessed on site at the children's mental health service provider, and were matched with demographic data to test whether clinicians' ratings of impairment in different contexts predicted youths' gender. In this analysis the respondent who provided responses to the SAI was not a consideration allowing the inclusion of youth whose strengths profiles were either self or observer reported. This group had an average age of 14.5 years (range = 7.7 – 18.4) and were represented by 38 girls (mean age =15.3, range = 10.4 – 18.4) and 34 boys (mean age =13.7, range = 7.7 – 18.1).

Youths BCFPI profiles were also accessed on site from the mental health service provider on a system separate from that used to retrieve CAFAS scores. Whereas CAFAS information was accessible using client ID numbers the BCFPI system required the use of a clients' given or family name. Client names were not included in the strengths database provided the researcher, but were indicated in the CAFAS database accessed on site and in turn used to locate youths BCFPI profiles. The BCFPI profiles used in the present study were all self-reported and had been completed between May of 2010 and 2012. When analysis focused on symptom expression type the dates on which the SAI and CAFAS profiles used were completed were compared to the date at which youths BCFPI scores were reported. Instances where the measures compared were finished more than one calendar year apart (365 days) were excluded from analysis, but were retained for tests exploring strengths and impairments relationship with gender.

To test the relative likelihood of self-reporting strengths or being rated by a clinician as impaired in various contexts for youth reporting qualitatively different symptom expression

types, BCFPI internalizing and externalizing symptom t-scores for 31 youth were retrieved. This subset of the larger sample of self-reported strengths profiles had a mean age of 15.1 (range = 9.9 – 18), represented by 12 youth with predominantly internalizing issues (mean age = 14.8, range = 9.9 – 18) and 19 with primarily externalizing concerns (mean age = 15.1, range = 11.6 - 17-6). BCFPI internalizing and externalizing t-scores in this sample were not strongly associated with youths gender as determined by two insignificant point-biserial correlations (n = 31: Internalizing r = .23 p =.19, Externalizing r = -.24 p =.18).   The gender split of this subset of the overall sample consisted of 10 boys (mean age = 14.1, range = 9.9 – 15.8) with an equal split of internalizing or externalizing presentation, and 21 girls (mean age = 15.4, range = 11.6 – 18) two-thirds of whom reported predominantly externalizing concerns.

BCFPI profiles which separated youth by their symptom expression type, and were completed by youth within the same calendar year as an observer SAI report were also recovered from the service providers' database. The sample available was highly limited and consisted of just14 youth who were on average 15.1 years old (range = 10.2 – 17.6), represented by 5 boys (mean age = 13.6, range = 10.2 – 17.5) only one of whom had self-reported predominantly externalizing issues, and 9 girls (mean age = 15.8, range = 13.5 – 17.6) of which 7 had self-reported externalizing issues.

Materials and Procedure

The measures used and their psychometric properties have been described at length earlier in the present work. Cases where BCFPI scores were invalid, or completed more than one year from the CAFAS or SAI profile to which they were being compared, were still included in analyses assessing the relationship between youths gender and self, or observer, reported areas of strengths, as well as clinician ratings of impairments in different settings. Youth with completely invalid or missing CAFAS and BCFPI profiles did not have their data extracted from the service providers' archives, nor were they included in analysis except those assessing the internal

consistency and inter-rater agreement of SAI subscales, or the association of SAI subscales with youths' gender. In a number of cases subjects prorated scores were incalculable on one or more SAI subscales. Investigation of these profiles determined these instances were attributable to cases where youth, or their caregiver, had only used the response option *not at all* and *does not apply* for an entire subscale. These individuals were only included in analyses focused on subscales to which their responses could be used to calculate a prorated score.

SAI developers' suggestions for determining the validity of subscale scores were also considered. The measures manual suggests profiles might be invalid when prorated total content scores exceed 200 or fall below 103 (Rawana & Brownlee, 2009a). In the sample accessed calculation of prorated total scores showed a small number of cases did exceed these limits. However, since most of these cases did not represent scores greater than two standard deviations from the mean of the sample, and since this was the first time SAI strengths profiles in a clinical sample were subjected to analysis, they were retained in the dataset. Of note is that in the present research youths *does not apply* responses were not treated as incomplete replies. Even in instances where youth used this response option on 75% or more of the items on a particular subscale it was not considered grounds for that cases exclusion, so long as responses to other items on that scale allowed the calculation of a prorated score. This means that some youth's strengths ratings were actually based on a limited number of strengths for a given subscale, with the underlying perspective that the measure of strengths is most meaningful when they are judged relevant by the individual reporting them.

BCFPI internalizing and externalizing t-scores were used to create a dichotomous dependent outcome variable where youth were coded as '1' for internalizing and '0' for externalizing symptom presentation. Categorization as predominantly internalizing or externalizing symptom presentation was based on differences in the two scores that were either as large as the gap between clinical and subclinical cut-off t-scores recommended by the tests

developers, or that fell on either side of one of these cut-off points (Cunningham, Pettingill, & Boyle, 2006). Another dichotomous outcome variable was created using the labelling convention of '1' to identify males and '0' to identify females in analysis.

CAFAS subscale scores were collected from the service providers database for the sample of 72 youth detailed above with the values '0', '10', '20', and '30'(Hodges, 2000). Because CAFAS scores represent an ordinal discrete four-point rating system these values were recoded; with '0' representing *Minimal or no impairment*, '1' *mild impairment*, '2' *moderate impairment*, and '3' *severe impairment.* SAI prorated scores were calculated first as percentages and then converted according to developers directions into a discrete three-point ordinal variable where scores equal to or exceeding 80% were labelled '2' as *well-established strengths*, scores between 79% and 50% '1' for *established strengths*, and those 49% or below '0' for *developing strengths* (Rawana & Brownlee, 2009a).

Analyses

Internal consistency. SAI item responses for 116 youth and 57 observer reports were used to assess internal consistency of SAI's subscales in a clinical sample. Congruent with previously reported in measures manual using a school sample the content and empirical subscales self-reported presently demonstrated moderate to strong internal reliability with coefficients ranging from r=.51 to r=.88. Chronbach's alpha for observer and youth reports, by gender for each sample, and the number of items per scale for each area of strength assessed by the SAI is reported in table 1. Internal consistency did not show a great deal of discrepancy by gender for self-reported strengths on most SAI subscales. A considerable difference was noted, however, in the internal consistency of boys (r=.25) and girls (r=.61) self-report of their strengths related to the *activity engagement* subscale. Lower consistency on this scale among boys, and in the sample overall (r=.51), may be attributable to the nature of the strengths loaded to that scale. Two of the strengths listed on the *activity engagement* scale are "*I like to watch non-violent*

sports on TV" and "*I like doing things outdoors like hunting, fishing, or camping*". Both these

items represent self-descriptive characteristics youth could consider personal strengths, even

though the endorsements of the particular characteristics on this strengths subscale are not highly

correlated with one another.

Table 1
Chronbach's Alpha for Candidate and Observer SAI content and empirical subscales

Subscale	αYouth(boys)(girls)	αObserver(boys)(girls)	# Items
At Home	.75 (.76)(.74)	.76 (.79)(.69)	12
At School	.88 (.86)(.89)	.87 (.86)(.88)	15
Free Time	.72 (.67)(.76)	.77 (.80)(.74)	19
With Friends	.72 (.72)(.72)	.78 (.84)(.60)	10
Self-Knowledge	.86 (.84)(.87)	.86 (.86)(.86)	18
Clean & Healthy	.69 (.76)(.62)	.71 (.74)(.68)	8
Being Involved	.71 (.64)(.75)	.66 (.75)(.51)	6
Faith & Culture	.80 (.80)(.80)	.86 (.87)(.84)	10
Goals & Dreams	.81 (.87)(.79)	.85 (.87)(.79)	7
Competent Coping	.79 (.78)(.79)	.83 (.86)(.79)	10
Family Values	.61 (.62)(.60)	.73 (.74)(.63)	8
Respect Culture	.81 (.82)(.80)	.86 (.85)(.87)	7
Future Optimism	.81 (.79)(.83)	.85 (.88)(.79)	8
Community Engagement	.80 (.68)(.84)	.81 (.82)(.80)	8
Classroom Behaviour	.83 (.83)(.83)	.82 (.83)(.82)	7
Creativity	.69 (.59)(.69)	.69 (.75)(.57)	5
Well-being	.74 (.69)(.75)	.71 (.62)(.80)	4
Health Consciousness	.75 (.79)(.72)	.73 (.71)(.76)	8
Pro-Social Attitude	.73 (.78)(.69)	.73 (.82)(.55)	5
Activity Engagement	.51 (.25)(.61)	.53 (.47)(.55)	4
Peer-connectedness	.63 (.63)(.61)	.69 (.75)(.59)	4

Youth n = 116 boys = 46 girls =70, Observer n = 57 boys = 29 girls = 28

The internal consistency of observer reported strengths on the SAI (see table 1 again) was

not included in the measures manual, making this the first time these ratings have been assessed

for internal consistency. Cronbach's Alpha coefficients for subscales ranged for the overall

sample from r=.53 to r=.87. Internal reliability of caregivers ratings of boys strengths ranged

from r=.47 to r=.88, and for girls from r=.51 to r=.88. While the overall internal consistency

coefficient of the *activity engagement* subscale was also the lowest of subscales among observer

responses, the discrepancy between caregivers' ratings of male and female dependents was of a

lesser magnitude than seen among self-reported scores. The greatest point of discrepancy among

the internal consistency of observer ratings was instead related to youths *pro-social attitude*, where observers ratings showed a notably greater average inter-item correlation for boys (r=.82) compared to girls (r=.55). With some minor exceptions the internal consistency of content and empirical SAI subscales among both observer and self-reported profiles met the levels recommended for use as experimental measures, with some even approaching the levels recommended for use in clinical measurement (Groth-Marnet, 2003).

Observer-youth agreement. Next 25 cases with both self and observer rated strengths profiles available had their subscale scores assessed for their level of inter-rater agreement (Table 2).

Table 2
Self by observer SAI subscale Pearson product-moment correlations

Subscale	Pearson R	Sig.
At Home	.487	.01*
At School	.784	<.00*
Free Time	.507	.01*
With Friends	.177	.39
Self-Knowledge	.100	.63
Clean & Healthy	.435	.03*
Being Involved	.712	<.00*
Faith & Culture	.299	.14
Goals & Dreams	.556	<.00*
Coping Skills	.043	.83
Family Values	.380	.06
Respect own Culture	.340	.09
Future Optimism	.534	<.00*
Community Engagement	.619	<.00*
Classroom Behaviour	.719	<.00*
Creativity	.419	.01*
Well-Being	.266	.19
Health Consciousness	.360	.07
Pro-Social Attitude	.520	<.00*
Activity Engagement	.535	<.00*
Peer Connectedness	.169	.41

n = 25, * Significant at p <.05

Results including Pearson correlation coefficients and associated significance level for the sample are listed for each subscale. Of the 21 SAI subscales 12 shared significant positive correlations. Prior to correlation subscale pro-rated scores for observers and participants were separately checked for major deviation from statistical normalcy. Though all scales

demonstrated varying degree of skewedness none were of sufficient magnitude to necessitate transformation prior to calculating their inter-rater correlation coefficients. To calculate inter-rater agreement Pearson product moment correlation coefficients between observer and self-reported responses were calculated using pro-rated subscale scores. Youth and their caregivers had a high level of agreement concerning youths strengths *at school* (r=.78), from their *functional classroom behaviours* (r=.71), and in their *being involved* and feeling accepted within their community (r=.71). Moderate agreement was seen between caregiver and youth ratings of strengths related to *community engagement* (r=.61), *goals and dreams* (r=.55) and *optimism for the future* (r=.53), youths use of *free time* (r=.50), *activity engagement* (r=.53), and their *pro-social attitude* (r=.52). Mild positive associations in observer and youth pairs were seen in ratings of youths' *strengths at home* (r=.48), from keeping *healthy and clean* (r=.43) and their strengths related to *creativity* (r=.41).

It should be stressed that a number of the scales found to share significant positive correlations in the present clinical sample overlap with one another considerably. The *strengths at school* content subscale is the origin of all items on the *functional classroom behaviour* empirical subscale. These two measures were, within both the youth and caregiver reported samples, highly correlated (r=.92 p<.01, n=113 / r=.93 p<.01, n=55). Likewise *Goals and dreams* subscale content constitutes a large proportion of items on the empirically derived *optimism for the future* subscale, the two of which also correlated highly with one another in the youth and observer samples accessed for the present study (r=.98 p<.01, n=114/r=.98 p<.01, n=55).

Predicting gender and symptom expression type. Next the two datasets made up of 116 self-reported and 57 observer completed SAI profiles had their pro-rated scores converted into a three level discrete ordinal variable describing strengths within different subscale areas as *Well-established*, *Established*, or *Developing*. These discrete strengths ratings were used as

solitary predictors in a series of binary logistic regression testing whether strengths in these areas were differentially associated with youth's gender. Additionally clinician CAFAS subscale ratings for 72 youth in the sample were also used to predict gender. These results indicated which areas of strengths and impairment had a greater likelihood of being reported by youth of a particular gender by themselves, their caregiver, or in the case of the CAFAS and functional impairment by their clinician.

In all binary logistic regression analyses the normalcy of SAI and CAFAS subscales as predictors was not assessed, as logistic regression is noted for its robustness to deviations from normality among dependent variables. Likewise Box and Tidwell testing, which is recommended for checking the assumption of linearity between predictors and the logit, was not applied as this assumption is described as critical for the use of continuous variables in logistic regression whereas those used presently were ordinal (Tabachnick & Fidell, 2007).

Predictor variables were screened prior to regression to check for their appropriateness as solitary predictors in logistic regression modelling. This was achieved through review of the point-biserial correlation of all predictors used with both dichotomous dependent outcome variables (gender and symptom type). CAFAS subscale scores greatest point-biserial association with gender was on the *Substance use* scale ($r = -.28$, $p>.05$, $n = 72$) suggesting a weak-mild association between substance related impairment and being female in the sample. With symptom expression type clinician CAFAS ratings of youths impairments related to *substance* use had a moderate association with youths presentation of predominantly externalizing symptoms ($r = .6$, $p>.05$, $n=31$).

For the self-reported SAI subscale scores there was no strong association found between any of the content or empirical measures with youths gender, with all point-biserial coefficients produced of a magnitude lower than $r = 0.3$. With the exception of the *pro-social attitude* subscale, which shared a strong association with internalizing symptom expression ($r=.70$,

p<.001, n=31), no subscales on the SAI correlated with either symptom expression type to a magnitude equal or greater than r =.6. On this basis it was deemed unnecessary to exclude any CAFAS or SAI subscale from consideration as solitary predictors on account of their being singular or redundant with gender or symptom type as outcome variables.

Pearson product moment correlations among CAFAS subscales showed the greatest inter-subscale correlation to be a moderate association between impairments in *home role* performance and *behaviour* [with] *others* (r= .62, p<.05, n = 72). For SAI predictors subscales were only moderately associated, with the greatest association seen between self-reported content subscales between *being involved* and *strengths at school* (r=.54, p<.01, n=112). Likewise the greatest correlation between empirical subscales was between strengths related to youths *well-being* and their strengths from their *optimism for the future* (r =.55, p<.01, n = 115). Correlation between subscales on the measures used as predictors were not indicative of singularity or multicollinearity which would serve as grounds to pre-emptively disqualify the combined consideration of these subscales within the same logistic model.

Consideration of the point-biserial correlation of observer reported strengths with gender and symptom expression type showed the subscale with the greatest association to youths gender was the empirical *Optimism for the future* subscale (r = .31, p>.05 ,n =55). Internalizing issues had a moderate association with observer ratings of youths strengths related to their *respect for own culture* ratings (r = .53, p>.05, n = 19). Correlation between SAI content subscales rated by observers was greatest between the *self-knowledge* strengths and strengths *at home* SAI subscales (r= .49, p>.05, n = 57). For the empirical subscales the two most highly correlated observer reported scores were the *functional classroom behaviour* and *well-being* subscales (r= .55, p>.05, n = 57). As was the case with self-reported strengths profiles observer ratings also did not show association with the outcome variables to a magnitude that would serve as grounds to exclude them from consideration in logistic regression as solitary predictors, and also

indicated that the association between observers ratings of youths strengths in different contexts were not so high as to preclude their combined use in more complicated logistic models.

In describing the results of logistic regressions using individual CAFAS and SAI subscales to predict youths' gender or symptom expression type three separate statistics are reported. First, although often omitted from research reporting unadjusted odds ratios of individual predictors, the model fit associated with each predictor is included as measured by the omnibus test of model coefficients Chi-square test. Although it seems reasonable that a predictor which is associated with the dependent variable should also fit the data to from which it is modelled in some instances one finding is not always consistent with the other (LaValley, 2008). This model-fit estimate is supplemented by a Wald chi-square static which represents a more conservative test measuring, instead of the fit of the model, the degree of association between the individual predictors used and the outcome variable. Lastly an odds ratio point estimates and its 95% confidence intervals provide a measure of effect size and an indication of how many times more likely youth in the sample were, per level increase in impairment or strengths ratings, to be from one or the other gender or symptom expression group. Standard error of the raw coefficients used to calculate the Wald statistic are also included in all tables as an indication of the precision of the statistic, with smaller standard errors indicating more precise estimates with those predictors.

The eight clinician rated CAFAS subscales were used first to predict youths' gender (Table 3). At outset classification predicting all cases to be girls resulted in 52.8% correct classification. Only substance use was a useful predictor of gender for the sample $X^2(1, 72) =$ 5.86, p<.05, Wald $X^2(1, 72) = 5.55$, p<.05, OR = .63, 95%CI [.43, .92]. These results indicated that girls in the sample were approximately 1.5 times more likely than boys to be rated by clinicians as having impairments related to their *substance* use habits. Predicting youths gender with their *substance* impairment rating improved classification of cases to 62.5% overall. All

other CAFAS subscales were insignificant according to omnibus model testing, the Wald

statistic, and the presence of 1 in the 95% confidence intervals of the odds ratios calculated. The

present sample produced results, with the exception of the *substance* scale, that were in

agreement with findings originally published by Hodges and Wong (1996) showing the CAFAS

does not rate youth more or less impaired in various areas on the basis of their gender.

Table 3
Logistic Regression predicting gender with Clinician Rated CAFAS subscale scores

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]
School Role	1.38 (.23)	1.36 (.24) (.19)	0.79 [.54 – 1.16]
Home Role	1.24 (.26)	1.22 (.26) (.19)	0 .80 [.54 – 1.18]
Community	0.09 (.75)	0.09 (.76) (.24)	0.92 [.57 – 1.50]
Others	0.06 (.80)	0.06 (.80) (.25)	1.06 [.64 – 1.74]
Moods	1.67 (.19)	1.61 (.20) (.28)	1.42 [.82 – 2.47]
Self-Harm	0.23 (.63)	0.22 (.63) (.23)	0.89 [.56 – 1.42]
Substance	5.86 (.01)	5.55 (.01) (.19)	0.63 [.43 – 0.92]*
Thinking	0.75 (.38)	0.72 (.39) (.48)	1.50 [.58 – 3.58]

n= 72, * Significant predictor and model fit at p<.05

Next 31 youth from the previous analysis whose BCFPI scores allowed for their

categorization as predominantly internalizing or externalizing symptom presentation had their

classification as such used as an outcome variable and subjected to logistic regression using

CAFAS subscale scores again as predictors, the results of which are listed in table 4.

Table 4
Logistic Regression predicting symptom type with Clinician Rated CAFAS subscale scores

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]
School Role	10.22 (.001)	7.97 (.005) (.36)	0.362 [.179 - .733]*
Home Role	5.61 (.018)	4.88 (.02) (.33)	0.479 [.249 - .920]*
Community	7.98 (.005)	4.90 (.02) (.62)	0.253 [.075 - .853]*
Others	6.58 (.036)	5.51 (.01) (.45)	0.340 [.138 - .837]*
Moods	5.75 (.016)	4.14 (.04) (.54)	3.044 [1.04 - 8.88]*
Self-Harm	0.05 (.813)	0.05 (.81) (.35)	0.921 [.463 - 1.83]
Substance	12.3 (>.000)	9.03 (.003)(.38)	0.315 [.149 - .669]*
Thinking	0.19 (.66)	0.18 (.66) (.65)	0.757 [.211 - 2.71]

n = 31, * Significant predictor and model fit at p<.05

Classification of all cases in the available sample as externalizing by the constant model resulted

in 61.3% correct identification overall. The omnibus test of model fit chi-square, association

between the predictor and the outcome variable Wald statistic, and odds ratio estimates including

95% confidence intervals indicated that six of eight CAFAS functional impairment subscales represented useful predictors of youths' symptom expression type.

Externalizing youth were 2.7 times more likely than youth with internalizing concerns in the sample to be rated by clinicians as having impairments in their role-performance at *school* $X^2(1,31)=10.22$, p<.05, Wald $X^2(1,31)= 7.97$, p<.05, OR = 0.36 95%CI [.17, .73] increasing the accuracy of correct classification to symptom expression group to 77.4%. Youth in the externalizing group were 2.1 times more likely to be rated by clinicians as being impaired at *home* $X^2(1, 31) =5.61$, p<.05 Wald $X^2(1, 31) =4.88$, p<.05, OR = .47 95%CI [.24, .92], improving classification to 67.7%. Youth with externalizing type problems were 4 times as likely to be rated by clinicians as impaired in respect to their behaviour in their *community* $X^2(1,31)=7.98$, p<.05 Wald $X^2(1,31)=4.90$, p<.05, OR = .25 95%CI [.07,.85], and 3 times as likely to have impairments associated to their interactions with *others* $X^2(1,31)=6.58$, p<.05 Wald $X^2(1,31)=5.51$, p<.05, OR = .34 95%CI [.13,.83] increasing correct prediction of symptom expression type to 74.2% and 71% respectively. Ratings of youths *substance* related impairments was also found to be 3 times as likely among youth with externalizing issues as well $X^2(1,31)=12.39$, p<.05 Wald $X^2(1,31)=9.03$, p<.05, OR = .31 95%CI [.14,.66] improving classification to 77%.

The last significant CAFAS subscale predicted greater likelihood of impairment among youth with internalizing rather than externalizing issues. Clinicians ratings of youth in the sample indicated youth with internalizing concerns were 3 times more likely to have been rated by clinicians as having impairments related to how they managed their *moods/emotions* $X^2(1,31)=5.75$, p<.05 Wald $X^2(1,31)=4.14$, p<.05, OR = 3.04 95%CI [1.04,8.88]. With the exception of this last finding the present sample showed association between externalizing symptom expression type and impairments in general agreement with research conducted by Grimbos and Granic (2009) which used CAFAS impairment scores to separate youth with

externalizing from those with mixed issues. Ratings of impairments in different areas by clinicians were clearly useful in separating youth by predominant symptom expression type. The current results were also in agreement with Rosenblatt and Rosenblatt's (2002) findings using a correlational design in a larger clinical sample; Youth with predominantly self-reported CBCL externalizing issues were more likely to have greater CAFAS impairment scores related to their *behaviour towards others* their *role performance* (both at home and at school) and related to *substance* use. Self-reported internalizing youth, also in alignment with Rosenblatt and Rosenblatt's (2002) findings, were more likely than those who reported predominantly externalizing concerns to have impairments associated with their regulation of *moods/emotions* but not with greater impairments related to *thinking*.

Following calculation of symptom groups relative likelihood of impairment on individual CAFAS subscales the measures total scores were correlated with youths self-reported internalizing and externalizing scores. This analysis allowed inclusion of 11 additional youth whose BCFPI mental health scores were not separated sufficiently to justify placing them in one of the two symptom groups analyzed in the prior binary logistic regression analysis, resulting in a sample size of 42. Prior to their correlation Internalizing and externalizing scores were checked for their level of association and were found to not be significantly associated with one another ($r=-.08$, $p = .59$, $n = 42$) compared to the recent findings reported by Urajnik (2011) using a larger sample of parent BCFPI reports ($r = .205$, $p<0.001$ $n= 1963$). BCFPI internalizing, externalizing, and CAFAS total scores each approximated a normal distribution making transformation or consideration of correlation methods besides Pearson's product moment unnecessary. Correlations between externalizing and internalizing symptomology with total CAFAS impairment ratings mirrored findings reported by Urajnik (2011), in the sense that externalizing scores had a greater relationship with level of impairment than internalizing scores. Parent reported internalizing and externalizing symptoms in that study both shared a significant

positive associations with CAFAS total scores (r=.119/r=.344, n=1963, p<.001). However, contrary to those and other findings (eg. Markon, 2010), in the current sample the association between internalizing symptom expression was in the opposite direction as expected; with internalizing symptoms negatively associated with clinicians functional impairment ratings (r= -.470, p>.01, n = 42). Externalizing symptoms and symptom impairment correlated with one another positively as in past research, but did not achieve statistical significance in this sample (r=.224, p =.15, n =42). That these findings depart from those of Urajnik (2011) might be related to the use of self rather than caregiver reported symptoms. Markon's (2010) approach did include self-reported internalizing issues as well, but differed from the present analysis by including both adolescents and adults as subjects, evaluating symptoms and impairments with a different set of measures, and perhaps most importantly eliciting self-reported impairment scores.

Self-reported SAI subscale ratings were used as predictors of youths gender (Table 5).

Table 5
Logistic Regression predicting gender with self-rated SAI subscales

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]	N
At Home	3.06 (.08)	2.95 (.08)(.32)	1.75 [.92 - 3.32]	116
At School	0.317 (.57)	0.31 (.57)(.28)	1.17 [.67 - 2.03]	113
Free Time	1.615 (.20)	1.58 (.20)(.33)	0.65 [.33 - 1.26]	116
With Friends	0.371 (.54)	0.37 (.54)(.31)	0.828 [.45 - 1.52]	116
Self-Knowledge	0.366 (.54)	0.36 (.54)(.31)	1.207 [.65 - 2.2]	116
Clean-Healthy	5.536 (.01)	5.27 (.02)(.29)	0.509 [.28 - .90]	116*
Being Involved	0.086 (.76)	0.08 (.76)(.29)	1.09 [.61 - 1.9]	115
Faith & Culture	0.041 (.84)	0.04 (.94)(.27)	0.946 [.55 - 1.61]	114
Goals & Dreams	1.259 (.26)	1.24 (.26)(.28)	0.72 [.41 - 1.26]	115
Coping Skills	0.21 (.88)	0.02 (.88)(.31)	0.95 [.51 - 1.77]	116
Family Values	3.92 (.04)	3.75 (.05)(.33)	1.92 [.99 - 3.73]	116[t]
Own Culture	0.24 (.61)	0.24 (.61)(.28)	0.86 [.49 - 1.51]	114
Future Optimism	1.72 (.18)	1.70 (.19)(.27)	0.69 [.40 - 1.19]	115
Community Engagement	1.41 (.23)	1.35 (.24)(.32)	0.68 [.36 - 1.29]	115
Classroom Behavior	0.26 (.60)	0.26 (.60)(.29)	1.16 [.65 - 2.05]	112
Creativity	11.77 (.001)	10.64(.001)(.26)	0.417 [.24 - .70]	116*
Well-Being	0.26 (.60)	0.26 (.60)(.29)	1.164 [.65 - 2.08]	116
Health-Consciousness	1.19 (.27)	1.18 (.27)(.28)	0.735 [.42 - 1.28]	116
Pro-social Attitude	0.55 (.45)	0.54 (.45)(.24)	1.20 [.73 - 1.95]	116
Activity engagement	4.93 (.02)	4.75 (.02)(.28)	1.84 [1.06-3.19]	116*
Peer connectedness	3.78 (.05)	3.68 (.05)(.32)	0.53 [.28 - 1.01]	116

*=significant model fit/ prediction at p <.05 [t]= marginally significant or conflicting result

Prior to the modeling of any predictors the constant model labeled all cases female achieving a classification rate of 59.5%. Strengths from keeping 'clean and healthy' was 2 times as likely to be reported as an area of strength by girls in the sample X^2(1,116)=5.53, p<.05 Wald X^2(1,116)=5.27, p<.05, OR = .50 95%CI [.28,.90] improving classification of cases to 65.5%. The empirically derived subscale 'creativity' was also significant, with girls being almost 2.5 times as likely to report strengths in this area X^2(1,116)=11.77, p<.05 Wald X^2(1,116)=10.64, p<.05, OR = .41 95%CI [.24,.70] increasing classification accuracy to 63.8%.

In contrast boys were 1.8 times more likely to report greater levels of strengths related to *activity engagement* X^2(1,116) =4.93, p<.05 Wald X^2(1,116) =4.75, p<.05, OR = 1.84 95%CI [1.06, 3.19] though the predictor actually reduce the accuracy of classification by gender in the sample overall to 56.9% which was perhaps associated with the low level of internal consistency for this subscale. Confounding results also emerged for the empirical family values SAI subscale which produced a significant omnibus model fit statistic X^2(1,116)=3.92, p<.05, but an insignificant Wald Chi-square as well as a 95% confidence interval around the estimated odds ratio that included the value 1, Wald X^2(1,116)=3.75, p>.05, OR = 1.92 95%CI [.99,3.73].

Symptom expression types differential likelihood of endorsement with self-reported SAI strengths subscales were derived from a similar series of binary logistic regression analysis as were done for the CAFAS, and are reported in table 6 below. Before the inclusion of any predictors the constant model achieved an accuracy of 61% by labelling all cases in the clinical sample used as having predominantly externalizing symptom presentation. Following testing of subscales it was found that in each instance an area of strength on the SAI provided a significant predictor of symptom expression type it was youth in the group reporting predominantly internalizing symptoms that were more likely to have endorsed the predictor as an area in which they possessed strengths.

Table 6

Logistic Regression predicting symptom-type with self-rated SAI subscales

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]
At Home	10.98(>.00)	6.17 (.01) (1.12)	16.5 [1.80- 150]*
At School	9.66(>.00)	5.28 (.02) (1.04)	11.0 [1.42- 86.2]*
Free Time	7.47(>.00)	5.43 (.02) (.83)	7.0 [1.36- 36.6]*
With Friends	6.83(>.00)	5.22 (.02) (.74)	5.4 [1.2 - 23.3]*
Self-Knowledge	3.06 (.08)	2.28 (.13) (1.12)	5.4 [.60 - 48.9]
Clean-Healthy	3.60 (.05)	3.13 (.07) (.65)	3.1 [.88 - 11.4]
Being Involved	2.12 (.14)	1.98 (.15) (.63)	2.4 [.70 - 8.42]
Faith & Culture	0.68 (.40)	0.66 (.41) (.64)	1.6 [.48 - 5.93]
Goals & Dreams	5.85 (.01)	4.69 (.03) (.65)	4.1 [1.1 - 15.0]*
Coping Skills	2.79 (.09)	2.36 (.12) (.86)	3.7 [.69 - 20.4]
Family values	10.98 (>.00)	6.17 (.01) (1.12)	16.5 [1.8 -150.6]*
Own Culture	0.74 (.38)	0.73 (.39) (.59)	1.6 [.51 – 5.33]
Future Optimism	7.15 (>.00)	5.41 (.02) (.70)	5.1 [1.2 - 20.1]*
Community Engagement	1.74 (.18)	1.62 (.20) (.65)	2.2 [.64 - 8.23]
Classroom Behaviour	5.43 (.02)	3.50 (.06) (1.07)	7.4 [.91 - 60.3][t]
Creativity	1.20 (.27)	1.17 (.27) (.48)	1.6 [.65 - 4.35]
Well-Being	0.12 (.72)	1.12 (.72) (.57)	1.2 [.39 - 3.75]
Health-Consciousness	4.49 (.03)	3.77 (.05) (.64)	3.4 [.99 - 12.1][t]
Pro-social Attitude	21.19(>.00)	0.00 (.99)(9942)	---------------------
Activity Engagement	0.30 (.58)	0.30 (.58) (.59)	1.3 [.43 - 4.4]
Peer-Connectedness	0.43 (.51)	0.43 (.51) (.55)	0.6 [.23 - 2.0]

N = 31, At school / Classroom behavior (n=29), * = significant at p = .05 [t]= conflicting result

The internalizing sample was 16 times more likely to report a greater level of *strengths at home* X^2(1, 31) =10.98, p<.05 Wald X^2(1, 31) =6.17, p<.05, OR = 16.5 95%CI [1.8, .150] and increased classification accuracy to 77.4%, Identical results were produced using the SAI's empirical *commitment to family values* subscale which is highly correlated with the *strengths at home* subscale. Compared to externalizing peers youth in the internalizing sample were 11 times more likely to report greater *strengths at school* X^2(1,29)=9.66, p<.05 Wald X^2(1,29)=5.28, p<.05, OR = 11.0 95%CI [1.42,86.2] increasing classification accuracy to 75.9%, 7 times as likely to report greater strengths related to their use of *free-time* X^2(1,31)=7.47, p<.05 Wald X^2(1,31)=5.43, p<.05, OR = 7.0 95%CI [1.36,36.6] improving classification accuracy to 67.7%, and 5 times as likely to report strengths related to their time spent *with friends* X^2(1,31)=6.83, p<.05 Wald X^2(1,31)=5.22, p<.05, OR = 5.4 95%CI [1.2,23.3] increasing classification to 77.4% as well. Rather interesting was that youth with internalizing symptom expression were 4 times as likely

to report strengths related to their *goals & dreams* X^2(1,31)=5.84, p<.05 Wald X^2(1,31)=4.69,

p<.05, OR = 4.1 95%CI [1.1,15], and 5 times more likely to report strengths in the closely

related empirical subscale *Optimism for the future* X^2(1,31)=7.15, p<.05 Wald X^2(1,31)=5.41,

p<.05, OR = 5.1 95%CI [1.2,20.1] with use of both these predictors resulting in 74.2% of cases

correctly classified by their BCFPI measured symptom type .

 For two SAI subscales results of the omnibus model fit Chi-square and Wald statistic

were in conflict when used to predict symptom type using self-reported strengths profiles.

Health-Consciousness used to predict symptom type appeared to provide a good fit to the

available data X^2(1,31)=4.49, p<.05, but the association between the predictor and outcome

variable was insignificant and the 95% confidence intervals calculated around its odds ratio

contained the value 1 (Wald X^2(1,31)=3.77, p>.05, OR = 3.4 95%CI [.99,12.1]). *Functional*

classroom behaviour, closely related to the *strengths at school* content subscale, also produced a

statistically significant Chi-square indicating adequate model fit X^2(1,29)=5.43, p<.05, but again

as indicated by the Wald statistic and 95% confidence intervals around the odds ratio calculated

functional classroom behaviour strengths were not significantly associated with one type of

symptom expression over the other (Wald X^2(1,31)=3.50, p=.06, OR = 7.4 95%CI [.91,60.3]).

 Youths self-reported ratings of their strengths related to having a *pro-social attitude*

indicated an incredible model fit X^2(1,31)=21.19, p<.001, however the Wald statistic

accompanying this analysis indicated zero association between the predictor and outcome

variable and indicated a highly inflated standard error for the estimate, (Wald X^2(1,29)= 0.00,

p=.99, SE = 9942). In this regression analysis no odds ratio was calculable. This could not have

been attributed to the small sample available alone, as interpretable results emerged in analysis of

youths *strengths at school* and *functional classroom behaviour* strengths where sample size was

reduced to 29 from 31 because two respondents used only *does not apply* or *not at all* as

responses to all the items on those scales. This break down of the analysis did not appear to be

related to the overall variance of the total sample or within the separate groups strengths ratings either, which when investigated were not vastly different from those of other predictors in this set of analyses. A possible cause of this breakdown might be related to the fact all youth within the internalizing symptom group rated *pro-social attitude* as an area of *established* or *well-established* strength, while all youth in the externalizing group rated their strengths in this same area as *developing* or *established*. Random reassignment of strengths ratings on this subscale in one group to match the dichotomy of responses in the other group supports this explanation, as doing so allowed the calculation of a Wald statistic in closer agreement with the model fit statistic it yielded, as well as the production of an interpretable odds ratio and associated confidence intervals.

Contradictory and difficult to interpret results aside, a number of SAI subscales were significant in regards to each of the statistical tests employed and improved classification of youth into their correct symptom expression group beyond that achieved through modal assignment. This suggests that the self-reported measure of strengths associated with different settings and contexts shares a meaningful relationship with youths' reports of the different types of mental health issues they experience. These results, in general, support the widely held philosophical assumption of strengths assessment that all individuals, no matter if they experience emotional and behavioural difficulties, have strengths (Weick, Rapp, Sullivan & Kisthardt, 1989; Epstein, 1999; Saleebey, 2006). These results also offer a more specific view, that is, that youth with similar issues may possess similarities in their profiles of strength thatare unique from those reported by youth in the other groups. On a more individual level 26 of the youth represented in the sample rated at least one subscale on the SAI as an area *well established-strength*, while 5 cases did not report strengths at this level (all externalizing cases) these youth did report a variety of *established* strengths in different domains. If strengths rated at the *established* level are considered it was true for the present sample that all youth assessed did

have strengths. Whether externalizing youths' relatively lower ratings of their own strengths are

associated with an actual lack of strengths, disdain for the assessment process or strengths test

leading them to dissimulate their responses, or if the SAI fails to capture areas of strength valued

by youth, all represent possible explanations deserving future consideration.

Next caregiver strengths ratings were used to predict youth in the samples gender.

Results are detailed in table 7.

Table 7
Logistic Regression predicting gender with observer-rated SAI subscales

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]
At Home	0.05 (.81)	0.057 (.81)(.48)	1.12 [.43 – 2.91]
At School	2.20 (.13)	2.11 (.14)(.42)	1.86 [.80 – 4.29]
Free Time	1.27 (.25)	1.24 (.26)(.40)	1.76 [.65 – 4.77]
With Friends	2.96 (.08)	2.77 (.09)(.44)	0.47 [.19 – 1.14]
Self-Knowledge	1.06 (.30)	1.03 (.31)(.52)	1.69 [.61 – 4.72]
Clean & Healthy	0.19 (.65)	0.19 (.65)(.43)	1.21 [.52 – 2.81]
Being Involved	0.41 (.51)	0.41 (.52)(.38)	1.28 [.60 – 2.73]
Faith & Culture	0.57 (.81)	0.57 (.81)(.37)	0.91 [.44 – 1.89]
Goals & Dreams	4.82 (.03)	4.33 (.03)(.47)	2.67 [1.05–6.75]*
Coping Skills	0.91 (.33)	0.89 (.34)(.47)	1.56 [.62 – 3.93]
Family Values	2.15 (.14)	2.05 (.15)(.43)	1.87 [.79 – 4.41]
Own Culture	0.53 (.46)	0.52 (.47)(.41)	1.35 [.59 – 3.07]
Future Optimism	6.39 (.01)	5.63 (.01)(.42)	2.75 [1.1 – 6.34]*
Community Engagement	0.56 (.45)	0.55 (.45)(.42)	1.52 [.50 – 4.64]
Classroom Behaviour	0.62 (.43)	0.61 (.38)(.43)	1.34 [.63 – 2.84]
Creativity	1.91 (.16)	1.86 (.17)(.36)	0.61 [.29 – 1.24]
Well-Being	0.91 (.33)	0.89 (.34)(.48)	1.58 [.61 – 4.08]
Health Consciousness	0.17 (.67)	0.17 (.67)(.39)	1.18 [.54 – 2.57]
Pro-social Attitude	0.10 (.74)	0.10 (.74)(.37)	0.88 [.42 – 1.84]
Activity Engagement	2.94 (.08)	2.78 (.09)(.38)	1.90 [.89 - 4.06]
Peer Connectedness	0.47 (.49)	0.46 (.49)(.39)	0.76 [.35 – 1.65]

n = 57 (Faith & Culture n =56, Own culture n=55) *= significant model/predictor at p = .05

There were only two SAI subscales where results indicated a significant difference between

observer report of strengths and youths gender. Results indicated observer ratings of strengths

separated youth by gender, but not in the same areas of measured strengths as were self-reported.

Prior to the introduction of any predictor constant model classification listing all youth as girls

achieved a correct classification rate of 50.9%. Parents were approximately 2.5 times as likely to

report greater strengths from *goals & dreams* for boys than girls X^2(1,57)=4.82, p<.05, Wald

X^2(1,57)=4.33, p<.05, OR = 2.67 95%CI [1.05, 6.75], and in the closely related empirical

subscale *future optimism* X^2(1,57)=6.39, p<.05, Wald X^2(1,57)=5.63, p<.05, OR = 2.75 95%CI

[1.1, 6.34] improving classification to 56.1% and 57.9%. No other SAI subscale as rated by

caregivers provided a significant predictor of youths' gender, nor were there any conflicting or

uninterruptable results.

Caregiver ratings of youths' strengths and youths' self-rated symptom expression type

were evaluated next with results listed in table 8. Unlike youths self-reported strengths observer

ratings for specific areas of strength were not statistically associated with the expression of

predominantly internalizing or externalizing symptom presentation.

Table 8
Logistic Regression predicting symptom-type with observer-rated SAI subscales

Subscale	Model X^2(p)	Wald X^2(p) (SE)	Odds Ratio [95% CI]
At Home	1.17 (.27)	0 (1.0)(40192)	--------------------
At School	2.67 (.10)	2.05 (.15) (1.19)	5.49 [.53 – 56.6]
Free Time	0.21 (.64)	0.21 (.64) (1.09)	1.66 [.19 – 14.2]
With Friends	0.10 (.74)	0.10 (.74) (.77)	0.77 [.17 – 3.53]
Self-Knowledge	2.84 (.11)	0 (.99)(28420)	--------------------
Clean & Healthy	1.06 (.30)	0.92 (.33) (1.16)	3.07 [.31 – 30.3]
Being Involved	1.18 (.27)	1.13 (.28) (1.1)	3.33 [.36 – 30.7]
Faith & Culture	0.01 (.89)	0.01 (.89) (.88)	1.18 [.19 – 6.33]
Goals & Dreams	0.39 (.53)	0.38 (.53) (1.18)	2.00 [.22 – 17.8]
Coping Skills	2.48 (.11)	0 (.99)(28420)	--------------------
Family Values	0.27 (.60)	0.26 (.60) (.93)	1.62 [.25 – 10.1]
Own Culture	3.94 (.04)	3.22 (.07) (1.3)	12.0 [.79 – 180]
Future Optimism	0.39 (.53)	0.38 (.53) (1.18)	2.00 [.22 – 17.8]
Community Engagement	0.88 (.34)	0.82 (.36) (1.3)	3.50 [.23 – 51.2]
Classroom Behaviour	1.80 (.17)	1.45 (.22) (1.1)	3.87 [.42 – 35.0]
Creativity	0.09 (.92)	0.09 (.92) (.66)	1.06 [.29 – 3.91]
Well-Being	0.46 (.49)	0.43 (.51) (1.26)	0.43 [.03 - 5.18]
Health Consciousness	0.15 (.69)	0.15 (.68) (.92)	1.43 [.23 – 8.76]
Pro-social Attitude	0.58 (.44)	0.55 (.45) (.93)	0.49 [.07 – 3.12]
Activity Engagement	3.67 (.055)	2.60 (.10) (1.17)	6.07 [.68 – 54.2]
Peer Connectedness	0.74 (.38)	0.71 (.39) (.78)	0.51 [.11 – 2.39]

n = 14 (Own Culture n = 13)

The sample of youth available for these analyses was extremely limited however, as can be seen

in the comparatively larger standard error in each analysis, in three cases these tests resulted in a

breakdown of the analysis used and results which could not be interpreted. Results indicated

caregivers ratings of greater strengths were not significantly associated with the nature of youths internalizing or externalizing issues. Three subscales, *strengths at home*, strengths from *self-knowledge*, and those related to *competent coping skills* behaved as *pro-social attitude* strengths subscale did in the prior analysis considering youth's self-reported strengths and symptom expression type. Though these two subscales did not produce significant Chi-square statistics regarding the adequacy of the models fit to the data, they also produced Wald statistics equal to zero with greatly inflated standard errors compared to other predictors tested and failed to calculate odds ratios and 95% confidence intervals. Like previously this breakdown of logistic regression was likely due to the frequencies of the three rated levels of strength *well-established*, *established*, and *developing* within the small samples of internalizing and externalizing youth available for analysis.

At the outset and during the design of this study it was hoped that after identifying individual areas of strength and impairment which successfully separated youth on the basis of their predominant expression of internalizing or externalizing issues, or gender, a series of more complicated binary logistic regression models could be tested. At the outset it had been anticipated that strengths and impairments which were successful at separating groups could be placed in separate logistic regression models controlling for the shared variance between strengths and impairment in different areas allowing the identification of strengths and impairments which were uniquely related to symptom expression type or gender. Following this a sequential binary logistic regression analyses would test whether these unique strengths improved the classification of youth symptom expression type or gender after the association between significant areas of impairment and the outcome variables considered were held constant. This analysis was planned to test whether areas of impairment and strength assessed by the CAFAS and SAI were additive or interactive in nature.

Unfortunately due to the limited sample of youth with distinct symptom expression types available it was not possible to include more than one predictor per logistic regression analysis without over-fitting the model. Analysis looking at youths' gender had a sufficient number of subjects to include multiple predictors, however the impairments and strengths distinct to boys and girls were not contextually or rationally related with one another, and such analysis would have meant testing the association between impairments associated with substance abuse and strengths pertaining to youths level of strengths related to their *creativity*, *activity engagement*, or from *keeping healthy and clean* within the context of youths gender. More intuitively rational a comparison would have been if it had been possible to test the predictive power of youth's self-reported strengths *at school* after controlling for the variance in symptom expression type related to clinician rated impairments in *school* role performance.

Over-fitting a model occurs when too many predictors are used to fit a sample of insufficient size, and in logistic regression produces invalid results which can appear initially to demonstrate greater accuracy in the prediction of cases due to the idiosyncratic characteristics of the available sample, but wherein individual predictors appear to no longer share a significant association with the outcome variable (Babyak, 2004; Tabachnick & Fidell, 2007). As such the intention to execute these multi-variate analyses was abandoned and recommendations for their execution in future research is discussed as part of the discussion and conclusion of the present research.

Discussion

The presented results represent a noteworthy advance toward the empirical measure of strengths for clinical purposes, and in efforts aimed at understanding the relationship strengths in different domains or contexts share with the broad symptom presentation type and gender of youth within clinical populations. While previous research has considered the association between youths internalizing and externalizing symptom severity scores with other strengths

measures, such approaches have tended to use both the internalizing and externalizing symptom severity scores of samples of clinical youth. The present study is the only one, known to the researcher, which has attempted to measure and contrast the relative strengths, and impairments, of youth in a clinical sample separated on the basis of their self-reported expression of predominantly internalizing or externalizing symptoms.

The SAIs subscales demonstrated internal consistency coefficients for youth and caregiver respondents' ratings of themselves or dependents in a clinical sample that were, by and large, sufficient for use as research measures. A higher level of internal consistency is often expected of clinical measures, which a number of SAI subscales approached. While there were some marginal differences among the internal consistency of caregiver and youth self-reported SAI subscales, it appears that neither group exhibits considerably greater consistency when rating strengths in a clinical sample overall. Discrepancy between the consistency of strengths ratings for boys and girls both as self-reported and as observed by caregivers was observed; such as the *activity engagement* and *pro-social attitude* strengths subscales which reflected areas of strength where the consistency of ratings differed notably by the gender of the youth rated.

Parents may provide relatively more consistent ratings than youths self-reports when it comes to boys *activity engagement* strengths, however as was stated earlier the low overall performance of this subscale might be attributable to the fact that items on this scale share in common that they are activities in which youth can be engaged and that they may consider areas of personal strengths, but which reflect activities that are themselves not strongly correlated. It is somewhat puzzling that despite the low average item correlation among boys for this subscale that they were found to be almost twice as likely as girls to self-report greater strengths in this area. This finding might be related to this subscales rate of predicted classification being lower than that achieved with the constant model. An additional consideration, despite the lower internal consistency of youths reports compared to caregivers, is determining whether greater

measurement accuracy is more important than allowing youth to self-report their strengths. Strengths based treatment strategies based on caregivers' perspectives of youths strengths might not be as motivating for youth in treatment as those which they self-identify, but still reflect an important area of future research consideration with possible clinical utility.

Inter-rater agreement between youth and caregiver pairs varied across subscales of the SAI considerably. The strongest agreement seen in ratings of strengths at school reflects pairs perspectives regarding youths' strengths in academic contexts were in alignment. It is interesting that the areas of highest agreement regarded domains that are not shared by youth and caregivers. Youths *strengths at home* despite being a shared environment were only moderately correlated between observer and youth reports, while *strengths at school* and from *being involved* demonstrated a strong level of agreement. It is possible that modest agreement among caregiver-youth pairs in shared contexts such as at home compared to contexts like school and community engagement reflects caregivers' exerted efforts to be knowledgeable regarding what youth in their care are doing outside the home.

Improved accuracy in the prediction of youths' predominant symptom expression type demonstrates that particular areas of self-reported strength can be used within a clinical sample to make distinctions between youth with different types of presenting concerns. The SAI was designed to provide a comprehensive assessment of youths' strengths (Brownlee & Rawana, 2009a). It was hoped in the outset of this study that a widely held key philosophical tenant of the strengths perspective, that every individual has strengths (Weick, Rapp, Sullivan & Kisthards, 1989; Epstein, 1999; Saleebey, 2006;), would be reflected by the identification of strengths which were unique to both symptom expression groups. Contrary to this expectation all significant predictors of symptom expression type indicated greater self and observer reported strengths among youth with internalizing issues. In an effort to identify areas of strength unique to youth with externalizing problems a series of logistic regression analysis similar to those done

on the SAI subscale ratings was executed on all individual SAI items dichotomized on the basis of their being a *top-strength* according to the guidelines of the SAI manual (Brownlee & Rawana, 2009a). These results, which are not included in this report, either failed to separate the sample by symptom expression type or like the subscales of the measure indicated these strengths were more likely to be reported as areas of greater strength among internalizing youth.

It is possible that all the perceived strengths of externalizing youth are overlapping with those also seen among youth with internalizing concerns, that youth with externalizing issues were disdainful of the mental health assessment process, the strengths measure, or its' content in some instances and dissimulated their responses, or perhaps the approach taken to constructing the SAI somehow failed to capture areas of strength unique to youth with externalizing issues. It might be a possible future research opportunity to canvas externalizing youth in treatment in an attempt to supplement the current version of the Strengths Assessment Inventory with items that reflect the perceived strengths of youth with this type of mental health symptom presentation, or to gather a greater sample of caregiver reports to see if observers report strengths for these youth they are unaware of or unwilling to report for themselves.

Regardless of the failure to identify strengths unique to youth with externalizing issues the present results do demonstrate a relationship between self-reported mental health issues and areas of strength. While some youth in the sample did not indicate any individual strength as something they engaged in *almost always* and had no subscale strength scores at the *well-established* level, these youth did report some individual strengths items as activities or characteristics they *sometimes* exhibited, and reported a variety of *established* strengths in different functional domains. Such characteristics and competencies might still be sufficient for use in clinical strategies incorporating youths' unique strengths into treatment.

Previous research by Epstein, Mooney, Ryser, and Peirce (2004), demonstrating the negative correlation between youths internalizing symptom severity and school related strengths

was of a lesser magnitude than that derived when correlating this measure of strength with youths externalizing symptom scores, was congruent with present findings which suggested youth with internalizing issues were more likely than externalizing youth to report strengths in an academic setting. However, whereas Epstein and colleagues reported a smaller negative association between externalizing scores and intra-personal strengths on the BERS-2, in the present study youth with externalizing issues were not more likely to report strengths related to their *self-knowledge*. This is possibly because while the *self-knowledge* subscale includes content such as "*I am happy about life*", and "*I am happy with the way I look*" which might be considered unlikely among youth with internalizing issues it also includes content such as "*I can control my anger*", and "*I can listen and accept feedback, whether it is good or bad*" which reflect strengths that are not in agreement with some of the issues which youth who have externalizing problems often present.

That youth with internalizing issues were more likely to report strengths related to their *goals & dreams*, a measure of youths optimism for the future, seems contrary for youth who self-report on the BCFPI "*feel*[ing] *hopeless*" but does make sense for youth who report symptoms related to being anxious about "*doing better at things*", "*[their] past behaviour*", "*about doing things wrong*", and "*about things in the future*". While maladaptive anxiety is undoubtedly pathological the present findings might reflect that youth who present with predominantly internalizing issues are in a certain light very thoughtful and conscientious, and that their predisposition to anxiety and emotional distress while problematic also reflects a strength which is being over applied in certain respects.

Also somewhat peculiar in the present findings is that despite the high agreement between caregiver and youth ratings of strengths at school observers ratings in this area did not similarly separate youth into internalizing and externalizing cases as did self-reports. Two potential explanations for this result exist. Firstly, the smaller sample of observer reported

strengths with youth who had distinct types of symptom expression might have simply lacked the power necessary to detect a relationship. The insignificant results of this test did produce coefficients which predicted in the direction of internalizing youth being more likely to be reported by caregivers as having academic strengths. It is also possible that specific academic strengths on the measure which do not reflect areas of agreement between youth and their caregiver's ratings might be those which account for why youths self-reported strengths *at school* successfully separated the sample by symptom expression type while caregiver strength ratings in this same domain did not.

The relationship between gender and strength was distinct from that seen between strengths and symptom expression type. Girls within the clinical sample were more likely than boys to report strengths related to their being *creative* or *clean & healthy* while boys were more apt to report strengths associated with their level of *activity engagement*. These areas of strength were irrelevant to symptom expression type. Observer ratings of strengths failed to predict symptom expression type but results indicated caregivers were more likely to report greater strengths among boys associated with their possessing strengths related to having *goals and dreams* and *optimism for the future*. While goal setting might not reflect areas of strength associated with youths self-report of strengths emphasis of these types of activities in service delivery might influence caregivers' level of investment and commitment to the mental health services provided to youth in their care.

Present findings of the greater likelihood of strengths among youth with clinical issues in particular areas, both self-reported and as disclosed by caregivers, are of course not intended to be interpreted to mean individual youth or caregivers cannot be expected to produce markedly different strengths profiles. A major characteristic of strengths-based assessment is that it represents an attempt to tailors mental health services by considering the strengths of individuals in treatment. As further efforts are devised and executed to uncover the pattern of strengths seen

across the clinical population and within various subsets of it, a larger question of how to best treat youth whose profiles are markedly different from peers with similar demographic characteristic and presenting issues will emerge. Related to this point is that strengths eventual use in mental health services is likely take one of two manifestations. Either strength's will be considered as characteristics and competencies which are already representative of individual youth at their entry to mental services, and which can be used in addressing their simultaneous clinical concerns. Or, alternatively, strengths which youth bring with them into treatment might be useful in treatment efforts designed to help youth expand their strengths from one area to another which might help them more effectively cope with their mental health issues.

In consideration of the clinician rated CAFAS impairment data, findings related to subscale scores was consistent in some respects with the expectation that youth with mental health symptoms experience functional impairments in contexts related to the nature of their symptom expression (Gordon, et al. 2006: Tsar, 2011). Many of Rosenblatt and Rosenblatt (2002)'s findings were substantiated in this sample with particular areas of impairment being differentially reported for youth in the different symptom expression groups. However, the performance of the measure of global impairment and a number of subscales on the CAFAS, and their negative association with self-reported internalizing symptom expression in the present sample, is contradictory with the reports of other studies using these or similar measures and the widely accepted understanding that symptoms are impairing.

Limitations. The present study, as is the case in applied research, had a number of limitations requiring acknowledgement. In planning this research the criterion for inclusion initially intended all youth be between 10 and 16 years of age when scores were collected. However, due to the limited number of cases available this requirement was relaxed and age in the retrieved sample allowed to range beyond those points. Despite some youth being as old as 18, possibly qualifying them as adults by some judgements, all individuals considered in the

reported analyses were receiving services from a children's mental health service provider. Similarly, younger youth were below the recommended age, and perhaps reading level, for the measures completed but despite this violation there was little basis, besides their age, on which to declare these profiles invalid for consideration. Future research should attempt to limit the age of youth considered to produce results more meaningful to children with mental health problems at different developmental stages. Within the sample used about half of youth considered were identified as past service recipients through the presence of either a CAFAS or BCFPI profile which long predated completion of their SAI profile, or a client ID number which suggested the year of service provision was well before the administration of the SAI. While it was at the outset desired to only include youth who had not previously been service recipients at the cooperating children's mental health agency, this exclusionary criteria was abandoned as the sample which only used new service recipients was of an insufficient size. Previous treatment, particularly if the clinician providing it is an informal adherent to strengths-based therapy (Duckworth, Steen, & Seligman, 2005), might have had a significant influence on the nature by which youth, or their caregivers, regarded strengths while providing ratings. Future studies which include only youth who have no previous service history, and which account for the clinicians assessing and treating youths' endorsement and knowledge of strengths-based assessment should also be a goal for subsequent research.

It was additionally desired at outset to categorize all youth's symptom expression as internalizing or externalizing on the basis of one score meeting or surpassing the clinical cut-point and the other being at or below the subclinical threshold. Very few of the available cases met this requirement so the use of a single cut-off point at the clinical or sub-clinical level was adopted, as well as the inclusion of cases where both internalizing and externalizing scores were equivalent to those seen among the normal population, in subclinical presentation, or clinical presentation so long as the difference between the two measures was at least six points. This

means in some instances youths categorization was made on the basis of a single point, or both scores fell in the test developer established range for normal, subclinical, or clinical expression. The time allowed to pass between the completion of measures used was initially intended to be shorter in light of reported test-retest reliabilities, but this exclusionary criterion was extended to an entire calendar year to allow for the collection of a more sufficient sample size. Future research should, if possible consider the test-retest reliability of these measures, as well as the span of time from which these coefficients were derived. Such endeavours will no doubt be complicated by the narrow window of time during assessment when such measures need to be finished.

A number of outliers were identified during the course of running of the logistic regression analysis reported, reflecting cases with large residuals where the model calculated predicted members of one group to belong to the other. The issue of how to deal with outliers within applied research is complicated, and it was decided that these outliers would not be removed from the study. Exclusion of such individuals likely would have produced better fitting models or improved the resulting level of classification; however doing so would be to overlook the profiles of youth who do not share similar strengths, symptoms, and impairment profile as their peers and to erroneously treat them as being somehow invalid.

Not only was sample size insufficient to create more elaborate models testing the relationship between strengths and impairments overall, multiple logistic regressions of single subscales had only the bare minimum number of cases advisable for such analyses (Tabachnick & Fidell, 2008). Furthermore, the sample used to assess the likelihood of observer ratings of strength was smaller than is presently considered acceptable for logistic regression, though the use of samples smaller than is currently recommended are not completely unheard of in applied research (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996).

The approach to identifying areas of strength and impairment related to gender and symptom impairment in the available sample is also somewhat problematic when considering the idea of phantom degrees of freedom, wherein identification of candidate predictors for a model constructed without any a priori research hypothesis is equivalent to the inflated family wise error that occurs when multiple univariate tests are performed on a single sample (Babyak, 2004). These limitations together limit the confidence which can be placed in the present findings, but are still defended as an acceptable approach given the infancy of empirical research regarding strengths in clinical populations and the difficulties inherit in acquiring clinical research data. Leaving a measure to be piloted for a longer period of time in order to acquire a larger sample size is a potential waste of service provider and clinicians' time and resources if at the end of that period the measure under consideration is not clinically meaningful.

Recommendations for Future Research. While the primary aim of this investigation was related to the assessment of strengths and their relationship to mental health symptom expression, the opportunity to consider youths' impairment ratings also yielded interesting results contradicting what has been routinely reported regarding the relationship between internalizing symptom expression and impairment. In the present case youths self-report of internalizing symptom expression was negatively associated with clinicians' ratings of their overall functional impairment. While the sample and methodology used differ notably from other research done in this area, with the present case using only self-reported symptoms and clinician rated impairment data as well as only youth mental health recipients rather than a mix of adolescents and adults, the small sample and unexpected findings reported here should be scrutinized and made the subject of additional research. Further consideration of the nature of the present findings should include recognition that while internalizing youths' global impairment ratings, and a number of other impairment subscales, were negatively associated there was a strong positive association between internalizing symptom severity and impairments in managing *moods/emotions*.

The results are particularly strange because the most plausible available explanation, that clinicians are not identifying the impairments of internalizing youth because the sources of information they access when rating the CAFAS are blind to these impairments, would have produced non-significant association between the measures rather than the moderate negative one reported. It is tenuous to make such a claim on the basis of the present findings, but the possibility that youths internalizing symptom presentation can in some respects prevent youth from engaging in the maladaptive actions measured as impairments in certain settings on the CAFAS such as at home or in their community but not in respect to how they manage their emotions or moods deserves follow-up. The divergent results of Urajnik (2011) possibly reflects that the comorbid experience of internalizing and externalizing symptoms in that sample (r=.205, p<.01, n = 1963) pulled the association between internalizing and symptoms and overall impairment in the direction seen among the externalizing group, while internalizing and externalizing scores in the present sample did not because they were not significantly associated with each other (r=-08, p=.59, n=42). This issue could be resolved by using a larger provincial CAFAS-BCFPI dataset and excluding youth with mixed symptom expression from consideration. A self-completed measure of impairment might also be provided to youth in service as well to reveal whether self-reported impairment and symptoms severity associate in the expected direction.

In regards to the major aim of this study, Strengths assessment is a fledgling research area with a great deal of work ahead before making recommendations' regarding clinical application is possible. Presently the internal consistencies reported regarded both self and observer reports, with gender as an additional consideration within these groups. The internal consistency and inter-rater reliability of youth and observer reported strengths by symptom expression type was not evaluated, and could represent a consideration for future research both with the SAI or another strength-based measure. More specific separation of groups to determine the internal

consistency of strengths of girls with externalizing issues for instance might also be a worthwhile endeavour, but was not attempted in the current work due to the limited number of youth in the sample who could be categorized by their symptom expression type. While the present work documents the internal consistency of caregiver reports of youths' strengths in a clinical sample, the internal consistency of observer ratings among the general population has not yet been given consideration. In much larger samples, like those used to validate the BCFPI and collected on an ongoing basis throughout the province using the CAFAS, more specific research questions such as the strengths profiles of youth with particular types of psychiatric disorder (eg. major depression or conduct disorder) might be feasible.

Also regarding caregiver ratings the internal consistency of a non-identified observer was reported in the current results. Future research should give consideration not just to the type of caregiver providing ratings (biological parent, foster parent, educator), but demographic characteristics of the youth rated by different types of observers as well. No consideration was given in the present study to the ethnic identity of youth in the present sample, though a mix of first nations and other ethnic groups were represented.

There was a tendency in the present study for youth with internalizing issues to be more likely to report greater strengths in more areas than externalizing youth. It seems that all the strengths reported by youth with externalizing issues were also regularly reported by youth with internalizing symptom presentation as well. Frequency analysis of both groups responses showed that externalizing youth did report 'well-established' strengths in some areas, but not as often as youth with internalizing problems. Because the distinction between internalizing and externalizing issues is a reliable and meaningful clinical difference it could be argued that future efforts should attempt to identify strengths unique to youth with externalizing issues so standardized treatments can be developed or augmented with strengths commonly seen among youth with these separate concerns.

In conclusion it is recommended that data continue to be collected using the Strengths Assessment Inventory, a modification of it, or a similar measure acceptable to clinicians and service providers, to quantify youths' strengths until a sufficient sample can be amassed to test both the independent influence of separate domains of strengths, the independence or relatedness of strengths and impairments together in a single regression model, and to test more specific hypothesis generated on the basis of the present findings, or findings of future studies. Such efforts to assess youth's strengths do not represent the clinical perspective of a sub-group of researchers or clinicians, but are in fact accreditation requirements within Ontario for mental health service providers (CMHO, 2004). Given that in the current results coefficients for functional classroom behaviour on the SAI and school role impairment on the CAFAS produced results in opposite directions, with the former more likely among internalizing cases and the later among externalizing cases, it is possible that strengths and impairments in this context could be related. Such a relationship could be tested by modeling an interaction between these two subscales within an independent clinical sample.

The limited data that was available was not easily accessed, so an important consideration for future efforts in this area will need to consider how researchers can be accommodated in accessing archived mental health data. The archives at the cooperating youth mental health service provider required the researcher to enter client ID numbers into one online database to retrieve CAFAS scores, and then to use the youths name recovered from that database in a different system in order to access BCFPI reports. The role of clinicians in applied research endeavours consists of more than their willingness to provide particular treatments. A number of cases were irretrievable because the clinician handling the case did not enter a valid client ID when entering scores for particular youth. While in the present study the cases lost would not likely have made a difference in the results reported, failure to correctly label cases reflect both lost data and a waste of clinicians' time. One suggestion that arose from discussions with the

mental health service providers IT manager was that masked input fields for data entry systems, which only allow input of particular characters, could decrease the likelihood of data-entry errors.

While the dataset presently used might be added to in order to allow the testing of more complicated logistic models a concern with simply adding to any dataset, rather than collecting a new sample, pertains to the statistical notion of phantom degrees of freedom. Using multiple univariate tests as a means of identifying candidates for regression models is decried by many researchers as an unscrupulous approach (Babyak, 2004).   It is possible that, due to idiosyncrasies of the sample collected, combined with modest interrelationship between predictor variables that individual areas of strength which predicted symptom group or gender presently might have be a function of the present sample which may not emerge in subsequent sampling. As strengths assessment is an accreditation requirement endorsed by Children's Mental Health Ontario (2004), the collection of new data should not be regarded as a chore, or even a research project, but as a component of current practice standards.

While this type of exploratory research is justly criticized it is not unusual, particularly in areas such as mental health research where data is limited and desire for empirical evidence to inform practice high, for such analysis to be conducted. A critical aspect of confirming the present findings includes the collection of more data and the testing of theoretically generated a priori hypothesis. The results herein may be taken to form the basis of such subsequent research, in light of the limited data to base these findings upon reconfirmation of these findings within independent research sample could confirm or discount the generalizability of the self or observer reported strengths domains unique to boys, girls, or youth with internalizing symptom presentation. Stability of such findings could then allow for subsequent testing of related issues like the independence or relatedness of strengths and impairments, and their comparative use in distinguishing between the symptom characteristics or other demographics of youth receiving

mental health services. While it was peripheral to the main goal of the present study, the negative association seen between youths internalizing symptom expression scores and their level of clinician rated functional impairment also demands further consideration. These results are in disagreement with published research on the relationship between impairment and internalizing issues, but this discordance in findings might be explained through to the age of the sample considered, the origin of the mental health and impairment ratings, the measures used, or other characteristics of the present sample that might have gone unrecognized in the current research.

A number of analyses that could not be run in the present study warrant research consideration pending the collection of a greater amount of strengths data, and the inclusion of additional demographic information not considered in this report. No effort was made to assess the temporal reliability of self or observer reported strengths scores among this clinical sample. Despite the presence of multiple self and observer reports for the same youth there was both an unequal amount of time between the posting of subsequent test scores, and no guarantee that the completion dates listed were the date at which the youth or observer actually completed the measure or whether this date instead reflected when these scores were entered into the database by clinicians. Additionally, given that there is varying interest among clinicians regarding the informal discussion and application of strengths in treatment use of these scores to calculate clinical test-retest reliability might be confounded by clinicians' applications of strengths during youths' time in treatment.

In light of the considerable association between youth and observer reported 'strengths at school' future consideration of educators' ratings of youth on this subscale would also be a good venue for future research. Quantitative strengths assessment represents a research area with a great deal of unasked research questions. With time and commitment to collecting this sort of information as a routine part of assessment empirical research on quantified strengths among

clinical samples of youth could come to have a significant impact upon the effectiveness of

mental health treatment.

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