DOSE RESPONSE EFFECTS OF COGNITIVE-BEHAVIORAL THERAPY IN A RURAL SCHOOL MENTAL HEALTH PROGRAM

A Thesis
by
ALEX KIRK

Submitted to the Graduate School
at Appalachian State University
in partial fulfillment of the requirements for the degree of
MASTER OF ARTS

May 2015
Department of Psychology

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Abstract

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School mental health (SMH) programs have been shown to be effective in providing empirically-based treatment to youth who otherwise might not receive treatment. However, a limitation of SMH programs is that they entail extended holiday breaks and typically do not operate over the summer, along with the fact that they often require pulling students from instruction time in order for them to receive therapy. These time limitations suggest that treatment needs to be expeditious and potent. Although researchers have investigated dose response to treatment, particularly for adult samples, no studies were located that addressed the question of dose response to treatment in SMH programs. The purpose of the present study was to address this gap in the literature by evaluating the dose response to SMH treatment in a sample of adolescents with diverse symptoms. Results showed an average total treatment response of a 26.81-point decrease in YOQ-30 score across 14 sessions of CBT. Further, adolescents exhibited reliable change (i.e., one of two RCI indicators) in YOQ-30 score within an average of 2.91 sessions. Finally, it was found that baseline scores on the Depression and Hyperactivity subscales of the BASC-2, along with total YOQ-30 score, reliably predicted treatment response. These findings not only advance our understanding of

dose response to CBT in SMH settings, but they create opportunities to better inform, individualize, and prescribe effective treatment strategies in similar contexts.

Keywords: school mental health, cognitive behavioral therapy, dose response

Acknowledgements

I would first like to thank my graduate mentor and thesis chair, Dr. Kurt Michael, for his support and guidance in all matters both clinical and empirical for the past three years. Additionally, I would like to thank Dr. Shawn Bergman for his extensive help and patience while collaborating on the analyses for this thesis, Dr. JP Jameson for challenging me both inside and outside of the classroom in various academic discussions and for helping to formulate the idea for this project, and Dr. Will Canu for his fantastically high standards of writing and evidence-based work. I am entirely grateful to have had all these individuals serve on my thesis committee.

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Foreword

This thesis is written in accordance with the style of the *Publication Manual of the American Psychological Association (6th Edition)* as required by the Department of Psychology at Appalachian State University.

Dose Response Effects of Cognitive-Behavioral Therapy in a Rural School Mental Health Program

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Abstract

School mental health (SMH) programs have been shown to be effective in providing empirically-based treatment to youth who otherwise might not receive treatment. However, a limitation of SMH programs is that they entail extended holiday breaks and typically do not operate over the summer, along with the fact that they often require pulling students from instruction time in order for them to receive therapy. These time limitations suggest that treatment needs to be expeditious and potent. Although researchers have investigated dose response to treatment, particularly for adult samples, no studies were located that addressed the question of dose response to treatment in SMH programs. The purpose of the present study was to address this gap in the literature by evaluating the dose response to SMH treatment in a sample of adolescents with diverse symptoms. Results showed an average total treatment response of a 26.81-point decrease in YOQ-30 score across 14 sessions of CBT. Further, adolescents exhibited reliable change (i.e., one of two RCI indicators) in YOQ-30 score within an average of 2.91 sessions. Finally, it was found that baseline scores on the Depression and Hyperactivity subscales of the BASC-2, along with total YOQ-30 score, reliably predicted treatment response. These findings not only advance our understanding of dose response to CBT in SMH settings, but they create opportunities to better inform, individualize, and prescribe effective treatment strategies in similar contexts.

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Dose Response Effects of Cognitive-Behavioral Therapy in a Rural School Mental Health Program

It has been estimated that up to 49% of adolescents will be affected by a psychological disorder of at least mild impairment within their lifetime, with 27.6% of this group (i.e., 22.2% of all adolescents) experiencing a psychological disorder marked by severe impairment during their teen years (Costello, Copeland, & Angold, 2011; Merikangas et al., 2010). Internalizing syndromes, broadly construed to include mood and anxiety disorders, are among the most common and debilitating psychological conditions during childhood and adolescence. It is estimated that 6.1% to 11.2% of children and adolescents will experience a mood disorder within their lifetime, while 8.3% to 10.7% will experience an anxiety disorder (Costello et al., 2011; Merikangas et al., 2010). Prevalence rates for externalizing conditions tend to be lower compared to internalizing problems, though they are still significant. Rates for severe cases of externalizing disorders range from 2.2% to 4% for conduct disorder, 3% to 4.2% for attention-deficit hyperactive disorder (ADHD), and 3% to 6.5% for oppositional defiant disorder (Costello et al., 2011; Merikangas et al., 2010). Finally, among adolescents who are impacted by a psychological disorder, 40% (i.e., roughly 20% of all adolescents) will meet criteria for two or more diagnoses (Merikangas et al., 2010).

Both internalizing and externalizing conditions are associated with increased risk of impaired functioning in school, interpersonal problems, future psychological disorders, substance abuse, and suicidality (Birmaher et al., 1996). The presence of comorbid conditions can often complicate outcomes even further (Karlsson et al., 2006; Lewinsohn, Rohde, & Seeley, 1995; Newman, Moffitt, Caspi, & Silva, 1998). The high rate of

psychological disorders during adolescence is especially problematic when coupled with the barriers to accessing adequate mental health care. Some of the most common barriers preventing youth from receiving proper care include transportation problems, economic limitations, and the stigma associated with treatment seeking (Owens, Watabe, & Michael, 2013; Zaheer et al., 2014).

School Mental Health: Innovations in Treating Youth

There is a growing body of literature that suggests a critical innovation in reaching a large number of youth is to treat them in school, where they spend the majority of their childhood (Farmer, Burns, Phillips, Angold, & Costello, 2003). Most children attend either a public or private school and are provided with reliable transportation, thus the school itself is an ideal environment for both the identification and provision of therapeutic interventions for mental health problems. This natural portal of entry into mental health treatment has been recognized in recent years, as independent groups have established school mental health (SMH) centers in public schools (e.g., Albright et al., 2013).

As ideal as this might sound, however, the primary challenge for SMH is to provide services without placing undue burden on the educators or competing unnecessarily with the chief currency in schools (i.e., instruction time). Administrators and teachers are often hesitant to permit their students time during the school day to address issues that may not appear to be germane to education. However, it has been demonstrated that successful SMH partnerships work together with school personnel to establish symbiotic goals in the service of achieving improvements in psychological and academic outcomes (Albright et al., 2013;

Michael, Bernstein, Owens, Albright, & Anderson-Butcher, 2014; Owens, Murphy, Richerson, Girio, & Himawan, 2008; Owens et al., 2013).

One of the main drawbacks of SMH programs is the reality that school is inherently a time-limited setting given the various breaks for vacations throughout the school year, along with the fact that most North American K-12 education systems operate on a nine-month school year. Such limitations highlight the need for efficient yet effective interventions and the importance of being able to determine how many sessions are necessary to produce meaningful therapeutic change in students' symptoms and functional adjustment. Further, the primary challenge across SMH programs is to provide effective services without undue burden on instruction time, given that therapeutic interventions require the students to be pulled from classroom instruction. In light of this challenge, attempts to minimize the impact of lost instruction time are critical in sustaining SMH programs. In addition, from an empirical standpoint, it would be useful to know how many sessions are required in the context of a general SMH program to attain reliable change for the majority of those who undergo treatment. It is also important to investigate other correlates that might help predict treatment dosage, such as problem type and the severity of the symptoms and issues being addressed.

School Mental Health Outcomes

SMH programs have shown moderate to large effect sizes in reducing mental health symptomatology and problematic behaviors overall (Baskin et al., 2010; Baskin, Slaten, Sorenson, Glover-Russell, & Merson, 2010; Prout & DeMartino, 1986; Prout & Prout, 1998). Previous research using school-based samples of K-12 students and their families found that

SMH services can effectively treat both internalizing and externalizing problem behaviors, buffer general emotional distress, and improve academic outcomes such as standardized test scores and discipline referrals (Berry & Hunt, 2009; Fox et al., 1999; Michael et al., 2013; Sander, Everts, & Johnson, 2011).

Some meta-analytic studies have shown moderately beneficial effects from a SMH program utilizing cognitive-behavioral therapy (CBT), specifically in alleviating both depressive and anxiety symptoms in children and adolescents (Kahn, Kehle, Jensen, and Clark, 1990; Prout & DeMartino, 1986; Prout & Prout, 1998; Reynolds & Coats, 1986; Swannell, Hand, & Martin, 2009). Similarly promising results have been found for SMH programs in the treatment of ADHD (Owens et al., 2012; Watabe, Stewart, Owens, Andrews, & Griffeth, 2012). Further, SMH programs have been utilized not only to treat psychological disorders but also to prevent psychological symptoms from reaching clinical levels (Albright et al, 2013; Ballard, Sander, & Klimes-Dougan, 2014; Swannell, Hand, & Martin, 2009). Finally, and relevant to the current study, previous outcome research in western North Carolina shows that a SMH approach within a rural context (Albright et al., 2013) is of comparable effectiveness to those receiving treatment for similar ailments in other contexts (TADS, 2007; Walkup et al., 2008).

Dose Response to Treatment

The dosage model for psychotherapy, initially introduced by Howard, Kopta, Krause, and Orlinsky (1986), attempts to measure the therapeutic effect for varying doses of psychological treatment, where "dose" is measured by the number of sessions a client attends and "effect" is measured by the proportion of clients who improve. This same study suggests

that more psychotherapy generally results in a greater probability of improvement, though this resembles a curvilinear relationship where higher doses of treatment yield reduced therapeutic gains over time (Howard et al., 1986).

Much of the research looking at dose response to treatment has measured clinical progress using a Reliable Change Index (RCI; Jacobson & Truax, 1991). Researchers utilize this standardized metric to measure clinically relevant change, calculating the number of sessions required to produce this change. Jacobson and Truax (1991) suggest that if the amount of observed change exceeds a certain threshold, based on the measure being used and at the desired level of significance, then one has shown "reliable change." This RCI calculation involves two parts. First, the individual must begin treatment within the clinical range of symptom severity; and then, the individual must end treatment in a non-clinical range. The second part of this RCI calculation determines whether an individual's change in symptom severity from a clinical range to non-clinical range is of a reliable quantity (i.e., amount) of change and not merely a chance fluctuation.

Based on these two conditions, individuals who drop a reliable amount in symptom level between initial and final assessment and move from a clinical to non-clinical range are labeled as "recovered." Individuals who drop a reliable amount in score between initial and final assessment but remain in the clinical range are labeled as "improved." Clients who do not see reliable change in scores are deemed "unchanged." Finally, for individuals who see a reliable increase in score between initial and final assessment scores would be labeled "deteriorated."

Unfortunately, most of the literature where dose response to treatment has been examined focuses on adults. Lambert et al. (1996) examined the treatment response in a sample of adults who were deemed to have a range of clinically significant symptoms based on pre-treatment Outcome Questionnaire (OQ) scores. The results of this study suggest that by the end of session five, 25% of this sample could expect to be recovered based on Jacobson and Truax (1991) criteria, and 50% would be expected to recover by session 11 (Anderson & Lambert, 2001). A study of 47 adults with similar symptom profiles and levels of impairment found that a higher dosage of psychotherapy was required, where 25% recovered by the end of session 10, 50% recovered by session 16, and 75% by session 25 (Kadera, Lambert, & Andrews, 1996). In a more comprehensive published review, Hansen, Lambert, and Forman (2002) found that roughly 57.6% of adult psychotherapy clients would expect to be recovered after an average of 12.7 sessions, while 67.2% would expect to be recovered or improved. However, in the same review the authors reported that the average number of sessions received among 6,000 psychotherapy clients in naturalistic settings was less than five, resulting in a rate of improvement of roughly 20%, suggesting that, on average, most individuals receive an inadequate number of sessions to achieve a positive treatment response. Additional research suggests that, for the typical adult outpatient psychotherapy client, roughly one year of psychotherapy is required in order to have a 75% chance of symptom recovery (Kopta, Howard, Lowry, & Beutler, 1994).

A study that measures treatment response based on dosage for adolescents receiving CBT in the context of a SMH program was not found in the published empirical literature. As such, the primary aim of this study is to address the question of how much treatment is

necessary to provide a reasonably effective response, as defined by reliable change, for the average student who presents for individual CBT with elevated internalizing or externalizing symptoms in a SMH program. Further, the secondary goal is to then determine whether pre-treatment scores on the Behavior Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004) and Youth Outcome Questionnaire (YOQ-30; Burlingame et al., 2004) can predict slope change on the YOQ-30 across time.

Given that dosage effects have not been studied extensively in adolescents with diverse symptoms and comorbidities or in the context of a SMH paradigm, it is difficult to make precise predictions. However, the literature provides some general guidance. For instance, Baldwin and colleagues found that in an adult sample of 4,676 psychotherapy clients in naturalistic settings, clients attended an average of 6.46 sessions of psychotherapy where roughly 43% of clients achieved clinically significant change (Baldwin, Berkeljon, Atkins, Olsen, & Nielsen, 2009). Further, Baldwin et al. (2009) found that 50% of clients who received 10 sessions of outpatient psychotherapy (n = 50) attained clinically significant change. With respect to SMH treatment in particular, Albright et al. (2013) provided CBT to a sample of 58 adolescents with a mixture of internalizing and externalizing problems. Albright et al. (2013) reported that 63% of the adolescent sample was either improved or recovered by the end of treatment, with an average of roughly 15 sessions per student whose baseline score was in the clinical range.

However, these SMH researchers did not measure treatment response over time beyond reporting the average dosage. Moreover, there was no way to determine the impact of other variables on dosage such as the level of psychological distress at baseline, highlighting

the importance of the current study determining whether pre-treatment assessment scores on the BASC-2 and YOQ-30 can predict treatment response over time. In an example of this approach, Michael and Furr et al. (2009) studied individual differences at baseline and the impact of psychotherapy outcomes in a young adult sample and reported that clients who presented with above average levels of psychopathology at pre-treatment as measured by the MMPI-2 (i.e., one standard deviation above the sample mean) exhibited almost half the level of symptom reduction per session when compared to clients with average levels of psychopathology at baseline. Other research has attempted to determine whether symptom profiles at baseline assessment are predictive of treatment response. Indeed, Kopta et al. (1994) found that 50% of clients with acute distress (i.e., short-term anxiety, somatization, depression, and compulsions) at baseline tended to see clinically meaningful change by session five, whereas 50% of those with chronic distress (i.e., long-lasting anxiety, phobias, depression, and obsessions) required approximately 14 sessions or more to produce similar outcomes. So, in this adult study, there was an apparent interaction between average treatment response and level of distress exhibited by the client at baseline.

Given the dearth of research that addresses treatment dosage response for adolescents in SMH programs, clinicians working in such settings have few, if any, tools available to accurately predict treatment response for these populations. Given this gap in the literature, one of the aims of the current project is to determine whether baseline scores on the YOQ-30 and BASC-2 can predict therapeutic response based on YOQ-30 slope change over the course of treatment for adolescents receiving mental health services in a SMH program. Knowing more about the slope change in YOQ-30 scores would help estimate how many

sessions are required before adolescents attain clinically significant change, and further, how much an adolescent might expect to improve over an entire course of treatment (e.g., 14 sessions) as defined by a total drop in YOQ-30 score.

Based on the research pertaining to adults discussed above, approximately 50% of a given treatment sample typically demonstrates clinically significant change after an average of 11-16 sessions (Anderson & Lambert, 2001; Hansen, Lambert, & Forman, 2002; Kadera, Lambert, & Andrews, 1996). Consequently, it was hypothesized that reliable change (i.e., one of the RCI indicators) would be evident, on average, by session 12 among our sample. Thus, this study should help to clarify the differences in treatment response between adolescents and adults, and more specifically for adolescents receiving SMH services.

Method

Participants

Participants were 133 high school students between the ages of 14 and 18 years old (M = 15.96, SD = 1.29) served by the Assessment, Support, and Counseling (ASC) Center between fall 2011 and fall 2014. Of this sample, 63.9% (n = 85) were female. Students were referred to the ASC Center primarily by professional school counselors and administrators. Other sources of referrals included parents, community providers, and self-referrals. Students who were 18 years or older provided their own legal consent, while those younger than 18 years old provided the written consent of their legal guardian(s) as well as their own assent. Inclusion for this study required three or more therapy sessions, a clinically elevated baseline YOQ-30 (i.e., defined by a score of 29 or higher; Burlingame et al., 2004), a post-treatment YOQ-30, and a pre-treatment BASC-2.

Procedure

The process of data collection began with obtaining baseline measures to each student participant once he or she voluntarily enrolled and provided informed consent (and assent) for ASC Center services. Consent to treat and consent to participate in research were collected separately as treatment is not contingent upon research participation. Upon admittance into ASC Center services, baseline information was collected immediately. For measures of emotional, behavioral, and cognitive functioning, the timing of baseline was therefore defined as the date of ASC Center treatment initiation. Baseline measures included the YOQ-30 and BASC-2 self-report form. In addition, the YOQ-30 was administered once every week or every other week as individual cases and treatment plans would allow.

Treatment consisted of non-manualized CBT along with crisis intervention and case management whenever appropriate, depending on the student and the severity of presenting problems. The therapists providing treatment were predominantly Masters-level licensed psychological associates (LPA) and clinical psychology graduate students. All of these therapists were under the supervision of a licensed clinical psychologist with a CBT orientation. All data for the duration of treatment was anonymized by assigning a number to each student within the data set.

Measures

YOQ-30. The Youth Outcome Questionnaire (YOQ-30; Burlingame et al., 2004) is a self-report measure that is used to measure recent emotions, behaviors, and thoughts, and was used herein to track changes in these dimensions of psychological well-being during the past week. This measure consists of 30 questions which are rated on a 4-point Likert scale

comprised of *never* (0), *rarely* (1), *sometimes* (2), and *always or almost always* (3); each option refers to the frequency of occurrence of the respective symptom. Students were given a YOQ-30 at the start of services with the ASC Center and at least every two sessions thereafter. Any score at or above 29 on the YOQ-30 is suggestive of clinically significant psychological symptoms. In addition, a change of 10 points between two YOQ-30 scores qualifies as "reliable change" (Burlingame et al., 2004). Thus, a difference of 10 or more points between two YOQ-30 scores suggests that treatment had a causative impact on symptom change, where an increase by 10 or more points suggests symptom deterioration and a like decrease suggests improvement.

BASC-2. The Self-Report of Personality (SRP-A) form of the Behavior Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004) was used to measure emotional and behavioral functioning. The SRP-A is comprised of 176 questions where only a *true* or *false* response is required, along with questions which operate on a 4-point Likert scale comprised of *never*, *sometimes*, *often*, or *almost always*; each referring to the frequency which the behavior in question occurs. A score between 60 and 69 signifies an "at risk" score, while any score of 70 or higher qualifies as "clinically elevated." The SRP-A form exhibits high internal consistency on its composite scales ($\alpha = 0.84 – 0.96$) and adequate test-retest reliability (0.71 – 0.82), suggesting strong support in the literature for the use of the BASC-2 as a reasonably sensitive outcome measure (McClendon et al., 2011; Reynolds & Kamphaus, 2004).

Analyses

The answers to three empirical questions will be sought in this study including 1) how much an adolescent might improve, on average, over a regimen of CBT based on YOQ-30 score change, 2) what dosage (i.e., number of sessions) of CBT is required for the average adolescent to demonstrate improvement as measured by a 10-point reduction in YOQ-30 total score from baseline to post-treatment, and 3) whether baseline scores on the YOQ-30 and BASC-2 can reliably predict treatment response. The chosen statistical analysis will be random intercepts/random slopes multilevel modeling (MLM), run through Statistical Package for the Social Sciences (SPSS) version 22. MLM was chosen given its utility in measuring slope change across time and for its ability to predict values for missing data, both of which are relevant in the present study. A YOQ-30 change score variable will be calculated for the sample, defined as the difference between any given YOQ-30 across the duration of treatment and the baseline YOQ-30. This change score variable will serve as the outcome for all MLM as the main focus will be to assess slope change across time in this YOQ-30 change score variable and then to determine whether baseline scores on the BASC-2 or YOQ-30 can accurately predict that slope change.

However, the initial baseline YOQ-30 change score for each participant will not be used in outcome analyses, given that everyone will start with a score of zero (i.e., the difference between the baseline YOQ-30 score, administered at session one, with itself), which would yield an intercept absent of any practical meaning as it would be interpreted as no YOQ-30 change at session one. As such, the YOQ-30 change score at session two will be treated as the new baseline YOQ-30 change score across the sample, and all outcome

analyses will be based on YOQ-30 change scores at session two and after. By doing this, the new intercept (i.e., when time is zero) for each participant will be defined by the session two change score providing a meaningful interpretation of the intercept (i.e., the average amount of YOQ-30 change predicted by session two). Additionally, this will allow participants to vary at baseline, thereby indicating the random intercepts procedure. Further, using a random intercepts approach will allow for analytic procedures which can determine how the variability with each analysis, and the inclusion of different predictors, will be partitioned.

The random slopes analysis was chosen so each participant's rate of change can be allowed to vary based on idiosyncratic YOQ-30 change scores over time as rates of change are not commensurate across the sample. As such, a random slopes analysis will be used to assess the extent to which average YOQ-30 change score varies among participants and across time. Therefore, the purpose of MLM is to determine slope change between each YOQ-30 over time, whereby a positive slope indicates a decrease in symptom severity and a negative slope indicates an increase in symptom severity.

General response to treatment. In order to satisfy the first aim of the study, a base model will be constructed consisting solely of the YOQ-30 change score variable. By excluding time variables and predictors, the intercept value obtained from this base model would thus represent the average total amount of change that participants would expect across the entirety of treatment. That is, the total number of points which adolescents would expect YOQ-30 score to drop, on average, throughout the duration of CBT.

In addition, this base model will allow us to assess the amount of variability observed before adding predictors into the model at later steps in order to draw more meaningful

comparisons of how much variance is assumed by each predictor in subsequent models. Once this initial base model is constructed and analyzed, random intercepts will then be added. This will allow us to look at the average amount of YOQ-30 score change throughout the entirety of treatment when scores are allowed to vary, as compared to the base model where scores are fixed. While this aim will provide meaningful information, it does not fully address the dosage component of this study, which is highlighted by the second aim.

Dose response to treatment over time. Following the assessment of general response to treatment, the time element will be incorporated into the base model so dose response can be further assessed. While the base model will yield a prediction of average total change, it will be unable to predict the amount of YOQ-30 change expected by each session. However, this study will attempt to determine the number of sessions required to see reliable change as defined by a decrease of 10 points or more on the YOQ-30 (i.e., one of two RCI criteria), thus satisfying the second aim of the study and subsequently providing results relevant to the hypothesis. Further, when incorporating the time element (i.e., session number data), we will assess for the presence of time interaction terms (e.g., quadratic time patterns), which would suggest a non-linear slope pattern, indicative of varying rates of symptom change across time. In order to yield more clinical utility, however, clinicians need to be able to predict treatment response based on pre-treatment measure scores, thus providing a rationale for the third and final aim of the present study.

Predicting treatment response. After constructing a model to calculate overall treatment response (i.e., the first aim of the study) and dose response to treatment (i.e., the second aim of the study), grand mean-centered level-2 predictor variables will be added in

order to determine whether YOQ-30 or BASC-2 subscale scores can predict treatment response. The purpose of this will be to assess whether baseline patterns of score elevations on the YOQ-30 and BASC-2 can predict when a participant would improve by 10 points on the YOQ-30. The BASC-2 subscales tested for these analyses will include Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, Somatization, Attention Problems, and Hyperactivity. These were chosen given their clinical nature in symptom profiles, and because their items are distinct from one another thus avoiding problems with multicollinearity. Grand mean centering will be used on level-2 predictors given its utility when focusing on level-2 predictors while controlling for the level-1 covariate (i.e., session number), dealing with potential multicollinearity among predictor variables, and to make lower-order effects more interpretable when dealing with interaction terms (Enders & Tofighi, 2007).

The YOQ-30 baseline score will be the first predictor added to the model as it is a separate measure from the BASC-2 and is hypothesized to be among the stronger predictors given that it would likely be correlated with YOQ-30 change score. Next, all BASC-2 subscale scores will be added to the model at once. The BASC-2 subscale with the highest *p*-value will be removed iteratively in a backward stepwise approach, with analyses run again upon each removal. This will be done in the event that removing subscales one at a time might result in another assuming a significant portion of the variance. This procedure will be used in order to find the cumulative effect of BASC-2 baseline scores. That is, when BASC-2 subscales are added to the model one at a time, certain subscales may be less significant or entirely nonsignificant and subsequently could be overlooked from the model. However,

when incorporated with other subscales, their combined effects could prove to be significant and thus meaningful for model incorporation.

As such, this final analysis will entail an equation prediction model with grand mean-centered measure scores consisting of all meaningful pre-treatment scales. The purpose of utilizing pre-treatment BASC-2 subscales and YOQ-30 scores in this way is to test for treatment response predictions based on pre-treatment scores (i.e., whether a difference in pre-treatment BASC-2 subscale scores or YOQ-30 score could predict a change in the slope of YOQ-30 change score over time). As such, the ultimate aim will be to determine whether elevations on the YOQ-30 or BASC-2 can predict the number of sessions needed for an adolescent to exhibit reliable change on the YOQ-30 (i.e., improve YOQ-30 score by 10 points).

Results

Means and standard deviations for baseline BASC-2 subscale *T*-scores are provided in Table 1. Average baseline subscale scores, with the exception of Hyperactivity, are classified as at-risk, indicated by a *T*-score between 60 and 69. Hyperactivity, however, showed an average score of 57.48 (*SD* = 11.11), which is classified as non-clinical. In addition, the frequencies for both at-risk and clinically elevated (i.e., *T*-score of 70 or more) baseline BASC-2 scores are displayed for each subscale in Figure 1. Taken together, these results indicate greater frequencies of internalizing pathology relative to externalizing pathology, with greater symptom severities in Anxiety and Depression, suggesting that the present SMH program treated students struggling with internalizing symptoms more than those with externalizing symptoms.

General Response to Treatment

The average number of sessions among participants was 14.79 (*SD* = 9.66), ranging from 3 to 55 sessions. However, not all session data were used in the analyses for two reasons: the YOQ-30 was not administered every session for each participant, and the number of participants in active treatment declined markedly over time. As a result, the amount of missing data increased with each subsequent session. While MLM can account for missing data by estimating parameters with the available data, the accuracy of this procedure decays as more data are missing. As such, it was decided that all data up to session 14 would be used for analyses given that it was the mean number of sessions in both this study and in past research on the present SMH program (Albright et al., 2013), and to ensure that sufficient data were available to warrant confidence in the missing data procedures via MLM. As such, it was found that 45.11% of participants were still in active treatment at session 14. Further, out of the 133 participants within the sample, 25.56% had a YOQ-30 change score at session 14 available for analyzing. Upon limiting the number of sessions to 14, the mean became 10.86 (*SD* = 3.67).

The findings pertaining to the first aim of the study (i.e., total amount of improvement across the duration of treatment) were significant, $F(1, 764) = 742.16$, $p < .001$. Here, the average amount of total change in YOQ-30 score across 14 sessions of CBT was defined by a decrease of 16.65 points, $b = 16.65$, $t(764) = 27.24$, $p < .001$ (Table 3, Model I). Initial -2 Log Likelihood (-2LL), an indication of model fit by estimation of error variance, for this base model was 6487.23, indicating the extent of error, along with a residual estimate of 285.22 ($p < .001$; Table 2, Model I).

Model II (i.e., the incorporation of random intercepts) proved to be statistically significant as well, $F(1, 132.03) = 165.01$, $p < .001$ (Table 2). Based on the results from Model II (Table 2), the average amount of total change in YOQ-30 score throughout the duration of treatment was defined by a decrease of 15.94 points, $b = 15.94$, $t(132.03) = 12.85$, $p < .001$ (Table 3, Model II), or about 0.71 points less than the results from Model I. Following the inclusion of random intercepts, a significant decrease in -2LL error variability was observed, χ^2 (1) = 497.82. Further, residual variance decreased to 99.65 ($p < .01$), indicating a drop of 65.1% (Table 2, Model II), and thus Model II was assumed to be more robust relative to the base model.

When applied to the average baseline YOQ-30 score for the sample, this figure of a 15.94 point decrease on the YOQ-30 would predict an average final YOQ-30 score of 32.44. This suggests that the majority of our sample would be "improved," or meet half of the RCI criteria, before the end of the 14 sessions. However, this does not satisfy the hypothesis of this study, which is the purpose of the second aim (i.e., measuring dose response to treatment).

Dose Response to Treatment over Time

Results from the inclusion of session number data showed that linear, $F(1, 646.80) = 29.35$, $p < .001$ (Table 2, Model IV), quadratic, $F(1, 592.20) = 7.223$, $p < .01$ (Table 2, Model V), and cubic, $F(1, 582.13) = 4.532$, $p < .05$ (Table 2, Model VI) time trends were found to be significant and therefore retained for the addition of level-2 predictors. Specific rates of change suggest a positive slope for the linear, $b = 3.71$, $t(646.80) = 4.95$, $p < .001$, and cubic, $b = 0.16$, $t(582.12) = 2.13$, $p < .05$, trends, and a negative slope for the quadratic

trend, b = -0.37, t(592.20) = -2.69, $p < .01$ (Table 3, Model IV). As such, both linear and cubic trends illustrated a decrease in symptoms, while the quadratic trend exhibited an increase in symptoms.

This pattern of slope change suggests an improvement in symptoms at non-linear rates across time. More specifically, there is an immediate decrease in symptoms exhibited by a positive slope, which begins to decline steadily after session two and through session nine on account of the quadratic term, thus indicating a diminishing return on symptom improvement. By session ten, the slope begins to increase again and steadily grows for the duration of treatment, suggesting a return to more rapid symptom improvement as a result of the cubic term. As such, these results indicate a non-linear growth curve with a cubic time effect, illustrating three changes in slope trend, whereby an average of 2.91 sessions predicted a decrease of 10 points on the YOQ-30 across the sample (Figure 2), signaling one of the two reliable change indicators. Thus, this finding confirms our hypothesis as students exhibited reliable change on the YOQ-30 within 12 sessions of CBT.

Interestingly, once the time element was added to Model II, not only was there a significant decrease in error variance (Table 2, Model VI), but also the predicted average amount of total YOQ-30 change for the sample across 14 sessions of CBT was 26.81 points; more than ten points greater than what Model I (i.e., base model) and Model II predicted. This suggests that, on average, the final YOQ-30 score for our sample would be 21.57. Compared to the finding from Model II of the first aim of this study, which predicted that adolescents would meet RCI improvement criteria across 14 sessions of CBT on average, Model VI (i.e., incorporating session data) updated this finding by predicting that adolescents

would in fact meet recovery criteria across 14 sessions of CBT on average. In fact, even more specific findings can be drawn from this time model as it was predicted that, on average, participants would see a drop of 19.49 points on YOQ-30 score by session eight, which would yield a YOQ-30 score of 28.89. This indicates both a decrease of more than 10 points (i.e., reliable change) and a shift from a clinical to non-clinical score. As such, not only would the average participant exhibit recovery criteria by session 14, but recovery would also actually occur by approximately session eight on average.

Predicting Treatment Response

The final aim of the study was to determine whether baseline measures could predict treatment response. First, baseline YOQ-30 score was found to be significant when incorporated into the model, $F(1, 131.96) = 32.815$, $p < .001$, suggesting it could predict YOQ-30 slope change across sessions. Further, two BASC-2 subscales were retained in the model following the iterative removal of nonsignificant subscales: Depression and Hyperactivity (Table 4). While Depression was statistically significant in predicting treatment response, $F(1, 131.24) = 14.72$, $p < .001$, Hyperactivity was not, $F(1, 128.17) = 3.654$, $p = .058$. Hyperactivity was still retained for analyses despite being nonsignificant given the probable likelihood it would have been statistically significant had there been greater statistical power via a larger sample size, coupled with the notion that the .05 cut-off value, which the Hyperactivity subscale missed by a narrow margin, is often perceived as being arbitrary. Both of these illustrate commonly cited limitations of null hypothesis significance testing (Cohen, 1994).

Results of this final model indicated that baseline YOQ-30 score illustrated a positive slope, $b = 0.54$, $t(131.96) = 5.728$, $p < .001$, while baseline scores for Depression, $b = -0.41$, $t(131.24) = -3.836$, $p < .001$, and Hyperactivity, $b = -0.19$, $t(128.17) = -1.912$, $p = 0.58$, revealed negative slopes (Table 3). Such trends suggest that a higher baseline YOQ-30 score is predictive of more immediate symptom improvement, while relatively higher baseline scores on the Depression and Hyperactivity BASC-2 subscales are predictive of worsened symptom response.

Finally, a significant decrease of 12.1% in -2LL was observed in the final model (i.e., Model VIII) relative to the base model (i.e., Model I), $\chi^2 (8) = 785.2$, $p < .01$. In addition, the residual estimate decreased by 229.98 between the base model (i.e., Model I) and the final model (i.e., Model VIII), representing an 81% decrease. These results suggest that our final model contained significantly less error than our base model and that significantly greater variance could be attributed to both the time element and the predictor variables (Table 2, Model VIII).

Discussion

The answers to three empirical questions were sought in this study including 1) how much an adolescent might improve, on average, over 14 sessions of CBT based on YOQ-30 scores, 2) what dosage (i.e., number of sessions) of CBT was required for the average adolescent to demonstrate improvement as measured by a 10-point reduction in YOQ-30 score from baseline to post-treatment, and 3) whether baseline scores on the YOQ-30 and BASC-2 could reliably predict treatment response. The findings pertaining to each of these research questions are discussed in sequence below.

General Response to Treatment

It was found that the average adolescent within our sample would be recovered (i.e., meeting both RCI criteria) after 14 sessions of CBT. This is consistent with previous SMH literature (Albright et al., 2013; Kahn, Kehle, Jensen, & Clark, 1990; Prout & DeMartino, 1986; Prout & Prout, 1998; Reynolds & Coats, 1986; Swannell, Hand, & Martin, 2009) and large-scale randomized controlled trials (TADS, 2007; Walkup et al., 2008). However, this general finding about outcome prediction is based solely on prediction models which do not take session data or other predictors into account. While these results are indeed promising for adolescents receiving treatment in SMH settings, they do not provide more specific predictions for when an adolescent would expect recovery to occur in terms of the actual session number. The findings pertaining to dose response and baseline predictors will be discussed in the following two sections.

Dose Response to Treatment over Time

The second aim of this study was to measure treatment response as defined by the number of sessions (i.e., dosage) required to observe a 10-point improvement on the YOQ-30. This aim was germane to the hypothesis about dose response, which predicted that the average student would evidence a 10-point decline on the YOQ-30 by session 12. Implementing session number data into the base model allowed for treatment response to be broken down by session. Once this information was included in the model, a non-linear, cubic curve was observed. The finding suggests that, on average, participants did not improve at a steady rate. Instead, the pattern of improvement appears to first accelerate, then flatten, and then increase again across the 14 sessions of CBT (Figure 2).

One of the more striking findings is the relatively rapid rate of change within the first three sessions, given that the average participant met one of two reliable change indicators, as defined by a drop of 10 points or more on the YOQ-30. This finding supports the dose response hypothesis, where it was predicted that one of the reliable change indicators would be evident, on average, by session 12. Therefore, not only was there support for the dosage hypothesis, but when compared to previous findings on dose response effects of therapy (Anderson & Lambert, 2001; Hansen et al., 2002; Kadera et al., 1996), the results were achieved in less time than is typically seen in adult studies ranging from 5 to 16 sessions of psychotherapy (Anderson & Lambert, 2001; Connolly et al., 2011; Kadera et al., 1996). The rate of improvement reported here is consistent with one of the definitions of "sudden gains" observed in psychotherapy, where there is at least a 25% reduction in pre-gain symptoms (Tang & DeRubeis, 1999).

Indeed, the rapid improvement from CBT relative to other therapies is well-documented in the adult literature (Aderka, Boe, Nickerson, & Hofmann, 2012; Hollon & Ponniah, 2010; Picardi & Gaetano, 2014). The present study provides yet more evidence of rapid improvement from CBT and is one of the first to document these effects in the adolescent literature and particularly when delivered in SMH contexts. This finding directly addresses one of the main concerns often expressed by school administrators and teachers, where treating students during the school day is seen as tantamount to lost instruction time, rather than an expenditure of resources possibly associated with better learning outcomes. Based on the available results, clinicians might expect the average student to show improvement in a relatively few number of sessions, similar to the results from adult studies,

and subsequently resulting in little interference with academics. Though speculative, an explanation for the rapid responding seen in this study might be attributable to the treatment modality of CBT. Indeed, in a recent meta-analysis, Aderka, Nickerson, Boe, and Hoffmann (2012) studied the sudden gains hypothesis in a meta-analysis of depression and anxiety treatment studies and found that the effect size (ES) or magnitude of sudden gains was more pronounced in CBT (ES = 0.75) than in non-CBT (ES = 0.23) interventions.

While the first aim of this study provided the finding that participants would expect to be recovered after 14 sessions of CBT, the results attained from the second aim of this study were able to provide more precise predictions for when recovery would occur on average. Here, the incorporation of session data predicted that students would exhibit recovery criteria, on average, by session eight. Overall, these data suggest that a response to CBT in the context of a SMH program is not only rapid for many who undergo treatment, but the benefits can be achieved well within the time frame of a typical academic year, even when providing intervention to youth with clinically significant problems including depression and suicidal ideation (Kirk, Jameson, Michael, & West, 2014). These results mirror the findings of Spirito et al. (2011) who reported that positive results were achieved after approximately 8 sessions, including many who presented with similarly significant symptoms. Taken together, the findings presented here suggest that SMH programs are effective and feasible treatment paradigms capable of producing results in relatively short time frame. In addition to the dose response findings, the results regarding the predictive power of baseline YOQ-30 and BASC-2 scores were the third aim of the study and equally intriguing.

Predicting Treatment Response

The third aim of this study was to determine whether baseline measures could predict treatment response, specifically the YOQ-30 and nine clinical BASC-2 subscales (i.e., Atypicality, Locus of Control, Social Stress, Anxiety, Depression, Sense of Inadequacy, Somatization, Attention Problems, and Hyperactivity). Of interest were the divergent slope patterns between the YOQ-30 and BASC-2 Depression and Hyperactivity subscales. While a relatively higher baseline score on the YOQ-30 indicated more rapid symptom improvement, higher scores on the Depression and Hyperactivity subscales were associated with a worsened treatment response. The YOQ-30 slope pattern might be explained by two phenomena in particular. First, baseline YOQ-30 scores will correlate with YOQ-30 change scores given that each are based on the same measure. Second, a higher baseline YOQ-30 score creates more room for regression to the mean. That is, having the lowest possible clinical score on the YOQ-30 (i.e., 29 points) may imply less room for rapid change, whereas having a relatively high score on the YOQ-30 (e.g., 101, the highest score within the present sample) suggests more room for rapid improvement. In the former case, the individual is significantly closer to the likely mean YOQ-30 score for the general population. In the latter case, however, the individual is significantly farther away and thus will likely see a more rapid change in score, at least initially. Interestingly this second explanation would diverge from previous findings on sudden gains, as pre-treatment levels of symptom severity for those who have demonstrated rapid improvement in past studies were generally lower (Tang & DeRubeis, 1999). However, in this case, the opposite was found, as relatively higher levels of YOQ-30 severity predicted more rapid improvement.

The findings regarding the Depression and Hyperactivity BASC-2 subscales suggest that relatively higher scores at pre-treatment predict a slowed treatment response. These findings are consistent with previous literature (e.g., Michael & Furr et al., 2009), where a higher level of psychopathology at baseline predicts a longer course of treatment necessary to produce either improvement or recovery for the participants. In this instance, it was interesting that one internalizing and one externalizing clinical scale provided the most predictive utility for the sample for two reasons. First, the sample under study had a general mixture of internalizing and externalizing problems, many of whom presented with significant elevations in these areas. Thus, these findings will likely prove useful in prescribing treatment dosage across a diverse array of symptom presentations. Second, although a diagnosis is not required to receive treatment at the ASC Center, the findings might speculate that particular features cutting across diagnostic categories are associated with outcome and should be considered as potential treatment targets. Further research is required to better understand these observed patterns.

Implications

The purpose of this study was driven heavily by practical questions in SMH treatment. That is, how many sessions might a clinician expect to have with an adolescent before reliable change is likely, and can we predict response based on pre-treatment measures? The benefits of these findings are such that clinicians can plan a course of treatment informed by objective data regarding when to expect achieving certain benchmarks (e.g., improvement, recovery). In other words, the study provides an empirically-based framework for SMH treatment-planning. In this case, the two most meaningful implications

are that 1) the average adolescent exhibits half of the reliable change indicators by the third session and recovery by the eighth session and 2) those with relatively higher scores on the Depression and Hyperactivity BASC-2 subscales will require a longer course of treatment to exhibit reliable change while those with relatively higher scores on the YOQ-30 will require a shorter course of treatment to similarly exhibit reliable change.

In line with the second major implication is the creation of a basic algorithm which can predict treatment response (see Figure 3). When a clinician obtains student data for the BASC-2 and YOQ-30, that clinician can simply input the scores into an algorithm and find the predicted amount of average YOQ-30 change by session. For example, when the baseline Depression and Hyperactivity BASC-2 subscale scores are average within our sample (i.e., 66 and 57, respectively) and a student's baseline YOQ-30 score is 40, then we would expect improvement by roughly session five and recovery by session six. When adjusting this scenario so the baseline YOQ-30 score is 50, we would expect improvement by session 3 and recovery by session 10. With a YOQ-30 baseline score of 60 and average scores on the Depression and Hyperactivity BASC-2 subscales, we would then expect recovery by session 14. In terms of treatment planning and goals, these examples highlight that a higher pre-treatment YOQ-30 score predicts a quicker time to exhibit "improvement," which is a static metric defined by a change of 10 points or more regardless of one's clinical magnitude, but often a longer time to exhibit "recovery," a more dynamic metric as those with higher scores start treatment further away from a non-clinical score meaning they have more therapeutic ground to cover in order to be classified as non-clinical.

As a reminder, these predictions are based on average YOQ-30 and BASC-2 baseline scores, and as these scores increase or decrease, then predictions would respond differently by allotting more time or less time to the number of sessions required for a student to exhibit improvement or recovery depending on which is the therapeutic target. As such, although the present study focused on improvement as the main outcome, there is still room to use the prediction model to determine when a student might expect to see recovery as well based on pre-treatment measure scores.

Further, the empirical avenues this line of inquiry opens up are of great benefit as well. More research investigating different measures that predict for treatment response would indicate new uses of such measures. Rather than merely tracking symptoms, measures could be used for greater predictive and planning purposes. As highlighted above, clinicians who have access to these algorithms can create simple documents (e.g., Microsoft Excel) to perform calculations by entering the various subscale scores that have predictive value. Finding measures that predict both symptom improvement and symptom deterioration could help to guide treatment in new ways. Targeting symptom profiles which predict deterioration while trying to build specific adaptive skills which might predict symptom improvement could become equally feasible treatment strategies pending further research. Of course it must be noted that such algorithms would reflect average treatment response based on pre-treatment scores, and subsequently should be used only as a guiding tool in treatment planning rather than creating unnecessary constriction in the time allotted to reach therapeutic benchmarks.

Limitations

This study has several limitations, the first of which was a relatively small sample size, which may have particularly limited the statistical power for determining whether BASC-2 subscales can determine overall treatment response. Future research can amend this issue by recruiting a larger pool of participants to increase statistical power. A second limitation was the amount of missing data across the sample. The accuracy of MLM when accounting for missing data relies on the amount of actual data present within the study. As such, when predicting YOQ-30 change score for sessions where only 25% of actual data is available (i.e., session 14), results will inherently be limited. Addressing such a limitation can be done simply by requiring participants to complete outcome measures at each session.

Another limitation would be the variable session numbers across the sample, and the non-manualized treatment approach of the ASC Center. The ASC Center is a SMH program which aims to provide treatment to any student who seeks it, and so creating a highly controlled treatment regimen to be applied across students of different ages, academic levels, symptom presentations, clinical severities, socioeconomic backgrounds, family dynamics, and so on can become constrained in such naturalistic settings. The main drawback of this approach is that variables of treatment can vary from one student to the next, including the number of sessions in treatment and the specific techniques utilized for a given presenting problem (e.g., individual treatment, crisis intervention, family consultation). Future research may aim to address this by offering additional levels of control not offered by the ASC Center, such as standardized treatment lengths and manualized procedures.

A final limitation was the focus placed on clinical or pathological symptoms. A promising area of study would be to explore measures that reflect more adaptive areas of functioning and their relationship to outcome. While the BASC-2 does include subscales that are described as "adaptive," the BASC-2 Self-Report does not include "resilience" subscales. An attempt was made to investigate the relationship between potential proxies for resilience on the Self-Report BASC-2 (e.g., Self-Reliance), but the results were inconclusive and complicated by the questionable construct validity of the subscale label. Although beyond the scope of the present study, future research should advance our understanding of the relationship between resilience and outcome.

Indeed, the concept of resilience and attempts to study further its implications for youth has already been undertaken in school contexts (e.g., Dray et al., 2014). Such research attempts to find ways to help adolescents maintain positive mental health outcomes despite the presence of adverse life events. It is has been proposed that higher levels of resilience serve to counterbalance pathological symptoms and characteristics or help adolescents continue to function more adaptively in the presence of these risk factors (Noltemeyer & Bush, 2013). Unfortunately, much of the mental health literature places greater focus on pathology than resilience, and consequently less is known about resiliency and its potential impact in facilitating stronger therapeutic effects across pathological presentations (Harvey & Delfabbro, 2004). Future research should better assess components of resiliency and its relationship with pathological symptoms and outcomes.

Summary

In conclusion, the results from the present study suggest that CBT is associated with rapid symptom improvement for adolescents receiving CBT in a SMH setting as the average adolescent experienced a 10-point decrease on the YOQ-30 within just three sessions. Further, adolescents receiving CBT in the context of a SMH program typically experience even more benefits over the course of 14 sessions of treatment, many of which will be classified as either "improved" or "recovered" based on established RCI criteria. Further, the rate of improvement is impacted by baseline scores such that relatively higher scores on the YOQ-30 predict a faster treatment response whereas relatively higher scores on the BASC-2 Depression and Hyperactivity subscales predict a worsened response to treatment. These findings not only advance our understanding of dose response to CBT in SMH settings, but they create opportunities to better inform, individualize, and prescribe effective treatment strategies in similar contexts.

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Table 1. Descriptive Statistics of Baseline BASC-2 Scores

BASC-2 Subscale	*N*	Minimum	Maximum	Mean	Standard Deviation
Atypicality	133	40	116	60.47	14.62
Locus of Control	133	36	87	62.19	11.51
Social Stress	133	36	93	62.93	12.75
Anxiety	133	35	88	67.07	11.65
Depression	133	40	93	65.92	12.80
Inadequacy	133	40	96	65.81	13.29
Somatization	133	40	89	62.47	14.16
Attention Problems	133	31	82	61.17	11.60
Hyperactivity	133	38	87	57.48	11.11

Table 1. Mean scores are presented as *T*-scores. At-risk scores are defined as *T*-scores between 60 and 69, and clinically elevated scores are defined as *T*-scores of 70 or higher.

Table 2. Change in -2LL and Residual Estimate by Model

Model	Parameters	-2LL	-2LL Change	AIC	BIC	Residual Estimate	Residual Estimate Percent Change
I	2	6487.23	n/a	6491.23	6500.51	285.22***	n/a
II	3	5989.42	-497.81**	5995.42	6009.33	99.65***	-65.10%
III	4	5864.08	-125.34**	5872.08	5890.63	80.76***	-19.0%
IV	5	5744.93	-119.15**	5754.93	5778.12	56.19***	-30.42%
V	6	5736.04	-8.89**	5748.04	5775.87	55.72***	-0.84%
VI	7	5731.53	-4.51*	5745.53	5778.00	55.23***	-0.88%
VII	8	5717.80	-13.73**	5733.80	5770.91	55.23***	0%
VIII	10	5702.03	-15.77**	5722.03	5768.42	55.24***	+0.02%

Table 2. * $p < .05$. ** $p < .01$. *** $p < .001$; -2LL Change and Residual Estimate Percent Change for each row based on model preceding it.

Model I – Fixed: intercepts
Model II – Fixed: intercepts; Random: intercepts
Model III – Fixed: intercepts, sessions; Random: intercepts
Model IV – Fixed: intercepts, sessions; Random: intercepts, sessions
Model V – Fixed: intercepts, sessions, quadratic sessions; Random: intercepts, sessions
Model VI – Fixed: intercepts, sessions, quadratic sessions, cubic sessions; Random: intercepts, sessions
Model VII – Fixed: intercepts, sessions, quadratic sessions, cubic sessions, YOQ-30 baseline; Random: intercepts, sessions
Model VIII – Fixed: intercepts, sessions, quadratic sessions, cubic sessions, YOQ-30 BL, Depression BL, Hyperactivity BL; Random: intercepts, sessions

Table 3. Parameter Estimates for the Eight Models Determining the Relationship Between Pre-treatment Measure Scores and Treatment Response

	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII	Model VIII
Fixed Components								
Intercept	16.65***	15.94***	10.24***	9.41***	7.94***	6.92***	7.03***	7.05***
Session			1.22***	1.57***	2.44***	3.71***	3.66***	3.67***
Session^2					-0.08**	-0.37**	-0.36**	-0.36**
Session^3						0.02*	0.02*	0.02*
YOQ-30							0.29***	0.54***
BASC-Depression								-0.41***
BASC-Hyperactivity								-0.19†
Random Components								
Intercept		180.44***	196.62***	150.22***	155.72***	156.58***	137.57***	119.30***
Session				2.40***	2.16***	2.16***	2.17***	2.15***

Table 3. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Model I – Fixed: intercepts
Model II – Fixed: intercepts; Random: intercepts
Model III – Fixed: intercepts, sessions; Random: intercepts
Model IV – Fixed: intercepts, sessions; Random: intercepts, sessions
Model V – Fixed: intercepts, sessions, quadratic sessions; Random: intercepts, sessions
Model VI – Fixed: intercepts, sessions, quadratic sessions, cubic sessions; Random: intercepts, sessions
Model VII – Fixed: intercepts, sessions, quadratic sessions, cubic sessions, YOQ-30 baseline; Random: intercepts, sessions
Model VIII – Fixed: intercepts, sessions, quadratic sessions, cubic sessions, YOQ-30 BL, Depression BL, Hyperactivity BL; Random: intercepts, sessions

Table 4. Process of BASC-2 Subscale Model Inclusion

Baseline measure	**Step 1**	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 6**	**Step 7**	**Step 8**
YOQ-30 Total Score	0.52 (.000)	0.52 (.000)	0.52 (.000)	0.53 (.000)	0.53 (.000)	0.53 (.000)	0.55 (.000)	0.54 (.000)
BASC-2 Depression	-0.40 (.008)	-0.40 (.004)	-0.38 (.002)	-0.38 (.003)	-0.37 (.003)	-0.39 (.001)	-0.37 (.002)	-0.41 (.000)
BASC-2 Hyperactivity	-0.17 (.178)	-0.17 (.179)	-0.17 (.162)	-0.16 (.172)	-0.15 (.185)	-0.15 (.164)	-0.15 (.172)	-0.19 (.058)
BASC-2 Atypicality	-0.10 (.302)	-0.10 (.304)	-0.10 (.307)	-0.10 (.305)	-0.10 (.291)	-0.11 (.238)	**-0.93 (.303)**	
BASC-2 Somatization	0.07 (.486)	0.07 (.488)	0.07 (.495)	0.08 (.323)	0.09 (.317)	**0.08 (.324)**		
BASC-2 Locus of Control	-0.05 (.638)	-0.05 (.646)	-0.05 (.655)	-0.5 (.639)	**-0.05 (.615)**			
BASC-2 Attention Problems	0.04 (.754)	0.04 (.765)	0.05 (.668)	**0.04 (.704)**				
BASC-2 Anxiety	0.04 (.771)	0.04 (.756)	**0.04 (.715)**					
BASC-2 Inadequacy	0.02 (.900)	**0.02 (.905)**						
BASC-2 Social Stress	**0.02 (.906)**							

Table 4. Each cell indicates the unstandardized regression weight with the *p*-value in parentheses. The values in bold at the bottom of each column corresponds to the BASC-2 subscale removed from subsequent analyses; Step 8 contains the final unstandardized regression weights and *p*-values for the subscales retained for analyses.

Figure 1. Frequency of At-risk and Clinical Baseline BASC-2 Scores

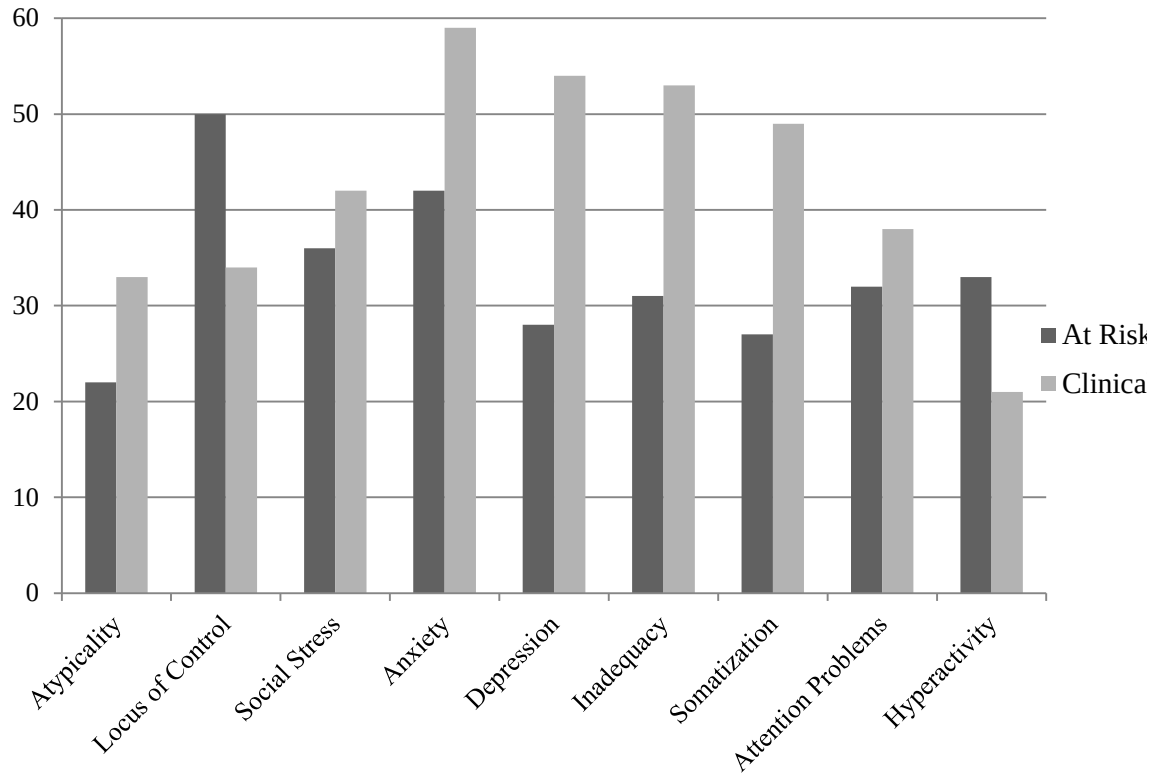

Figure 1. At-risk scores are defined as *T*-scores between 60 and 69, and clinically elevated scores are defined as *T*-scores of 70 or higher. *N* = 133.

Figure 2. Overall Treatment Response for the Entire Sample

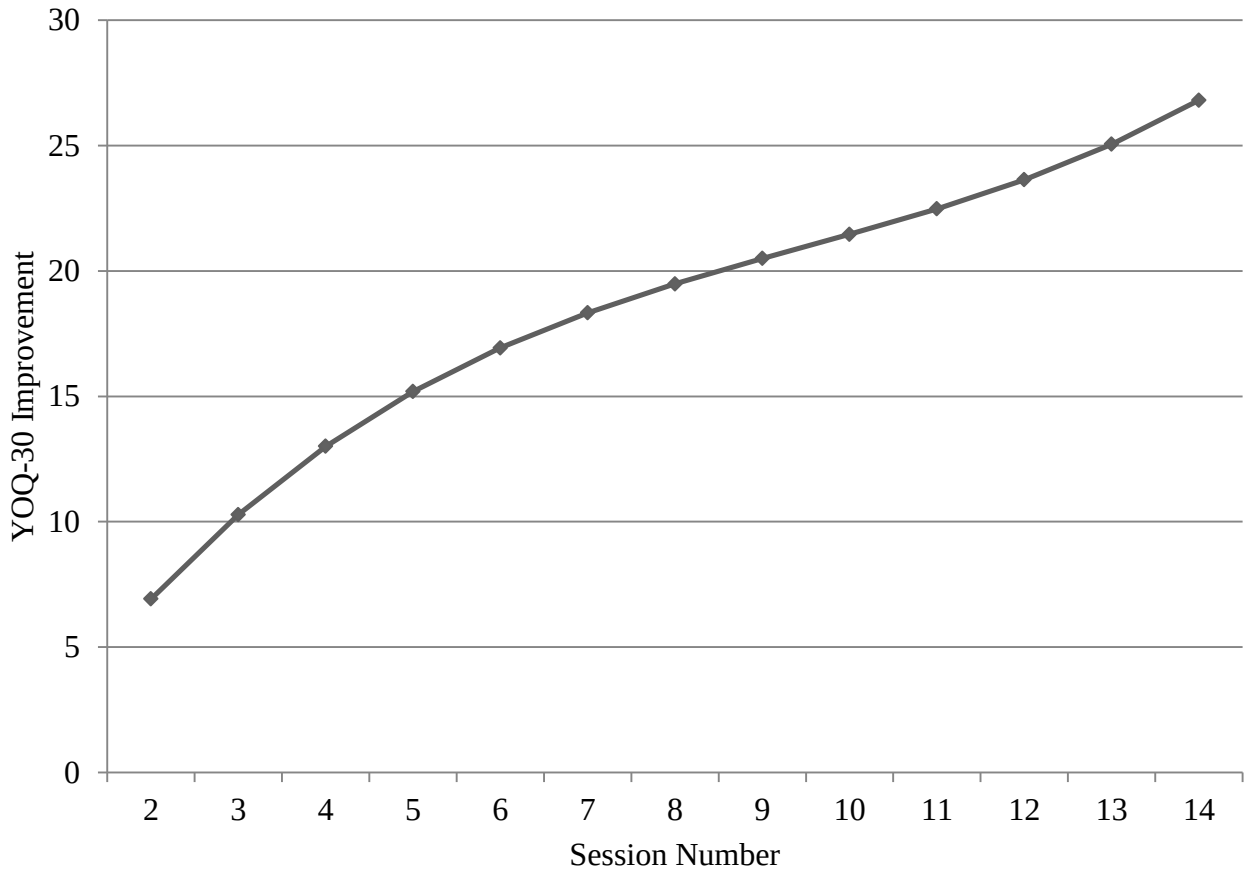

Figure 2. Treatment response based solely on session number data. The increase in YOQ-30 Change is a reflection of symptom improvement, where a higher number indicates a greater level of improvement. The horizontal dotted line represents the cut-off for reliable change.

Figure 3. Examples of Varying Treatment Responses According to Different Pre-treatment Measure Scores

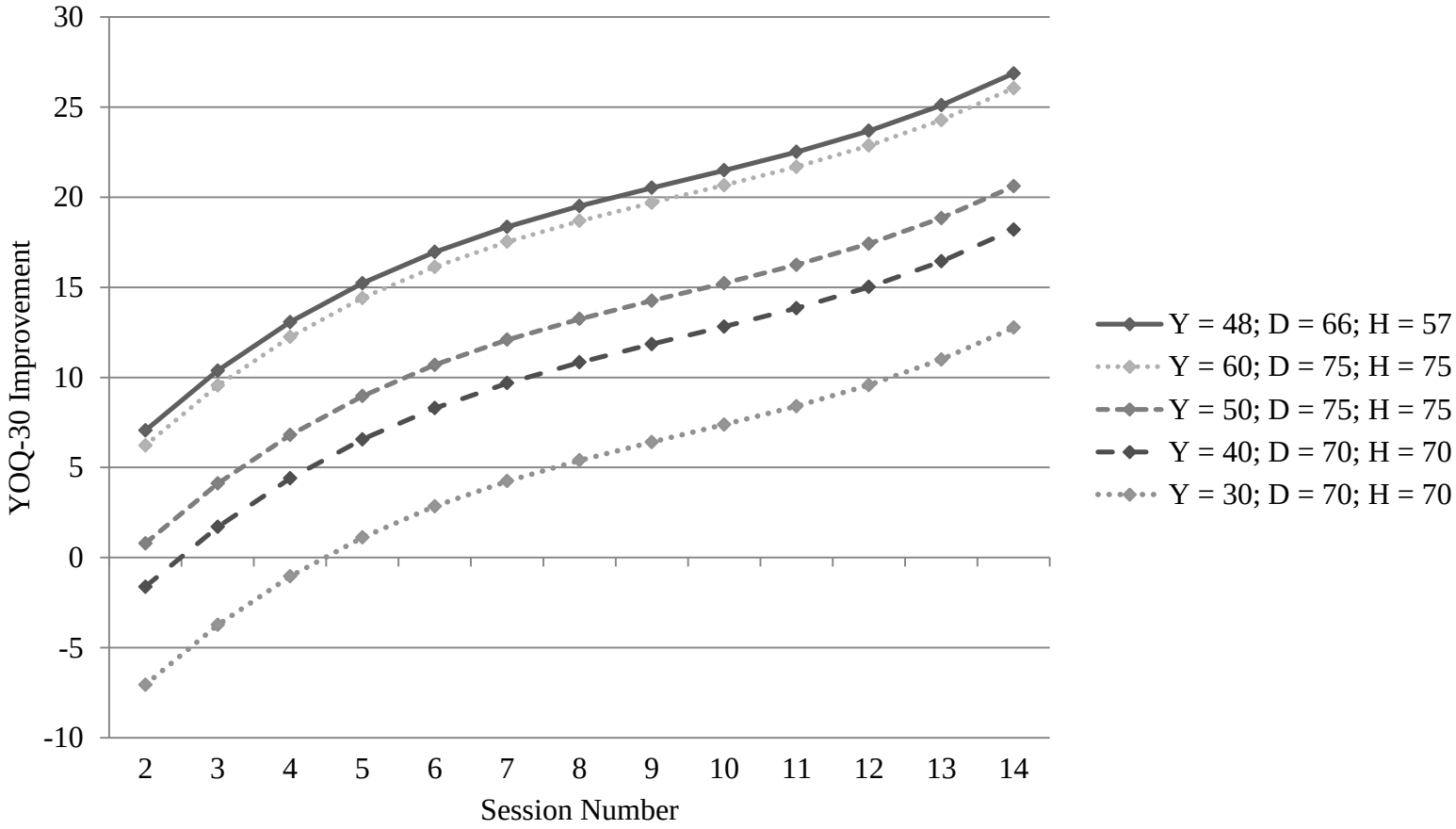

Figure 3. In reference to the key: Y = YOQ-30, D = BASC-2 Depression subscale, and H = BASC-2 Hyperactivity subscale; the first line (i.e., YOQ-30 = 48) represents the average baseline scores for the sample. The increase in YOQ-30 change is a reflection of symptom improvement, where a higher number indicates a greater level of improvement. The horizontal dotted line represents the cut-off for reliable change.

Appendix A

To: Kurt Michael
Psychology
EMAIL

From: Dr. Stan Aeschleman, Institutional Review Board Chairperson
RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
Date: 8/07/2013
Study #: 13-0020
Sponsors: Ashe County Board of Education: 13-0283
Study Title: Student Educational and Emotional Development (SEED) Study
Submission Type: Renewal
Expedited Category: (6) Collection of Data from Recordings made for Research Purposes,(7) Research on Group Characteristics or Behavior, or Surveys, Interviews, etc.
Renewal Date: 8/07/2013
Expiration Date of Approval: 8/06/2014

The Institutional Review Board (IRB) renewed approval for this study for the period indicated above. The IRB found that the research procedures meet the expedited category cited above. IRB approval is limited to the activities described in the IRB approval materials, and extends to the performance of the described activities in the sites identified in the IRB application. In accordance with this approval, IRB findings and approval conditions for the conduct of this research are listed below.

Regulatory and other findings:

The IRB has determined that the research presents minimal risks to participants, adequate provisions are made for soliciting assent of minors, and obtaining the consent of one parent or guardian (45 CFR 46.408).

Approval Conditions:

Appalachian State University Policies: All individuals engaged in research with human participants are responsible for compliance with the University policies and procedures, and IRB determinations.

Principal Investigator Responsibilities: The PI should review the IRB's list of PI responsibilities. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records.

Modifications and Addendums: IRB approval must be sought and obtained for any proposed modification or addendum (e.g., a change in procedure, personnel, study location, study

instruments) to the IRB approved protocol, and informed consent form before changes may be implemented, unless changes are necessary to eliminate apparent immediate hazards to participants. Changes to eliminate apparent immediate hazards must be reported promptly to the IRB.

Approval Expiration and Continuing Review: The PI is responsible for requesting continuing review in a timely manner and receiving continuing approval for the duration of the research with human participants. Lapses in approval should be avoided to protect the welfare of enrolled participants. If approval expires, all research activities with human participants must cease.

Prompt Reporting of Events: Unanticipated Problems involving risks to participants or others; serious or continuing noncompliance with IRB requirements and determinations; and suspension or termination of IRB approval by external entity, must be promptly reported to the IRB.

Closing a study: When research procedures with human subjects are completed, please complete the Request for Closure of IRB review form and send it to irb@appstate.edu.

Websites:

1. PI responsibilities:
http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI%20Responsibilities.pdf

2. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms

CC:
John Jameson, Psychology
Cameron Massey, Psychology
Rafaella Sale

Appendix B
Student Participant Consent Forms

Assessment, Support, and Counseling (ASC) Center: Ashe County High School
Informed Consent for Clinical Services

We are pleased to have the opportunity to serve you and/or your child through the ASC (Assessment, Support, and Counseling) Center, a partnership between Ashe County High School and Appalachian State University (ASU). ASC Center personnel are committed to providing the highest quality clinical services to students and their families, providing education and training for faculty and staff, and expanding the knowledge base for best practice standards through research. Clinical services are provided by qualified, licensed professional providers, faculty members, and/or students under supervision, as appropriate. As we proceed to work together, the following information may be helpful.

Depending on your situation, our first few sessions might be spent exploring and assessing your problems and the possible reasons for them. This might include written or oral testing and evaluation. Once we understand your issues to the best of our ability, you and we will agree on the goals you want to accomplish. Together, we may also agree to change the goals as we move along. We may set some time frames for action.

ASU/ASC providers/faculty and students will work to ensure that the theoretical perspectives, interventions, and treatments used are considered the best practice methods, supported by research, and are appropriate for your needs. However, it is important for you to know that there are often many different approaches to similar problems. We will talk with you about the pros and cons of each approach before a decision is made to go ahead with any treatment plan. Successful treatment or problem resolution requires a commitment from you. There is always the possibility that our work will not result in the progress we hope to make. Please let us know immediately if you have any questions or concerns.

CONFIDENTIALITY

Ordinarily, anything and everything you share with us is strictly confidential—whether you say it in person, on the telephone, or write it. Some of the information you give us about yourself and matters we discuss will be recorded in your clinical record. If we mutually decide that, in your interests, ASU/ASC Center personnel should provide some part of your confidential information to another professional, your insurance company, your attorney, or even you, you will sign a specific and time-limited release of information. You will know what is to be released, to whom, and how the information will be used. You will be able to stipulate the time period in which the release is to be in effect.

There are some circumstances in which ASU/ASC Center providers, faculty, and/or students would be required by law to reveal confidential information about you without your consent. One situation would be if we learned that you were at imminent risk of harming yourself or

another person. Another situation would be if there is reasonable suspicion of abuse or neglect of a child. A third situation would be in the event of a court order compelling us to release your clinical record to a court of law. Other situations would be based on federal or state laws. Some of these situations are discussed in a separate document, the Notice of Privacy Practices, which we are providing as required by federal law.

Sound clinical practice and teaching includes consultation and discussion with other interdisciplinary providers, faculty members, and students, sometimes regarding specific cases. All those affiliated with ASU/ASC Center are also legally bound to keep the information confidential. If you do not object, we will not tell you about these consultations and discussion unless they are important to our work together.

RESEARCH PARTICIPATION

As indicated above, we endeavor to use best practices when providing treatment to students. In order to accomplish this, we regularly collect data on treatment progress, satisfaction, academic outcomes, attendance, and disciplinary referrals. Although we use these data to facilitate best practices, participation in this type of data collection in no way reduces our commitment to protecting students' confidentiality. On occasion, we conduct specific research projects above and beyond these normal methods of data collection. If selected for a project beyond routine data collection, a separate consent form will be obtained and additional information provided for parent/guardian and student consideration.

HOW TO REACH ASC CENTER PROVIDERS, FACULTY, AND STUDENTS

If it is necessary to cancel or reschedule an appointment, please do so at least 24 hours in advance. Please cancel your appointment by calling (336)846-2400, between 8:30 a.m. and 3:30 p.m., Monday through Friday. If your call is urgent or an emergency, please tell the operator
immediately. If you have an imminent emergency, you may also contact the Ashe County HELP line, at 264-4325, call 911, or go to any hospital emergency room. We will discuss other ways of dealing with crisis situations relevant to your personal situation, as needed.

Feel free to contact Dr. Kurt Michael, Licensed Psychologist, Professor of Psychology (828-262-2272, ext. 432), or Tara Miller, ASC Center Coordinator (336-846-2400), if you have questions or comments regarding clinical services.

I have received and been given the opportunity to read a copy of this Informed Consent for Clinical Services sheet.

Signature of Legally Responsible Person or Student:

_____ Date: _____

Specify Relationship to Student and Print Name in Full:

_____

Additional Signature of Child or Parent, if needed:

_____ Date: _____

Witness (optional):

_____ Date: _____

___ Copy given to Student ___ Student declined copy

NOTICE OF PRIVACY PRACTICES

THIS NOTICE DESCRIBES HOW MEDICAL INFORMATION ABOUT YOU MAY BE USED AND DISCLOSED AND HOW YOU CAN GET ACCESS TO THIS INFORMATION. PLEASE REVIEW THIS NOTICE CAREFULLY.

Your health record contains personal information about you and your health. This information about you that may identify you and that relates to your past, present or future physical or mental health or condition and related health care services is referred to as Protected Health Information ("PHI"). This Notice of Privacy Practices describes how the ASC Center may use and disclose your PHI in accordance with applicable law. It also describes your rights regarding how you may gain access to and control your PHI.

The ASC Center is required by law to maintain the privacy of PHI and to provide you with notice of our legal duties and privacy practices with respect to PHI. The ASC Center is required to abide by the terms of this Notice of Privacy Practices. We reserve the right to change the terms of this Notice of Privacy Practices at any time. Any new Notice of Privacy Practices will be effective for all PHI that we maintain at that time. The ASC Center will provide you with a copy of the revised Notice of Privacy Practices by sending a copy to you in the mail upon request or providing one to you at your next appointment.

HOW the ASC Center MAY USE AND DISCLOSE HEALTH INFORMATION ABOUT YOU

For Treatment. Your PHI may be used and disclosed by those who are involved in your care for the purpose of providing, coordinating, or managing your health care treatment and related services. This includes consultation with other ASC Center clinical providers, faculty, supervised students, or other treatment team members, if applicable. We may disclose PHI to any other consultant only with your authorization.

For Payment. The ASC Center may use and disclose PHI so that we can receive payment for the treatment services provided to you. This will only be done with your authorization. Examples of payment-related activities are: making a determination of eligibility or coverage for insurance benefits, processing claims with your insurance company, reviewing services provided to you to determine medical necessity, or undertaking utilization review activities. If it becomes necessary to use collection processes due to lack of payment for services, the ASC Center will only disclose the minimum amount of PHI necessary for purposes of collection.

For Health Care Operations. The ASC Center may use or disclose, as needed, your PHI in order to support our business activities including, but not limited to, quality assurance

activities, evaluation of effectiveness, licensing, and conducting or arranging for other business activities.
For example, we may share your PHI with third parties that perform various business activities (e.g., billing services) provided we have a written contract with the business that requires it to safeguard the privacy of your PHI. We may disclose your PHI to other ASC Center clinical
providers, faculty, supervised students, and/or other treatment team members for training or teaching purposes.

Required by Law. Under the law, the ASC Center must make disclosures of your PHI to you upon your request. In addition, we must make disclosures to the Secretary of the Department of Health and Human Services for the purpose of investigating or determining the ASC Center's compliance with the requirements of the Privacy Rule.

Without Authorization. Applicable law and ethical standards permit the ASC Center to disclose information about you without your authorization only in a limited number of other situations. The types of uses and disclosures that may be made without your authorization are those that are:

- Required by Law, such as the mandatory reporting of child abuse or neglect or mandatory government agency audits or investigations (such as the psychology or social work licensing boards or the health department)
- Required by Court Order
- Necessary to prevent or lessen a serious and imminent threat to the health or safety of a person or the public. If information is disclosed to prevent or lessen a serious threat it will be disclosed to a person or persons reasonably able to prevent or lessen the threat, including the target of the threat.

Verbal Permission. The ASC Center may use or disclose your information to family members who are directly involved in your treatment with your verbal permission.

With Authorization. Uses and disclosures not specifically permitted by applicable law will be made only with your written authorization, which you may revoke at any time.

YOUR RIGHTS REGARDING YOUR PHI

You have the following rights regarding PHI the ASC Center maintains about you. To exercise any of these rights, please submit your request in
writing to us at the address below or in person.

- **Right of Access to Inspect and Copy.** You have the right, which may be restricted only in exceptional circumstances, to inspect and copy PHI that may be used to make decisions about your care. Your right to inspect and copy PHI will be restricted only in those situations where there is compelling evidence that access would cause serious harm to you. The ASC Center may charge a reasonable, cost-based fee for copies.

- **Right to Amend.** If you feel that the PHI the ASC Center has about you is incorrect or incomplete, you may ask us to amend the information although we are not required to agree to the amendment.
- **Right to an Accounting of Disclosures.** You have the right to request an accounting of certain of the disclosures that the ASC Center makes of your PHI. The ASC Center may charge you a reasonable fee if you request more than one accounting in any 12-month period.
- **Right to Request Restrictions.** You have the right to request a restriction or limitation on the use or disclosure of your PHI for treatment, payment, or health care operations. We are not required to agree to your request.
- **Right to Request Confidential Communication.** You have the right to request that the ASC Center communicates with you about medical matters in a certain way or at a certain location.
- **Right to a Copy of this Notice.** You have the right to a copy of this notice.

COMPLAINTS

If you believe the ASC Center has violated your privacy rights, you have the right to file a complaint in writing to us at the address below or in person or with the Secretary of Health and Human Services at 200 Independence Avenue, S.W., Washington, D.C. 20201 or by calling (202) 619-0257.

The effective date of this Notice is March 3, 2014.

Notice of Privacy Practices
Receipt and Acknowledgment of Notice

Name_____ DOB:
_____

I hereby acknowledge that I have received and have been given an opportunity to read a copy of the ASC Center Notice of Privacy Practices. I understand that if I have any questions regarding the Notice or my privacy rights, I can contact my provider, Tara Miller, or Dr. Kurt Michael at the address or phone number below or discuss them in person at my next appointment.

Signature of Legally Responsible Person or Student*:

_____Date:_____

Specify Relationship to Student and Print Name in Full:

_____

** If you are signing as a personal representative of an individual, please describe your legal authority to act for this individual (power of attorney, healthcare surrogate, etc.).*

Additional Signature of Student or Parent, if needed:

_____Date:_____

Witness (optional):

_____
Date:_____

☐ Student Refuses to Acknowledge Receipt

Signature of Staff Member:

_____
Date:_____

The ASC Center
Ashe County High School
West Jefferson, NC 28694
Tara Miller: (336) 846-2400
Kurt Michael: (828) 262-2272, ext. 432

Authorization for Use and Disclosure of Protected Health Information

This form implements the requirements for student authorization to use and disclose health information protected by the federal health privacy law (45 C.F.R. parts 160, 164), the federal drug and alcohol confidentiality law (42CFR, part 2) and state confidentiality law governing mental health, developmental disabilities, and substance abuse services (GS 122C)

Student Name: _____ Date of Birth: _____

I hereby authorize: ASC Center/Appalachian State University Licensed Professional Providers, Faculty Members, and/or Supervised Students To Disclose and/or Share Protected Health Information with: Ashe County Schools

The following protected information: (Provide a specific and meaningful description of the information to be used or disclosed) Psychological evaluation results, student status, participation in services, progress made, family dynamics and history, safety issues, recommendations, school status, school concerns, grades, testing, behavioral concerns, school progress, treatment plan, clinical impressions

The Purpose of Disclosure: Coordination of services, participation in the School-Based Therapy and ASC Center Programs, and treatment planning.

REDISCLOSURE

Once information is disclosed pursuant to this signed authorization, I understand that the federal health privacy law (45 C.F.R. Part 164) protecting health information may not apply to the recipient of the information and, therefore, may not prohibit the recipient from redisclosing it. Other laws, however, may prohibit redisclosure. When this agency discloses mental health and developmental disabilities information protected by state law (G.S. 122C) or substance abuse treatment information protected by federal law (42 C.F.R. Part 2), it must inform the recipient of the information that redisclosure is prohibited except as permitted or required by these two laws. ASU Institute for Health and Human Services Notice of Privacy Practices describes the circumstances when disclosure is permitted or required by these laws.

EXPIRATION AND REVOCATION

I understand that, with certain exceptions, I have the right to revoke this authorization at any time. [If I want to revoke this authorization, I must do so in writing.] If not revoked earlier, this authorization expires automatically upon _____ or one year from the date it is signed, whichever is earlier.

NOTICE OF VOLUNTARINESS

I understand that I may refuse to sign this authorization form. A readable photocopy or fax of this authorization shall have the same force and effect
as this original.

SIGNATURES

Signature of Legally Responsible Person:

_____ Date: _____

Specify Relationship to Student and Print Name in Full:

_____

Signature of Student:

_____ Date: _____

Additional Parent/Guardian Signature:

_____ Date: _____

Witness (optional):

_____ Date: _____

___ Copy given to Parent/guardian/student ___ Parent/guardian/student declined copy

Daymark Recovery Services
Authorization for Use and Disclosure of Protected Health Information

This form implements the requirements for student authorization to use and disclose health information protected by the federal health privacy law (45 C.F.R. parts 160, 164), the federal drug and alcohol confidentiality law (42CFR, part 2) and state confidentiality law governing mental health, developmental disabilities, and substance abuse services (GS 122C)

Student Name: _____ Student ID: _____ Date of Birth: _____

I hereby authorize Daymark Recovery Services

To _X Disclose and/or _X Share Protected Health Information with Ashe County School System

The following protected information: Psychological evaluation results, student status, participation in services, progress made, family dynamics and history, safety issues, recommendations, school status, school concerns, grades, testing, behavioral concerns, school progress, treatment plan, clinical impressions The Purpose of & Disclosure: Coordination of services, participation in the School-Based Therapy and Assessment, Support, and Counseling (ASC) Center Programs, and treatment planning.

REDISCLOSURE

Once information is disclosed pursuant to this signed authorization, I understand that the federal health privacy law (45 C.F.R. Part 164) protecting health information may not apply to the recipient of the information and, therefore, may not prohibit the recipient from redisclosing it. Other laws, however, may prohibit redisclosure. When this agency discloses mental health and developmental disabilities information protected by state law (G.S. 122C) or substance abuse treatment information protected by federal law (42 C.F.R. Part 2), it must inform the recipient of the information that redisclosure is prohibited except as permitted or required by these two laws. Daymark Recovery Services' Notice of Privacy Practices describes the circumstances when disclosure is permitted or required by these laws.

EXPIRATION AND REVOCATION

I understand that, with certain exceptions, I have the right to revoke this authorization at any time. [If I want to revoke this authorization, I must do so in writing.] The procedure for how I may revoke this authorization, as well as the exceptions to my right to revoke, are explained in Daymark Recovery Services' Notice of Privacy Practices, a copy of which has been provided to me. If not revoked earlier, this authorization expires automatically upon _____ or one year from the date it is signed, whichever is earlier.

NOTICE OF VOLUNTARINESS

I understand that I may refuse to sign this authorization form. If I choose not to sign this form, I understand that Daymark Recovery Services cannot deny or refuse to provide treatment, payment enrollment in a health plan, or eligibility for benefits due to my refusal to sign. A readable photocopy or fax of this authorization shall have the same force and effect as this original.

Signature of Legally Responsible Person or Student:

_____ Date: _____

Specify Relationship to Consumer and Print Name in Full:

_____

Additional Signature of Child or Parent, if needed:

_____Date:_____

Witness (optional):

_____Date: _____

___ Copy given to Consumer ___ Consumer declined copy

Daymark Recovery Services

This form implements the requirements for student authorization to use and disclose health information protected by the federal health privacy law (45 C.F.R. parts 160, 164), the federal drug and alcohol confidentiality law (42CFR, part 2) and state confidentiality law governing mental health, developmental disabilities, and substance abuse services (GS 122C)

Student Name: _____ Student ID: _____ Date of Birth: _____

I hereby authorize Daymark Recovery Services To _X Disclose and/or _X Share Protected Health Information with ASU Licensed Providers

The following protected information: Psychological evaluation results, student status, participation in services, progress made, family dynamics and history, safety issues, recommendations, school status, school concerns, grades, testing, behavioral concerns, school progress, treatment plan, clinical impressions The Purpose of & Disclosure: Coordination of services, participation in the School-Based Therapy and Assessment, Support, and
Counseling (ASC) Center Programs, and treatment planning.

REDISCLOSURE

Once information is disclosed pursuant to this signed authorization, I understand that the federal health privacy law (45 C.F.R. Part 164) protecting health information may not apply to the recipient of the information and, therefore, may not prohibit the recipient from redisclosing it. Other laws, however, may prohibit redisclosure. When this agency discloses mental health and developmental disabilities information protected by state law (G.S. 122C) or substance abuse treatment information protected by federal law (42 C.F.R. Part 2), it must inform the recipient of the information that redisclosure is prohibited except as permitted or required by these two laws. Daymark Recovery Services' Notice of Privacy Practices describes the circumstances when disclosure is permitted or required by these laws.

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Signature of Legally Responsible Person or Student:

_____ Date: _____

Specify Relationship to Consumer and Print Name in Full:

_____

Additional Signature of Child or Parent, if needed:

_____Date:_____

Witness (optional):

_____Date:_____

___ Copy given to Consumer ___ Consumer declined copy

Ashe High School/Appalachian State University
Informed Consent for Participation in Research

Title of Project: The Effectiveness of the Assessment, Support, and Counseling (ASC) Center
Investigator(s): Dr. Kurt Michael, Carissa Orlando, M.A., Kelsey Toomey, M.A.

I. **Purpose of Research:**
As described on the Consent to Treatment form that was signed and on-file at the ASC Center, we are committed to providing your children with effective interventions to address their behavioral and academic concerns. As you are already aware, we regularly collect data on treatment progress, satisfaction, academic outcomes, attendance, and disciplinary referrals that help us serve your children better. We now request your permission to present anonymous data regarding the effects of ASC Center services in the form of presentations and publications to an
audience of professionals outside of the ASC Center. Information about the effects of the ASC Center services will be presented anonymously so that your children's identities will not be disclosed.

II. **Procedures:**
In addition to the information collected regularly as part of ASC Center involvement, students and parents will be asked to complete a few brief assessments before, during, and after ASC Center services have been delivered. The assigned ASC Center clinician will review these documents in detail with the students and parents (before and after) and if there is evidence on the assessments of significant distress or discomfort, interventions will be delivered (or referrals made) immediately, up to and including the disclosure of this information to parents/guardians should it deemed consistent with the "limits of confidentiality" described on the original
Consent to Treatment Form (that is, danger to self or others, reasonable suspicion of abuse).

III. **Risks:**
As described above, the risks of participation in this project do not exceed the normal risks associated with receiving mental health/behavioral treatment in other settings. We will abide by all standards of confidentiality and we are committed to the safe and effective treatment of your children's concerns.

IV. **Benefits:**
Your participation in this project will help other professionals and society at large learn more about providing effective mental health and behavioral treatment for high school students.

V. **Extent of Anonymity and Confidentiality:**
The answers you and your student provide on the assessments will be kept confidential and under lock and key. Only authorized ASC Center personnel will know the identity of your

children. When the data is presented, it will not include your children's identity. The information will be presented anonymously.

VI. **Compensation:**
There will not compensation for your participation. ASC Center services are provided at no cost to you or your child.

VII. **Freedom to Withdraw:**
You or your child do not have to answer any questions if you do not want to and you can stop at any time.

VIII. **Participant's Responsibilities:**
I voluntarily agree to participate in this study. I have the following responsibilities:
1. Review this consent form
2. Complete the assessments honestly if I consent to participation

IX. **Participant's Permission:**
I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent by completing and signing this form.
Signature of Legally Responsible Person or Student:

_____ Date: _____

Specify Relationship to Student and Print Name in Full:

_____

Signature of Student:

_____ Date: _____

Should I have any questions about this research or its conduct, I may contact:
Kurt Michael, michaelkd@appstate.edu, (828) 262-2272, ext. 432
IRB Administrator, Research and Sponsored Programs, Appalachian State University, Boone, NC 28608, (828) 262-2130, irb@appstate.edu.

Vita

Alex Kirk was born in Houston, Texas, to Gary Kirk and Jeri Kessenich. He graduated from Hope College in Holland, Michigan, in May 2010. He earned a Bachelor of Arts degree, majoring in psychology and minoring in neuroscience. He was accepted to Appalachian State University in fall 2012 to begin study toward a Master of Arts degree in Clinical Health Psychology. He earned his degree in May 2015 and will be pursuing his Ph.D. in Clinical Psychology at the University of Colorado Boulder in fall 2015.