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Does School-Based Recruitment for Anxiety Interventions Reach Youth Not Otherwise
Identified? A Comparison Between a School-Based and a Clinical Sample

Abstract

Objective: To determine how youth with anxiety recruited for a school-based randomized controlled trial (RCT) compared demographically and clinically to clinically-referred youth with anxiety who participated in an RCT conducted in community mental health clinics.

Method: Youth ($N = 99$) with anxiety aged 12-15 years were (a) 37 youth (M age = 13.70, $SD = 0.89$; 97.3% BLINDED NATIONALITY; 19.0% male) from a school-based RCT, and (b) 62 youth (M age = 13.8, $SD = 1.0$; 88.7% Caucasian; 29.5% male) from an RCT conducted in community mental health clinics. The youth were assessed for anxiety diagnoses, functional impairment, internalizing symptoms, and externalizing symptoms.

Results: Compared to the clinically-referred youth who received care in community mental health clinics, the youth in the school sample met criteria for fewer anxiety diagnoses, lower severity of diagnoses, and less functional impairment caused by mental health problems.

However, the school sample had significantly higher levels of youth rated anxiety symptoms, $t(95) = -2.33, p = .02$, parent rated depression-, $t(94) = 4.452, p < .001$, and externalizing symptoms, $t(96) = 2.859, p = .005$. Finally, only 12.1% of the youth who met diagnostic criteria reported receiving services at a community mental health clinic in the last year.

Conclusion: Although many of the youth in the school sample met diagnostic criteria for one or more anxiety disorders, few had received services in community mental health clinics. This suggests that recruiting in schools may help identify youth with anxiety that may not otherwise seek mental health services.

Keywords: cognitive behavioral, anxiety, adolescents, school-based, implementation

1 Does school-based recruitment for anxiety interventions reach youth not otherwise identified?

2 A comparison between a school-based and a clinical sample

3 A high proportion of youth suffer from anxiety disorders, with a worldwide point
4 prevalence of 6.5% (Polanczyk et al. 2015). Anxiety disorders are associated with impairment
5 and negative long-term consequences (Swan and Kendall 2016; Essau et al. 2014; Costello et
6 al. 2003). Specifically, youth with anxiety have impaired academic achievement, higher risk
7 for school refusal, poorer academic outcomes and lower social competence compared to their
8 peers (de Lijster et al. 2018). Unfortunately, only 17–60.0% of youth with anxiety disorders
9 are identified and receive mental health treatment (Merikangas et al. 2011; Merikangas et al.
10 2010; Chavira et al. 2004; Chavira et al. 2009; Reardon et al. 2019), which means that a large
11 proportion of youth with anxiety go unnoticed and do not access mental health services
12 (Merikangas et al. 2011; Waite and Creswell 2014; Jongerden et al. 2015). Given the negative
13 consequences of anxiety and the low percentage of youth with anxiety who receive treatment,
14 it is important to understand how to reach a higher proportion of youth with anxiety.

15 Most youth with anxiety receive treatment in outpatient community mental health
16 clinics (hereafter called *community clinics*; Merikangas et al. 2011), and contact is typically
17 initiated by their parents (Creswell et al. 2014; Ehrenreich-May et al. 2011). However, to
18 access treatment in community clinics requires that a parent notice a youth is experiencing
19 anxiety, a parent schedule an appointment, and the youth meet diagnostic criteria for a
20 disorder (Waite and Creswell 2014). Unfortunately, parents do not always notice when a
21 youth is experiencing anxiety (Salloum et al. 2016), and youth may be hesitant to tell their
22 parents that they are experiencing anxiety (Gulliver et al. 2010). Thus, there are a number of
23 barriers to youth receiving treatment for anxiety in community clinics.

24 Providing mental health services in schools can help address barriers (e.g.,
25 transportation, dependency on parent referrals) to accessing treatment at community clinics

1 (Lyon and Bruns 2019; Werner-Seidler et al. 2017; Salloum et al. 2016; Reardon et al. 2017).
2 Mental health services in schools are often organized and delivered in schools via a multi-
3 tiered systems of support (MTSS). MTSS is based on a public health model of prevention that
4 conceptualizes services as a continuum with three levels: universal, targeted, and indicated
5 (Jones et al. 2017; Fabiano and Evans 2018). All youth are provided services at the universal
6 level, youth who are considered at risk are provided services at the targeted level, and the
7 youth with the most severe problems are provided services at the indicated level. Though
8 there are potential benefits to offering school-based mental health services within the MTSS
9 framework, it is important to determine the type of services youth with anxiety would need to
10 access in school.

11 To date, little is known about what type of school-based services youth with anxiety
12 might need because few studies that have recruited youth from schools have included
13 diagnostic assessment (Werner-Seidler et al. 2017). Exceptions are three randomized
14 controlled trials (RCTs) of school-based cognitive-behavior therapy (CBT) for anxiety. These
15 studies used multiple recruitment strategies (i.e. school-wide screenings, self-, parent- and
16 teacher nominations) to identify youth who met criteria for a primary anxiety disorder
17 (Ginsburg and Drake 2002; Ginsburg et al. 2012; Masia Warner et al. 2016). Disorders were
18 assessed with the Anxiety Disorder Interview Schedule for DSM-IV child and/or parent
19 version (ADIS-C/P; Silverman and Albano 1996). In all three studies, youth were excluded if
20 they were currently receiving treatment for anxiety, though only one study reported the
21 number of youth who were excluded for this reason ($n = 3$; Masia Warner et al. 2016).
22 Together, these studies demonstrate that school-based recruitment efforts can identify youth
23 with anxiety disorders who are not receiving treatment elsewhere. However, these studies do
24 not indicate how youth with anxiety identified through school-based recruitment compare
25 regarding severity and impairment to youth receiving treatment in community clinics.

1 effectiveness of CBT in the school setting (BLINDED REFERENCE). The RCT compared
2 two group-based CBT programs; one with 5 sessions, and one with 10 sessions. Local nurses
3 employed in the schools led the recruitment and inclusion process. Recruitment was done
4 through multiple formats. Youth scoring above the mean on the Spence Children's Anxiety
5 Scale (SCAS) in a youth-reported school survey of anxiety symptoms (BLINDED
6 REFERENCE) were informed about their scores and inclusion procedures for the school
7 intervention. In individual routine meetings on general health with all 8th graders and their
8 parents, school nurses gave information about the study. Teachers were informed in meetings
9 on how to recognize eligible youth and nominate them to school nurses for inclusion
10 assessment. Self-recruitment was also possible. Inclusion criteria were self-reported or parent
11 reported total score of ≥ 25 on SCAS (Spence 1998), and youth or a parent confirming that
12 the anxiety symptoms were interfering with everyday life on the Child Anxiety Life
13 Interference Scale (Lyneham et al. 2013). Self- and parent-reported youth depressive
14 symptoms, negative automatic thoughts, internalizing and externalizing problems, and impact
15 of symptoms and problems in the youth's daily life were also collected (Schniering and Rapee
16 2002; R. Goodman 1997; R. Goodman et al. 1998; Angold et al. 1995; Lyneham et al. 2013).
17 Questionnaires were administered electronically. Sixty-one of the total 313 youth in the
18 BLINDED study were informed about the present study through school health services.
19 Participants for the present study were recruited during the last 8 of the 24-month BLINDED
20 study inclusion period. Of those informed, 10 did not wish to participate, 10 were not reached
21 and one had already started in a CBT group. Forty (65.6%) agreed to participate and were
22 approached for diagnostic assessment pretreatment. See Figure 1 for participant flow.

23 ----- Insert Figure 1 about here-----

24 Written informed consent was obtained from parents and assent from youth and an
25 appointment for diagnostic assessment with the Anxiety Disorder Interview Schedule for

1 DSM-IV (ADIS-C/P; Silverman and Albano 1996) was made. Three were not available for
2 assessment before the group started, leaving 37 youth to be assessed (further referred to as the
3 *school sample*). The school sample averaged 13.70 years ($SD = 0.89$; range 12-15 years),
4 81.0% female (7 males), 97.3% BLINDED NATIONALITY, and 2.7% Non- BLINDED
5 NATIONALITY.

6 Due to geographical distances (up to 7.5 hours by car), diagnostic interviews were
7 administered via telephone. Telephone administration of the interviews has shown
8 comparable reliability to face-to-face administration (Lyneham and Rapee 2005). The first
9 and last authors (a psychologist and a child-psychiatrist) conducted the interviews, 82.0% and
10 18.0% respectively. The first author received training for the ADIS-C/P in a two-day
11 workshop on the ADIS-C/P and assessed sample cases approved by a licensed ADIS-C/P
12 rater. The last author, a licensed ADIS-C/P rater, supervised and reviewed the interviews.
13 Diagnostic interviews were video- or audiotaped, except for six interviews not recorded due
14 to technical problems. Each family received a gift card (US \$30) as compensation for their
15 time.

16 **Community mental health clinics setting.** Participants in the community clinic
17 sample were clinically-referred youth who contacted one of seven clinics between 2008-2010
18 (hereafter called *ATACA study*; Wegeland et al., 2014) for services focused on anxiety. Youth
19 were included in the study based on having a primary separation anxiety disorder (SAD),
20 social anxiety disorder (SOP), or generalized anxiety disorder (GAD). The purpose of the
21 ATACA study was to evaluate the effectiveness of 10-session CBT delivered as group or
22 individual therapy in community clinics. Clinicians had an average of 10.8 years of clinical
23 experience, and were clinical psychologists, clinical pedagogues, and clinical social workers.
24 Participants and their parents completed self-report measures on youth anxiety, depression,
25 externalizing symptoms and functional impairment, and were interviewed with the ADIS-C/P

1 (Silverman and Albano 1996) administered in-person by experienced clinicians working in
2 community clinics. The training and supervision of interviewers were the same as the
3 procedure in the school-based study. Diagnostic interviews were videotaped. All participants
4 in the same age range as the school sample (12-15 years) were included in the present study
5 (hereafter clinical sample), which included 34% of the ATACA sample. The clinical sample
6 ($n = 62$) averaged 13.80 years ($SD = 1.00$, range 12-15 years), 70.5% female (19 males),
7 88.7% Caucasian, 3.2% Asian, and 8.1% not reported.

8 **Measures**

9 **Anxiety Disorder Interview Schedule for DSM-IV (ADIS-C/P; Silverman and**
10 **Albano 1996)** is a semi-structured diagnostic interview, conducted separately with youth and
11 their parent. ADIS-C/P assesses anxiety, mood, and externalizing disorders in youth,
12 according to *DSM-IV* criteria. Each diagnosis has a clinical severity rating (CSR) on a 0 to 8
13 scale, where ratings of 4 and above represent clinical disorders. According to the manual,
14 diagnoses and CSRs are based on the combined youth and parent ratings. The ADIS-C/P has
15 demonstrated excellent inter-rater reliability and concurrent validity (Silverman et al. 2001).
16 The school sample was assessed for all diagnoses covered in the ADIS-C/P. Twenty-five
17 percent of the interviews administered to the school sample were randomly selected and re-
18 rated by an expert rater blind to the first assessors' ratings. The overall inter-rater agreement
19 estimated by kappa (κ) for the presence of an anxiety diagnosis was 0.93 (ADIS-C), and 0.80
20 (ADIS-P). For specific anxiety disorders, in the combined child and parent report, kappas
21 were: SOP = 0.87, specific phobia (SP) = 1.00 and GAD = 0.88. The intraclass correlations
22 (ICC 2:1) for CSR were all in the good to excellent range (Cicchetti 1994): ICCs for the
23 school sample were 0.94 (ADIS-C) and 0.74 (ADIS-P), and for the specific anxiety disorders,
24 using combined child and parent report, CSR ICCs were 1.00 (SOP), 0.71 (SP) and 0.88
25 (GAD). For SAD, Obsessive-compulsive disorder (OCD), and Agoraphobia there were too

1 few cases to compute kappa and ICC. The clinical sample was assessed only for SAD, SOP
2 and GAD. Inter-rater agreement was examined in the original RCT, by randomly selecting
3 20% of the interviews for re-rating by blinded expert raters (Wergeland et al. 2014). The
4 overall inter-rater agreement estimated by κ for the presence of an anxiety diagnosis was 0.84
5 (ADIS-C), and 0.86 (ADIS-P). For specific anxiety disorders, in the combined child and
6 parent report, kappas were: SAD = 0.86, SOP = 0.83, and GAD = 0.86. The intraclass
7 correlations (ICC 2:1) for CSR were all in the good to excellent range: ICCs for the clinical
8 sample were 0.82 (ADIS-C) and 0.82 (ADIS-P), and for the specific anxiety disorders, using
9 combined child and parent report, CSR ICCs were 0.72 (SAD), 0.88 (SOP), and 0.89 (GAD).

10 **Spence Children's Anxiety Scale (SCAS-C/P; Spence 1998)** is a 38-item child- and
11 parent report questionnaire assessing anxiety symptoms in youth 6-18 years. Items are rated
12 on a 4-point scale yielding a maximum score of 114. SCAS-C/P has demonstrated convergent
13 validity of $r = .75$ and an alpha of $\alpha = .92$ (Spence et al. 2003). The self-report and parent
14 report correlate well with each other, with parent-child agreement ranging from $r = .41$ to $.66$
15 (Nauta et al. 2004). The total SCAS-C/-P scale has previously shown good to excellent
16 internal consistency in clinical and community samples (Cronbach's α range = $.87$ -. 92) and
17 satisfactory test-retest reliability (Arendt et al. 2014). For the current study, internal
18 consistency for SCAS for the school sample and the clinical sample, respectively, was $\alpha = .91$
19 and $\alpha = .85$ for youth-report, and $\alpha = .85$ and $\alpha = .85$ for parent report.

20 **Short Mood and Feelings Questionnaire (SMFQ-C/P; Angold et al. 1995)** is a 13-
21 item child- and parent report scale assessing depressive symptoms in children aged 8 to 18
22 years. Ratings are done on a 3-point scale, yielding a maximum total score of 26. Higher
23 scores indicate greater severity of symptoms. The questionnaire has previously been found to
24 have score reliability and validity (Angold et al. 1995; Sharp et al. 2006; Kuo et al. 2005).
25 Two-week test-retest reliability is confirmed ($r = 0.66$ for the child ratings and $r = 0.88$ for

1 the parent ratings; Kuo et al. 2005). A cut-off of 11 for high depression symptoms was
2 applied for the current study (Larsson et al. 2016). For the current study, internal consistency
3 for the school sample and the clinical sample, respectively, were $\alpha = .92$ and $\alpha = .92$ for
4 youth-report, and $\alpha = .81$ and $\alpha = .89$ for parent report.

5 **Strengths and Difficulties Questionnaire (SDQ-C/P; R. Goodman 1997; R.**
6 **Goodman et al. 1998)** is a 25-item child- and parent report questionnaire assessing prosocial
7 behaviors and general behavioral difficulties in children aged 4-16 years. Each item is rated
8 on a 3-point-scale, with higher scores on behavioral difficulties indicating more dysfunction
9 (R. Goodman 1997). A total problem scale has demonstrated good internal reliability (R.
10 Goodman 1999). The items may be divided into two subscales; internalizing and externalizing
11 difficulties, with satisfactory internal consistency of the parent and the youth version (A.
12 Goodman et al. 2010). The SDQ further includes an impact score, measuring distress and the
13 extent to which problems and symptoms interfere with the youth's daily life (R. Goodman
14 1999). National norms for SDQ are available (Van Roy et al. 2006), and were applied in this
15 study. Internal consistency for the school sample and the clinical sample, were $\alpha = .83$ and α
16 $= .78$ for youth-report, and $\alpha = .81$ and $\alpha = .72$ for parent report, respectively.

17 **Children's Automatic Thoughts Scale (CATS; Schniering and Rapee 2002)** is a
18 40-item self-report questionnaire assessing negative automatic thoughts in children aged 7-16
19 years. Each item is rated on a 5-point scale with higher scores indicating a higher occurrence
20 of the negative thought. CATS has demonstrated an alpha of $\alpha = .95$, and a test-retest
21 correlation coefficient for the total score of $r = .76$ at 3 months (Schniering and Rapee 2002;
22 Schniering and Lyneham 2007). For the current study, internal consistency for the school
23 sample and the clinical sample, were $\alpha = .97$ and $\alpha = .93$, respectively.

24 **Sociodemographic information.** In both the school sample and the clinical sample
25 parents' occupational status, child and parent country of birth were included in the

1 questionnaires administered pretreatment. Parents' occupational status was classified into five
2 rank-ordered social classes in accordance with the Registrar General Social Class coding
3 scheme (Currie et al. 2008), with family social class defined by the highest ranking parent.

4 Information on previous contact with mental health care providers and the use of
5 psychotropic medication was assessed in the school sample.

6 **Statistical analyses**

7 SPSS version 25 (IBM Statistics, Chicago, IL) was used for all analyses. Data
8 analyses were conducted using a stepped approach. First, analyses were conducted to
9 determine whether the school sample differed from the BLINDED study sample. Then,
10 analyses were conducted to calculate differences between the school sample and the clinical
11 sample. Comparisons were made only across SAD, SOP, and GAD. Independent sample t-
12 tests and χ^2 tests were applied. Frequencies and percentages are provided for categorical
13 variables; if SAD, SOP, and/or GAD are present or not. Means and standard deviations are
14 provided for continuous variables: clinical severity rating for SAD, SOP, and GAD; SCAS-
15 C/P; SMFQ-C/P; CATS, and SDQ-C/P. There were no missing data for diagnostic interviews.
16 Missing data for questionnaires ranged from 1.0 - 5.1% for all measures across informants
17 and occurred completely at random (Little's missing-completely-at-random test $\chi^2 = 37.71$, df
18 $= 71$, $p = 1.0$).

19 **Results**

20 The school sample was compared to the remaining participants in the BLINDED study
21 ($N = 276$), to check for representativeness. The samples did not differ in sex, $\chi^2(1, N = 313) =$
22 1.98 , $p = .16$, social class, $\chi^2(1, N = 312) = 1.61$, $p = .45$, or previous contact with community
23 clinics, $t(304) = 0.16$, $p = .877$. No differences were found on youth and parent reported
24 anxiety symptoms (SCAS-C; $t(310) = 0.44$, $p = .66$, SCAS-P; $t(308) = 1.11$, $p = .27$) or
25 depressive symptoms (SMFQ-C; $t(311) = -.36$, $p = .72$, SMFQ-P; $t(308) = .74$, $p = .46$). A

1 significant difference was found for age ($p < .01$), with the school sample having a lower
2 mean age ($M = 13.65$; $SD = 0.89$) compared to the remaining BLINDED study participants
3 ($M = 14.03$; $SD = 1.00$). This age difference (4.6 months) may be due to 10th graders not
4 being recruited to the BLINDED study during the inclusion period to the present study, due to
5 closeness of final exams. This age difference is considered small and without clinical
6 significance and will therefore not be given further attention.

7 The school sample ($M = 13.65$ years; $SD = 0.89$) and the clinical sample ($M = 13.80$
8 years; $SD = 1.00$) did not differ in age, $t(97) = 0.87$, $p = .39$, sex, $\chi^2(1, N = 99) = 0.49$, $p = .66$
9 or social class, $\chi^2(2, N = 93) = .86$, $p = .30$.

10 -----Insert Table 1 about here-----

11 Comparisons of diagnostic profiles between the two samples were done based on
12 combined youth- and parent interviews. The comparisons for the number of diagnoses and
13 severity (CSR) as measured by ADIS-C/P are presented in Table 1. The school sample was
14 less likely to meet criteria for SAD, $\chi^2(1, N = 99) = 5.64$, $p = .02$, SOP, $\chi^2(1, N = 99) = 15.50$,
15 $p < .001$, or GAD, $\chi^2(1, N = 99) = 8.63$, $p = .003$, than the clinical sample.

16 Assignment of primary diagnosis was based on highest ranking CSR, according to the
17 ADIS-C/P manual. The severity of the primary anxiety diagnosis differed between the
18 samples, $t(84) = -4.04$, $p < .001$. The school sample had a lower severity of primary diagnosis
19 ($M = 5.89$; $SD = 1.26$) compared to the clinical sample ($M = 7.00$; $SD = 1.12$). For diagnoses
20 anywhere in the diagnostic profiles, severity of SOP, $t(69) = -4.01$, $p < .001$, and GAD,
21 $t(28.39) = -2.79$, $p = .01$, were rated lower in the school sample compared to the clinically-
22 referred sample. The school sample had higher severity ratings for SAD, $t(5.47) = -.30$, $p =$
23 $.78$, compared to the clinical sample. The school sample's mean was 6.00 ($SD = 1.58$) for
24 SAD, 5.56 ($SD = 1.20$) for SOP, and 5.67 ($SD = 1.19$) for GAD. For the clinical sample the

1 mean CSRs were 6.23 ($SD = 1.38$) for SAD, 6.90 ($SD = 1.24$) for SOP, and 6.60 ($SD = 1.09$)
2 for GAD.

3 Table 1 provides clinical characteristics of the two samples; means and standard
4 deviations for all symptom measures. Youth in the school sample reported higher levels of
5 anxiety symptoms (SCAS-C), $t(95) = -2.33, p = .02$, whereas parent report of youth anxiety
6 symptoms (SCAS-P) did not differ between the samples, $t(93) = .99, p = .33$. Furthermore,
7 youth reports on depressive symptoms (SMFQ-C) were not different between the samples,
8 $t(94) = 1.55, p = .12$. For parent reports on youth symptoms of depression (SMFQ-P) the
9 school sample was rated higher, $t(94) = 4.45, p < .001$. Both youth- and parent reports in the
10 school sample were above cut-off for clinical levels of depressive symptoms (≥ 11 ; Larsson et
11 al. 2016).

12 The rating of negative automatic thoughts (CATS) was higher (i.e. more negative
13 thoughts) in the school sample compared to the clinical sample, $t(93) = 4.90, p < .001$.
14 Ratings on general behavioral difficulties (SDQ) were not different between the two samples,
15 on youth-, $t(93) = 0.49, p = .63$, or parent-report, $t(96) = 0.63, p = .53$. In the school sample,
16 both youth- and parent-report SDQ scores were above a low risk cut-off (defined as a score of
17 ≥ 15 ; Van Roy et al. 2006). In the clinical sample, only youth-reports were above this cut-off.
18 The SDQ internalizing scale revealed no differences between the youth-, $t(93) = -0.24, p =$
19 $.81$, or the parent-report, $t(92) = -0.64, p = .52$. The youth ratings on SDQ externalizing
20 problems scale showed no difference between the samples, $t(93) = 1.30, p = .20$, while the
21 mean parent score was higher for the school sample, $t(96) = 2.86, p = .005$.

22 The impact scale scores for SDQ-C/P in the school sample was in the borderline range
23 (> 1.00). The clinical sample scored significantly higher on both youth-, $t(93) = -3.28, p =$
24 $.001$ and parent-report, $t(95) = -2.50, p = .01$, and had scores in the abnormal range (> 2),
25 representing high risk for a mental health disorder.

1 **Diagnostic status and use of community clinics for the School sample**

2 Table 2 provides data for the full ADIS-C/P for the school sample. Thirty-three youth
3 (89.1%) met criteria for one or more diagnoses. All had a primary anxiety diagnosis and a
4 mean of 2.60 DSM-IV diagnoses ($SD = 1.11$; range: 1-5). Specifically, four had no diagnosis,
5 five had one, 11 had two; 10 had three; five had four; and two had five. CSR for primary
6 diagnosis had a mean of 5.90 ($SD = 1.30$; range = 4-8). GAD was the most common primary
7 diagnosis (29.7%). The most common comorbid disorders were SP, attention deficit
8 hyperactivity disorder (ADHD), and major depressive disorder.

9 None of the youth in the school sample used psychotropic medication. Four of the
10 youth in the school sample, 12.1% of those who met diagnostic criteria, had been in contact
11 with community clinics during the last 12 months, one on a weekly basis, and three on a
12 monthly basis. They had a mean number of 3.50 diagnoses, ($SD = 1.29$; range 2-5). The mean
13 CSR for primary diagnosis for the four youth (CSR = 6.00; $SD = 1.63$) was not different from
14 the mean CSR for primary diagnosis for the rest of the school sample ($M = 5.93$; $SD = 1.31$),
15 $t(3.55) = 0.81, p < .94$. One of the four had OCD with a CSR of 8 as a primary diagnosis, and
16 dysthymia and social anxiety as comorbid disorders. The other three had SAD, SOP, and
17 GAD as primary diagnosis. Two of these also had comorbid ADHD.

18 -----Insert Table 2 about here-----

19 **Discussion**

20 This study aimed to examine how youth with anxiety recruited in schools compared to
21 youth with anxiety clinically referred to community clinics. This was examined by comparing
22 a sample of youth recruited from schools to participate in a research study focused on CBT
23 for anxiety to youth clinically referred for anxiety treatment in community clinics. Our
24 findings revealed that participants in the school sample had fewer anxiety diagnoses, lower
25 severity of diagnoses, and less functional impairment caused by mental health problems.

1 However, compared to the clinically-referred sample the youth in the school sample had
2 higher scores (i.e., more symptoms) on both youth- (anxiety symptoms, automatic negative
3 thoughts) and parent-report (depression, externalizing symptoms) measures. Only a small
4 percentage of the school sample (12.1%) who met diagnostic criteria reported regular contact
5 with community clinics in the last year, suggesting that providing targeted or indicated
6 services in schools within an MTSS framework may help reach youth with clinical and
7 impairing anxiety.

8 Within the school sample, 89% of the youth met criteria for one or more diagnoses.
9 This was higher than expected for participants recruited to a targeted school-based
10 intervention designed to enroll youth with elevated anxiety symptoms (i.e., cutoff above mean
11 in a previous school survey using the same measure of anxiety symptoms; Raknes et al.
12 2017). Our findings that school-based recruitment identified youth who meet diagnostic
13 criteria and relatively few youths have received services is consistent with findings from
14 previous school-based treatment studies (Ginsburg & Drake, 2002; Ginsburg et al., 2012;
15 Masia Warner et al., 2016). Together, these findings indicate that only a small percentage of
16 youth recruited from schools who meet diagnostic criteria for anxiety may be receiving
17 outpatient mental health services.

18 The youth who met diagnostic criteria from the school sample would likely qualify for
19 mental health services in community clinics. However, only 12.1% of these youth had
20 received mental health services in the previous year. A number of factors may explain why
21 such a small percentage of youth in the school sample had received treatment. As the parent is
22 often responsible for initiating a mental health referral to a community clinic, it is plausible
23 that parents did not recognize that the youths in the school sample were experiencing anxiety
24 that warranted treatment (Creswell et al. 2014; DiGiuseppe et al. 1996). Research indicates
25 that parents may be less aware when youth are experiencing internalizing symptoms

1 (Youngstrom et al. 2000). This interpretation is supported by the fact that in the school
2 sample the (a) youth reported higher anxiety symptoms, and (b) parents reported that
3 symptoms caused a lower impact and less functional impairment. It is possible that youth in
4 the school sample may not have shared their experience with their parents and thus been less
5 likely to be referred to mental health services. In contrast, the parents of the youth from the
6 community clinic sample may have been more aware of the anxiety and its level of
7 impairment.

8 Of course, other barriers may have influenced access to mental health treatment in the
9 school sample. Parents may have recognized the anxiety symptoms, but did not believe that
10 they warranted treatment (Ryan et al. 2015; Reardon et al. 2019). Alternatively, parents may
11 have recognized the anxiety, but may have been reluctant to seek help due to perceived stigma
12 of mental health (Reardon et al. 2018; Gronholm et al. 2015), not been aware of the treatment
13 options, or experienced other barriers to accessing treatment (e.g., lack of transportation, lack
14 of money; (Salloum et al. 2016). It will be important for future research to help pinpoint the
15 factors that serve as barriers to accessing treatment for youth with anxiety in both school and
16 community settings.

17 The participants in the school sample were recruited through procedures comparable
18 to those employed in previous school-based studies (e.g. through self- or parent referrals,
19 information to school personnel, and school screenings). The recruitment procedures are
20 similar to those that might be employed in universal screening within a MTSS framework.
21 Given the number of youths identified with elevated symptoms (anxiety and depressive) and
22 disorders, it appears that universal screening may identify youth who would meet criteria for
23 targeted or indicated levels of care. Given the level of symptomatology, one might
24 hypothesize that the school sample will become more impaired without intervention, due to
25 the negative consequences of prolonged, untreated anxiety (Rapee 2002). When not treated,

1 anxiety in youth may lead to missed academic learning, reduced social learning, chronic
2 anxiety, comorbid disorders, and need for treatment in adulthood (McLoone et al. 2006; Swan
3 and Kendall 2016; Wolitzky-Taylor et al. 2012; Keller et al. 1992; Ollendick and King 1994).
4 Thus, delivering interventions for anxiety in the schools could help prevent some of these
5 serious problems (Atkins et al. 2010).

6 Our findings suggest that school-based recruitment may identify youth with anxiety
7 who meet criteria for mental health services, but who are not receiving any services. These
8 needs could be met within the MTSS framework by providing multiple levels of care to
9 address the different levels of symptoms and impairment (Kendall et al. 2016). School-based
10 anxiety interventions exist that could be provided by school counsellors, school nurses, or
11 other health professionals, with comparable benefits as when delivered by psychologists
12 (Werner-Seidler et al. 2017; Fazel et al. 2014; Masia Warner et al. 2016). A review of
13 interventions for anxiety delivered in schools for anxiety found studies with effect sizes
14 ranging from small (Cohen's $d = 0.11$) to large (Cohen's $d = 1.37$). Further, a meta-analysis
15 demonstrated small mean effects of school-based universal (Hedge's $g = 0.19$) and targeted
16 interventions (Hedge's $g = 0.22$) (Werner-Seidler et al. 2017). Reduced anxiety symptoms
17 following CBT has been associated with increased school performance and improved social
18 functioning (Wood 2006; Nail et al. 2014). Further, in a review of universal and targeted
19 interventions, a 53% decrease in risk of internalizing disorder onset was found (Stockings et
20 al. 2016). Thus, targeted and indicated interventions exist that could be implemented in
21 schools to help youth with anxiety (Werner-Seidler et al. 2017; Atkins et al. 2010).

22 The study findings need to be considered in the context of a few limitations. First, the
23 small sample size, unequal distribution of girls and boys, and unequal sample size across the
24 two samples raise concerns about the generalizability of the findings. A replication of this
25 study with a larger and more diverse set of participants is thus recommended. Second, data on

1 prior and current contact with community clinics in the school sample was based on self-
2 report of the previous 12 months. Ideally, we would have had patient records from local
3 community clinics to verify the reports. Third, the enrollment period for the two RCTs that
4 provided participants for the two samples were at least four years apart (ATACA study: 2008
5 – 2010 and BLINDED study: 2014 – 2016). Hence, we cannot rule out that events may have
6 occurred and influenced the samples differently. Fourth, as data from the community clinic
7 sample were collected 10 years ago, advancements in the field may have influenced data
8 collection. However, the guidelines and administration of the included assessment measures
9 (e.g. ADIS-C/P) have remained the same. Fifth, the full ADIS-C/P was administered for the
10 school sample, but only the SAD, SOP and GAD modules were administered for the
11 community clinic sample. Hence, non-anxiety comorbidity could not be compared. Sixth,
12 different interviewers administered the diagnostic assessment in the two samples, although
13 standardized training was provided to assessors in both studies. Finally, the sample consisted
14 predominantly of BLINDED NATIONALITY, making results less generalizable to non-
15 BLINDED NATIONALITY groups. Importantly, this nationality distribution also reflects the
16 population, as only 15% of pupils in junior high schools in BLINDED COUNTRY has an
17 immigrant background (The BLINDED COUNTRY Directorate for Education and Training
18 2017).

19 **Conclusions**

20 Overall, school-based recruitment identified a group of youth with anxiety problems
21 that likely would meet criteria for mental health services in community clinics. Participants in
22 the school sample had fewer and less severe diagnoses than the clinical sample. They had
23 however, higher levels of self-reported anxiety symptoms and parent-reported depressive
24 symptoms than the clinically referred youth. The vast majority of the school sample had not
25 had regular contact with mental health services the last year before recruited to the present

1 study. This evidence that the school intervention reached youth that would not otherwise have
2 been identified or might have been identified at a later stage.

3 **Compliance with ethical standards**

4 Conflict of interest: The authors declare that they have no conflict of interest.

5 Ethical approval: All procedures performed in studies involving human participants were in
6 accordance with the ethical standards of the Regional Committee for Medical and Health

7 Research Ethics (2013/2331) and with the 1964 Helsinki declaration and its later amendments
8 or comparable ethical standards.

9 Informed consent: Informed consent was obtained from all participants in the study.

10 Specifically, informant consent and participant assent were obtained from all
11 parents/caretakers and individual participants included in the study.

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Table 1. Characteristics of school sample and clinically-referred sample

Variable	School sample		Clinical sample	
	<i>n</i> (%)	<i>M</i> (<i>SD</i>)	<i>n</i> (%)	<i>M</i> (<i>SD</i>)
Age	37	13.7 (0.89)	62	13.8 (1.0)
Female	30 (81.0)		43 (70.5)	
SES				
High	13 (35.1)		21 (37.5)	
Medium	21 (56.8)		32 (57.1)	
Low	3 (8.1)		3 (5.4)	
Anxiety diagnoses ^a				
SAD	5 (15.2)		22 (35.5)	
SOP	18 (48.6)		53 (85.5)	
GAD	18 (54.5)		48 (77.4)	
Anxiety severity				
CSR SAD	5	6 (1.6)	22	6.2 (1.4)
CSR SOP	18	5.6 (1.2)*	53	6.9 (1.2)
CSR GAD	18	5.7 (2.9)*	48	6.6 (1.1)
SCAS-C	37	44.5 (18.8)*	60	36.2 (16.1)
SCAS-P	37	34.7 (11.5)	58	32.3 (11.7)
SMFQ-C	37	11.1 (6.8)	59	9.0 (6.5)
SMFQ-P	37	13.3 (6.2)*	59	8.0 (5.4)
CATS	37	46.2 (34.7)*	58	20.5 (16.1)
SDQ-C	37			
Internalising problems	37	8.8 (4.3)	58	9.1 (4.1)
Externalizing problems	37	6.8 (2.2)	58	6.1 (3.1)
Total difficulties score	37	15.7 (5.3)	58	15.1 (5.5)
Impact score	37	1.6 (2.5)*	58	3.3 (2.5)
SDQ-P				
Internalising problems	37	8.5 (3.8)	57	9.0 (3.8)
Externalizing problems	37	6.9 (2.5)*	61	5.1 (3.1)
Total difficulties score	37	15.2 (5.4)	61	14.5 (5.9)
Impact score	36	2.7 (2.9)*	61	4.2 (2.8)

Note. SES = Socio economic status; SAD = Separation anxiety disorder; SOP = Social Phobia; GAD = Generalized anxiety disorder; CSR = Clinical severity rating; C = child; P = parent; SCAS = Spence Child Anxiety Scale; SMFQ = Short Mood and Feelings Questionnaire; CATS = Children's Automatic Thoughts Scale; SDQ = Strength and Difficulties Questionnaire. * $p < 0.05$. ^a= diagnosis present in the profile.

Table 2. Diagnostic profiles and service use in school sample ($n = 37$)

Variable	<i>n</i>	%
Non-BLINDED	1	(2.7)
Primary diagnosis		
SAD	3	(8.1)
SOP	10	(27.0)
GAD	11	(29.7)
SP	6	(16.2)
Dysthymia	1	(2.7)
PTSD	1	(2.7)
OCD	1	(2.7)
None	4	(10.8)
Comorbidity		
SP	11	(29.7)
ADHD	4	(10.8)
Depression or dysthymia	3	(8.1)
PD	1	(2.7)
AGO	2	(5.4)
Total no of diagnoses	2.4	(1.3)
CSR primary diagnosis	5.9	(1.3)
Service use last year ($n = 36$)		
Community clinic	4	(10.8)
Child protection services	0	(0.0)
General practitioner	0	(0.0)
Primary health care	1	(2.7)

Note. SAD = Separation anxiety disorder; SOP = Social Anxiety Disorder; GAD = Generalized anxiety disorder; SP = Specific Phobia; PTSD = Post Traumatic Stress Disorder; OCD = Obsessive-Compulsive Disorder; ADHD = Attention deficit hyperactivity disorder; PD = Panic Disorder; AGO = Agoraphobia; CSR = Clinical severity rating; Service use is youth reported. None had depression, agoraphobia or panic disorder as primary diagnosis. Comorbidity numbers are based on all diagnoses except primary. *Non-BLINDED NATIONALITY defined as none of the parents born in BLINDED COUNTRY.