INDICATED PREVENTION OF CHILDHOOD ANXIETY AND DEPRESSION

RESULTS FROM A PRACTICE-BASED STUDY UP TO 12 MONTHS AFTER INTERVENTION

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OBJECTIVES We investigated whether intervention effects of FRIENDS for Life, a school-based prevention program for children with anxiety or depression symptoms, were maintained over a period of 12 months after the intervention in a naturalistic setting.

METHODS We used a quasi-experimental design, with 339 children in the intervention group and 157 in the control group (aged 8–13 years) in schools in Amsterdam, the Netherlands. We collected self-, teacher, and peer reports of anxiety and depression scores before and after intervention, and 6 and 12 months after intervention, from 2010 to 2012.

RESULTS Intervention-group children reported a continuing and significant decrease in anxiety and depression scores compared with the control group. Twelve months after the intervention, participants’ anxiety and depression levels were comparable to those of the general population. Girls reported a stronger decrease in anxiety scores than did boys. Teacher reports suggested no effects. Although classmates reported increased internalizing problems in intervention-group children immediately after intervention, these effects disappeared over time.

CONCLUSIONS FRIENDS for Life, an indicated prevention program, yielded long-lasting and continuing reduction in anxiety and depression problems when implemented in daily school practice.
INTRODUCTION

Anxiety and, to a lesser extent, depression are common mental health problems in elementary school-aged children (Cartwright-Hatton, McNicol, & Doubleday, 2006). Anxiety and depression affect children’s quality of life and are a risk factor for several adverse life outcomes, such as poor academic and professional achievement, substance abuse, anxiety, depression and other mental disorders, and suicidal behavior (Beesdo, Knappe, & Pine, 2009; Birmaher, Arbelaez, & Brent, 2002; Fergusson & Woodward, 2002). Hence, efforts aiming at prevention of anxiety and depression in children are warranted.

The FRIENDS for Life program is a protocolled preventive intervention for childhood anxiety and depression based on cognitive behavior therapy (Barrett, 2004a; Barrett, 2004b). The program teaches children how to recognize symptoms of anxiety or depression, how to relax, how to act when a problem arises, positive self-talk, graduated exposure to feared situations, and to reward oneself after trying rather than focusing on succeeding. Up until now, 5 trials have evaluated FRIENDS for Life as indicated prevention (i.e., for children who show symptoms, but who do not meet criteria for a clinical disorder) (Bernstein, Layne, Egan, & Tennison, 2005; Cooley-Strickland, Griffin, Darney, Otte, & Ko, 2011; Dadds, Spence, Holland, Barrett, & Laurens, 1997; Hunt, Andrews, Crino, Erskine, & Sakashita, 2009; Miller et al., 2011). These trials used comparable inclusion procedures comprising a screening and additional teacher or parent nomination or indication, and samples ranged from 61 to 260 children. One US and 1 Canadian trial found no significant intervention effects on anxiety problems (Cooley-Strickland et al., 2011; Miller et al., 2011). An Australian trial found delayed intervention effects at 6- and 24-month follow-up (Dadds et al., 1997; Dadds et al., 1999). Another US trial found positive effects on anxiety up to 12 months after intervention (Bernstein et al., 2005; Bernstein, Bernat, Victor, & Layne, 2008). A trial from New Zealand found intervention effects on anxiety 4 years after the intervention (Hunt et al., 2009).

In the present study, we aimed to extend the research on FRIENDS for Life as an indicated preventive intervention. In Amsterdam, the Netherlands, FRIENDS for Life has been implemented in elementary schools as indicated prevention since 2007. This study is the first to our knowledge that evaluated the effectiveness of FRIENDS for Life under naturalistic conditions, as the intervention had been implemented for several years. This is important, because effects found in randomized controlled trials under controlled conditions are not necessarily transferred into practice (Higa & Chorpita, 2008). Furthermore, the effects of FRIENDS for Life as an indicated prevention program on symptoms of depression have been examined only once before (Hunt et al., 2009). We collected data on self-, teacher-, and peer-reported anxiety and depression at baseline, immediately after the intervention, and at 6 and 12 months after the intervention. Children were our primary informants, because symptoms of anxiety and depression may go undetected by teachers and classmates if a child does not disclose his or her feelings.
In the current trial, we found that children in the intervention group self-reported significantly lower anxiety and depression scores than did children in the control group immediately after intervention (M. P. Kösters, written communication, February 2, 2015). Teachers, however, reported no differences between treatment conditions in post-intervention scores, whereas classmates reported increased scores in intervention-group children, suggesting both positive and negative intervention effects. In the present study, we investigated whether the self-reported beneficial effects of the intervention were maintained over time. Furthermore, we investigated whether teacher and peer reports showed delayed intervention effects, which have been reported before for cognitive behavior therapy interventions (Calear & Christensen, 2010; Dadds et al., 1997).

In light of the positive short-term effects in the present trial and previously reported longer-term effects of FRIENDS for Life on anxiety and positive effects on depression of other indicated prevention programs, (Bernstein et al., 2008; Dadds et al., 1997; Dadds et al., 1999; Sandler et al., 2014), we expected to find intervention effects on anxiety and depression scores at 6- and 12-month follow-up measurements.

In addition, we explored the potential moderating effects of child gender, age, ethnicity, initial severity of problems, comorbid externalizing problems, and peer rejection on program effects. Previous research showed inconsistent results regarding the moderating effects of gender and age on the effectiveness of anxiety and depression prevention programs (Sandler et al., 2014). Specific cognitive behavior therapy techniques used in FRIENDS for Life have been suggested to be more effective for girls (Sutton, 2007). Smaller intervention outcomes have been reported for children with more severe initial anxiety problems (Dadds et al., 1999). Sandler et al. (2014) found that studies with more ethnic minority participants yielded higher effect sizes.

We also investigated whether children with comorbid externalizing problems or who were rejected by their peers benefitted comparably from the program as children without these problems. Internalizing and externalizing problems tend to co-occur (Caron & Rutter, 1991; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), and peer rejection is strongly related to the development of internalizing problems during the late elementary school period (Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010). Finally, we investigated the possible moderating effect of socioeconomic status (SES), as a lower SES is a risk factor for anxiety and depression in children (Najman et al., 2010; Samaan, 2000). Our exploratory analyses on moderating effects may provide insight into the suitability of FRIENDS for Life for specific groups, and directions for inclusion criteria or program development.

METHODS

We chose a quasi-experimental design as the intervention had become part of the existing curriculum in several schools and we therefore could not randomize schools to treatment conditions. All 25 schools that were implementing FRIENDS for Life agreed to participate in the study, and 13 schools participated in both school years.
Two schools quit the implementation process and therefore withdrew from the study. In total, 35 FRIENDS for Life groups started during 2 school years. We asked 241 comparable schools in Amsterdam to participate as control schools by using a recruitment procedure comparable to the one used to recruit intervention schools. Twenty-one schools agreed to participate as control schools. Four control schools withdrew from the study after the screening (T1).

We assessed participating children from grades 6 through 8 (comparable to grades 4 through 6 in the United States) at 4 time points. The children received an information letter and a passive informed consent form to take home. Parents or children could withdraw at any time during the study.

In the intervention schools, children who had the highest baseline Revised Child Anxiety and Depression Scale (RCADS) scores (see Measures) or who were nominated by their teacher, were eligible to participate in the program. Per group, up to 11 children were included, dependent on the number of children screened. In control schools, children received no intervention.

Selection of the control group took place after the final follow-up measurement, following the same selection procedure as in the intervention group. The general population sample comprised children in schools not selected for the control group condition. For more details about the selection procedure, we refer to Kösters et al. (2012). Our study obtained data from FRIENDS for Life groups conducted during the school years 2010-2011 and 2011-2012.

**INTERVENTION**

Pairs of prevention workers from a local mental health organization implemented the Dutch translation of FRIENDS for Life at elementary schools (Utens & Ferdinand, 2006a; Utens & Ferdinand, 2006b). The intervention consists of 10 group sessions and 1 booster session, 1 month after the program has finished. Each session lasts 90 minutes. One parent session is organized halfway through the program. When the program has finished, an individual evaluation session with the parents is organized. All sessions are carried out during school time. Prevention workers implemented the program largely according to protocol, and children attended on average 9.1 sessions (SD=1.3). Data on parental attendance was not well registered, but prevention workers indicated that attendance was low.

**MEASURES**

*Revised Child Anxiety and Depression Scale*

The RCADS is a 47-item self-report questionnaire assessing symptoms of childhood anxiety and depression (Chorpita, Yim, Moffitt, Umemo, & Francis, 2000). The RCADS consists of an anxiety scale (sum of 37 anxiety items, Likert scale 0-3) and a depression scale (sum of 10 depression items, Likert scale 0-3) (Chorpita & Ebesutani, 2014). Children rate how often each item applies to them (never, sometimes, often, always).
The RCADS has been shown to have adequate structural, convergent, and divergent validity, and reliability (Chorpita et al., 2000; de Ross, Gullone, & Chorpita, 2002). In the present sample, Cronbach alphas for anxiety ranged from 0.95 to 0.96 over the assessments, and for depression from 0.78 to 0.87.

**Problem Behavior at School Interview**

The Problem Behavior at School Interview (PBSI; Erasmus MC, 2000) assesses teacher-rated problem behavior in school. In the present study, the internalizing scale of the PBSI, consisting of 5 anxiety items and 7 depression items, was presented as a questionnaire. Teachers rated on a 5-point Likert scale how often each item applied to their pupils (never, rarely, sometimes, fairly often, often). The PBSI has been shown to have adequate convergent validity, and sensitivity to change was demonstrated for a preventive intervention (Spilt, Koot, & van Lier, 2013). In the present sample, Cronbach alphas for anxiety ranged from 0.73 to 0.80 over the assessments, and for depression from 0.82 to 0.86.

**Peer nominations**

All children in the class completed a peer-nomination instrument. Children were asked to unlimitedly indicate which classmates fitted 7 descriptions: “Is fearful” and “Is sad easily” (internalizing); “Starts fights,” “Bullies,” and “Does not obey school rules” (externalizing); “Liked most” (popularity); and “Liked least” (rejection). We summed the internalizing and externalizing items into 1 scale each, as well as the popularity and rejection items, and divided the sum by the number of classmates minus 1, as selfnomination was not allowed, to compute 4 separate variables (van Lier & Koot, 2010). We calculated a social preference score by subtracting the rejection from the popularity score for each participant. We used this score as a measure of peer rejection. Lower scores indicated relatively more rejection than preference (Coie, Dodge, & Coppotelli, 1982), which has widely been accepted as a valid measure of peer status (Cillessen, 2009). We used the internalizing problem scores as primary outcome measure. We used the externalizing problem score and social preference score as secondary outcome measures.

**Demographic information**

We defined children’s ethnicity according to their parent’s country of birth, based on child reports (Statistics Netherlands, 2000). We categorized ethnicity in accordance with the most common ethnic groups in the Netherlands (Dutch, Turkish, Moroccan, and Surinamese/Antillean). All other ethnic groups were classified as other Western or other non-Western (Statistics Netherlands, 2000). We based SES of schools on the schools’ postal codes. The Netherlands Institute for Social Research computed an SES score based on education level, income, and labor market position of the inhabitants of every postal code area in the Netherlands (The Netherlands Institute for Social Research, 2012).
PROCEDURES

In the intervention schools, at T1, every child in participating classes filled out the RCADS and the peer nominations. The postintervention measurement (T2) took place immediately after the last regular session of FRIENDS for Life, and the follow-up measurements took place 6 (T3) and 12 (T4) months after intervention. At T2 to T4, the RCADS and, at T1 to T4, the PBSI were only filled out by or for children who were selected for the intervention. We obtained peer nominations from all children in the classroom from T1 to T4.

In the control schools, comprising the control group and general population sample, we obtained the RCADS, PBSI, and peer nominations from all children in the class at T1 to T4. Teachers nominated the children they believed suitable for FRIENDS for Life at T1. After T4, control schools were offered to implement FRIENDS for Life.

The researchers or trained research assistants collected data during school hours. They also contacted children who left elementary school at T3 or T4 by e-mail to fill out a digital RCADS questionnaire. In the intervention group, we also collected addresses and telephone numbers, enabling us to send questionnaires to children’s homes and make follow-up calls.

ANALYSES

The RCADS anxiety and depression scales, the PBSI anxiety and depression scales, and the peer-nominated internalizing problems were the main outcome variables. We allowed 1 missing item per RCADS subscale, and replaced it with the item median of the total sample. We conducted no imputation procedures for outcome variables, as multilevel linear regression procedures perform better without (Twisk, 2003). MlwiN software (version 2.27, Centre for Multilevel Modeling, Bristol, UK) uses a maximum likelihood estimation procedure. There were no missing hierarchical variables. We conducted analyses according to the intention-to-treat principle.

We investigated attrition from the study by using logistic regression procedures with a 3-level hierarchical structure (individual, class, school). We investigated whether attrition was related to study condition (for PBSI and peer report only between the intervention and control group), gender, age, ethnicity, SES, and differences in scores between T1 and T2. The second series of models investigated differential attrition between study groups by adding an interaction term comprising study group and characteristic.

We performed longitudinal linear regression analyses with a 4-level hierarchical structure (time, individual, class, school). The first series of models assessed the outcomes for the treatment conditions over time, adjusting for baseline values, gender, age, ethnicity, and SES. The second series of models assessed the intervention effects at T2, T3, and T4 separately, by adding an interaction term comprising treatment condition and time to the adjusted model. The third series of models included significant modifier variables, to assess moderating effects of gender, age, ethnicity,
RESULTS UP TO 12 MONTHS AFTER INTERVENTION

CHAPTER 6

initial severity of problems, comorbid externalizing problems, peer rejection, and SES over time by adding an interaction term comprising the respective treatment condition and time and variable. We considered statistical significance at \(p<0.05\).

We analyzed differences in RCADS scores between the intervention group and general population per measurement with hierarchical (individual, class, school) linear regression procedures, and adjusted for gender, age, ethnicity, and SES.

We performed hierarchical analyses with MLwiN software. We calculated baseline differences except for outcomes with the \(t\)-test, the \(\chi^2\)-test, or analysis of variance (SPSS version 21, IBM, Somers, NY).

RESULTS

The flow diagram (Figure 1) reports the numbers of participants in each study phase and measurement. The sample consisted of 339 children in the intervention group and 157 in the control group. At T2, there was virtually no attrition from the study. At T3 and T4, self-, teacher-, and peer-reported data were more often missing for older children across study conditions. Gender, ethnicity, SES, and intervention effects were not associated with attrition from the study. The RCADS data were more often missing for the control group and general population than for the intervention group. At T4, RCADS data were more often missing for older children from the general population than for the intervention and control group.

BASELINE DATA

The intervention schools’ average size was 309 children (range=174 to 519); on average, we screened 72 children per school (range=31 to 149), and selected 7% to 32% of these for the intervention. The mean SES score of intervention schools was \(-1.39 (SD=1.38;\ range =–3.24 to 2.49). The control schools’ average size was 317 children (range=108 to 578); on average, we screened 61 children (range=14 to 123), and selected 8% to 36% of these for the intervention. The mean SES score of control schools was \(-0.21 (SD=1.60;\ range =–4.73 to 2.08. The percentages of children selected per school did not differ between study groups \((p=0.104), whereas SES scores of schools differed significantly \((p=0.008).

Table 1 reports the demographic characteristics of the intervention group, control group, and general population. Outcomes at baseline were similar between the intervention and control group \((p>0.05).

CHANGES IN ANXIETY AND DEPRESSION

Over time, children in the intervention group had significantly lower anxiety \((B=-9.0; 95\% confidence interval [CI]=–12.1, –5.9; p<0.001) and depression \((B=-2.5; 95\% CI=–3.3, –1.7; p<0.001) scores than children in the control group. The differences
between treatment conditions increased over time from a small to a medium effect size (Table 2). In addition, intervention group girls reported a stronger decrease over time in self-reported anxiety than boys between T3 and T4 ($B$ = −4.2; 90% CI = −6.9, −1.6; $p$ < 0.01). We did not find other significant moderator effects.

Figure 2 shows the course of anxiety and depression scores over time in both groups, and in the general population (nonselected children from control schools). At T3 and T4, intervention group anxiety scores were not significantly different from those of the general population ($B$ = 3.2; 95% CI = 0.3, 6.2; $p$ = 0.07, and $B$ = 2.8; 95% CI = 0.3, 5.4; $p$ = 0.07), and at T4, depression scores of the intervention group were not significantly different from those of the general population ($B$ = 0.8; 95% CI = 0.1, 1.5; $p$ = 0.06). Teacher reports of anxiety and depression showed no significant differences between treatment conditions over time ($B$ = −0.5; 95% CI = −1.2, 0.3; $p$ = 0.22, and $B$ = −0.8; 95% CI = −2.0, 0.3; $p$ = 0.14), nor did we find any effects of the included moderator variables.

Peer reports indicated that, over time, children in the intervention group showed more internalizing problems than children in the control group ($B$ = 0.06; 95% CI = 0.2, 0.10; $p$ < 0.01). Differences between treatment conditions were significant at T2 and T3 in favor of the control group (Table 2). Differences between treatment conditions became smaller at T3, and at T4 no significant differences between the groups existed any more. Although the peer-reported scores of the intervention group decreased over time, these remained rather stable for the control group (Appendix 1). We did not find significant effects of candidate moderator variables on peer-reported changes.

**DISCUSSION**

We investigated whether the effects of FRIENDS for Life as an indicated school-based preventive intervention were maintained over a year after intervention. After intervention, children in the intervention group self-reported significantly lower anxiety and depression scores. Over time, the effects became stronger, and the levels of anxiety and depression returned to general population levels. The finding of effects several months after intervention is partly in line with 2 earlier studies. Dadds et al. (1997; 1999) reported effects at 6 and 24 months after intervention, but not at 12 months. Bernstein et al. (2008) reported effects up to 12 months after intervention. It was interesting that, in both studies, these effects were found for clinicians’ and parents’ reports but not for self-reported anxiety.

We were the first to investigate the effects of FRIENDS for Life as indicated prevention on depression scores at 6 and 12 months after intervention. Girls showed a stronger decrease in self-reported anxiety scores over time than did boys. This may be related to the fact that girls showed better participant responsiveness than did boys in the program (M. P. Kösters, written communication, November 27, 2014) or that specific cognitive behavior therapy techniques may be more effective for girls (Sutton, 2007).

The effects demonstrated for child self-reports were not confirmed by teacher or peer reports. Teachers reported no significant differences between the intervention
RESULTS UP TO 12 MONTHS AFTER INTERVENTION

CHAPTER 6

FIGURE 1


CONTROL SCHOOLS
Recruited from the remaining 241 schools in Amsterdam: 21 (9%) agreed to participate
Invited for participation (n=1552)

INTERVENTION SCHOOLS
25 schools that implemented FRIENDS for Life
Invited for participation (n=2999)

T1-BASELINE
Assessed for eligibility (n=1445)

Excluded (n=107, 6.9%)
- Declined to participate (n=94)
- Other reasons (n=13)

Excluded (n=2937)
- Declined to participate (n=18)
- Other reasons (n=44)

SELECTED

General population (n=890)

Selected for no intervention control group (n=157)

Excluded (n=281; 19.4%)
- Withdrawal 4 schools (n=235)
- Other reasons (n=46)

Excluded (n=228; 7.8%)
- Withdrawal 2 schools (n=228)

Selected for intervention (n=339)
- Received intervention (n=328)
- Did not receive intervention:
  (n=11)
  - Did not start (n=6)
  - Quit intervention (n=5)

Excluded (n=62, 2.1%)
- Withdrawal 4 schools (n=55)
- Other reasons (n=7)
### RESULTS UP TO 12 MONTHS AFTER INTERVENTION

<table>
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<tr>
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<th>T3 - 6 MONTHS POST</th>
<th>T4 - 12 MONTHS POST</th>
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<th>T4 - 12 MONTHS POST</th>
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**Note:** PBSI=Problem Behavior at School Interview; RCADS=Revised Child Anxiety and Depression Scale.
FIGURE 2 Revised Child Anxiety and Depression Scale over time in intervention group, control group, and general population by (a) anxiety score and (b) depression score: The Netherlands, 2010–2012

Note: RCADS=Revised Child Anxiety and Depression Scale. The general population sample comprised nonselected children from control schools.
### Baseline demographic characteristics, and pre- and postintervention (T1 and T2) scores and 6- (T3) and 12-month (T4) follow-up measurements in the FRIENDS for Life intervention and control group, and in the general population: 2010–2012, the Netherlands

<table>
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<th>INTERVENTION GROUP</th>
<th>CONTROL GROUP</th>
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<td>No. (%) or M (SD)</td>
<td>No. (%) or M (SD)</td>
<td>No. (%) or M (SD)</td>
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<tr>
<td>**Gender n girls (%)**a</td>
<td>209 (62%)</td>
<td>101 (64%)</td>
<td>461 (52%)</td>
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<tr>
<td><strong>Age, y</strong></td>
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<td>10.7 (0.8)</td>
<td>10.8 (0.8)</td>
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<td><strong>Ethnicity n (%)</strong>:</td>
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<td>Dutch</td>
<td>66 (20%)</td>
<td>88 (56%)</td>
<td>538 (60%)</td>
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<td>Turkish</td>
<td>40 (12%)</td>
<td>3 (2%)</td>
<td>32 (4%)</td>
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<td>Moroccan</td>
<td>74 (22%)</td>
<td>24 (15%)</td>
<td>72 (8%)</td>
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<td>Surinamese/Antillean</td>
<td>54 (16%)</td>
<td>9 (6%)</td>
<td>55 (6%)</td>
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<td>28 (8%)</td>
<td>15 (10%)</td>
<td>87 (10%)</td>
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<td>Other non-Western</td>
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<td>86 (10%)</td>
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<td>8 (5%)</td>
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<th>BOYS</th>
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<tr>
<td>T1</td>
<td>31.3 (19.3)</td>
<td>43.6 (23.9)</td>
<td>36.0 (14.9)</td>
<td>39.4 (14.8)</td>
<td>15.7 (10.6)</td>
<td>20.7 (13.5)</td>
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<td>28.1 (17.4)</td>
<td>34.1 (15.5)</td>
<td>13.6 (10.4)</td>
<td>19.4 (12.4)</td>
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<td>T3</td>
<td>15.1 (16.3)</td>
<td>23.6 (21.1)</td>
<td>23.5 (12.1)</td>
<td>32.5 (17.6)</td>
<td>13.2 (11.4)</td>
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<td>T4</td>
<td>15.5 (15.6)</td>
<td>19.8 (16.8)</td>
<td>23.4 (12.5)</td>
<td>31.8 (15.9)</td>
<td>12.0 (10.7)</td>
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<td><strong>RCADS Depression</strong>&lt;br&gt;(range: 0-30)</td>
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<tr>
<td>T1</td>
<td>7.6 (4.5)</td>
<td>9.4 (5.5)</td>
<td>9.6 (4.1)</td>
<td>9.8 (3.8)</td>
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<td>T2</td>
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<td>8.7 (5.0)</td>
<td>4.2 (3.4)</td>
<td>4.9 (4.0)</td>
</tr>
<tr>
<td>T4</td>
<td>4.3 (4.3)</td>
<td>5.5 (5.0)</td>
<td>7.9 (4.2)</td>
<td>9.0 (4.7)</td>
<td>4.0 (3.3)</td>
<td>5.1 (4.2)</td>
</tr>
<tr>
<td><strong>PBSI Anxiety</strong>&lt;br&gt;(range: 0-25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>12.6 (3.8)</td>
<td>12.7 (3.7)</td>
<td>11.0 (4.4)</td>
<td>10.4 (3.0)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>T2</td>
<td>11.4 (3.5)</td>
<td>11.7 (3.3)</td>
<td>10.8 (3.9)</td>
<td>10.9 (3.4)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>T3</td>
<td>11.1 (3.3)</td>
<td>10.6 (3.3)</td>
<td>10.8 (3.8)</td>
<td>9.8 (3.0)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>T4</td>
<td>10.4 (3.0)</td>
<td>10.3 (2.9)</td>
<td>9.7 (3.7)</td>
<td>9.4 (3.1)</td>
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</tr>
</tbody>
</table>
RESULTS UP TO 12 MONTHS AFTER INTERVENTION

**TABLE 1** (Continued)

<table>
<thead>
<tr>
<th></th>
<th>BOYS</th>
<th>GIRLS</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
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<tr>
<td><strong>PBSI Depression (0-35)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>16.4 (4.5)</td>
<td>15.6 (4.8)</td>
<td>14.7 (5.5)</td>
<td>13.2 (4.8)</td>
</tr>
<tr>
<td>T2</td>
<td>15.7 (4.9)</td>
<td>14.5 (4.4)</td>
<td>14.7 (5.1)</td>
<td>14.4 (5.2)</td>
</tr>
<tr>
<td>T3</td>
<td>15.5 (5.0)</td>
<td>13.7 (4.5)</td>
<td>13.8 (5.6)</td>
<td>13.6 (5.2)</td>
</tr>
<tr>
<td>T4</td>
<td>14.2 (4.9)</td>
<td>13.5 (4.7)</td>
<td>11.8 (4.2)</td>
<td>12.9 (5.3)</td>
</tr>
<tr>
<td><strong>Peer-reported internalizing problems (NA)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>0.19 (0.28)</td>
<td>0.32 (0.30)</td>
<td>0.17 (0.26)</td>
<td>0.28 (0.24)</td>
</tr>
<tr>
<td>T2</td>
<td>0.23 (0.32)</td>
<td>0.40 (0.35)</td>
<td>0.16 (0.28)</td>
<td>0.26 (0.28)</td>
</tr>
<tr>
<td>T3</td>
<td>0.20 (0.29)</td>
<td>0.39 (0.37)</td>
<td>0.17 (0.30)</td>
<td>0.25 (0.30)</td>
</tr>
<tr>
<td>T4</td>
<td>0.18 (0.29)</td>
<td>0.36 (0.36)</td>
<td>0.17 (0.33)</td>
<td>0.25 (0.34)</td>
</tr>
</tbody>
</table>

**Note:** PBSI=Problem Behavior at School Interview; RCADS=Revised Child Anxiety and Depression Scale; SES=socioeconomic status. The general population sample comprised nonselected children from control schools. a= different between three groups ($p<0.01$). b=gender of one case unknown. c=different between intervention group and general population ($p<0.01$). d=different between intervention versus control group/general population ($p<0.01$).

**TABLE 2** Differences in scores between FRIENDS for Life intervention and control group (reference category) at T2, T3, and T4 on multilevel linear regression analyses: The Netherlands, 2010–2012

<table>
<thead>
<tr>
<th></th>
<th>B a</th>
<th>95% CI</th>
<th>p</th>
<th>ES</th>
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</thead>
<tbody>
<tr>
<td>RCADS Anxiety T2</td>
<td>-5.32</td>
<td>[-8.19, -2.44]</td>
<td>0.002</td>
<td>-0.28</td>
</tr>
<tr>
<td>RCADS Anxiety T3</td>
<td>-10.32</td>
<td>[-13.58, -7.06]</td>
<td>&lt;0.001</td>
<td>-0.55</td>
</tr>
<tr>
<td>RCADS Anxiety T4</td>
<td>-11.63 b</td>
<td>[-14.92, -8.35]</td>
<td>&lt;0.001</td>
<td>-0.62</td>
</tr>
<tr>
<td>RCADS Depression T2</td>
<td>-1.92</td>
<td>[-2.66, -1.17]</td>
<td>&lt;0.001</td>
<td>-0.38</td>
</tr>
<tr>
<td>RCADS Depression T3</td>
<td>-2.58</td>
<td>[-3.43, -1.72]</td>
<td>&lt;0.001</td>
<td>-0.51</td>
</tr>
<tr>
<td>RCADS Depression T4</td>
<td>-3.19</td>
<td>[-4.05, -2.33]</td>
<td>&lt;0.001</td>
<td>-0.63</td>
</tr>
<tr>
<td>Peer-reported internalizing problems T2</td>
<td>0.07</td>
<td>[0.03, 0.11]</td>
<td>&lt;0.001</td>
<td>0.21</td>
</tr>
<tr>
<td>Peer-reported internalizing problems T3</td>
<td>0.06</td>
<td>[0.02, 0.10]</td>
<td>0.02</td>
<td>0.003</td>
</tr>
</tbody>
</table>
| Peer-reported internalizing problems T4 | 0.03 | [-0.02, 0.07] | 0.28 | -

**Note:** CI=confidence interval; RCADS=Revised Child Anxiety and Depression Scale. a Adjusted for baseline (T1) scale scores, gender, age, ethnicity, and SES. b Girls reported a stronger decrease in symptoms.
and control group. As this result contrasted with children's self-report, and with children's positive appraisal of the usefulness of the program (M. P. Kösters, written communication, November 27, 2014), we may conclude that teachers cannot adequately identify children's internalizing problems, which is in concordance with previous research (Achenbach, McConaughy, & Howell, 1987; Mesman & Koot, 2000).

Peers reported a slight increase in internalizing problems at T2 in the intervention group, followed by a decrease from T2, resulting in no differences between treatment conditions at T4, whereas the level of peer-reported internalizing problems in the control group remained stable over time. The initial increase in peer-reported internalizing problems in the intervention group may be ascribed to peers’ increased attention for the internalizing problems of the FRIENDS for Life participants, as they saw their classmates leave the classroom to attend a program targeting anxiety and depression. The decrease of these peer-reported internalizing problems in the intervention group after T2 may indicate that this awareness faded over time. We also investigated the possibility of teachers’ or peers’ differential attrition, which was unlikely and therefore not a plausible explanation for the inconsistency between child report and teacher and peer report.

STRENGTHS AND LIMITATIONS

The present study is the largest FRIENDS for Life study among children with elevated levels of anxiety and depression to date. Our study has several additional strengths. It is the first that examined not only the effects of FRIENDS for Life as indicated intervention on preadolescent anxiety, but also its effects on depression. Another strength is the implementation of the program in the naturalistic school setting. Our study proves that FRIENDS for Life has long-lasting effects even when implemented in daily school practice. Furthermore, because the control group did not receive the intervention until the last measurement, we were able to compare treatment conditions over the full length of the study. An additional advantage was the ethnic diversity of the sample. Although populations are nowadays often ethnically heterogenic, only few previous intervention studies were conducted in an ethnically diverse population (Sandler et al., 2014).

Despite these strengths, our study has several potential limitations. Because FRIENDS for Life was part of current school practice, we were not able to randomly assign schools to treatment conditions. However, we found no significant baseline differences between treatment conditions, except for a more ethnically diverse and lower-SES intervention group. To account for this, we adjusted our analyses for ethnicity and SES.

Second, we did not compare the treatment condition to a placebo or an attention-only condition. The use of active control conditions should exclude the possible influence of non-intervention-specific factors such as receiving extra attention. Although some studies report no differences between intervention and active control conditions, the evidence is neither overwhelming nor consistent across literature (Merry et al., 2011;
Neil & Christensen, 2009). Furthermore, it is not likely to find placebo effects lasting 12 months after intervention (Merry et al., 2011).

A third limitation was attrition at the T3 and T4 measurements, where especially older children and – for RCADS data – control and general population children dropped out. This was expected, as children leave elementary school after grade 6, which makes it more difficult to collect data from these groups. As we had collected home addresses and telephone numbers from the intervention group, we had more possibilities to collect follow-up data in this group compared with the control group.

Lastly, the general population sample was not completely representative, as we did not include children with elevated scores. Most likely, RCADS scores in a complete general population sample would have been higher, implying that the effects in Figure 2 are in fact a slight underestimation of the true effect.

In the present study, FRIENDS for Life was implemented by prevention workers from a mental health organization. Although the costs may have been higher than when implemented by school personnel (costs were about €1000 per child), this strategy also prevents nonimplementation because of schools’ time constraints. This does not mean that schools were not involved in the implementation process. They played an important role in the composition of groups and assisted with the logistics (reservation of a classroom, inviting parents, etc.). When cooperation lacked, termination of the implementation occurred. We invested a lot of time in the cooperation with the prevention workers and schools, and discussed what would work best regarding the study. The familiarity with the program and awareness of childhood anxiety and depression, in school managers as well as in teachers and parents, caused intervention schools to be motivated to participate in the study. A strategy to prevent control schools from withdrawing after the first measurement may be to invest more in these 3 groups, instead of focusing primarily on school management. In some schools, teachers or parents felt not sufficiently informed by a letter only, after which the management decided to withdraw.

Conclusions

The present study showed that FRIENDS for Life yields long-lasting effects, even when implemented in the context of daily school practice that existed already for several years. As anxiety and depression are major public health problems, these findings warrant wider implementation of the program.
REFERENCE LIST


Erasmus MC. (2000). Problem Behavior at School Interview. Rotterdam, the Netherlands: Department of Child and Adolescent Psychiatry, Erasmus MC.


RESULTS UP TO 12 MONTHS AFTER INTERVENTION

27(5), 552-571.


APPENDIX 1

Peer-reported internalizing problems over time in the intervention and control group

![Graph showing peer-reported internalizing problems over time in the intervention and control group. The x-axis represents time points T1 to T4, and the y-axis represents peer-nominated internalizing problems ranging from 0 to 0.35. The intervention group shows a higher peak at T2 compared to the control group.](image-url)