



A randomized controlled trial comparing two cognitive-behavioral programs for adolescent girls with subclinical depression: A school-based program (Op Volle Kracht) and a computerized program (SPARX)



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ABSTRACT

Limited research has indicated the effectiveness of the school-based Cognitive Behavioral Therapy (CBT) prevention program 'Op Volle Kracht (OVK)' and the computerized CBT program 'SPARX' in decreasing depressive symptoms. Therefore, a randomized controlled trial of the effectiveness of OVK and SPARX was conducted among Dutch female adolescents ($n = 208$, mean age = 13.35) with elevated depressive symptoms. Participants were randomly assigned to one of four conditions: OVK only ($n = 50$), SPARX only ($n = 51$), OVK and SPARX combined ($n = 56$) and a monitoring control condition ($n = 51$). Participants in the first three conditions received OVK lessons and/or the SPARX game. Depressive symptoms were assessed before interventions started, weekly during the interventions, and immediately after the interventions ended, with follow-up assessments at 3, 6 and 12 months. Intention to treat results showed that depressive symptoms decreased in all conditions ($F(12, 1853.03) = 14.62, p < .001$), with no difference in depressive symptoms between conditions. Thus, all conditions, including the monitoring control condition, were equally effective in reducing depressive symptoms. Possible explanations for the decrease of depressive symptoms in all conditions are discussed and suggestions for future research are provided. Dutch Trial Register: NTR3737.

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1. Introduction

Globally depression is among the leading causes of disease burden (Mathers et al., 2004; Murray & Lopez, 1997; Vos et al., 2012), and it is the leading cause of disease burden in young people aged 10–24 years old (Gore et al., 2011). Moreover, subclinical depressive symptoms cause significant impairment in adolescents' school performance and social interactions, and subclinical

depression is an important risk factor for major depressive disorder (Gotlib, Lewinsohn, & Seeley, 1995; Nolen-Hoeksema & Girgus, 1994; Wesselhoeft, Sørensen, Heiervang, & Bilenberg, 2013). Prevalence of subclinical depression is estimated to be between 20% and 50% in adolescents, with depressed mood showing a sharp increase in 13–15 year olds (Kessler, Avenevoli, & Merikangas, 2001; Petersen et al., 1993). Female adolescents appear especially vulnerable, as their depressive symptoms by mid-adolescence are markedly higher than those of male adolescents (Nolen-Hoeksema & Girgus, 1994; Wade, Cairney, & Pevalin, 2002). Therefore depression prevention may be especially relevant for girls during early adolescence.

Not surprisingly, extensive research has aimed to identify effective prevention programs, with meta-analyses demonstrating that depression prevention programs have small to moderate

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positive effects on depressive symptoms (Horowitz & Garber, 2006; Merry et al., 2011). Additionally, the reduction in onset of depressive disorders through depression prevention programs is clinically relevant (Van Zoonen et al., 2014). By definition, prevention programs target individuals that are not currently affected by a disorder and aim to eliminate the risk of developing a disorder (Muñoz, Cuijpers, Smit, Barrera, & Leykin, 2010). Three levels of prevention are frequently distinguished; (1) universal prevention, aimed at the entire population, (2) selective prevention, aimed at individuals who are at risk for developing a disorder, and (3) indicated prevention, aimed at individuals with early symptoms of a disorder (Merry et al., 2011). Although Merry et al. (2011) found effectiveness for universal, selective and indicated programs, selective and indicated prevention are often found to be more effective than universal prevention (Horowitz & Garber, 2006). Moreover, as clinical depression is often not identified and/or treated (Merry et al., 2011), Muñoz et al. (2010) argue for increased efforts to identify depressive symptoms early on and provide adequate early treatment or indicated prevention to limit the adverse consequences of clinical depression. However, when comparing prevention programs to active control programs, showing effectiveness for all levels of prevention remains a challenge (i.e. to be more effective than programs that are not aimed at preventing depression; Brunwasser, Gillham, & Kim, 2009; Manassis et al., 2010; Merry et al., 2011). Additionally, prevention programs most often find treatment effects (i.e. depressive symptoms decrease in the intervention condition compared to the control condition which remains stable), rather than true prevention effects (i.e. depressive symptoms in the control condition increase, while depressive symptoms in the intervention condition do not increase or increase less; Horowitz & Garber, 2006). However, prevention effects may become visible if participants are followed for a longer time (Horowitz & Garber, 2006).

The current study investigated the prevention effects of two depression intervention programs, a school-based program designed to prevent depression, and a computerized program shown to be effective in treating mild to moderate depression, among an indicated sample of Dutch female adolescents with elevated depressive symptoms. Furthermore, the effectiveness of both programs delivered simultaneously was studied. Long-term effectiveness was studied up to one year after program completion.

1.1. Cognitive-behavioral interventions

According to cognitive behavioral principles, attitudes and assumptions (schemas) are distilled from an accumulation of previous experiences (Beck, Rush, Shaw, & Emery, 1979). Cognitive-Behavioral Therapy (CBT) assumes that present cognitions and interpretations of events are based on these schemas (Beck et al., 1979). Certain schemas can become dominant in a person through accumulation of (negative) experiences and determine how a person interprets and reacts to a wide range of events. This can occur even when this schema is irrelevant to the situation, and leads to distorted and dysfunctional schemas, which in turn develop into misconceptions and maladaptive cognitions. Consequently, these maladaptive cognitions (e.g., 'nobody likes me') and dysfunctional reactions to events (e.g., avoiding social interactions) cause distress and lead to the development and maintenance of depression as long as dysfunctional schemas continue to be used (Reinecke, Ryan, & DuBois, 1998).

CBT aims to expose and change these maladaptive cognitions and behaviors through cognitive and behavioral techniques. Clients engaged in this form of therapy are acquainted with CBT principles and learn to challenge and alter distorted cognitions, which should over time, alter dysfunctional schemas (Beck et al., 1979). Research

has shown that CBT is effective in treating depression in adolescents (e.g. Reinecke et al., 1998); For example, ACTION, a CBT treatment program intended for young adolescent girls, led to remission in more than 80% of participants (Stark, Streusand, Arora, & Patel, 2011). In addition, CBT shows promise for preventing depression (Brunwasser et al., 2009). Thus, even when maladaptive cognitions are not yet fully formed, or have not yet affected daily functioning, CBT may instill more adaptive cognitions and may counteract future maladaptive cognitions. In this way, CBT principles may be utilized to prevent clinical depression in those suffering from subclinical depression.

1.1.1. School-based prevention

Several large scale studies have tested the effectiveness of school-based CBT prevention programs with mixed results. Spence, Sheffield, and Donovan (2003) showed that a CBT-based prevention program implemented in 8 schools effectively decreased depressive symptoms at post intervention compared to a monitoring control group, however these effects were not maintained across the four year follow-up period (Spence, Sheffield, & Donovan, 2005). Two other universal CBT-based prevention programs in schools were found to be no more effective than a monitoring control condition in decreasing depressive symptoms across one year (Sheffield et al., 2006), and a three year period (Sawyer et al., 2010). Additionally, Sheffield et al. (2006) showed that both indicated and combined universal and indicated school-based CBT prevention programs were not effective in decreasing depressive symptoms in high risk adolescents in the consequent year.

In contrast, one of the most studied prevention programs based on CBT principles, the Penn Resiliency Program (PRP), seems to be linked to preventing depression among a range of populations (Brunwasser et al., 2009). Although, in comparison to active controls, PRP has yet to show a superior effect (Brunwasser et al., 2009). PRP is a school-based universal program for children aged 10–14 years. PRP has been translated into Dutch, and has been adapted to ensure cultural relevance in the Netherlands and improve the program. The Dutch version of the program is called 'Op Volle Kracht' (OVK; Tak et al., 2012).

Recent Randomized Controlled Trials (RCTs) on the effectiveness of OVK have also had mixed results. On the one hand, two RCTs showed that OVK was not effective in a universal trial (Tak, Lichtwarck-Aschoff, Gillham, van Zundert, & Engels, 2015), and a selective trial among adolescents in high-risk neighborhoods (Kindt, Kleinjan, Janssens, & Scholte, 2014). On the other hand, in an indicated RCT, OVK was shown to be effective in reducing depressive symptoms among girls with elevated depressive symptoms for up to six months (Wijnhoven, Creemers, Vermulst, Scholte, & Engels, 2014) and positive effects of OVK were also found in the selective trial for adolescents whose parents had psychopathology (Kindt et al., 2014). Thus, further replication of the effectiveness of OVK as an indicated prevention program is warranted, especially in comparison to active controls or alternative prevention programs.

1.1.2. Computerized prevention

Computerized prevention is promising due to its low costs and potential appeal to adolescents used to modern technology. Research on computerized interventions has shown potential efficacy in adults for both anxiety and depression (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Richards & Richardson, 2012). However, research on the effectiveness of computerized prevention of depression in adolescents is limited (Merry et al., 2012; Richardson, Stallard, & Velleman, 2010). Evidence from two small reviews has shown early support for computerized interventions (Richardson et al., 2010) and internet-based prevention programs and interventions (Calear & Christensen, 2010) as effective

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