

## Internet-based Therapies for Child and Adolescent Emotional and Behavioral Problems

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## Abstract

This chapter discusses the development and evaluation of Internet-delivered Cognitive Behavior Therapy (ICBT) in the treatment of emotional and behavior disorders in children and adolescents. Although most evaluations of ICBT to date have focused on adults, the literature regarding its use with young people is rapidly expanding. Results thus far have been strongly encouraging, with many studies showing positive outcomes in terms of reduction in symptoms associated with a broad range of psychological disorders, and in enhancing emotional wellbeing and psychosocial functioning. However, the research is still in its early stages and it is difficult to draw firm conclusions regarding the effectiveness of ICBT with young people. The wide variation in the way that ICBT is used also makes it hard to identify the most effective formats for treatment delivery, particularly in terms of level of therapist involvement, parent participation, group online interactivity and type of Internet material. Despite these reservations, the evidence to date provides a strong case for continued research into the development and evaluation of ICBT approaches with young people in order to determine the most effective approaches. What is clear, however, is that young people find ICBT a very appropriate method of intervention. Nevertheless, one of the big challenges is to find methods of enhancing client engagement, motivation and compliance with the therapy content.

### KEYWORDS

CHILDREN; ADOLESCENTS; COGNITIVE BEHAVIOR THERAPY; CBT; INTERNET;  
ONLINE; ANXIETY; DEPRESSION; CONDUCT DISORDER

## **Introduction**

Emotional and behavioral problems among children and adolescents present a significant issue in terms of the distress and interference to young people themselves and to their families. Such problems also generate a major cost to the community in terms of the provision of treatment or the adverse psychosocial impacts if left untreated. Numerous prevalence studies have been conducted in many countries across the world. Exact figures vary according to the study, as the result of variation in definitions and methodology. The results of one of the largest studies to date, based on data from the USA, found estimates of 12-month and 30-day prevalence of 40.3% and 23.4% respectively for at least one form of mental health problem in 13 – 17 year olds (Kessler et al. 2012). Of those who experienced a diagnosed mental health problem over the past 12 months, only around 45% had received some form of treatment. It would also seem that those with ADHD, conduct disorders or oppositional defiant disorders are much more likely to have received help than those with anxiety or depression (Costello et al. 2014). The prevalence of mental health problems among younger children is also a cause for concern, although at a lower prevalence rate which gradually increases with age (Merikangas et al. 2010).

It is also clear that mental health issues in young people cannot be assumed to remit automatically without treatment, with many children and adolescents showing strong patterns of repeated episodes and comorbidity (Kessler et al. 2012). There is therefore a very strong case for early intervention in the treatment of emotional and behavioral problems in children and adolescents, and ensuring that as many young people as possible have access to effective interventions.

### **Potential benefits of Internet-delivered cognitive behavioral therapy for young people**

Children, adolescents and their families are entitled to evidence-based mental health care,

and access to care should not be influenced by geographical location, socio-economic conditions, age, gender, sexual orientation or disability. However, given the high prevalence rates of mental health problems in young people, it is clearly well beyond the capacity of current health services to provide sufficient numbers of trained therapists to treat all children and adolescents who experience emotional and behavioral difficulties. Thus, it is essential that we develop and resource novel and effective ways to make evidence-based psychotherapies available on a broader scale. In addition to the lack of sufficient local clinical services and frequent long waiting lists, there are several other reasons why young people do not receive help, including lack of awareness that a problem exists, embarrassment and worries about the stigma associated with attending a mental health clinic, concerns about confidentiality, lack of knowledge about available services and financial concerns (Boyd et al. 2007).

Cognitive behavior therapy (CBT) has been found to be effective in treating a wide range of mental health problems in children and adolescents, including depression, anxiety disorders, and conduct disorders (James et al. 2013; McDermott et al. 2010; Scott 2008). Research regarding the impact of CBT for adolescent eating disorders is less well-developed, but preliminary findings suggest positive results, albeit with many cases benefiting also from family-based interventions (Gowers 2006). The delivery of structured CBT using the Internet (ICBT) has the potential to increase the availability of treatment for young people. It also requires less therapist time per patient, it eliminates the effects of geographical distances between therapists and patient, and patients do not need to schedule appointments during their day. Indeed, both parents and children have reported the Internet to be an acceptable format for treatment with both the flexibility and anonymity identified as important factors (Stallard et al. 2010). It also has the advantage of emphasizing patients' autonomy in that it allows them to decide when and where to work on their treatment. Also,

ICBT teaches skills that the patient can benefit from long after the completion of treatment and the online platform offers the opportunity to repeat the educational content of the treatment when needed and potentially to enhance the self-efficacy of patients.

### **Additional advantages for children, adolescents and their families**

There are additional benefits of ICBT that are likely to be of particular advantage for children, adolescents and their families. First of all, the Internet is a medium that young people are used to and, many times, is their preferred method of communication. Research suggests that young people already use the Internet as a key mode of communication and find it easier to communicate about thoughts and feelings online than face-to-face (Livingstone and Bober 2004). Socially anxious adolescents in particular see the Internet as a valuable tool for intimate self-disclosure (Valkenburg and Peter 2007). Similarly, the Internet potentially provides a more comfortable form of communication for individuals with autism spectrum disorder because of the visual anonymity and the more flexible pace of interaction (Benford and Standen 2009).

ICBT also provides particular benefits for parents who are often involved in the treatment and/or transport of their children and who may need to take time away from work to attend sessions. Furthermore, in instances where only one parent is able to come to sessions or if parents live apart and only one parent takes part in the treatment, ICBT could be a way of informing or communicating with the parent that cannot be present at traditional face-to-face sessions.

It is important to note that we are not suggesting that ICBT will replace traditionally delivered CBT conducted by professional therapist. Rather, we propose that ICBT offers an opportunity to treat more patients than could be the case purely with face-to-face delivery of therapy.

## **A Review of the Literature Evaluating Internet-Based Cognitive Behavior Therapies for Emotional and Behavioral Problems in Children And Adolescents**

This chapter will focus specifically upon clinical trials that evaluate the impact of cognitive behavioral interventions that are delivered using the Internet as space precludes from considering the broad range of treatments that use other computer technologies, such as CD-ROMs, videoconferencing, or virtual reality simulations, but we acknowledge their potential in the treatment of child and youth mental health problems. We also note that the Internet is now widely used to provide online education for mental health clinicians and as a source of information for clinicians, parents and young people about the nature of mental health problems, type of treatments, and availability of therapy. Again, it is beyond the scope of this chapter to discuss these important uses of the Internet. Rather, we will focus this chapter specifically on interventions that make use of the Internet to delivery the majority of treatment components, with either no or minimal direct contact with a therapist.

There are now a substantial number of studies that report the development and evaluation of Internet-delivered psychological therapies for young people, and these relate to almost every conceivable emotional and behavior disorder. As will be noted below however, there are still relatively few randomized controlled trials in this area. The most commonly used approach has been CBT, no doubt due to its high level of suitability for adaptation to Internet delivery given its high level of structure, ease of manualization, and time limited nature. Approaches have varied in terms of the level of therapist involvement, with most programs including at least some monitoring by and/or feedback from a clinician (Jones et al. 2008; March et al. 2009; Spence et al. 2011; Vigerland et al. 2013). Issues of poor treatment compliance tend to occur when children and/or families participate on a purely self-help basis or with minimal

support, such as completing the program in class under teacher supervision (O'Kearney et al. 2009).

ICBT studies have also varied in terms of the level of parent participation. In some instances the interventions have been delivered solely through parents, particularly for problems among young children, such as encopresis (Ritterband et al. 2013) and disruptive behavior (Sanders et al. 2012). In others, participation has been limited to the young person, such as programs for smoking cessation and depression among adolescents (O'Kearney et al. 2009; Patten et al. 2006) or has involved both parents and children, such as in the treatment of child anxiety (March et al. 2009; Spence et al. 2011). Interventions have also varied considerably in length, and in the way in which material is delivered in terms of level of interactivity, use of downloadable visual and spoken content, amount of reading material, requirements for homework completion and so on. These issues need to be taken into account in interpreting the results regarding the effectiveness of online psychotherapies. We are, as yet, a long way from knowing what the ideal format is for delivering ICBT.

### **ICBT for disruptive behavior and substance use**

*Disruptive behavior disorders.* Most of the studies relating to oppositional defiant and conduct disorder have focussed on parent training approaches with young children. For example, Sanders and colleagues conducted an interesting trial examining the use of an online version of the Triple P program (Sanders et al. 2012). The study randomly assigned 116 parents of 2-9 year olds who showed disruptive behavior problems, to either the online program or a control condition that did not receive intervention but allowed parents to have normal access to the Internet. Parenting skills were taught through 8 modules, with 43% of parents completing all modules. Significantly greater improvements in child behavior and parenting style were found for the online program compared to the control condition, with

benefits being maintained at 6-month follow-up. A subsequent non-inferiority study demonstrated that the online version of Triple P was not less effective than the more well-researched self-help work-book version of the program (Sanders et al. 2014), with both conditions demonstrating clinical improvements at post-treatment, which were maintained at 6-month follow-up. These results, combined with similar findings reported by Enebrink et al., (2012) suggest that online interventions have a role to play in the treatment of childhood conduct problems. The key challenge will be discovering the best methods of encouraging parents to take up such programs and to engage in their content through to program completion.

***Substance Use.*** A number of Internet programs have been developed for the prevention or reduction of substance use problems, such as tobacco, alcohol, or illicit substance use. For example, Schinke et al. (2011) conducted an RCT examining the effects of a 10-session program, based on family interaction theory, and that aimed to enhance relationship quality between adolescent, African American or Hispanic girls and their mothers. The results suggested that, in comparison to a no-intervention control condition, girls receiving the program were less depressed, reported higher self-efficacy in their ability to refuse cigarettes, alcohol and drugs, lower alcohol use, and lower expectations that they would use tobacco, alcohol or prescription drugs. Further RCTs evaluating this treatment program have shown positive effects in the prevention of substance use among girls aged 10-14 years (Fang et al. 2010), preventing alcohol use among late adolescent urban youth (Schwinn and Schinke 2010), reducing underage drinking among adolescent girls (Schinke, Cole, et al. 2009), and preventing substance use among 11-13 year old girls (Schinke, Fang, et al. 2009). Schwinn et al. (2010) also developed the RealTeen program, an Internet-based, 12-session program incorporating general personal and social skills training, drug use information and



drug refusal skills amongst adolescent girls. This self-help program incorporates blogs, pen pals and a private diary, in addition to the skill-building content of the program. At 6-month follow-up, girls in the treatment group reported less marijuana and total substance use compared to the no-intervention control.

Programs such as these have produced some positive results, but their longer-term impact remains to be determined. As with other populations of young people it is also unclear whether the impact is a direct result of the intervention or reflects a non-specific treatment effect. Controlled trials with attention-placebo control conditions are warranted.

***Eating Disorders and Body Image Problems.*** Given the relatively high incidence of body image problems and disordered eating, particularly in teenage girls, it is important that interventions are readily accessible to these young people. To date most of the research has focused on adult populations, with a recent literature review suggesting positive effects for ICBT in treating disordered eating symptoms (Aardoom et al. 2013). With adolescents, Heinicke et al. (2007) developed and evaluated an online program for adolescent girls aged 12-18 years who self-identified as having body image or eating problems. The intervention involved six, 90-minute weekly small-group, synchronous on-line discussion sessions, using a chat-room and a manual to guide content, facilitated by a therapist. The intervention produced clinically significantly greater short-term improvements in body dissatisfaction, disordered eating and depression at post-assessment compared to a wait-list control condition, and the benefits were maintained at 6-month follow-up.

Positive benefits were also reported by Jones et al. (Jones et al. 2008) for a 16-session Internet-facilitated program, for male and female adolescents, that included psycho-education, interactive components for self-monitoring of diet, exercise and thoughts, an asynchronous discussion group, and a handbook for parents. Weekly letters focusing on

reinforcement, encouragement and motivational messages were also mailed to participants. Compared to a waitlist group, participants reported greater improvements in their body mass index, binge eating and weight and shape concerns.

Pretorius et al. (2009) developed and empirically tested a program with 13 to 20 year olds who experienced bulimia nervosa or an eating disorder with strong bulimic symptoms. The intervention involved eight, 30-40 minute interactive multimedia web-based CBT sessions, accompanied by a workbook, homework, and an anxiety reduction audio session. A message board provided peer support and participants had an online therapist who provided email support and advice. In an uncontrolled effectiveness study, the authors found significant reductions in eating disorder symptoms and service contacts from pre-treatment to post-treatment that were maintained at 6-month follow-up. However, the authors noted that the majority of adolescents still had significant symptoms. It was also unclear whether there was any association between the completion of sessions and level of improvement.

Thus, again the results to date are encouraging for this group of young people, but the limited research data to date prevents us from being able to draw firm conclusions about treatment effectiveness.

### **ICBT for depression, anxiety and obsessive compulsive disorder**

***Depression.*** Several ICBT programs have been evaluated in terms of impact upon depression. Some of these have involved preventative interventions, rather than the treatment of young people with clinical depression. For example, O’Kearney et al. (2006) evaluated the preventative effects of a self-directed ICBT program (MoodGYM) that was initially developed for the treatment of depression in adults. The study involved seventy-eight boys aged 15 to 16 years who were allocated to either MoodGYM or to standard personal development activities. There were no significant differences in depression change

scores between the groups at post intervention or follow-up, but it should be noted that participants were not initially selected on the basis of having high depression scores. There was a very small short-term reduction in the risk of being depressed in the MoodGYM group (based on a composite of depression and attributional style scores) but this effect was not maintained at 12-week follow-up. Subsequently, O’Kearney et al. (2009) allocated one hundred and fifty-seven girls aged 15 and 16 years to either MoodGYM or their usual curriculum. Although there were no significant differences in depression between conditions at post-treatment, those in MoodGYM showed significantly greater reductions in depression scores at 20-week follow-up than the control group, with girls who demonstrated high depression scores before intervention showing the strongest benefits. It is important to note that only thirty percent of participants in the MoodGYM group completed three or more of the five modules and those with initially higher depression scores were less likely to complete the full set of modules. Calear et al., (2009) conducted a larger scale evaluation of MoodGYM allocating 1,477 students from 30 schools to either MoodGYM or waitlist control. Overall, there was no significant difference between conditions in depression scores over time to 6-month follow-up, but analyses showed that for boys, there was a stronger decline in depression scores for those in the MoodGYM group than the control, with no effects for girls. Interestingly, the study showed significant decreases in anxiety associated with participation in MoodGYM. Again, there was a problem with compliance with only 62% of students completing more than three of the five modules. Clearly, further research with an attention placebo control condition is warranted to exclude the possibility of changes being due to non-specific intervention factors.

An intervention called Grip Op Je Dip Online (Master Your Mood:MYM; van der Zanden et al. 2012) that uses an Internet chat room has been developed in the Netherlands. The course comprises CBT modules presented by a mental health professional within the chat room,

using text and images, during 6 sessions of 90 minutes each, available at a set time every week, followed by home exercises. A randomized controlled trial assigned 244 young people aged 16 – 25 years who reported scores above 10 on the CES-D to either MYM or a wait-list (van der Zanden et al. 2012). The MYM group showed significantly greater reductions in depression and anxiety and stronger clinical change than the control group at the 12-week assessment. The reductions in symptoms in the MYM condition were maintained at the 24-week assessment. However, only 20% of the MYM group participated in all sessions, and 20% of the intent-to-treat MYM sample did not attend any sessions. There was no association between number of sessions attended and outcome, which raises interesting questions about the mechanism of change in generating improvement.

Van Voorhees and colleagues (Van Voorhees et al. 2005; 2008; 2009) developed the CATCH-IT program for youth aged 14-21 years, as a physician-initiated intervention within primary care contexts. The intervention includes 14 Internet-based sessions based on CBT, Interpersonal Psychotherapy, behavioral activation, and community resiliency concepts. Eighty-four adolescents (14 to 21 years) at increased risk for depressive disorders were randomized to primary care physician motivational interview (MI) + Internet program or brief advice (BA) + Internet program. For both groups, depression scores and the percentage of those with clinically significant depression symptoms declined from baseline to 12 weeks, but the condition involving motivational interviewing demonstrated a significantly greater reduction in hopelessness and suicidal ideation (Van Voorhees et al. 2009).

Hoek et al. (2012) published a randomized controlled trial in which forty-five 12 to 18 year olds were allocated to an Internet-based self-help problem-solving therapy or a wait-list control group (WLC). Participants were supported by computer-generated and brief, therapist-formulated e-mails. Results showed overall improvement over time for both groups

on depressive and anxiety symptoms, with no significant differences between the groups, or between completers and non-completers. Forty-five percent of participants completed three or more lessons and 27% completed all five.

Although the studies outlined above provide some encouraging results, we are clearly a long way from being able to draw firm conclusions about the impact of ICBT for either the treatment or prevention of depression in young people. Completion rates appear to be an issue, and it is probable the results would be stronger with a higher level of therapist guidance than has been the case to date, with ICBT being used as an adjunct to rather than replacement for direct therapist contact. Indeed, with the use of methods such as Skype, therapist contact can be achieved with the need for clinic attendance, and could be provided for very short or fortnightly contacts for example, thereby still achieving reductions in therapist contact times.

*Anxiety and obsessive compulsive disorders.* Several controlled trials examining the benefits of ICBT with clinically anxious children and adolescents have now been reported. The most widely researched ICBT program with young people to date is the BRAVE-ONLINE Program (hereafter referred to as BRAVE). An initial RCT using BRAVE, reported by Spence, Holmes March, and Lipp (2006), demonstrated the feasibility of adapting CBT sessions for child anxiety for Internet delivery, with minimal impact upon treatment outcome compared to clinic-delivery when half the sessions were presented online. Subsequently, March et al. (2009) published a RCT evaluating the efficacy of BRAVE when delivered fully online in the treatment of children anxiety disorders. Seventy-three children with anxiety disorders (7–12 years) and their parents were randomly assigned to either ICBT (BRAVE) or wait-list (WL). At post-treatment assessment, children in the ICBT condition showed small but significantly greater reductions in anxiety symptoms and

increases in functioning than WL participants. These improvements were enhanced during the 6-month follow-up period, with 75% of ICBT children free of their primary diagnosis, comparable with findings from clinic-based treatment studies in this area. Sixty percent of parents and 33 % of children had completed all sessions at the 12-week assessment point, with families continuing to finish sessions over the following weeks such that, by 6-month follow-up, 72.3% of parents and 62% of children had completed all Internet sessions. At follow-up, on average, parents had completed 5.34 out of 6 sessions and children had completed 8.66 out of 10 sessions.

A further RCT from the same research group (Spence et al. 2011) then compared the relative efficacy of Internet versus individual clinic delivery of BRAVE versus a waitlist control, with adolescents with anxiety disorders. One hundred-fifteen adolescents (12 to 18 years) were randomly assigned to one of the 3 conditions. Assessment at 12 weeks post-baseline showed significantly greater reductions in anxiety diagnoses and anxiety symptoms for both ICBT and CLIN conditions compared with the WL. These improvements were maintained or further enhanced for both conditions, with minimal differences between them, at 6- and 12-month follow-ups. Seventy-eight percent of adolescents of completers in the ICBT group no longer met criteria for the principal anxiety diagnosis at 12-month follow-up compared with 81 % in the CLIN group. The average number of completed sessions was 7.5 out of 10 for adolescents and 4.5 out of 5 for parents, although only 39 % of adolescents and 66 % of parents had completed all of their sessions during the specified treatment period. As in the previous study, families tended not to have finished all therapy sessions at the post-treatment assessment point and continued to complete sessions over the next few weeks. By 12-month follow-up, adolescents in the NET condition had completed an average of 8.20 out of 10 sessions and parents had completed 4.70 out of 5 sessions, with 57% of adolescents and 79% of parents completing all treatment sessions.

A frequently asked question about ICBT relates to the impact of lack of face-to-face contact upon the clients' perceptions of their relationship with a therapist. A study reported by Anderson et al., (2012) examined this question within the BRAVE program. Adolescents who completed BRAVE online reported equivalent, and positive working alliance scores with respect to the quality of the therapist-client relationship compared to their peers who received face-to-face treatment. This finding was important as there was no face-to-face contact with the therapist in the online delivery, and relatively little email or phone contact compared to the clinic delivery. Interestingly, the parents who participated in the online program also reported positive working alliance scores, although they were slightly lower than those of parents who received the clinic format. The results go some way towards reassuring those therapists who are concerned about the impact of online delivery (albeit therapist mediated) upon the therapist-client relationship.

An RCT examining ICBT in the treatment of social anxiety disorder and public speaking fears in adolescents was reported by Tillfors et al. (2011). Nineteen speech-anxious high school students with SAD were randomized to ICBT or to a wait-list control (WL). Significant improvements were found on measures of social anxiety, general anxiety, and depression and effects were maintained at 1-year follow-up. The average number of modules finished during the treatment period was 2.9 (of 9) and none of the students completed all 9 sessions.

Recently, Vigerland et al. (2013) published the account of an open trial to evaluate ICBT for children with specific phobia. Thirty children (8 to 12 years) with specific phobia received six weeks of ICBT with therapist support. At post-treatment, there were significant and large reductions on diagnosis severity and self-report measures from parents and children showed small to moderate effects on anxiety symptoms. These improvements were enhanced during

the 3-month follow-up period, with 50% of ICBT children free of their primary diagnosis at that point. Eighty percent of participants completed nine or more of the eleven modules.

A recent pilot study by Lenhard et al (in press) investigated the efficacy of ICBT for adolescents with obsessive compulsive disorder (OCD). Twenty-one adolescents (13-17) with OCD received twelve weeks of ICBT with therapist support. Treatment yielded significant improvements on all clinician-, parent- and most self-administered outcome measures, with a large effect size of  $d = 2.29$  (95% CI 1.5 - 3.07) on the primary outcome measure. At 6-month follow-up, 71% were classified as responders and 76% as being in remission. Participants completed on average 8.29 of the 12 treatment sessions.

### **Summary Regarding ICBT Outcomes with Children and Adolescents**

In summary, compared to the large number of published studies that have evaluated ICBT for adults it is surprising that so few have focused on children and adolescents. Although the research is limited, studies involving a wide range of psychological disorders have generally reported significant improvements in mental health outcomes. However, until we have more, carefully controlled randomized controlled trials we cannot draw firm conclusions about the impact of ICBT with young people.

Where benefits have been reported, it is not clear whether they can be attributed specifically to the interventions. The lack of attention placebo control groups in many studies means that it is not possible as yet to demonstrate that any effects are not just due to non-specific intervention factors. Furthermore, most studies have demonstrated relatively low rates of compliance with ICBT session content, thus where improvements are found it is uncertain how any changes were brought about. It would be valuable in future studies to determine whether ICBT for young people results in improvements in the skills and knowledge that the interventions aim to teach, and whether these improvements in turn mediate the treatment



outcome in terms of emotional and behavioral symptoms. Many of these points, however, could equally be applied to clinic-based psychotherapies. A further complicating factor in reviewing the literature regarding ICBT with young people is that studies have differed a good deal in terms of the way in which treatment is delivered, particularly regarding the type and level of input from a therapist, parent participation, the extent of communication between participants with each other (e.g. in chat rooms), and degree of interactivity of the Internet material. Thus, ICBT can mean many things making it difficult to draw conclusions about what works and what doesn't. When the number of studies increases sufficiently, however, it will be feasible to conduct meta-analyses to identify those therapy formats that are associated with the best outcomes.

Meanwhile, it is clear that a consistent factor in the literature is the need to identify ways to increase client engagement and compliance with therapy tasks, to enhance motivation, and to develop methods to reduce early dropout from sessions. Research into the characteristics of those children and families who respond best to ICBT, and those who do not, will also be valuable in enabling us to better target ICBT interventions to those most likely to benefit.

The few studies that have examined this issue have demonstrated inconsistent results. While one study has demonstrated that compliance is not related to treatment outcome (e.g. van der Zanden, et al. 2012), others have highlighted more complex relationships. With respect to the BRAVE Program, Anderson et al. (2012) showed that while overall levels of working alliance and treatment compliance did not predict response to the online treatment, these effects were moderated by age. That is, higher working alliance and program compliance predicted better treatment outcome for teenagers (and parents of teenagers), but not for children. Studies examining predictors, mediators, moderators and mechanisms of change in

ICBT interventions are sparse, and warrant further attention before firm conclusions can be drawn.

### **Program Examples**

The following section provides examples of two programs that aim to treat anxiety problems in children and adolescents. The aim of this section is to illustrate some of the practical points in the development and implementation of ICBT with young people.

#### **BRAVE-ONLINE**

The BRAVE-ONLINE Program is an ICBT program designed for the treatment of mixed anxiety disorders in young people from seven to 18 years of age (Spence, Holmes, Donovan 2006; Spence et al. 2005). There are age-specific versions for children (7-12 years) and adolescents (13-18 years), with corresponding parent programs. BRAVE is completed online, using a desktop or laptop computer, with more recent versions also allowing access via tablets. The participant receives automated feedback and reinforcement from the program in the form of quizzes, corrective/reinforcement messages and generalised emails. The research studies to date have used a therapist-mediated approach in which the ‘therapist’ monitors the participant’s responses and provides brief feedback using an email template system, supplemented by a 15-30 minute phone call midway through the program to establish the participant’s exposure hierarchy. Aside from the midway exposure phone call (which can also be conducted via email), there is no ‘real time’ component to BRAVE (e.g. no live forums or live therapist contact). Email feedback is sent within 1-3 days following completion of a session, and email questions are responded to on an as-needs basis.

BRAVE has undergone several phases of development, targeted pilot testing and evaluation, and is designed to be developmentally appropriate, engaging and interactive. In addition to

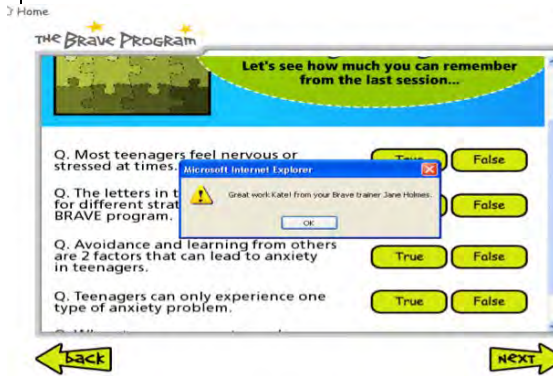
the therapist-mediated version, a self-help version is currently being trialled in Australia (see Dissemination section below).

***Program content.*** The program is comprised of 10 sessions for children and adolescents, and six sessions for parents (5 extended sessions for parents of adolescents). Sessions are completed in order, with a 7-day time delay between sessions to maximise opportunities for skill consolidation and translation. Sessions include information provision, illustration through examples and stories, skill consolidation through engaging activities (completion of worksheets and quizzes) and home practice activities to enhance skill consolidation and generalisation. BRAVE utilises evidence-based techniques including; training in detection of physiological signs of anxiety (B stands for Body Signs), relaxation training (R stands for Relax), cognitive strategies such as thought detection, cognitive restructuring and coping statements (A stands for Activate Helpful Thoughts), training in graded exposure and problem solving (V stands for Victory Over Your Fears) and training in self and parent reinforcement (E stands for Enjoy! Reward Yourself). The parent program includes additional parent training strategies to assist the management of children's anxious behaviors (e.g. ignoring fearful behavior) and to assist parents to 'coach' their child or adolescent.

The following screenshots in Figure 1 illustrate some of the key concepts from the program, although the actual screens are highly interactive, and many include sound effects, movements and downloadable materials.

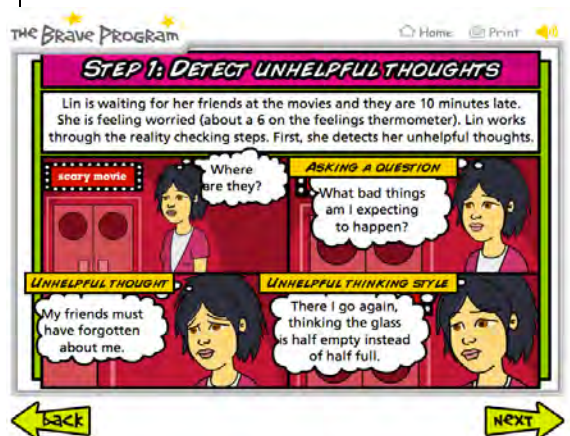
Personalised pop-ups  
(illustration from child program)

Building a therapist-client relationship



Colour, Graphics, Animation  
(illustration from child program)

Age appropriate content  
(illustration from teen program)



Interactive Quizzes  
(illustration from child program)

Use of characters  
(illustration from teen program)



Presentation of information  
(illustration from child program)

Use of downloadable content  
(illustration from teen program)

Figure 1. Examples of strategies used in BRAVE-ONLINE

**Client Satisfaction.** In terms of client satisfaction, evaluations of BRAVE have shown that it is perceived favourably by children, adolescents and parents, who endorse the online format as an appealing and convenient mode of treatment delivery. The program has now demonstrated efficacy across a number of trials, as outlined above, with rates of improvement similar to face-to-face CBT by follow-up. BRAVE appears to offer a viable,

evidence-based alternative for those families unable or unwilling to attend traditional therapy, although is a time-intensive program that requires some therapist support.

***Recent Developments With Brave.*** In addition to the RCTs described above demonstrating the significant benefits of the BRAVE program with children and adolescents, Donovan and March (under review) amended the parent program and evaluated its efficacy in a sample of parents of preschool aged children (3-5 years) with anxiety disorders. Results revealed significant improvements in child anxiety compared to waitlist participants and highlight the potential for variants of the program to be utilised with different age groups. The BRAVE program, as an intervention that takes a trans-diagnostic approach to anxiety, is also currently being compared to a newly developed, social phobia-specific version of the program in an RCT with children and adolescents experiencing social anxiety. A UK-based study is also in progress that examines the role of the parent BRAVE program in an adolescent sample. Further, it is being examined in a community effectiveness trial in a New Zealand sample following the Christchurch earthquakes. A self-help version of the program has been developed and is currently being disseminated to Australian young people.

The BarnInternetprojektet (BiP) (translated as the Stockholm Child Internet Project) focuses on developing and evaluating ICBT for children with anxiety disorders (Vigerland et al. 2013), ICBT for adolescents with obsessive-compulsive disorder (OCD) (Lenhard et al. 2014) or non-suicidal self-injury (NSSI), and ICBT for children and adolescents with functional gastrointestinal disorder (FGID).

***General description of the BiP programs.*** All BiP- programs can be thought of as an interactive e-learning system with therapist support. The aim of the treatment is to teach

participants techniques for overcoming their problems and the material is presented in short slides containing a limited amount of information that the participants work through.



Participants have access to the treatment platform for 10-12 weeks. Throughout the treatment, participants have contact with a therapist, mostly through written messages within the platform but also, if needed, over the telephone. Telephone calls are often limited to 1-2 calls and reasons for calling could for example be that the participant is lagging behind treatment, or need extra support with exposure exercises.

All current BiP-interventions are exposure-based. The interventions typically contain information about the disorder, the rationale for treatment, goal setting, foreseeing and managing obstacles, problem solving, planning of exposure exercises and relapse prevention. The content of the treatments is presented in a varied manner with reading material, films, animations, illustrations, and exercises aimed at consolidating knowledge, practicing new skills, relating personally to the content or increasing interactivity.

All exercises are saved in an accessible way in the treatment platform so that the participants easily can go back and revise their answers. They also receive comments and feedback from their therapist on all exercises and the technical platform also allows participants to comment on worksheets. Hence, conversations about particularly important worksheets, such as treatment goals or exposure hierarchy, are easily accessible. It is important to note that the communication does not have to be, and seldom is, synchronous. The participants can send written messages to their therapist at any time during treatment. Therapists have the possibility to comment on worksheets or reply to messages at any time but typically log in every weekday. Therapists provide feedback, prompts and encouragement. All participants have their own assigned therapist throughout the treatment.

**Adapting the Program for Different Age Groups.** There are some differences in the treatment for children (8-12 years), compared to the treatment for adolescents (13-17 years). For children, the parents are highly involved in the treatment and are responsible for conducting the treatment together with the child. Some parts are directed only to parents where they receive information and instructions on how to help their child in the best way. In the parts that are directed to the child, less written material and more animations are used to explain the concepts of fear, anxiety, exposure etc.

In the adolescent programs, the parents and adolescents have separate logins and separate content. Parents access the same psycho-education and rationale for treatment as their adolescents but are also given exercises on how to be supportive of their adolescent during the treatment.

<p>Animated psycho-education about feelings directed at children</p>	<p>Psycho-education about coping strategies and an audio file with a breathing exercise.</p>
	
<p>Whiteboard animation of psycho-education about OCD.</p>	<p>Downloadable material</p>



STEG 4 AV 17

### Om tvång

HUR VANLIGT? VAD ÄR TVÅNG? VARFÖR? MÅNGA?

IAG HAR TVÅNGS  
BENDRÖM

TVÅNGSTANKAR

OBEHÄGLIGA +

TVÅNGSHANDLINGAR

OM OCH OM IGEN

TVÅNGSSUNDOM

2-3

OCD

OBESSIVE  
COMPULSIVE  
DISORDERS

Tillbaka

Nästa steg

DITT FÖRINGSSTEN

BiP

START

1 2 3 4

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Goal Ladder

Drag and drop exercise

STEG 11 AV 16

### Gör en steg för mål 1

Nu är det dags för dig att göra en målstege för mål 1 tillsammans med dina förälder.

När du trycker på "Nästa steg" sparas din målstege. I slutet av den här delen i programmet kan du se och ändra alla dina sparade svar. Du kan sen göra ändringar i din målstege genom "Mina svar" på startsidan.

100

90

80

70

60

50

40

30

20

10

Välj Stege

Tillbaka

Nästa steg

STEG 17 AV 20

### Sant eller falskt?

Sant

Falskt

Att göra det man är rädd för istället för att undvika det gör att rädslan går över på siket!

Om man vill bli av med sin rädsla är det bara att fly!

Att undvika den man är rädd för gör att rädslan går över till slut!

Att fly gör att det känns mindre läskigt i stunden men man förbättrar vara rädd!

Om man inte flyr så blir rädslan bara värre och värre!

I stunden känns det ofta lättare om man tar till knäp men man fortsätter att vara rädd!

Tillbaka

Nästa steg

**Recent and Future Developments with BiP.** To date, three pilot studies and one RCT have been completed, with two RCTs currently in progress, and a trial in a clinical setting being planned. One of the next steps in BiP is the development of a smartphone application to be

used in conjunction with ICBT to facilitate treatment. For example, an application will be developed with the purpose of increasing compliance to homework assignments, as well as for collecting more detailed data on treatment activity and progress. The smartphone application will be able to remind the participant of exposure tasks that have been planned together with the therapist and gather information about each exposure exercise, for example initial anxiety, duration of exposure and anxiety at end of exposure. The smartphone application will be used in an upcoming RCT for adolescents with OCD.

## **Discussion**

### **Clinical Issues and Challenges in Implementation of ICBT for Children**

There are numerous clinical issues and implementation challenges that have been reported or are potentially of importance for ICBT interventions for children. While families who are motivated, engaged and compliant appear to respond well to ICBT, there are some families who fail to respond in the same manner. Similar to ICBT interventions delivered with adults, the loss of face-to-face contact with a therapist in combination with inflexible (manualised) programs is likely to pose a number of clinical challenges for children, parents and clinicians. First, some families fail to complete all ICBT sessions (or progress much slower than in face-to-face therapy), even with therapist prompting via email or telephone. It seems likely that for some, set appointment times and expectations from a 'real' therapist may be vital to enhancing and maintaining motivation and compliance. The evidence to date suggests that compliance with ICBT interventions is of importance in predicting outcome for youth, although more so with adolescents rather than children (e.g. Anderson et al. 2012). Second, there is less capacity to support the child or parent when they experience difficulties in knowledge/skill acquisition or in the application of strategies to real-life situations. Third, there are reduced opportunities to encourage generalisation beyond the

specific target of the intervention and assist the client to apply the learned skills to comorbid or other more complex difficulties (or common child-parent relationship problems).

Although there is reduced capacity to tailor interventions to the client's needs or preferences, this is less likely to be a problem in ICBT interventions for children (as opposed to adults), due to the tendency for youth-based programs to focus on common transdiagnostic elements of CBT that relate to multiple disorders.

Of course, some of these challenges can potentially be offset in interactive programs that include therapist support components. Interestingly, despite the loss of face-to-face contact, studies have shown that a therapeutic alliance can be established in computer interventions where there is some therapist contact, even when only via email (Anderson et al. 2012; Khanna and Kendall 2010), and, that stronger alliance is associated with better outcomes for ICBT, at least for adolescents (Anderson et al. 2012). Therefore, clinical challenges due to the loss of real-time therapist involvement are likely to be more evident in programs that do not include therapist contact.

While it seems feasible to transfer CBT content into online packages, clinicians and researchers should be aware of the clinical challenges that accompany such ICBT interventions. There are likely to be some children and families for whom ICBT is less suited, and future research needs to identify the specific challenges and circumstances under which ICBT is most effective for the various disorders, in order to inform clinical practice.

### **Dissemination and Cost-Effectiveness**

Despite the growing evidence base for ICBT interventions for children and adolescents, there have been very few systematic attempts to examine models of dissemination or evaluate cost-effectiveness in this group. Although individual researchers have estimated the potential time or cost savings of their interventions (March et al. 2009; Spence et al. 2011),

with respect to ICBT treatment programs, we are yet to conduct comprehensive cost-effectiveness evaluations. There is much room for further research into these issues in ICBT programs for children. Emerging findings in the adult literature demonstrate the cost-effectiveness of ICBT for depression and anxiety (Hedman et al. 2011; McCrone et al. 2004), with one study showing greater cost savings for ICBT compared to group CBT (Hedman et al. 2011).

Encouragingly, ICBT programs for childhood emotional and behavioral disorders have been generally well accepted by users, although sometimes with slightly lower satisfaction ratings given by parents (March et al. 2009; Spence et al. 2011). Unfortunately, less is known about the acceptability of Internet-based treatments by the general population, and, whether families would be likely to participate in interventions delivered through population-wide dissemination attempts.

While there is potential to widely disseminate ICBT programs to increase access to evidence-based treatment and provide cost-effective alternatives to face-to-face therapy, this is not achievable until we understand clearly for whom child ICBT interventions are best suited. ICBT interventions will be most cost-effective and dissemination models most effective if directed at appropriate targets. It is particularly important to prevent programs from being disseminated to the ‘wrong’ populations; those likely to experience treatment failure and who subsequently may be unwilling to attempt CBT, ICBT or any therapy in the future.

The purpose or objective of dissemination must also first be determined. For example, if the goal of dissemination is to enhance access to quality, gold-standard treatments for childhood emotional and behavioral disorders, then dissemination is likely to require therapist involvement, and potentially lower cost savings. However, if the goal of dissemination is to

provide access to lower-intensity interventions that act as a first step in a stepped-care approach, then dissemination may have a broader scope and potentially lower costs (although perhaps may not greatly reduce the impact of existing disorders). ‘Open access’ programs are easier to disseminate (free and no participation restrictions), but also typically do not include validated diagnostic procedures, support, and are not as suitable for ‘clinical’ level difficulties. However, they have the potential benefit of providing prevention or early intervention effects and may possibly improve acceptability of ICBT or therapy in general.

If ICBT programs are to be disseminated with the support of a therapist, it also raises the question of who is required to deliver the intervention. Fortunately, there is emerging research from the adult and child literature that demonstrates that support provided by non-professionals (e.g. technicians) or professionals not trained in CBT, can be as beneficial as support provided by specialist CBT professionals or psychologists (Khanna and Kendall 2010; Robinson et al. 2010; Titov et al. 2010). This makes sense given that for the majority of Internet-based CBT packages, the core CBT components are built into the program and supported through multimedia mechanisms and interactive activities. Thus, specialised skills are not required from the support person and this means that dissemination models may be able to utilise non-specialised support persons in treatment delivery (thus reducing costs further). This holds particular potential for child-based interventions as children are frequently in contact with various professionals (e.g. teachers, nurses, school counsellors), all who could potentially play a role in the dissemination of ICBT programs. However, the effects of ICBT when delivered by specialist and non-specialist support persons are yet to be determined for various child emotional and behavioral problems.

Thus, acceptability of ICBT by the general population, information about who is most suited to these interventions and desired outcomes of dissemination models must first be

determined to ensure successful and cost-effective methods for dissemination. Even if ICBT interventions are efficacious, there are still critical elements of clinical practice that are not suitable to Internet-based delivery with children (e.g. diagnosis for some childhood disorders, suicide risk assessment, family conflict) and these factors must be considered in dissemination attempts.

## **Conclusion**

Although research and development relating to ICBT programs has mainly involved adults to date, there is rapidly increasing interest in its use with children and adolescents to treat and prevent a broad range of emotional and behavioral problems. Given that young people are experts when it comes to Internet communication, it is hardly surprising to find that they find ICBT programs to be an acceptable method of intervention and report high levels of satisfaction with the mode of therapy. What is less certain, however, is the degree to which ICBT is effective in producing long-term improvements in emotional wellbeing and in reducing mental health problems. Similarly, it is clear that much more research is needed to identify those contexts in which ICBT is most effective with young people, and the role of therapist support or guidance.

Despite these reservations, the literature to date is extremely encouraging and suggests that ICBT offers strong promise as a therapy tool in the treatment and prevention of a wide range of emotional and behavioral problems in young people.

## **References**

- Aardoom JJ, Dingemans AE, Spinhoven P, Van Furth EF (2013) Treating eating disorders over the internet: A systematic review and future research directions. *International Journal of Eating Disorders* 46: 539-552.
- Anderson RE, Spence S, Donovan CL, March S, Prosser S, Kenardy J (2012) Working Alliance in Online Cognitive Behavior Therapy for Anxiety

- Disorders in Youth: Comparison With Clinic Delivery and its Role in Predicting Outcome. *Journal of Medical Internet Research* 14: e88. doi: doi:10.2196/jmir.1848
- Benford P, Standen P (2009) The internet: a comfortable communication medium for people with Asperger syndrome (AS) and high functioning autism (HFA)? *Journal of Assistive Technologies* 3: 44-53. doi: 10.1108/17549450200900015
- Boyd C, Francis K, Aisbett D, Newnham K, Sewell J, Dawes G, Nurse S (2007) Australian rural adolescents' experiences of accessing psychological help for a mental health problem. *Australian Journal of Rural Health* 15: 196-200. doi: 10.1111/j.1440-1584.2007.00884.x
- Calear AL, Christensen H, Mackinnon a, Griffiths KM (2009) The YouthMood Project: A cluster randomized controlled trial of an online cognitive behavioral program with adolescents. *Journal of Consulting & Clinical Psychology* 77: 1021-1032. doi: 10.1037/a0017391
- Costello E, He J-p, Sampson NA, Kessler RC, Merikangas KR (2014) Services for adolescents with psychiatric disorders: 12-month data from the National Comorbidity Survey-Adolescent. *Psychiatric Services* 65: 359-366.
- Donovan CL, March S (under review) Online CBT for Preschool Anxiety Disorders: A Randomised Control Trial. *Behaviour Research and Therapy*.
- Enebrink P, Hogstrom J, Forster M, Ghaderi A (2012) Internet-based parent management training: A randomized controlled study. *Behaviour Research and Therapy* 50: 240-249.
- Fang L, Schinke SP, Cole KCA (2010) Preventing Substance Use Among Early Asian-American Adolescent Girls: Initial Evaluation of a Web-based, Mother-Daughter Program. *Journal of Adolescent Health* 47: 529-532. doi: 10.1016/j.jadohealth.2010.03.011
- Gowers SG (2006) Evidence based research in CBT with adolescent eating disorders. *Child and Adolescent Mental Health*, 11: 9-12.
- Hedman E, Andersson E, Ljótsson B, Andersson G, Rück C, Lindefors N (2011) Cost-effectiveness of Internet-based cognitive behavior therapy vs. cognitive behavioral group therapy for social anxiety disorder: Results from a randomized controlled trial. *Behaviour Research and Therapy* 49: 729-736. doi: 10.1016/j.brat.2011.07.009
- Heinicke B, Paxton S, McLean S, Wertheim E (2007) Internet-Delivered Targeted Group Intervention for Body Dissatisfaction and Disordered Eating in Adolescent Girls: A randomized controlled trial. *Journal of Abnormal Child Psychology* 35: 379-391. doi: 10.1007/s10802-006-9097-9
- Hoek W, Schuurmans J, Koot HM, Cuijpers P (2012) Effects of internet-based guided self-help problem-solving therapy for adolescents with depression and anxiety: A randomized controlled trial. *PLoS ONE* Vol 7(8), Aug 2012, ArtID e43485 7.
- James AC, James G, Cowdrey FA, Soler A, Choke A (2013) Cognitive behavioural therapy for anxiety disorders in children and adolescents (review). *Cochrane Database of Systematic Reviews* vol 2013
- Jones M, Luce KH, Osborne MI, Taylor K, Cunning D, Doyle AC, Wilfley DE, Taylor C (2008) Randomized, controlled trial of an Internet-facilitated intervention for reducing binge eating and overweight in adolescents. *Pediatrics* 121: 453-462.

- Kessler RC, Avenevoli S, Costello E, Georgiades K, Green JG, Gruber MJ, He J-p, Koretz D, McLaughlin KA, Petukhova M, Sampson NA, Zaslavsky AM, Merikangas KR (2012) Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry* 69: 372-380.
- Khanna MS, Kendall PC (2010) Computer-assisted cognitive behavioral therapy for child anxiety: Results of a randomized clinical trial. *Journal of Consulting & Clinical Psychology* 78: 737-745. doi: 10.1037/a0019739
- Lenhard F, Vigerland S, Andersson E, Rück C, Mataix-Cols M, Thulin U, Ljótsson B, Serlachius E (2014) Internet-delivered cognitive behavior therapy for adolescents with obsessive-compulsive disorder: an open trial. **PLOS ONE** 9(6).
- Livingstone S, Bober M (2004) Taking up opportunities? Children's uses of the internet for education, communication and participation. *E-learning*.
- March S, Spence SH, Donovan CL (2009) The Efficacy of an Internet-Based Cognitive-Behavioral Therapy Intervention for Child Anxiety Disorders. *Journal of Pediatric Psychology* 34: 474-487. doi: 10.1093/jpepsy/jsn099
- McCrone P, Knapp M, Proudfoot J, Ryden C, Cavanagh K, Shapiro DA, Illson S, Gray JA, D. G, Mann A, Marks I, Everitt B, Tylee A (2004) Cost-effectiveness of computerised therapy for anxiety and depression in primary care: Randomised controlled trial. *British Journal of Psychiatry* 185: 55-62. doi: 10.1192/bjp.185.1.55
- McDermott B, Baigent M, A C, L F, Graetz BW, N H, Newman L, Parikh N, B P, J P, T S, Spence SH (2010) Clinical Practice Guidelines: Depression in Adolescents and Young Adults. *beyondblue: the national depression initiative*, Melbourne
- Merikangas KR, He J-p, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J (2010) Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry* 49: 980-989.
- O'Kearney R, Gibson M, Christensen H, Griffiths KM (2006) Effects of a Cognitive-Behavioural Internet Program on Depression, Vulnerability to Depression and Stigma in Adolescent Males: A School-Based Controlled Trial. *Cognitive Behaviour Therapy* 35: 43-54. doi: 10.1080/16506070500303456
- O'Kearney R, Kang K, Christensen H, Griffiths K (2009) A controlled trial of a school-based Internet program for reducing depressive symptoms in adolescent girls. *Depression and Anxiety* 26: 65-72. doi: 10.1002/da.20507
- Patten CA, Croghan IT, Meis TM, Decker PA, Pingree S, Colligan RC, Dornelas EA, Offord KP, Boberg EW, Baumberger RK, Hurt RD, Gustafson DH (2006) Randomized clinical trial of an Internet-based versus brief office intervention for adolescent smoking cessation. *Patient Education and Counseling* 64: 249-258.
- Pretorius N, Arcelus J, Beecham J, Dawson H, Doherty F, Eisler I, Gallagher C, Gowers S, Isaacs G, Johnson-Sabine E, Jones A, Newell C, Morris J, Richards L, Ringwood S, Rowlands L, Simic M, Treasure J, Waller G, Williams C, Yi I,



- Yoshioka M, Schmidt U (2009) Cognitive-behavioural therapy for adolescents with bulimic symptomatology: The acceptability and effectiveness of internet-based delivery. *Behaviour Research and Therapy* 47: 729-736. doi: 10.1016/j.brat.2009.05.006
- Ritterband LM, Thorndike FP, Lord HR, Borowitz SM, Walker LS, Ingersoll KS, Sutphen JL, Cox DJ (2013) An RCT of an internet intervention for pediatric encopresis with one-year follow-up. *Clinical Practice in Pediatric Psychology* 1: 68-80.
- Robinson E, Titov N, Andrews G, McIntyre K, Schwenke G, Solley K (2010) Internet treatment for generalised anxiety disorder: A randomized controlled trial comparing clinician vs. technician assistance. *PloS ONE* 5: e10942. doi: e10942
- Sanders MR, Baker S, Turner KM (2012) A randomized controlled trial evaluating the efficacy of Triple P Online with parents of children with early-onset conduct problems. *Behaviour Research and Therapy* 50: 675-684.
- Sanders MR, Dittman CK, Farruggia SP, Keown LJ (2014) A comparison of online versus workbook delivery of a self-help positive parenting program. *The Journal of Primary Prevention: No Pagination Specified*.
- Schinke SP, Cole KCA, Fang L (2009) Gender-specific intervention to reduce underage drinking among early adolescent girls: a test of a computer-mediated, mother-daughter program.(Report). *Journal of Studies on Alcohol and Drugs* 70: 70(78).
- Schinke SP, Fang L, Cole KC (2009) Computer-delivered, parent-involvement intervention to prevent substance use among adolescent girls. *Preventive Medicine* 49: 429-435. doi: 10.1016/j.ypmed.2009.08.001
- Schinke SP, Fang L, Cole KC, Cohen-Cutler S (2011) Preventing Substance Use Among Black and Hispanic Adolescent Girls: Results From a Computer-Delivered, Mother-Daughter Intervention Approach. *Substance Use & Misuse* 46: 35-45. doi: doi:10.3109/10826084.2011.521074
- Schwinn TM, Schinke SP (2010) Preventing alcohol use among late adolescent urban youth: 6-year results from a computer-based intervention.(Report). *Journal of Studies on Alcohol and Drugs* 71: 535(534).
- Scott S (2008) An update on interventions for conduct disorder. *Advances in Psychiatric Treatment* 14: 61-70.
- Spence SH, Donovan CL, March S, Gamble A, Anderson RE, Prosser S, Kenardy J (2011) A Randomized Controlled Trial of Online Versus Clinic-Based CBT for Adolescent Anxiety. *Journal of Consulting & Clinical Psychology*.
- Spence SH, Holmes J, Donovan CL (2006) BRAVE for Teenagers - ONLINE: An internet based program for adolescents with anxiety. School of Psychology, University of Queensland, Brisbane, Australia
- Spence SH, Holmes JM, March S, Lipp OV (2006) The feasibility and outcome of clinic plus internet delivery of cognitive-behavior therapy for childhood anxiety. *Journal of Consulting & Clinical Psychology* 74: 614 - 621. doi: 10.1037/0022-006X.74.3.614
- Spence SH, March S, Holmes JM (2005) BRAVE for children - ONLINE: an internet based program for children with anxiety. School of Psychology, University of Queensland, Brisbane, Australia

- Stallard P, Velleman S, Richardson T (2010) Computer use and attitudes towards computerized therapy amongst young people and parents attending child and adolescent mental health services. *Child and Adolescent Mental Health* 15: 80-84.
- Tillfors M, Andersson G, Ekselius L, Furmark T, Lewenhaupt S, Karlsson A, Carlbring P (2011) A Randomized Trial of Internet-Delivered Treatment for Social Anxiety Disorder in High School Students. *Cognitive Behaviour Therapy* 40: 147-157. doi: 10.1080/16506073.2011.555486
- Titov N, Andrews G, Davies M, McIntyre K, Robinson E, Solley K (2010) Internet treatment for depression: A randomized controlled trial comparing clinician vs. technician assistance. *PloS ONE* 5. doi: e10939
- Valkenburg PM, Peter J (2007) Preadolescents' and adolescents' online communication and their closeness to friends. *Developmental psychology* 43: 267-277. doi: 10.1037/0012-1649.43.2.267
- van der Zanden R, Kramer J, Gerrits R, Cuijpers P (2012) Effectiveness of an online group course for depression in adolescents and young adults: A randomized trial. *Journal of Medical Internet Research* 14: 296-309.
- Van Voorhees BW, Ellis J, Stuart S, Fogel J, Ford DE (2005) Pilot Study of a Primary Care Internet-Based Depression Prevention Intervention for Late Adolescents. *Canadian Child and Adolescent Psychiatry Review* 14: 40-43.
- Van Voorhees BW, Vanderplough-Booth K, Fogel J, Gladstone T, Bell C, Stuart S, Gollan J, Bradford N, Domanico R, Fagan B, Ross R, Larson J, Watson N, Paunesku D, Melkonian S, Kuwabara S, Holper T, Shank N, Saner D, Butler A, Chandler A, Louie T, Weinstein C, Collins S, Baldwin M, Wassel A, Reinecke MA (2008) Integrative Internet-Based Depression Prevention for Adolescents: A Randomized Clinical Trial in Primary Care for Vulnerability and Protective Factors. *Journal of Canadian Academic and Child Adolescent Psychiatry* 17: 184-196.
- Van Voorhees BW, Vanderplough-Booth K, Fogel J, Pomper B, E., Marko M, Reid N, Watson N, Larson J, Bradford N, Fagan B, Zuckerman S, Wiedman P, Domanico R (2009) Adolescent Dose and Ratings of an Internet-Based Depression Prevention Program: A Randomized Trial of Primary Care Physician Brief Advice versus a Motivational Interview. *Journal of Cognitive and Behavioural Psychotherapies* 9: 1-19.
- Vigerland S, Thulin U, Ljótsson B, Svirsky L, Öst L, Lindefors N, Andersson G, Serlachius E (2013) Internet-delivered CBT for children with specific phobia: A pilot study. *Cognitive Behaviour Therapy* 42: 303-314.