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Feedback to a prototype self-help computer program for anxiety disorders in adolescents

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Abstract

Computer-based therapy is a potential treatment delivery method to help reach many adolescents who have an anxiety disorder but who do not access traditional psychological services. At Macquarie University's Anxiety Research Unit we have developed *Cool Teens*, a computer-based, self-help program for this audience. The aim of this study was to examine adolescents' presentation ratings, multimedia preferences, and attitudes to a prototype version of the *Cool Teens* CD-ROM. Nine adolescents who had previously been treated for an anxiety disorder and 13 non-clinical teens used the prototype and completed a feedback questionnaire. Participants rated all multimedia components positively, but showed a preference for live video in some sections. They reported the CD-ROM was easy to use and visually appealing. The adolescents who had previously been through group treatment all reported they would use a program such as *Cool Teens* either to prepare or to practice following group sessions. Three of these nine participants reported a preference to use a CD-ROM instead of attending group therapy. We conclude that interactive computer-based cognitive behavioural therapy may be an acceptable method of delivering treatment to some adolescents.

Keywords

anxiety disorders, media, self-help, adolescents, cognitive behavioural therapy, computer-based therapy

Introduction

Anxiety disorders affect around 10% of adolescents (Costello, Mustillo, Erkanli et al., 2003) and are among the most common mental health problems in this age group. Untreated, they can cause tremendous personal suffering, academic underperformance, interference with interpersonal relationships and socialisation, and predisposition to depression (Kendall, Chu, Pimentel & Choudhury, 2000). Cognitive behavioural therapy (CBT) is an empirically supported approach to treating anxious young people (Cartwright-Hatton, Roberts, Chitsabesan et al., 2004; James, Soler & Weatherall, 2005). Many group therapy and bibliotherapy-based CBT programs exist (e.g., Barrett, Dadds & Rapee, 1996; Kendall, 1994; Rapee, Abbott & Lyneham, 2006) but attracting adolescents to these treatment options is difficult. The Australian Government Department of Health and Ageing (2004) reports that many 16-25 year olds either do not readily access professional services for mental health problems or else encounter barriers to ongoing therapy. The New South Wales Association for Adolescent Health (2005), Booth, Bernard, Quine et al. (2004), and other researchers have identified several potential barriers to traditional services,

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including therapy availability, approach and appropriateness, confidentiality, stigma, cost, geographic or social isolation, other rural and remote issues, engagement of participants, and a shortage of trained therapists.

In response to the identified gap in therapy provision and use by adolescents, Macquarie University's Anxiety Research Unit (MUARU) engaged a multidisciplinary team to develop the *Cool Teens* self-help CD-ROM for 14-18 year olds with anxiety disorders (Cunningham, Rapee, Lyneham et al., 2006). Computer-based CBT (CCBT) programs, delivered using either CD-ROMs or web sites, have been shown to be clinically effective for adults with various forms of anxiety disorders (Cavanagh & Shapiro, 2004; Emmelkamp, 2005). However, no data have been published on any computer program specifically for the treatment of anxious adolescents. The *Cool Teens* program is an adaptation of existing paper-based therapy materials developed and used successfully for group therapy at our clinic (Lyneham, Schniering, Wignall & Rapee, 2005; Rapee, Wignall, Hudson & Schniering, 2000). The project has four phases. The first was to design and develop a prototype program. Phase 2 evaluated the prototype with young people to assess the structure, design, and presentation format. Feedback was used to guide Phase 3, the development of a full clinical version of the program. The final phase will be a treatment outcome study to evaluate clinical efficacy and user acceptability. Details of the phases of the project and a description of the overall structure and the CBT content of the full 8-module version of the *Cool Teens* CD-ROM have been published elsewhere (Cunningham, Rapee & Lyneham, 2006). The purpose of this current article is to present data from the evaluation of the prototype program and to discuss this feedback in terms of the potential use of computer-based therapy for reducing barriers to treatment for some adolescents with anxiety disorders.

The Prototype Cool Teens CD-ROM

The prototype developed for this evaluation contained the first full CBT module we developed from the overall 8-module design plan, Realistic Thinking (Figure 1). This was considered to be a typical program module and its content was presented using multiple media formats: text, audio, static pictures, video, animated flowcharts, cartoon animations, and interactive forms. In order to assess media preferences in various sections and to evaluate technical and usability issues, key sections from two other modules and several introductory pages (user agreement and login, anxiety questionnaire, welcome video, and menu page), and an overall navigation structure were included in the prototype (Figure 2).

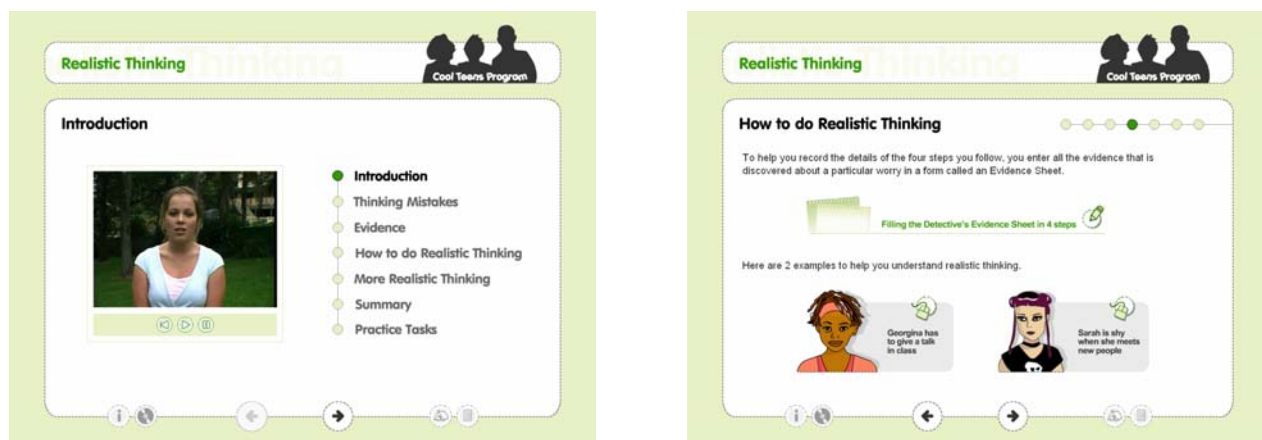

Figure 1. Example content pages from the *Cool Teens* prototype

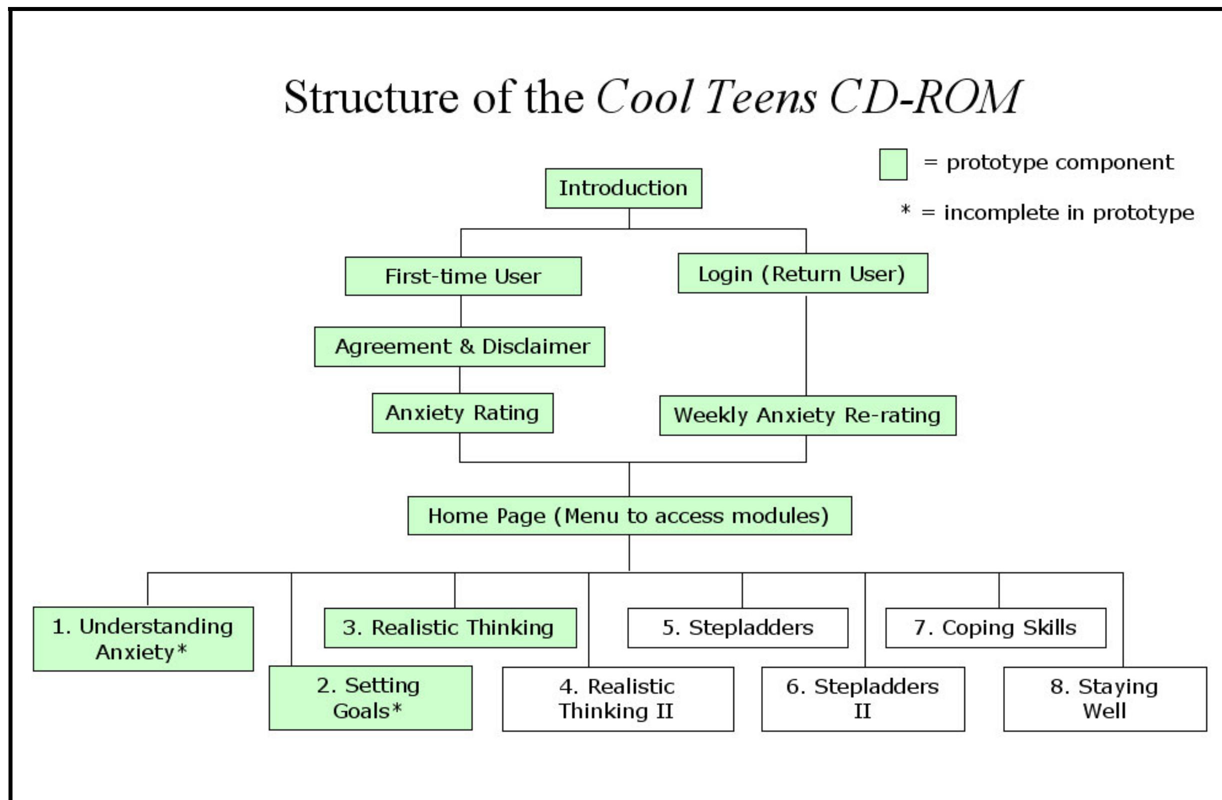

Figure 2. Components of the *Cool Teens* prototype

Method

Sample

Non-clinical participants were recruited from replies to local poster advertising. Past clients from the MUARU were contacted by mail and telephone with an invitation to receive an information pack. Participants were required to be between the ages of 14 and 18 years, to have access to a home computer that was capable of playing a multimedia CD-ROM, and to sign a consent form (with a parent also signing). While clinical status was not assessed or monitored during the study, participants and parents were given a contact number at the anxiety clinic for use if any aspect of the study caused discomfort or concern about anxiety to the young person. The ethical aspects of this study were approved by the Macquarie University Ethics Review Committee (Human Research).

Procedure

Potential participants were mailed an information pack and consent form. Those who returned a completed consent form were sent a participant pack containing the prototype CD-ROM, instructions for its use, a user feedback questionnaire, and a stamped envelope addressed to the investigator. They were asked to use the program for up to one hour on a home computer and to then complete and return the feedback questionnaire. Following receipt of the questionnaire, each participant was paid $30.00.

Measures

Data on various aspects of the program were collected via questionnaire. Proudfoot, Swain, Widmer et al. (2003) and Wright, Wright, Salmon et al. (2002) used self-report questionnaires to elicit user feedback to multimedia programs and, although their studies

also explored clinical aspects, this was likely to be a good method of getting adolescent feedback to this prototype. Some basic demographic data were collected.

The questions used in the evaluation were designed to provide direction on several issues relating to content and multimedia development for the full clinical version of the *Cool Teens* program, and also to identify delivery issues that might affect user satisfaction with using CCBT. Firstly, we wanted to record participants' main likes and dislikes regarding the presentation format, style, and usability of the program, as well as to gather suggestions for improvement. We also wanted to elicit ratings for each of the media components used in this program to find out if young people have preferences (e.g., Do they prefer on-screen text to audio voiceover? Do they prefer live video to cartoons? Is a combination of media formats acceptable?). We then asked participants if they found the CD-ROM to be an 'engaging and fun way to learn' and what they thought of the name *Cool Teens*. Finally, in order to compare the use of the CD-ROM to group therapy, participants who had past experience of group psychotherapy for anxiety were asked to list their perceived advantages and disadvantages of the CD-ROM and to compare its hypothetical use either as a replacement for, or in combination with, group therapy. It was expected that these questions would elicit some information about how a computer-based approach might help overcome some of the access and treatment barriers that have been proposed as reasons for the low rates of mental health help seeking from traditional professional psychological services by young people.

Results

Thirteen non-clinical participants (7 female) and nine adolescents who had previously attended group therapy for an anxiety disorder (6 female) returned a user-feedback questionnaire. There was one drop-out in the non-clinical group (due to a technical problem where the audio component could not be heard with the computer setup used). More than half of the adolescents who had previously attended group therapy who agreed to receive an information pack did not return a consent form and therefore took no further part in the evaluation. Participants ranged from 14 to 18 years of age (modes = 17 years for the non-clinical group and 16 years for the group of adolescents who had previously been treated for anxiety) and from Australian school year 9 to first-year university (modes = year 11 for both groups).

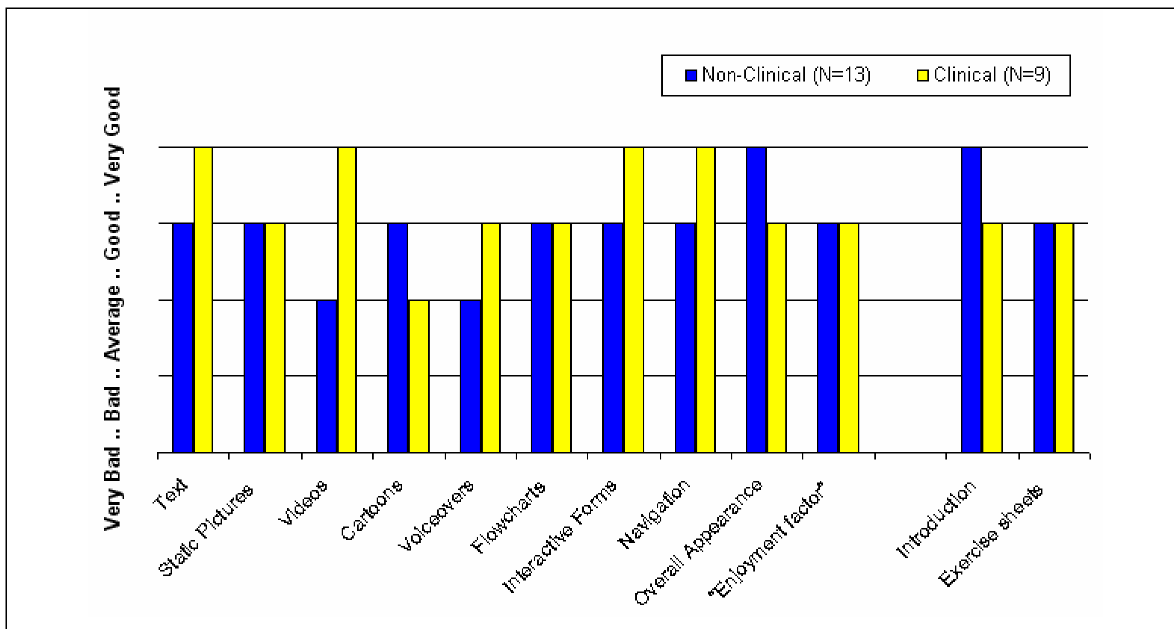

Figure 3. Ratings of components and aspects of the *Cool Teens* prototype (n=22)

The majority of participants in both groups rated all of the multimedia components and general aspects of the program as either 'Very good' or 'Good' (Figure 3). They showed a strong preference for live video over cartoons, audio, and text options in two key program sections: Other People's Stories, which shows case studies of young actors portraying anxiety problems; and a simulation of an anxiety-provoking scenario that was used to illustrate the potential effects of the CBT technique of Realistic Thinking (Table 1). The most commonly mentioned reasons for preferring live video centred on realism (one participant said it was 'almost like they were talking to you') and the interactive, friendly, and visually appealing format. The reported dislikes were poor or 'fake' acting and a preference for learning by reading. The main reasons given for preferring the cartoons (sequenced frames with audio but without animation) were that they were 'easier to relate to' and 'more fun'.

Table 1. Multimedia preferences for two parts of *Cool Teens* prototype

Section	Group		
	Past-anxiety (n=9)	Non-clinical (n=13)	Combined (n=22)
Other people's stories			
Text	1	0	1
Animated head	0	3	3
Pictures with audio	0	0	0
Video	8	10	18
Dating scenario			
Cartoon	1	3	4
Cartoon with audio	0	3	3
Video	8	7	15

Both groups of participants provided information on the aspects that they liked and disliked the most about the CD-ROM and provided suggestions for improving the program (Table 2). A majority in both groups found the program an 'interesting and fun way to learn'.

Table 2. Themed feedback to aspects of the *Cool Teens* prototype

Question	Past-anxiety group (n=9)	Non-clinical group (n=13)
Likes	Realistic/relatable examples (6) Live video clips (4) Easy to use (3) No need to travel (2) Choice of pace and order (2) Design, Privacy, Expert section, Realise 'you're not alone', Information	Design/overall look (4) Interactive multimedia (3) Information/techniques (3) Good privacy (2) Live video clips (2) Easy to use, Realistic examples, Ability to answer and record, Expert section
Dislikes	Background music (3) Unsure of navigation/icons (4) For younger ages, Impersonal, Not enough animation	Repeating menu page audio (3) Unsure of navigation/icons (3) Repetitive background music (2) For younger ages, Disjointed presentation, Poor audio
Suggestions	Add more information, videos, scenarios, or characters (6) Clearer navigation/instructions (3) Get real teens to add stories, More colourful style, More personal forms, Use a 'windowed' format, Different background music	Better/variety of music (5) More information/examples (3) Clearer navigation (2) Better/more audio control (2) Add quizzes, More animation, Better graphics, Make it funnier/less boring
Is it an interesting and fun way to learn?	Yes (7) No (0) Unclear (2)	Yes (12) No (1)
Do you like the name *Cool Teens*?	OK (5) Not OK (1) Unclear (3)	OK (6) Not OK (5) Unclear (2)
Can you suggest an alternative name?	'Teen Chill Zone', anything with 'cool, groovy or funky'	'Play it Cool', 'Brave New World', 'Teen Time', 'Anxiety', 'Understanding Anxiety', 'Beating Anxiety'

Table 3. Comparison of *Cool Teens* with group therapy (n = 9)

Question	Response themes
Advantages of CD-ROM compared to group therapy	Convenience (time or travel) (6)
	More privacy/personal/comfortable (6)
	Can focus on your own areas of interest (4)
	Better recording/tracking of your progress (3)
	Would allow you to avoid speaking in groups (2)
Disadvantages of CD-ROM compared to group therapy	Can't ask questions or get advice/support (7)
	Can't meet/discuss with/learn from others (6)
Would a CD like this help you prepare for group?	Yes (7) No (2)
Would a CD like this help you practice what you learned in group?	Yes (9) No (0)
Would you prefer to use a CD like this instead of attending group?	Yes (3) No (4) Combination (2)

The group of adolescents who had previously received treatment for anxiety answered an extra set of questions focussed on comparing computer-based therapy to group therapy (see Table 3). The main perceived advantages of the CD-ROM were convenience (either time or travel), privacy/comfort, the ability to focus on your own problems, good progress tracking, and not having to speak in front of others. Participants also identified disadvantages, almost all of which were due to the absence of the involvement of a therapist and other group members (e.g., asking questions, getting support, making friends). Despite these perceived disadvantages, most reported they would use the program to prepare for group therapy, and all would use it to help practice what they learned. In response to the question on whether they would use a CD-ROM like this instead of attending group therapy, answers were divided almost evenly between yes (3), no (4), and in combination (2).

Since neither of the groups in the study represented the exact final target audience (actual help-seeking teenagers with a current anxiety disorder) and overall numbers were small, no comparisons between groups were performed.

Discussion

The goal of this study was to evaluate a prototype version of the *Cool Teens* CD-ROM with adolescents to get feedback on its structure and style, and to elicit opinions on this method of delivering therapy for anxiety disorders. Participant feedback showed that all forms of multimedia used were rated highly but that there was a strong preference for live video in several program sections. This preference was due mostly to the realism that these videos add, and to their engaging nature. Most of the adolescents who had previously been treated for anxiety identified advantages or disadvantages to computer-based therapy compared to group therapy. Despite some reservations, all of them reported the program as 'interesting and fun to learn from' and almost all would use a clinical version to prepare for group or to practice. However, on the very important issue of whether they would use it instead of attending group therapy, opinion was divided. One-third of the participants reported they would prefer the computer program. Clearly, some participants would never want to miss out on the 'more personal' nature of group therapy, with the accompanying involvement of a therapist. While we recognise that our participants are a sub-group who have already referred for group treatment, the proportion preferring the computer program is important. If a similar proportion of clinically anxious adolescents who would not seek help from traditional services had this preference, then this delivery method could be an attractive therapy option for a significant number of young people. In addition, since we will have integrated changes based on user preferences from this evaluation, we might

expect that the proportion preferring the CD might increase when we develop the final version of the program. In answering the various questions in the evaluation, participants identified several perceived advantages of the CD-ROM that could be explored to help address some of today's barriers to adolescent treatment. These include convenience, privacy, comfort, ability to focus on your own areas of interest, and better recording/tracking of your progress.

While most participants reported that the CD-ROM was easy to use, the navigation system was rated as 'poor' or 'very poor' by three people. This feedback has been used to make several modifications to the program to make the various navigation options more clear to the user. This has been done primarily by labelling and numbering several graphic icons and text buttons and by re-recording some voiceover messages. No software problems were reported and no technical support was requested during the evaluation. The incomplete nature of the prototype—it contained some modules that were not linked up to content—may have contributed to these opinions. There are limitations to the applicability of the usability feedback obtained in this study because participants used the program in a once-off manner, instead of in the repeat, possibly even daily, access pattern that would be expected in full clinical use. For example, the likelihood of a young person being able to remember the username and password they had created when attempting to access the program on subsequent visits, possibly a week later, could not be evaluated adequately.

Another limitation was that the participant sample was small and the questionnaire was not detailed enough to allow meaningful subgroup analyses (e.g., age, school year) or correlations (e.g., socio-economic status, reading level) to be performed. A third weakness was that the study sample did not fully represent the intended target audience for the full version of the program, i.e., the participants who had already attended group therapy may not be representative of all anxious teens, especially those who would not seek help from traditional services.

The development of CCBT programs can help answer two recent government calls to provide timely and effective mental health care services that cater for specific population groups, especially adolescents (Australian Health Ministers, 2003) and to explore the potential use of technology-based solutions to improve access and to reduce barriers for rural and remote communities (Commonwealth Department of Health and Aged Care, 2000). We believe that programs such as *Cool Teens* can provide realistic, low-cost treatment options for many young people with anxiety who do not access professional services. In these days of increasing demands on healthcare professionals, less time-intensive programs like this have the potential to help free up psychologist time for those who would benefit most from face-to-face therapy.

Despite the fact that CBT is now an endorsed treatment for adolescents with anxiety disorders, calls have been made for further research to confirm preliminary positive findings (Kendall & Ollendick, 2004). The use of computer-based programs could provide more evidence on the use of CBT, and will also help to further develop our understanding of the treatment process in young people (Chu, Choudhury, Shortt et al., 2004). In addition, computer therapy programs can be adapted for the purposes of educating young people about mental health. For example, we will evaluate the psycho-education module of the *Cool Teens* program (Understanding Anxiety) as a stand-alone resource for increasing mental health literacy and help-seeking rates.

This study has greatly helped to guide the final design and development of the full clinical version of the *Cool Teens* program (Cunningham, 2005, doctoral dissertation in progress). While it may not be the preferred option for all young people, this method of delivering therapy is likely to be acceptable to many of them. We believe that CCBT warrants further exploration as a method of increasing therapy access for many young people who would otherwise not receive help. Our upcoming clinical pilot and full randomised controlled trial outcome studies will provide more comprehensive information on user satisfaction and attitudes to the *Cool Teens* program, and will better examine the program's ability to reduce barriers to treatment participation.

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References

Australian Government Department of Health and Ageing (2004). *Responding to the Mental Health Needs of Young People in Australia. Discussion Paper: Principles and Strategies*. Retrieved November 1, 2006 from www.health.gov.au/internet/wcms/Publishing.nsf/Content/mental-pubs/$FILE/youngppl.pdf

Australian Health Ministers. (2003). *National Mental Health Plan 2003–2008*. Canberra: Australian Government.

Barrett, P.M., Dadds, M.R., & Rapee, R.M. (1996). Family treatment of childhood anxiety: a controlled trial. *Journal of Consulting and Clinical Psychology,* 64, 333-342.

Booth, M.L., Bernard, D., Quine, S., Kang, M.S., Usherwood, T., Alperstein, G., & Bennett, D.L. (2004). Access to health care among Australian adolescents - young people's perspectives and their sociodemographic distribution. *Journal of Adolescent Health,* 34, 97-103.

Cartwright-Hatton, S., Roberts, C., Chitsabesan, P., Fothergill, C., & Harrington, R. (2004). Systematic review of the efficacy of cognitive behaviour therapies for childhood and adolescent anxiety disorders. *British Journal of Clinical Psychology,* 43, 421-436.

Cavanagh, K. & Shapiro, D.A. (2004). Computer treatment for common mental health problems. *Journal of Clinical Psychology,* 60, 239-251.

Chu, B.C., Choudhury, M.S., Shortt, A.L., Pincus, D.B., Creed, T.A., & Kendall, P.C. (2004). Alliance, technology, and outcome in the treatment of anxious youth. *Cognitive and Behavior Practice,* 11, 44-55.

Commonwealth Department of Health and Aged Care (2000). *National Action Plan for Promotion, Prevention and Early Intervention for Mental Health*. Canberra: Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care.

Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and Development of Psychiatric Disorders in Childhood and Adolescence. *Archives of General Psychiatry,* 60, 837-844.

Cunningham, M.J. (2005). *Development and Evaluation of a Computer-Based Program for the Treatment of Anxiety Disorders in Adolescents*. Doctoral dissertation in progress. Macquarie University, Sydney.

Cunningham, M.J., Rapee, R.M., & Lyneham, H.J. (2006). The Cool Teens CD-ROM: A multimedia self-help program for adolescents with anxiety. *Youth Studies Australia,* 25, 50-56.

Cunningham, M.J., Rapee, R.M., Lyneham, H.J., Schniering, C.A., Hudson, J.L., & Wuthrich, V. (2006). *The Cool Teens CD-ROM - An Anxiety Management Program for Young People*. Sydney: Macquarie University Anxiety Research Unit (MUARU).

Emmelkamp, P.M. (2005). Technological innovations in clinical assessment and psychotherapy. *Psychotherapy & Psychosomatics,* 74, 336-343.

James, A., Soler, A., & Weatherall, R. (2005). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *The Cochrane Database of Systematic Reviews,* Issue 4. Art. No. CD004690.

Kendall, P.C. (1994). Treatment of anxiety disorders in children: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 62, 100-110.

Kendall, P.C., Chu, B.C., Pimentel, S., & Choudhury, M. (2000). Treating anxiety disorders in youth. In P.C. Kendall (Ed.), *Child and Adolescent Therapy: Cognitive-Behavioral Procedures* (2nd ed., pp. 235-290). New York: Guilford.

Kendall, P.C. & Ollendick, T.H. (2004). Setting the research and practice agenda for anxiety in children and adolescence: A topic comes of age. *Cognitive and Behavioral Practice,* 11, 65-74.

Lyneham, H.J., Schniering, C.A., Wignall, A., & Rapee, R.M. (2005). *The Cool Kids Program – Adolescent Version*. Sydney: Macquarie University Anxiety Research Unit.

NSW Centre for the Advancement of Adolescent Health. (2005). *Understanding Adolescents*. Retrieved November 1, 2006, from www.caah.chw.edu.au/resources/gp-section1.pdf

Proudfoot, J., Swain, S., Widmer, S., Watkins, E., Goldberg, D., Marks, I., Manna, A., & Gray, J.A. (2003). The development and beta-test of a computer-

therapy program for anxiety and depression: Hurdles and lessons. *Computers in Human Behavior,* 19, 277-289.

Rapee, R.M., Abbott, M.J., & Lyneham, H.J. (2006). Bibliotherapy for children with anxiety disorders using written materials for parents: A randomized controlled trial. *Journal of Consulting and Clinical Psychology,* 74, 436-444.

Rapee, R.M., Wignall, A., Hudson, J.L., & Schniering, C.A. (2000). *Treating Anxious Children and Adolescents: An Evidence-Based Approach*. Oakland, CA: New Harbinger Publications.

Wright, J.H., Wright, A.S., Salmon, P., Beck, A.T., Kuykendall, J., Goldsmith, J., & Zickel, M.B. (2002). Development and initial testing of a multimedia program for computer-assisted cognitive therapy. *American Journal of Psychotherapy,* 56, 76-86.