

CBT/DBT SKILLS TRAINING FOR ADULTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Pierre Cole¹, Sebastien Weibel¹, Rosetta Nicastrò¹, Roland Hasler¹, Alexandre Dayer^{1,2},
Jean-Michel Aubry^{1,2}, Paco Prada¹ & Nader Perroud^{1,2}

¹Service of psychiatric specialties, Department of Mental Health and Psychiatry,
University Hospitals of Geneva, Geneva, Switzerland

²Department of Psychiatry, University of Geneva, Geneva, Switzerland

SUMMARY

Background: Attention deficit hyperactivity disorder (ADHD) is associated with marked impairments in familial, social, and professional functioning. Although stimulant treatments can be effective in adult ADHD, some patients will respond poorly or not at all to medication. Previous studies demonstrated that cognitive behavioural therapy- (CBT) and dialectical behavior therapy- (DBT) oriented interventions are effective in reducing the burden of the disease, which is mainly marked by depression, interpersonal difficulties, low self-esteem, and low quality of life. In order to determine the effectiveness of this intervention, we assessed the benefits of a CBT/DBT programme to reduce residual symptoms and help patients improve their quality of life.

Subjects and methods: 49 ADHD-patients, poor responders to medication, were enrolled in a one-year programme where they received individual therapy, associated with weekly sessions of group therapy with different modules: Mindfulness, Emotion Regulation, Interpersonal Effectiveness and Distress Tolerance, Impulsivity/Hyperactivity and Attention. Each subject was assessed at baseline, at months 3 and 6, and at the end of the treatment for ADHD severity (ASRS v1.1), depression severity (BDI-II), hopelessness (BHS), mindfulness skills (KIMS), anger expression and control (STAXI), impulsivity (BIS-11), quality of life (WHOQOL-BREF), and social functioning (QFS). The 49 ADHD patients were compared with 13 ADHD subjects on a waiting list. Linear mixed models were used to measure response to treatment.

Results: Overall, the psychotherapeutic treatment was associated with significant improvements in almost all dimensions. The most significant changes were observed for BDI-II ($b=-0.30$; $p<0.0001$), ASRS total score ($b=-0.16$; $p<0.0001$), and KIMS AwA ($b=0.21$; $p<0.0001$), with moderate to large effect sizes. Compared with the waiting list controls, ADHD patients showed a better, albeit non-significant, pattern of response.

Conclusions: Individual and structured psycho-educational DBT/CBT groups support existing data suggesting that a structured psychotherapeutic approach is useful for patients who respond partially or not at all to drug therapy.

Key words: attention deficit hyperactivity disorder (ADHD) - dialectical behavior therapy (DBT) - cognitive behavioural therapy (CBT) - mindfulness - skills training group

* * * * *

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is characterized by difficulties in sustaining attention, and by impulsiveness and hyperactivity, leading to poor outcomes and impairments in professional, familial, and social functioning (Bush et al. 2010). ADHD is associated with reduced life expectancy and significant morbidity (Dalsgaard et al. 2015).

Despite being effective in reducing ADHD symptoms in adults, many patients will still respond poorly or not at all to medication. In addition, some of them refuse to take psycho-pharmaceutical agents and other approaches are required (Wigal et al. 2009). Even for ADHD patients whose symptoms are in remission, having to cope with problems that have accumulated over the years and affect parts of their social, family, and professional lives can be problematic. Therefore, helping ADHD patients cope with dysfunctional behaviours and teaching them new skills and strategies to manage their lives is as important as psychopharmacological interventions. In this perspective, most inter-

national guidelines recommend psychotherapies for adult ADHD sufferers, whenever possible and in addition to the psychopharmacological treatment (National Collaborating Centre for Mental Health 2009). For this purpose, several psychotherapeutic treatments for adult ADHD have been developed. The ones that have given rise to the greatest interest are individual or group cognitive behavioural therapy- (CBT) oriented programmes, which have been shown to be efficient in reducing ADHD symptoms, with medium to high effect sizes (Stevenson 2003, Safren et al. 2010). More recently, mindfulness-based programmes and dialectical behavior therapy- (DBT) based programmes have been developed for adults suffering from ADHD, with effect sizes comparable to the ones found for CBT programmes (Philippsen et al. 2007, Hirvikoski et al. 2011, Mitchell et al. 2013, Edell et al. 2014, Shoenberg et al. 2014, Hepark et al. 2014, Bueno et al. 2015, Jansen et al. 2015, Fleming et al. 2015). Initially designed for borderline personality disorder, DBT include an individual therapy and a skills training group that features four modules aimed at balancing

change-oriented skills (interpersonal effectiveness and emotion regulation) and acceptance-based skills (mindfulness and distress tolerance). Since difficulties in emotional regulation, impulsivity and interpersonal relationships are shared by ADHD and borderline personality disorder, adapted DBT skills training groups with additional CBT modules have been developed for adult ADHD (Perroud et al. 2015, Philipsen et al. 2015). The fact that mindfulness and emotion regulation are given more weight in DBT than in other traditional CBT programmes is believed to better help patients cope with dimensions such as emotion dysregulation, which is believed to be as important as attention deficit and/or hyperactive/impulsive symptoms in ADHD. Previous studies (Philipsen et al. 2007, Hirvikoski et al. 2011, Edell et al. 2014, Philipsen et al. 2014, Fleming et al. 2015) have indeed shown that besides reducing core ADHD symptoms, such as attention deficit and impulsivity, CBT- and DBT-oriented interventions and mindfulness-based programmes are also effective in reducing the burden of the disease, which includes depression, anxiety, interpersonal difficulties, low self-esteem, and low quality of life and functioning. The most effective treatments are those given to medicated patients in highly structured and manual-based programmes comprising skills training that teaches patients to use specific skills to alleviate ADHD difficulties affecting organization, planning, motivation, and emotion, and to help them use these skills outside sessions. Based on these observations, the aim of our study was to assess the effectiveness of an adapted DBT/CBT skills training group for adult ADHD sufferers who are poor or partial responders to medication (Perroud et al. 2015).

SUBJECTS AND METHODS

For the purpose of this study, we recruited patients suffering from ADHD who are being treated in our specialized centre for the treatment of adult ADHD. The diagnosis was established according to DSM-V criteria by trained psychiatrists and based on a semi-structured interview (DIVA 2.0). It also included a detailed investigation of childhood ADHD and its persistence into adulthood (Kooij et al. 2008). 49 ADHD patients (36.6 age, DS =10.02, 23 women; 46.9%), following a pharmacological treatment or not, were enrolled in the psychotherapeutic programme of our study. Patients were referred to psychotherapeutic interventions if they were found to be poor responders to medication (residual symptoms despite appropriate dosage of medication) or if they failed to respond altogether (non-response despite high dosage of medication (>100mg of equivalent of methylphenidate) or if the patient suffered from side-effects preventing him/her from taking the medication). As described previously, patients followed

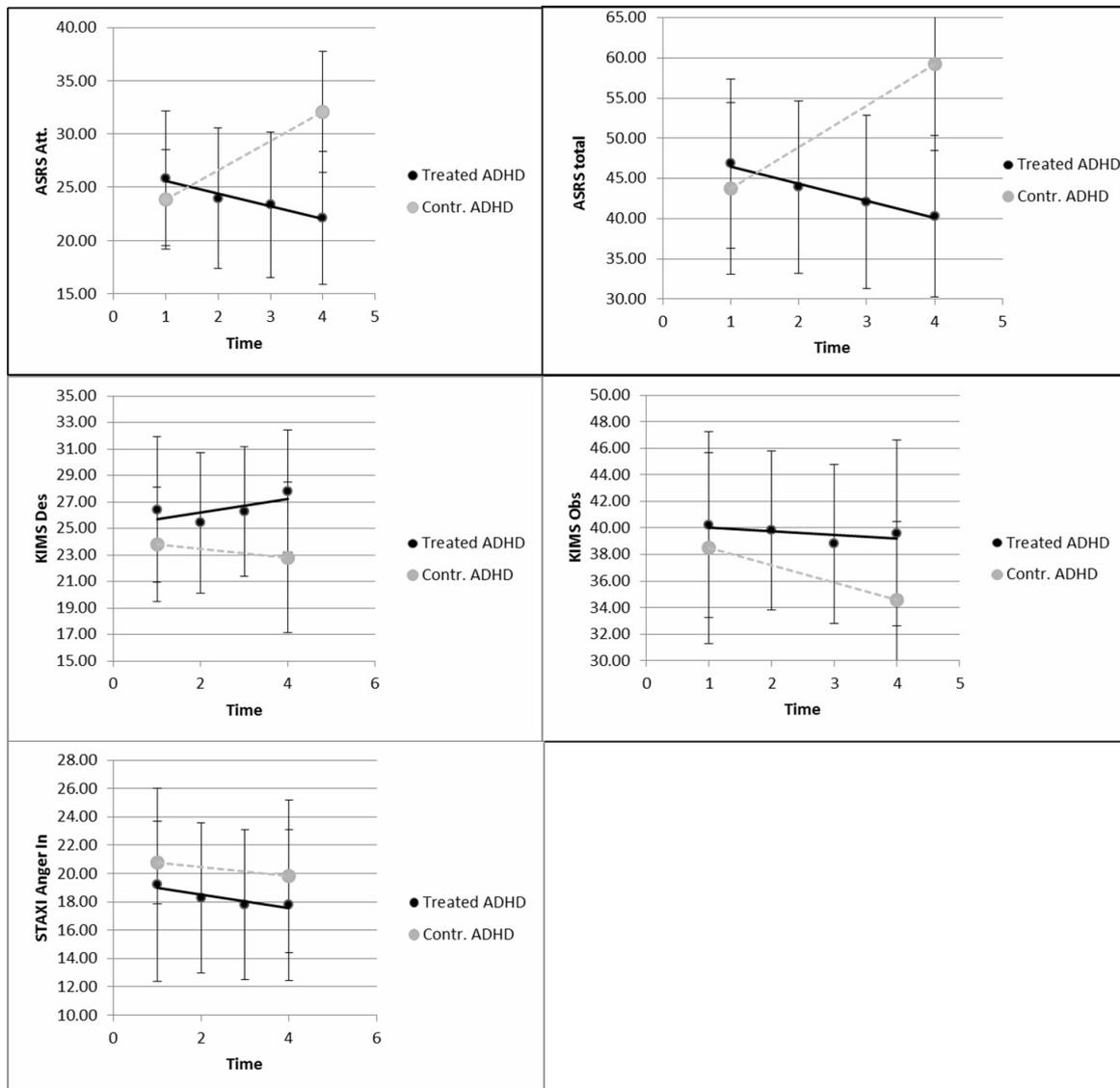
weekly individual psychotherapy sessions and group sessions (Perroud et al. 2015). To the four traditional DBT modules (Mindfulness, Emotion Regulation, Interpersonal Effectiveness, and Distress Tolerance), we added two modules inspired from CBT interventions (Impulsivity/Hyperactivity and Attention). The treatment was given over a 12-month period. Homework assignments are given to the participants. The first hour of the group session is dedicated to reviewing the homework given at the end of the previous session. Participants are encouraged to participate and share their difficulties or strategies with the group. The second hour of the group session is dedicated to psycho-education and mindfulness training. Weekly individual sessions aim at helping patients generalize acquired skills outside the sessions and reviewing tasks that were given in group sessions. Whether in individual therapy or in group skills training, the search for balance between acceptance and change is always the preferred objective of our therapeutic strategies. The therapists are nurses, psychologists or psychiatrists, all trained in DBT and CBT. All of them attended weekly team meetings to discuss the evolution of patients and difficulties encountered during group and individual sessions. Furthermore, these weekly consultation meetings help ensure adherence to treatment by the therapists. Each subject was assessed at baseline, at months 3 and 6, and at the end of treatment for ADHD severity (ASRS v1.1), depression severity (BDI-II), hopelessness (BHS), mindfulness skills (KIMS), and anger expression and control (STAXI). The control group included 13 ADHD patients (38.9 age, DS =13.47, 6 women; 46.1%) registered on a waiting list. Patients on the waiting list had a monthly medical follow-up to assess the evolution of symptoms and their response to treatment. No specific psychotherapeutic interventions were provided and only some elements of ADHD-oriented psycho-education were given to the patients. Waiting list controls were assessed at baseline and at the one-year follow-up. The study was approved by the Ethical Committee of the University Hospitals of Geneva and complies with the Helsinki Declaration.

Statistical Analyses

Linear mixed models with fixed treatment time effect and random individual effect, fitted with maximum likelihood, as described previously (Uher et al. 2009), were used to measure response to treatment among ADHD patients following psychotherapeutic group sessions and individual skills training. These models, refitted with additional fixed effects of gender, age and baseline levels of each of the scales used to assess response to treatment, were then used to compare ADHD patients undergoing the psychotherapeutic intervention with ADHD patients on the waiting list, and to analyse predictors of response.

Table 1. Comparing ADHD treated versus waiting list control

	ADHD treated		ADHD waiting list controls		b	p	
	Mean	SD	Mean	SD			
Age	36.61	10.02	38.92	13.47	-0.21	0.495	
Years of education	15.27	3.08	17.00	2.92	-0.56	0.084	
	N	%	N	%	χ^2	p	
Gender (female)	23	46.94	6	46.15	0.01	0.960	
ADHD type	Attentional	11	22.45	8	61.54	7.56	0.023
	Hyp./Impul.	2	4.08	0	0.00		
	Combined	36	73.47	5	38.46		
Currently working (YES)	27	55.10	11	84.62	3.77	0.052	
Married or living in couple (YES)	23	46.94	6	46.15	0.01	0.960	
Pharmacological treatment for ADHD	30	61.22	10	76.92	1.11	0.293	
Other pharmacological treatment (benzo.; antidi.; antipsych.; mood stab.)	12	24.49	4	30.77	9.18	0.002	
Current psychiatric comorbidity (MDD; BD; Anx. Dis.; Subst. Use Dis.; BPD)	23	46.94	8	61.54	0.87	0.349	



Evolution of scores for ASRS attentional, ASRS total score, KIMS Des., KIMS Obs., and STAXI anger in for controls (ADHD in waiting list) and treated ADHD subjects. Bars=Standard Deviation

Figure 1. Evolution ADHD treated versus waiting list control

RESULTS

Controls were more likely to be sufferers of ADHD attention type than participants undergoing the psychotherapeutic treatment. They were also more likely to receive other pharmacological treatments, such as benzodiazepine; antidepressants; antipsychotics and/or mood stabilizers. At baseline, controls and treated patients did not differ in any of the other clinical and demographic characteristics. 7 of the ADHD patients following the psychotherapeutic treatment dropped out during the one-year programme (14.29%). None of the clinical and demographic baseline characteristics were associated with dropping-out (Table 1).

Response to treatment

Overall, the psychotherapeutic treatment was associated with significant improvements in all the dimensions, except for KIMS Obs. ($b=0.02$; $p=0.628$) and STAXI angerout ($b=-0.09$; $p=0.069$). The most significant changes over time were observed for BDI-II ($b=-0.30$; $p<0.0001$), with a large effect size (Cohen's $d=-0.85$), followed by ASRS total score ($b=-0.16$; $p<0.0001$) and KIMS AwA ($b=0.21$; $p<0.0001$), with intermediate effect sizes (Cohen's $d=-0.63$ and 0.61 respectively). Other variables showing intermediate effect sizes were BHS ($b=-0.15$; $p=0.01$; Cohen's $d=-0.52$), ASRS attentional ($b=-0.16$; $p=0.0001$; Cohen's $d=-0.59$) and ASRS hyp./imp. ($b=-0.13$; $p=0.0002$; Cohen's $d=-0.46$). Overall during the year spent on the waiting list, controls suffered a worsening of their attentional symptoms as measured by the ASRS v1.1, with a large effect size ($b=0.32$; $p=0.031$; Cohen's $d=1.58$), of their hyperactive/impulsive symptoms, with a large effect size ($b=0.32$; $p=0.042$; Cohen's $d=1.17$), and of their ASRS total score ($b=0.36$; $p=0.03$; Cohen's $d=1.52$). They showed a decrease in KIMS Obs ($b=-0.18$; $p=0.015$; Cohen's $d=-0.58$), but paradoxically reported a significant increase in KIMS AwA ($b=0.27$; $p<0.0001$; Cohen's $d=1.24$). Finally their control of anger worsened, with an intermediate effect size ($b=-0.15$; $p=0.014$; Cohen's $d=-0.60$). Comparing the two groups for evolution during follow-up, no significant differences emerged in terms of response to treatment. Some small to moderate effect sizes, specifically for ASRS attentional, ASRS total score, KIMS Obs, KIMS Des and STAXI anger in should also be mentioned here (Figure 1).

Predictors of treatment response

Considering level of depression measured by the BDI-II as the dependent variable indicative of treatment response, good response to treatment was associated, unsurprisingly, with a higher baseline level of depression ($b=0.81$; $p<0.0001$); a higher baseline severity of ADHD ($b=0.35$; $p=0.012$); a higher level of hopelessness ($b=0.59$; $p<0.0001$); a poor baseline KIMS AWJ ($b=-0.39$; $p=0.002$); a higher baseline level of state

anger ($b=0.41$; $p<0.0001$); a higher baseline STAXI anger in score ($b=0.34$; $p=0.001$); a higher baseline STAXI anger out score ($b=0.38$; $p=0.003$); and a higher level of education ($b=-0.23$; $p=0.05$).

DISCUSSION

The results of this study are consistent with the literature on the subject and show a positive impact of structured skills training on ADHD symptomatology, depression, hopelessness, and anger expression, with roughly medium to large effect sizes in a group of adult ADHD patients (Philipsen et al. 2007, Mitchell et al. 2013, Bueno et al. 2015). The low rate of drop-out emphasizes the patients' interest for, and satisfaction with, this kind of structured programme. This programme addresses the growing expectation of patients that a structured programme will help improve ADHD symptoms and the associated disease. The effectiveness of this skills training programme in a population of adult ADHD sufferers might be explained by its focus on emotion regulation and mindfulness skills, indirectly highlighted by the improvement on STAXI subscales, with better anger control and expression among ADHD subjects after the one-year intervention and with improved mindfulness skills, as shown by the evolution of the KIMS score. As in previous studies (Philipsen et al. 2007, Hirvikoski et al. 2011, Edell et al. 2014, Philipsen et al. 2014, Fleming et al. 2015), improving these parameters has a positive effect on the ADHD symptoms. Further supporting the relevance of our psychotherapeutic intervention for adult ADHD is the fact that patients on a waiting list tend to worsen their ADHD symptoms (increase of ASRS scores), both on the attentional and hyperactive/impulsive dimensions. This suggests that monthly assessments of adult ADHD sufferers who respond poorly to pharmaceutical agents are insufficient (National Collaborating centre for mental health 2009). This study has limitations, the main one being the small sample size, especially for the waiting-list controls; it might help explain the absence of significant differences between the groups. We are therefore unable to exclude the idea that observed improvements in ADHD patients undergoing the psychotherapeutic intervention can be better explained by a phenomenon such as regression to the mean. Nevertheless, our results are in line with previous studies in the field. Furthermore, the fact that controls worsen on most of the assessed dimensions during the year spent on the waiting list supports the idea that our approach is a useful intervention for adult ADHD. In addition, patients were only monitored over a one-year period, and we cannot state whether our intervention is associated with a long-term improvement of ADHD symptoms. Finally, this study was a non-randomized study on a small sample of patients. The design of the study probably leads to a recruitment bias among patients enrolled in the programme or placed on the waiting list. Further studies are clearly needed in this field in order to answer these questions.

CONCLUSIONS

Individual and structured psycho-educational groups of dialectical/behavioural cognitive therapy focused on mindfulness, regulation of emotions, interpersonal effectiveness, distress tolerance, impulsivity, and attention have been shown to improve ADHD symptoms, depression, decreased expression of anxiety and impulsivity (Philipsen et al. 2007, Hirvikoski et al. 2011, Edel et al. 2014, Fleming et al. 2015). Our study supports existing data that suggests that these structured psychotherapeutic approaches are useful to patients who respond partially or not at all to drug therapy.

Acknowledgements: None.

Conflict of interest: None to declare.

References

1. Adler L, Spencer T, Faraone S, Kessler RC, Howes M, Biederman J & Secnik K: Validity of pilot Adult ADHD Self-Report Scale (ASRS) to Rate Adult ADHD symptoms. *Ann Clin Psychiatry* 2006; 18:145-8.
2. Bueno V, Kozasa E, da Silva M: Mindfulness meditation improves mood, quality of life, and attention in adults with attention deficit hyperactivity disorder. *Biomed Res Int* 2015; 2015.
3. Bush G: Attention-deficit/hyperactivity disorder and attention networks. *Neuropsychopharmacology* 2010; 35:278-300.
4. Dalsgaard S, Ostergaard S & Leckman J: Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study. *Lancet* 2015; 385:2190-2196.
5. Edel MA, Holter T & Wassink K: A comparison of mindfulness-based group training and skills group training in adults with ADHD: an open study. *J Atten Disord* 2014; 9.
6. Fleming A, McMahon R & Moran L: Pilot randomized controlled trial of dialectical behavior therapy group skills training for ADHD among college students. *J Atten Disord* 2015; 19:260-271.
7. Janssen L, Kan C & Carpentier P: Mindfulness based cognitive therapy versus treatment as usual in adults with attention deficit hyperactivity disorder (ADHD). *BMC Psychiatry* 2015; 15:216.
8. Kooij J, Boonstra A, Willemsen-Swinkels S, Bekker E, De Noord I & Buitelaar J: Reliability, validity, and utility of instruments for self-report and informant report regarding symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) in adult patients. *J Atten Disorders* 2008; 11:445-458.
9. Hepark S, Kan C & Speckens A: Feasibility and effectiveness of mindfulness training in adults with ADHD: a pilot study. *Tijdschrift voor psychiatrie* 2014; 56:471-476.
10. Hirvikoski T, Waaler E & Alfredsson J: Reduced ADHD symptoms in adults with ADHD after structured skills training group: results from a randomized controlled trial. *Behav Res Ther* 2011; 49:175-185.
11. Mitchell J, McIntyre E & English J: A pilot trial of mindfulness meditation training for ADHD in adulthood: impact on core symptoms, executive functioning, and emotion dysregulation. *J Atten Disord* 2013; 10.
12. National Collaborating Centre for Mental Health: *Diagnosis and Management of ADHD in Children, Young People and Adults*. In: *Attention Deficit Hyperactivity Disorder*. Leicester: The British Psychological Society 2009.
13. Patton JH, Stanford MS & Barratt E: Factor structure of the Barratt impulsiveness scale. *J Clin Psychol* 1995; 51:768-74.
14. Perroud N, Nicastro R, Prada P, Aubry J & Zimmerman J: *Déficit de l'attention-hyperactivité de l'adulte*. Medecine et hygiène, 2015.
15. Philipsen A, Richter H & Peters J: Structured group psychotherapy in adults with attention deficit hyperactivity disorder: results of an open multicentre study. *J Nerv Ment Dis* 2007; 195:1013-1019.
16. Philipsen A, Graf E & Jans T: A randomized controlled multicenter trial on the multimodal treatment of adult attention-deficit hyperactivity disorder: enrollment and characteristics of the study sample. *Atten Defic Hyperact Disord* 2014; 6:35-47.
17. Philipsen A, Jans T, Graf E, Matthies S, Borel P, Colla M et al.: Effects of Group Psychotherapy, Individual Counseling, Methylphenidate, and Placebo in the Treatment of Adult Attention-Deficit/Hyperactivity Disorder: A Randomized Clinical Trial. *JAMA Psychiatry* 2015; 72:1199-210.
18. Safren S, Sprich S, Mimiaga M: Cognitive behavioral therapy versus relaxation with educational support for medication-treated adults with ADHD and persistent symptoms: a randomized controlled trial. *JAMA* 2010; 304:875-880.
19. Schoenberg P, Hepark S & Kan C: Effects of mindfulness-based cognitive therapy on neurophysiological correlates of performance monitoring in adult attention-deficit/hyperactivity disorder. *Clin Neurophysiol* 2014; 125:1407-1416.
20. Segal Z, Williams J, Teasdale J: *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: Guilford Press, 2012.
21. Stevenson C, Stevenson R & Whitmont S: A self-directed psychosocial intervention with minimal therapist contact for adults with attention deficit hyperactivity disorder. *Clin Psychol Psychother* 2003; 10:93.
22. Uher R, Maier W, Hauser J, Marusic A, Schmael C et al.: Differential efficacy of escitalopram and nortriptyline on dimensional measures of depression. *Br J Psychiatry* 2009; 194:252-9.
23. Wigal SB: Efficacy and safety limitations of attention-deficit hyperactivity disorder pharmacotherapy in children and adults. *CNS Drugs* 2009; 23(Suppl 1):21-31.

Correspondence:

Pierre Cole, MD

TRE Program, Service of Psychiatric Specialties,

Department of Mental Health and Psychiatry, University Hospital of Geneva

20bis rue de Lausanne, 1201, Geneva, Switzerland

E-mail: pierre.cole@hcuge.ch