

Robusthed.dk /Myresilience.org – Scientific background

Robusthed.dk /Myresilience.org (Robusthed is the Danish word for resilience) is part of the Child Mental Health Research Program at Aarhus University and Region Midt, Denmark, started by a Tryg Foundation grant January 2012 (Grant no 7-11-1155). Details about the research program can be found here: www.iupgrowth.com.

Introduction

Many children, adolescents and families seem to cope well with most things. Others need more than general guidance and support - and some need protective measures, temporary or permanent. It is an important societal challenge to create healthy environments in general and to help and support vulnerable children, adolescents and families with special needs.

As adults we must protect children and young people so they do not get too big challenges while giving them challenges they can become more resilient by - in relation to:

- Relationships with other people - including conflict prevention and conflict management.
- Being able to solve tasks - set realistic goals - and achieve them.
- Resist temptations that may be harmful.
- Coping with life crises such as illness, suffering, pain, and death.
- To cope in a globalized world.

Naturally in the population there is a continuum concerning vulnerability and resilience depending on innate characteristics and abilities, age, life events and basic living conditions. That is one of the reasons why interventions designed to meet different levels of difficulties to support children, young people and families are crucial for efficient intervention strategies in society (Rose 1992, The Government Office for Science 2008, Kazdin & Blase, 2011, Spenser et al 2012).

Robusthed.dk / Myresilience.org is an intervention program that builds on well substantiated learning and psychoeducation theories including principles from comprehensive parent management training interventions. Also included are promising ideas and knowledge based on recent neuroscience and neuropsychology research and practical and innovative theories and tools from a variety of other research fields such as life style research, self-control and anger management training and peer pressure research.

Robusthed.dk / Myresilience.org is an internet based platform with inspirational knowledge and tools directly useful in daily life building resilience and robustness. . The program is introduced for target groups in lectures and courses and is basically a self-directed program with a strong recommendation of parent-professional cooperation.

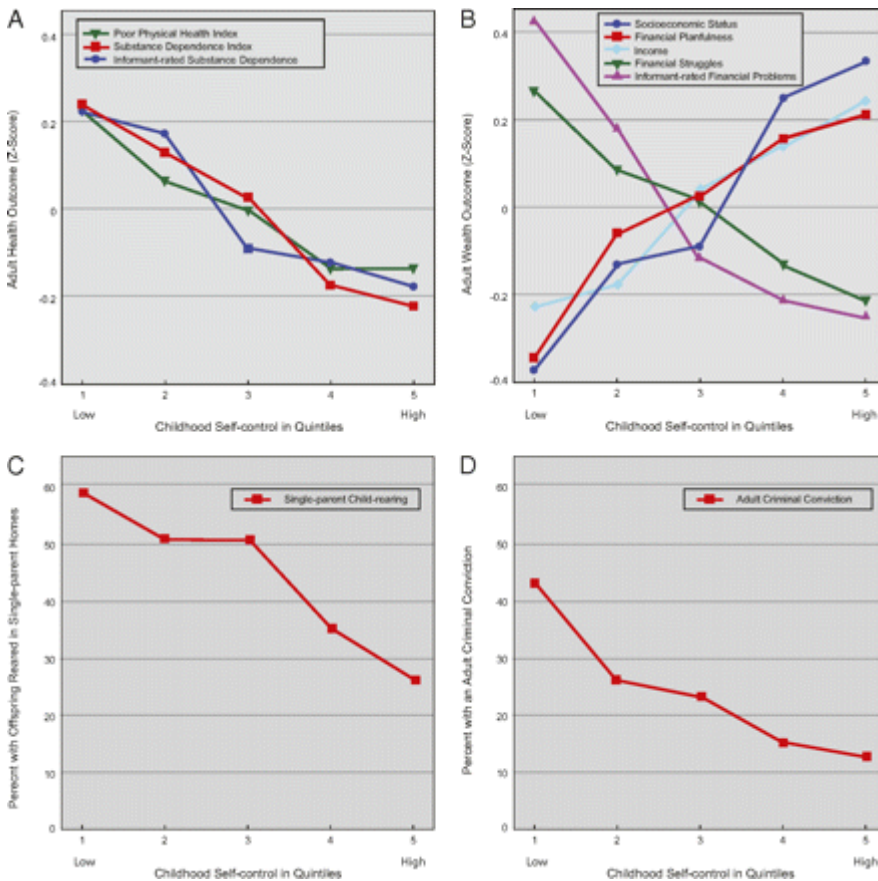
Resilience and Self-Control

Resilience is defined by scholars as successful adaptation to adversity including two components: successful recovery from adverse life events and sustainability in relation to life challenges (Zautra, Hall & Murray 2010, Walsh, Dawson & Mattingly 2010). Resilience is thus about dealing with life's challenges in large and small. The scientific field of resilience has gradually developed over the last 3 decades (Haggerty et al 1996, Liebenberg & Ungar 2009, Reich et al 2010, Ager 2012). Different ways of operationalizing resilience affects prevalence estimates of resilience on a population level (Walsh, Dawson & Mattingly 2010).

Resilience is closely related to the concepts of coping and self-efficacy and one important common factor behind lack of resilience (vulnerability, mental suffering, powerlessness and helplessness, anger, fear, depression and inability to change unwanted habits) is basically a lack of self-control – that is a lack of appropriate control over thoughts, feelings and behavior when needed. The ability of self-control develops during the course of childhood linked to development of the executive functions and maturation of the

frontal lobes in the brain and is among other factors dependent on secure attachment relations in early childhood (Fonagy et al 2002).

This is illustrated by one of the most thorough investigations of a human population - The Dunedin study from New Zealand, where a cohort with 1000 children has been followed by a research group from birth – 38 years ago on a large number of physical, psychological and social parameters. Results from the 32 year measurements have just been published (Moffitt et al 2011). The results show clearly that early childhood self-control predicts health, wealth and public safety in adulthood:



Self-control gradient. Children with low self-control had poorer health (A), more wealth problems (B), more single-parent child rearing (C) and more criminal convictions (D) than those with high self-control.

The Dunedin results are supported by other studies (e.g. Shoda, Mischell &Peake 1990). Thus any supportive measures that might strengthen secure attachments and the development of self-control in vulnerable children and families with low self-control could have a substantial impact on health, welfare and security in the society. This is basically what MyResilience.org is about. And a Campbell systematic review (Piquero et al 2010) has indeed indicated that self-control improvement programs for children under the age of 10 are an effective intervention for improving self-control and reducing delinquency and problem behaviors.

It’s all going on in our minds and in the interactions between our minds and these complex processes and dynamic states of mind is well captured in the modern concepts of mentalization and non-mentalization. Mentalization is defined as the ability to reflect over ones one and other peoples thoughts and feelings - a premise for self-control (Fonagy et al 2004, Liotti & Gilbert 2011)) – and is closely related to the concept of meta-cognition (Fonagy & Bateman 2011). Compromised or lacking ability to mentalize is considered as a core neuropsychological deficit in autism spectrum disorders (Castelli et al 2002, Philip et al 2012, Philip

2012) and border line personality disorder (Allen & Fonagy 2006). Also people with other psychiatric disorders such as schizophrenia, Obsessive-compulsive Personality Disorder, psychosomatic disorders, eating disorders, panic disorders and depression (Hains 2008, Fonagy & Bateman 2011) and completely normal individuals in severe distress are also in a non-mentalizing state of mind, where thoughts and feelings about physical, psychological and/or social survival dominate. Non-mentalization is characterized by reaction rather than reflection – including compromised self-control.

Mentalization research has proved very valuable in clinical work where evidence based mentalization treatment programs combined with CBT now routinely are used in border line clinics (Allen & Fonagy 2006). And programs for children, young people and families in therapy and in general health promotion are now under development in several countries (Midgley & Vrouva 2012).

The psychological research about mentalization is supported by recent neuroscience showing how the brain works in mentalizing and non-mentalizing states of mind – “the social brain” (Fonagy et al 2004, Fonagy & Bateman 2011, Hains & Arnstein 2008, Bisson 2007, Lombardo et al 2009, Zaki & Ochsner 2012, Blakemore 2008, Gweon et al 2012)). This knowledge is especially useful in psychoeducation, and is also used prominently in MyResilience.org.

These social and neuropsychological topics link all the way down to basic gene expression and the biologic phenomena Yerkes-Dodson’s law and Hormesis. The concept of Hormesis originally stems from toxicology and may be defined as a dose-response phenomenon characterized by low-dose stimulation and high-dose inhibition. It embodies a process whereby a low dose of a physical or chemical agent/stressor that is toxic at higher doses induces what often appears to be a beneficial effect on the system/individual studied (Calabrese 2008, Calabrese and Baldwin, 2002).

In the field of neuroscience Hormesis is also profoundly evident and reflects, as noted by Mattson and Cheng (2006), “the adaptive process by which neurons (and hence nervous systems and organisms) respond to a moderate level of stress by enhancing their ability to resist a more severe stress that might otherwise be lethal or cause dysfunction or disease.” These adaptive responses induce changes in gene expression activating molecular pathways that mediate stress resistance and ultimately lead to the expression of the hormetic dose response (see also Rossi 2002).

The phenomenon is known in psychology as Yerkes-Dodson’s law (Calabrese 2008a). Vygotsky’s concept of proximal learning zone and studies in micro-development and micro-cognition may also be considered as expressions of this basic phenomenon (Granott & Parziale 2002). And it is also a well-known fundamental principle in Cognitive Behavioral Therapy/Training called “exposition in vivo”.

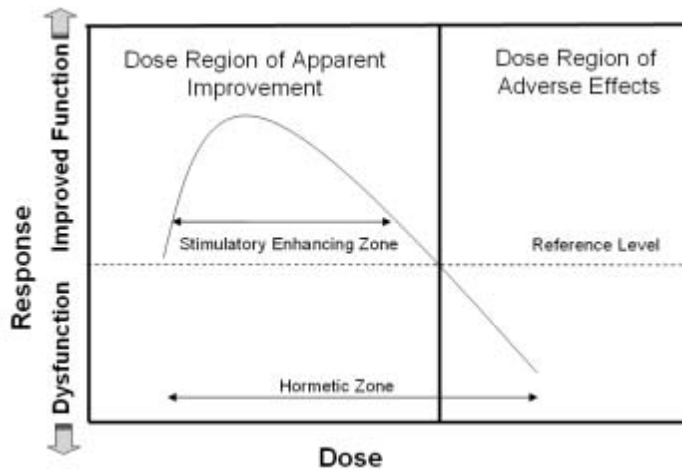
Research indicates that appropriate early life stressors may foster resilience. Adults cope better with spousal loss, illness, and major accidents if they have previously experienced and coped with stressors in childhood. Work-related stressors likewise have fewer depressive effects in adults previously exposed to work-related stressors in adolescence. These findings suggest that stressful events that are not overwhelming, but challenging enough to elicit emotional activation and cognitive processing may make subsequent coping efforts more efficient, and therefore easier and more likely to be used later in life (Feder et al 2010. Lyons & Parker 2007).

The key concept on the social and relational level is thus appropriate challenges. What we see in building resilience and self-efficacy is that individually appropriate challenges which are within the stimulatory enhancing hormetic zone (see figure below) actually influence gene expression and the glucocorticoid and neuropeptide systems in the brain and thereby enhance engaged arousal, flexible learning and memory – thereby increasing adaptability and resilience (Kastin & Pan 2008, Lupien et al 2005, Rossi 2002).

In contrast, severely adverse situations elicit hormonal and cellular responses in the brain which inhibits flexible functioning of the learning-memory systems in a way that elicit vigilance, decrease self-efficacy and narrows coping possibilities and life skills. An important example is the cognitive bias in anxiety disorders where the attention is attracted to fearful stimuli. An emerging field in the treatment of anxiety disorders is

computer based cognitive bias modification and training (Beard 2011) which is also included in MyResilience.org.

May be the most important natural example of this mechanism is children’s risky play which from an evolutionary perspective can be considered to have an anti-phobic effect. As stated by Sandseter & Kennair (2011): ‘The child starts off with a natural inhibition toward situations that the child developmentally is not mature enough to cope with, but this fear is reduced when the child develops mental and physical skills and exposes itself to the stimulus by thrilling emotions, while learning to master these challenges’.

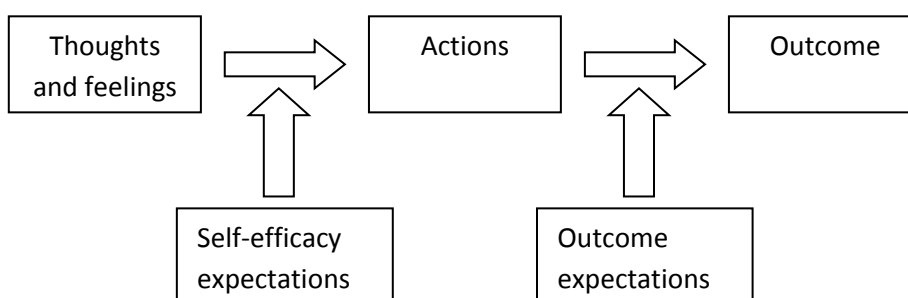


(Figure from Lupien et al 2005)

Psychoeducation

Among the most influential health paradigms in the last ½ century – related to resilience development - are the Salutogenesis Theory – how do we support successful coping in life and facilitate one’s becoming healthier and more resilient (Antonovsky 1987, Antonovsky 1984, Lundberg & Nyström 1994) and Social Learning Theory (Bandura 1977, Bandura & Locke 2003). One important salutogenic factor is the so called Sense of Coherence (SOC) embracing three components: Comprehensibility, manageability and meaningfulness. SOC is strongly related to perceived health, especially mental health (Eriksson & Lindström 2006, Torsheim, Aaroe & Wold 2001). Neenan (2009) has also linked the experience of meaningfulness to the development of resilience in a cognitive behavioural approach.

Central in Social learning theory is the simple fact that every human action is preceded by conscious/unconscious thoughts and feelings:



Self-efficacy expectations are determined by:

1. Personal experience & body sensations
2. Knowledge / (psycho)-education
3. Role models (secure attachments)

Whether a person takes action or not in a particular situation is determined by outcome expectation and self-efficacy expectation. Outcome expectations may be high but one does not take action if self-efficacy expectations are low. Self-efficacy is task specific but when self-efficacy is low in multiple areas global self-esteem and general resilience may also be affected.

The importance of secure and positive role models is well known from attachment research (Fonagy et al 2002, Masten & Wright 2010). Parents are the most important figures in childhood but the key role of the professional as a role model is emphasized by new research into teacher –student relationships: It has been shown that dramatic increases in academic performance can be achieved through systematic training and focus on positive teacher-student interaction qualities (Allen et al 2011).

To strengthen self-efficacy expectations it is absolutely crucial to ‘design’ practical life situations with appropriate challenges which can lead to positive personal experiences (“I did it!”). It is obvious and for many years known that practice based learning and gradual training in everyday life is essential for lasting change. Knowledge alone is not enough. It is a classic learning principle expressed in Vygotsky’s “proximal learning zone” and in the cognitive tradition as “exposure in vivo”. This is all about goal setting and goal commitment (Klein et al 1999) and in line with the above mentioned self-control development, mentalization and hormesis research.

Research indicates that announcing ones intentions (one kind of so called “commitment devices”) without direct coupling to practice based behavior may even decrease the likelihood of achieving the goal (Gollwitzer 2009). One should also be careful when giving feedback to a person in learning process. In general feedback should be task specific and give guidance in a positive way and not address identity levels which carry the risk of being counterproductive (Kluger & DeNisi 1996)

The process of ‘designing’ practical life situations with appropriate challenges is very much in family with the concept of goal setting which is a documented way to increase performance and reduce procrastination. Appropriate goal complexity and interest enhancement are strong positive moderators – more than feedback (Gröpel & Steel 2008, Neubert 1998).

Knowing something relevant about what is going on around and inside one self can be central for setting the scene for perceived meaningfulness and appropriate challenges for building positive personal experiences and self-efficacy. This is naturally in line with the WHO statement that education in general is one of the most important general health factors in the world.

A contemporary “resilience” trend which is also in line with the classical theories and research is the focus on positive psychology (Seligman 1995, 2002 & 2011) supporting people to explore own and collective resources and opportunities for action. As a small example Seligman and colleagues has documented that very brief and simple actions such as writing down at least three good experiences (small or big) every day for at least two weeks can be helpful in promoting mental health. In resilience and capacity building programs there has also been a focus on sense of personal mastery & positive affects (Seligman & Steen 2005, Ken & Davis 2010, Lyubomirsky & Della Porta 2010).

It has been documented on metaanalytic level that health education, psycho education and patient education in a wide range of specific health topics has positive effects on perceived health, health behaviour and disability. Here are some recent examples:

- Psychoeducation for schizophrenia (Xia, Merinder & Belgamwar 2011).
- Psychoeducation for depression, anxiety and psychological distress (Donker, Griffiths, Cuijpers & Christensen 2009).
- Psychosocial treatment of adult ADHD (Knouse, Cooper-Vince, Sprich & Safren 2008).
- Children's physical activity and mental health (Ahn & Fedewa 2011).
- Youth psychotherapy and academic performance (Baskin, Slaten, Sorenson, Glover-Russell & Merson 2010).
- Parenting education with expectant and new parents (Pinquart & Teubert 2010).

- Internet-based self-management interventions for youth with health conditions (Stinson, Wilson, Gill, Yamada & Holt 2009).
- Treatment foster care for improving outcomes in children and young people (Macdonald & Turner 2008).
- School-based interventions for aggressive and disruptive behavior (Wilson & Lipsey 2007).
- Interventions for promoting smoking cessation during pregnancy (Lumley et al 2009).
And: Self-help smoking cessation interventions in pregnancy (Naughton, Prevost & Sutton 2008).
- Effects of asthma education on children's use of acute care services (Coffman et al 2008)
and: Effects of educational interventions for self-management of asthma in children and adolescents (Guevara et al 2003).
And: Educational interventions for asthma in children (Wolf et al 2003).
- Media-based behavioral treatments for behavioral problems in children (Montgomery, Bjornstad & Dennis 2006).

A central tenet of a well-designed program is simplicity. Even the most stressed parent, the busiest professional and a 10 grade student should feel that the knowledge and guidance that can be retrieved in the program is simple and intuitively understandable, practically relevant, inspiring and engaging. Simplicity is a central premise also to ensure implementation and compliance on a large scale.

The Danish "Thoughts in Mind" (TiM) project (Lundgaard Bak 2012) has been an inspiration for MyResilience.org in this matter. In the TiM project complicated knowledge from the neurocognitive sciences and mentalization research has been transformed into practical knowledge about thoughts, emotions and the brain - right down to children height - in teaching concepts and materials. It has been shown in comprehensive feasibility studies that this kind of knowledge is highly sought after by professionals and parents. An important experience in the TiM project is that the adults feel that this kind of knowledge is useful for them personally to handle pressures and stress. This of course becomes a protective factor for children. This holds both for parents and for professionals.

In a recent pilot study using elements of MyResilience.org in a club with 140 adolescents from a social low income area the experience was that it helped to reduce the level of disruptive behavior and conflicts significantly. The registered level of incidents of using force to prevent physical fights and damage was reduced from 150 incidents per year to less than 10 per year.

The general psychoeducative approach discussed above permeates MyResilience.org:

- The intervention is tailored to meet the role models – parents and professionals.
- Factual knowledge about thoughts, feelings and the brain is presented – in practical useful ways - and on child level - with a simple educative perspective:

Thoughts and feelings are "tools for life". It's easier to use a tool when you know something about how it works.

- Evidence based guidelines about how to develop useful personal experiences building self-efficacy is included.
- The Mind-Body perspective is included.

Parent Management Training (PMT)

One approach to support the development of self-control and resilience in vulnerable children and families is so called Parent Management Training for parents with children with ADHD and conduct disorder diagnoses. The treatment and management of ADHD and conduct disorder is of special interest because of the severe individual and social consequences of these diseases which among other symptoms are characterized by low self-control. Positive parenting is of course essential for parents in trouble and their children (Fonagy 2002, Masten & Wright 2010).

In the NICE guidelines for ADHD treatment of children with ADHD and conduct disorder (National Institute for Health and Clinical Excellence 2008). PMT is recommended as first line of treatment. All parent-training/education programs, whether group- or individual-based, should:

- be structured and have a curriculum informed by principles of social-learning theory. The content should incorporate learning opportunities that reflect social-learning approaches, such as skills rehearsal and role play, watching recorded vignettes as triggers for discussion of alternative parenting strategies, and preparation and review of homework
- include relationship-enhancing strategies such as play and praise, and effective discipline strategies
- offer sufficient sessions, with an optimum of 8–12, to maximize the possibility of participants deriving benefit
- not be didactic, but should enable parents to identify their own parenting objectives
- incorporate role-play during sessions, as well as homework to be undertaken between sessions, to achieve generalization of newly rehearsed behaviors to the home situation
- be delivered by appropriately trained and skilled facilitators who are supervised, have access to necessary ongoing professional development and are to engage in a productive therapeutic alliance with parents.
- adhere to the program developer's manual and employ all of the necessary materials to ensure consistent implementation of the program.

The ADHD recommendations are identical with the NICE recommendations for the treatment of children with a developmental age of 12 years or younger with conduct disorder (National Institute for Health and Clinical Excellence 2007). The recommendations are based on the structure and results from thoroughly investigated programs such as the Webster-Stratton Incredible Years Program and the Triple P – Positive Parenting Program (Turner & Sanders 2006). Evidence based PMT programs available in Danish are reviewed by Socialstyrelsen (<http://www.servicestyrelsen.dk/born-og-unge/evidensbaserede-programmer>)

Parent training and school programs exist with many minor variations, but the basic method in the programs are largely based on systems of reward and consequence. Reward involves that parents use praise, acknowledge the child and give positive attention and tangible rewards, while the unwanted behaviour can be reduced through ignoring, timeout and deprivation of privileges. Children and young people have to be protected from overload and challenges they are not able to understand. For that reason it is very important that parents and other adults remain calm – keeping a cool head and a warm heart. It can be really hard to be parents to children and young people with ADHD and conduct disorder – and then it becomes obviously even more that professionals around the family preserves peace, perspective and patience – that is stays mentalized.

Analogous approaches with emphasis on collaborative problem solving are found in conflict prevention and management programs (Green 2008).

Several reviewers state that parent programs generally improve parenting practices and child behaviour (National Institute for Health and Clinical Excellence 2008, Børne og Ungdomspsykiatrisk Selskab 2008, Christoffersen & Hammen 2011). The research has also shown that it is essential for the positive results that parents are motivated and consistent in their use of parent training. When mothers are diagnosed with ADHD, only minor or no effects can be expected (Sonuga-Barke, Daley & Thompson 2002). It also seems to be critical that the professionals running the programs are very consistent in their teaching and stick to the manual. Program leadership and supervision are important for results (Eames et al 2008, Eames et al 2009, Eames et al 2010, Sonuga-Barke, Daley & Thompson 2004). Most of the studies have been short lived and it has not been investigated whether the effects of parent training is prolonged. Effect sizes across countries and cultures are largely unknown.

A recent Cochrane Review on Parent training interventions for ADHD in children aged 5 to 18 years (Zwi et

al 2011) found only five randomized controlled studies that met the inclusion criteria. All studies were small and their quality varied. Results were somewhat encouraging as far as parental stress and general child behaviour were concerned, but were uncertain with regard to other important outcomes including ADHD-related behaviour. No study provided data on the key outcomes of achievement in school, harmful effects or parent knowledge of ADHD. There was no evidence to say whether parent training is better delivered in groups or individually. The evidence found was limited in terms of the size of the trials and in their quality, and therefore the reviewers do not think it can be used as the basis for guidelines of treatment of ADHD in clinics or schools. They believe more research is needed and that it should ensure better reporting of the study procedures and results.

Another recently published extensive Cochrane review on Behavioural and Cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years (Furlong et al 2012) concludes that parenting programmes that are delivered in group settings have the potential to help parents develop parenting skills that improve the behaviour of their young children. The review provides evidence that group-based parenting programmes improve childhood behaviour problems and the development of positive parenting skills in the short-term, whilst also reducing parental anxiety, stress and depression. Evidence for the longer-term effects of these programmes is unavailable. These group-based parenting programmes achieve good results at a cost of approximately \$2500 (£1712 or EURO 2217) per family. These costs are modest when compared with the long-term social, educational and legal costs associated with childhood conduct problems.

Some of the prominent evidence based programs are targeting broader groups than ADHD. Well known are The Incredible Years program ((O'Connell, Boat & Warner 2009, Montgomery, Bjornstad & Dennis 2006) and the Triple-P program (O'Connell, Boat & Warner 2009, Prinz et al 2009). As mentioned they are based on the same theoretical and practical principles mentioned above and they also face the same basic challenges as the other ADHD programs mentioned. Though PMT programs are often too expensive and time consuming to be directly implemented in primary health care on a larger scale, some of the principles and ideas are very useful in the development of programs for children with less severe problems. This has been documented in the Triple-P (O'Connell, Boat & Warner 2009, Prinz et al 2009) and Incredible Years programs (O'Connell, Boat & Warner 2009, Montgomery, Bjornstad & Dennis 2006). Generally PMT programs has been developed and evaluated for specific age groups why one should be cautious to generalize the evidence to other age groups.

Efforts to promote effective parenting and prevent behavior problems early in life may also contribute to the reduction of obesity and health disparities (Brotman et al 2012).

There are thus literally very few high quality researched PMT programs in the world and they are relatively "old". Societies and technology are changing rapidly in ways that may be or may not be important for program effects - though naturally there are basic principles in good parenting that are likely to valid cross culturally and for very long periods of time. Old programs should be retested in contemporary contexts in different societies and new programs should be developed on the shoulders of the old ones. Not to speak of the serious problem that the vast majority of studies has been conducted in a highly unrepresentative small part of the human population on earth – the WEIRD population: Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich et al 2010).

Nevertheless PMT research confirms the everyday experience, that new habits and behavior demands motivation, appropriate challenges, practice and good support. It seems to be an important ambition for future program development, to create a content and structure so relevant and appealing that most users – kids, parents and professionals - can't let it be, thereby minimizing current PMT and CBT caveats. The ambition is more effortless integration of valuable knowledge in the upbringing of children and young people in daily life situations in their homes, daycare and schools. Internet based programs provide new opportunities for program development and testing. Principles and practical details of positive parenting are embedded in MyResilience.org.

Cognitive Behavioral Treatment (CBT)

Cognitive behavioural therapy is an umbrella term that covers different combinations of behaviour-oriented and cognitive approaches. There is no sharp boundary between cognitive training and social skills training, but the latter focuses less on verbal-based self-control and more on direct teaching of appropriate behaviours in different social situations. Social skills training also take place in relation to the child and often in groups. The aim is to increase the child's social competence. A Cochrane review concludes that there is no good evidence for recommending social skills training (Storebø et al 2011).

Cognitive intervention has been tested directly targeting ADHD children's cognitive deficiencies (lack fully developed cognitive functions as impulse control and attention) in the form of self-instruction training, training of problem solving and planning, self-reward and the like. This also includes the new training programs, directed specifically towards the improvement of working memory, which is considered a core defect in ADHD. Another type of cognitive intervention target the child's cognitive distortions. It is a verbal and psychotherapeutic intervention targeting child's distorted inner table or working model of themselves and the world. This intervention is used primarily if there are associated problems such as anxiety, depression or low self-esteem.

Unfortunately there is no good evidence to recommend cognitive training in self-control in addition to medication or as an independent treatment of ADHD in children (Børne og Ungdomspsykiatrisk Selskab 2008).

People diagnosed with ADHD have an increased risk of a criminal career. Therefore it is of some interest that cognitive behavioral training reduces the risk of criminal recidivism (typically from 0.40 to 0.30). Programs are efficient for both juveniles and adults both imprisoned and treated in community settings. The effects of CBT are greater for offenders with higher risk of recidivism than those with lower risk, contrary to any presumption that higher risk offenders might be less amenable to treatment. Anger management, training interpersonal problem solving skills and good individual contact between offender and educator seems to be particularly important for effect (Lipsey, Landenberger & Wilson 2007).

CBT principles are widely used in anger management programs. Meta-analysis indicates moderate to large effect sizes in both adolescent and adult clinical and mixed populations (Beck & Fernandez 1998, Saini 2009). Although the evidence is weaker because of lower study quality, meta-analytic results also indicate moderate effect sizes in populations with children with special educational needs (Ho et al 2010).

Basic CBT principles are included in the MyResilience.org program.

Robusthed.dk / Myresilience.org

The intervention program consists of two closely intertwined dimensions:

1. The Robusthed.dk / Myresilience.org Website
2. Model of delivery

Robusthed.dk / Myresilience.org is a closed website with log-in access only for participants in the scientific trials. Depending on the results of the research project, the website will eventually be freely accessible after the end of the project.

The website consist of compiled knowledge and ideas from multiple scientific disciplines as mentioned earlier - transformed into simple coherent presentations in daily language – equally understandable for a 10 grade student and a highly educated professional. The website provides

- Practical knowledge about resilience, thoughts, emotions and the brain.
- Good illustrative stories for identification.

- Small games and exercises.
- Interactive options for tests, training and action plans.
- A Blog for participant dialogue.

In order to optimize program feasibility and fidelity Robusthed.dk / Myresilience.org exploit the best possibilities in contemporary medical internet research including psychological intervention architecture with a theory based multicomponent cognitive behavioral approach (Cugelman et al 2011, Webb et al 2010), smartphone application, feedback and social media contact (Poirier & Cobb 2012).

A related large precursor project (The Thoughts in Mind project in Aarhus Community) has been shown to have a high feasibility both for parents and professionals (Lundgaard Bak 2012).

In a clinical context decades of randomized controlled trials have produced separate evidence-based treatments for depression, anxiety, and conduct problems in youth, but these treatments are not often used in clinical practice, and they produce mixed results in trials with the comorbid, complex youths seen in practice. New research strongly indicate that systematic but flexible intervention/treatment programs (The MATCH Modular design program) perform better in the complex real world than “more rigid” standard programs and usual care (Weisz et al 2012). Systematic flexibility may be the new ‘golden standard’.

On the principal level Robusthed.dk can be viewed as a ‘modular program’, just like the MATCH program, because both contain numbers of small coherent modules of psychoeducative and reflective tools based on solid communication principles which are applied flexibly to whatever situation is relevant in the sessions.

Model of delivery

As emphasized by Kadzin & Blase (2011) and Roth & Fonagy (2006) it is important in order to meet today's welfare challenges that more cost-efficient models of delivery in mental health care are developed. This has to be united with the strong recommendations from for instance the NICE guidelines about Parent Management Training training intensity, compliance and fidelity (read more above in the PMT section) (National Institute for Health and Clinical Excellence 2007 and 2008).

This is an increasing challenge but not a new challenge. Investigators have tried to design and evaluate brief interventions based on media technologies available – mostly written materials, booklets and videos.

A Cochrane database systematic review on brief intervention media-based behavioural treatments for behavioural problems in children (Montgomery, Bjornstad & Dennis 2006) addresses the question how effect sizes in brief interventions are compared to effect sizes in more resource intensive programs – e.g. Parent Management Training programs (PMT). This is interesting because media-based self-directed programs are low cost brief interventions with the potential of large scale implementation. Out of 2564 trials found in the search strategy 11 fulfilled the inclusion criteria for the review including 943 participants. Written information to convey behavioural skills to parents was the most frequently used method – in one program supplemented by video modelling of behavioural techniques. All studies are “pre-internet” studies meaning that there are no studies so far on this quality level evaluating IT technology in PMT programs. Because of the small number of high quality trials one has to be cautious with conclusions. The results indicate that immediately after the intervention, participants actually benefit from both face-to-face intervention and media-based self-directed intervention. Benefits seem to be stable at one year follow up in both groups. However it seems that self-directed intervention results improve within the first year. Adding options to the self-directed programs for brief professional support may improve results but it is unclear whether it may justify the additional costs that would be incurred.

There is some evidence that self-help materials eventually supplemented by professional guidance may reduce eating disorder and other symptoms in comparison to waiting list or control treatment and may produce comparable outcomes to formal therapist-delivered psychological therapies. Self-help concepts may thus have some utility as a first step in treatment (Perkins et al 2009).

A recent review has concluded that internet based smoking cessation programs has not yet been evaluated. There are only few trials reporting success rates for stopping smoking after six months or more, and those trials provided only limited evidence of long-term benefits of the Internet or web-based smoking cessation programs. Internet intervention programs that provide individually tailored information and support may be more effective than a static website. The Internet may have an additional benefit when used alongside other interventions, such as nicotine replacement therapy (NRT) or other pharmacotherapy. Innovative smoking cessation intervention delivered via the Internet may be more attractive to young people and females who smoke, and less attractive to smokers reporting depression (Civljak 2010).

A Meta-analytic review of eHealth interventions for pediatric health promoting behaviors has indicated that in order to be efficient it is important that behavioral components (such as goal setting, self-monitoring, feedback and contingency management) are included in the interventions (Cushing & Steele 2010).

In the 2009 report from the National Research Council and Institute of Medicine: *Preventing Mental, Emotional and Behavioural Disorders among Young People* (O'Connell 2009), the Committee has recommended further Internet based intervention research:

The Internet as a Potential Tool for Wide-Scale Dissemination of Preventive Interventions:

The enormity of need for mental health services often produces a type of paralysis: since it is not feasible to train enough providers to treat all individuals with mental, emotional, and behavioral disorders, how can preventive interventions be provided to those at risk? This dilemma is caused in part by the exclusive reliance on consumable interventions, such as face-to-face services, and the use of medications. Once a prevention or therapy session is over, no other individual can benefit from that hour of contact. Once a medication is consumed, no one else can benefit from its therapeutic effect. The development and implementation of interventions delivered via the Internet offers the promise of an approach to make interventions available on a continual basis to a wide range of young people at minimal cost while addressing several dissemination and implementation challenges.

Fidelity: The fidelity of Internet interventions is inherent as the material on the computer screen remains the same, no matter how many times it is used. The content of the intervention can be shared widely exactly as tested in randomized control trials.

Scalability: An Internet intervention can be shared with literally thousands of users beyond the locality in which it was created, while remaining accessible to the original locality. The site of a proven Internet intervention can be immediately opened to use by anyone with web access, which also allows effectiveness evaluation on a wide scale.

Sustainability: The cost of maintaining a website hosting an evidence-based preventive intervention is relatively modest, especially if the site is an automated, self-help intervention.

Accessibility: Internet interventions can simultaneously serve users across a community, a state, the nation, or the world, at any time of the day or night, including holidays and weekends.

Stigma: The availability of Internet interventions that are used in the privacy of one's own home, educational or work setting, or using a public access computer makes these interventions more likely to be used by people who would not come to a mental health-oriented program.

Reaching multicultural, multilingual communities: Internet interventions can be implemented relatively easily in multiple languages. Similarly, advances in technology now

make it possible to create Internet interventions that require a minimum level of reading or writing. The use of video, graphics, and audio allow the creation of Internet interventions that can be used by individuals at any education level.

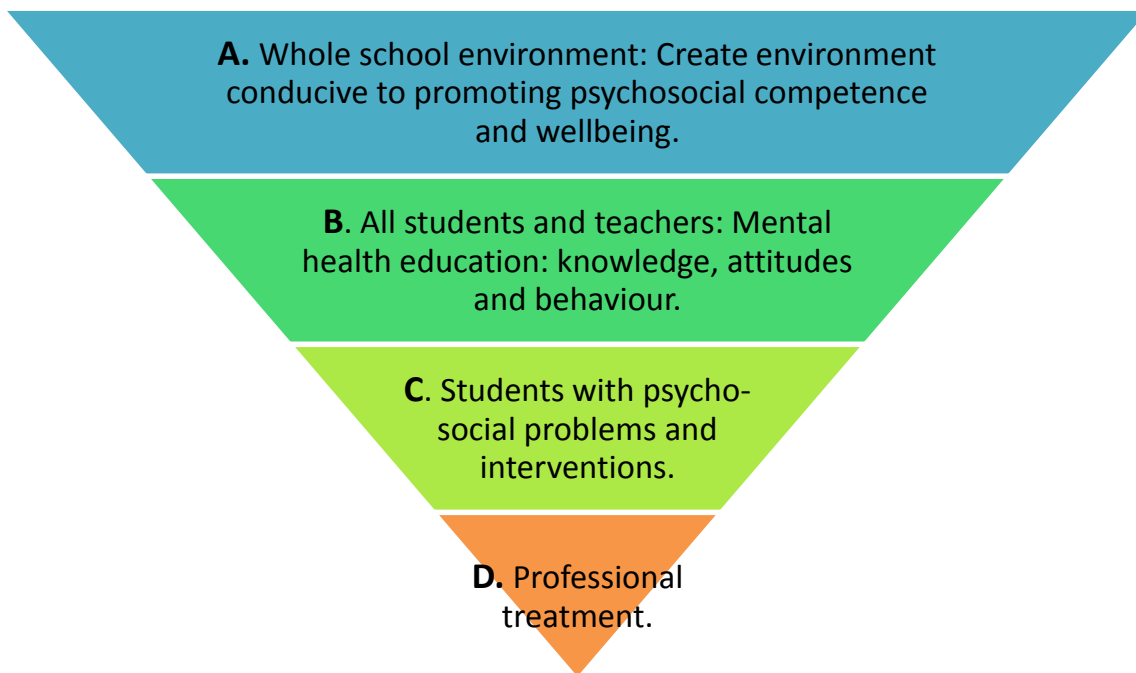
Internet interventions also have limitations. One of the most troublesome is the lack of access to the web by many low-income, low-education groups. However, Internet access is increasingly available via mobile devices, such as cell phones. Many developing countries have skipped the stage of land-line phones and moved directly to cell phones. As is the case for other venues, Internet interventions will not be effective in preventing all types of mental, emotional and behavioral disorders. It is useful to think in terms of “market segmentation,” in which specific means of reaching populations at risk will need to be developed and evaluated to see which is most effective for which population. Nevertheless, to help make prevention feasible, one must think beyond traditional interventions and harness the power of advanced communication media, such as the Internet.

In a recent publication Barak and Grohol (2011) reviews and summarizes the current research for online mental health interventions and discusses future trends. These interventions range from psychoeducational static webpages and complex, personalized, interactive cognitive-behavioral-based self-help programs, to videoconferencing, self-help support groups, blogging, and professional-led online therapy. Future trends in online interventions include the greater prevalence of online therapy and the use of video chat and videoconferencing technologies to enhance and extend the therapeutic relationship. The use of texting or short message service (SMS), mobile communications, smart phone applications, gaming, and virtual worlds extends the intervention paradigm into new environments not always previously considered as intervention opportunities. The authors find that there is strong evidence to support the effective use and future development of a variety of online mental health applications.

It has been documented that Clinical web-based Cognitive Behavioral Programs for Anxiety can have large effect sizes with up to 5 years follow up (Hedman et al 2011).

It is absolutely crucial for the success of a “large-scale low-cost brief-intervention self-directed” program that content and user interface must be experienced as being immediately relevant and engaging including options for interactivity. This also holds for introduction of the program for a target group.

In the Robusthed.dk / Myresilience.org project there is focus on the collaboration between parents, teachers, educators and others who deal with children every day. This is in line with decades of research on whole school approaches in health promotion exemplified by the WHO Health promotion Schools project involving more than 40 countries (WHO 2006) and recommendations from a series of NICE reports (Adi et al 2007a, Adi et al 2007b, Shucksmith et al 2007, NICE 2008, 2009).



WHO Whole School Approach. Figure modified from Wyn et al 2000.

Longitudinal social network analyses over 20-30 years from the Framingham study has documented that smoking as well as smoking cessation, development of obesity and the experience of happiness spreads dynamically in large social networks (Christakis & Fowler 2007 & 2008, Fowler & Christakis 2008). This also indicates that it is a reasonable strategy to 'seed' relevant knowledge simultaneously into 'the whole network' around a group of children and young people.

Based on existing evidence, combining a web-based intervention with a social field model of delivery seems to be the best way to maximize program adherence (Mohr et al 2011, Neil et al 2009).

Robusthed.dk / Myresilience.org is a brief intervention in which parents and professionals will be offered the same background knowledge and practical knowledge of how resilience training of children and adolescents can be integrated in daily life. The purpose is to support the development of common understanding, knowledge and concepts about child development and provide opportunities to train coping situations with the child both at home and daycare /school.

Robusthed.dk / Myresilience.org fits into ordinary curricular and extracurricular activities such as parents meetings on group and/or individual level – typically on level B and C in the above figure. Thus a minimum of extra resource input is needed. A typical course will be:

Example A (a school):

1. 1-3 hour introduction to Robusthed.dk / Myresilience.org to the professionals on a school (leaders, teachers, psychologists etc.) by a municipality consultant with a formal Robusthed.dk education (3 day education run by program developers). Afterwards the teachers introduce MyResilience.org to parents on ordinary parent meeting (½-1 hour). Alternatively the introduction is given by the consultant to professionals and parents on the school at the same time (whole school approach or age cohort groups).

The purpose of the introduction is to give a short overview of the relevance and core ideas of Robusthed.dk / Myresilience.org and to raise the engagement and curiosity to go on and explore the "Robusthed.dk / Myresilience.org" needed for commitment and program fidelity afterwards. Parents and staff members are then given personal login to the Robusthed.dk / Myresilience.org website.

2. Teachers and parents select and use Robusthed.dk / Myresilience.org knowledge and tools appropriate for specific kids (individually/groups) integrated in daily activities as a general activity or with a focus on specific problem solving. If they wish to run a more formal general Robusthed.dk / Myresilience.org course for the kids, they may use the Robusthed.dk / Myresilience.org course proposals on the website ('Knowledge Vitamins').
3. Teachers and parents Robusthed.dk / Myresilience.org experiences and ideas on individual/group meetings and via the Robusthed.dk / Myresilience.org Blog as a user driven process. Process intensity is defined by local needs.
4. Informed users may explore the scientific background for MyResilience.org in the Science Review on the website.

The program may also be useful in a clinical setting:

Example B (a physician or psychology/consultant clinic):

1. 1 day introduction to Robusthed.dk / Myresilience.org to the professionals in the clinic by a Consultant with a formal Robusthed.dk / Myresilience.org education. Staff members are given personal log-in to MyResilience.org website.
2. The professionals in the clinic introduce Robusthed.dk / Myresilience.org to parents on ordinary visits or during group sessions. Personal log-in to the Robusthed.dk / Myresilience.org website is given to the parents.
3. Parents select (eventually in cooperation with the professional in the clinic) and use Robusthed.dk / Myresilience.org knowledge and tools appropriate for their kid integrated in daily activities as a general activity or with a focus on specific problem solving. If they wish to run a more formal general Robusthed.dk / Myresilience.org course for the kid, they may use Robusthed.dk / Myresilience.org course proposals on the website.
4. Parents share Robusthed.dk / Myresilience.org experiences and ideas on individual visits/group meetings in the clinic and via the Robusthed.dk / Myresilience.org Blog as a user driven process. Process intensity is defined by local needs.
5. Informed users may explore the scientific background for Robusthed.dk / Myresilience.org in the Science Review on the website.

In introductions and courses it will be strongly recommend that parents and professionals around children and young people work together when using the knowledge and tools in Robusthed.dk / Myresilience.org.

In the scientific testing of the program other target areas and models of delivery will also be investigated – thus for instance children and young people taken into foster care and residential care.

Children taken into foster care are among the most vulnerable groups in society. In Denmark the financial pressure on the communities and the administrative community reform has led to serious challenges for many foster care families. Foster care children come with more serious problems and foster care parents have less access to education and supervision. The issue is high on the political and media agenda. 12.500 children are in foster care or residential care in Denmark (2010).

A 2009 Cochrane review concluded that although training programs have proliferated, there has been minimal evaluative research to determine whether they are effective. The review attempted to determine the effectiveness of cognitive-behavioural training interventions. Only six trials involving 463 foster carers were included. Results suggest little evidence of effect on looked-after children, foster carers and fostering agency outcomes (Turner 2009).

With its focus on daily problem solving and a comprehensive knowledgebase the purpose of this trial will be to investigate whether MyResilience.org may be useful in foster care and residential care settings in

collaboration with community supervisors in creating safe, healthy and stimulating living conditions for children and young people in care.

In the scientific evaluation of Robusthed.dk / Myresilience.org trials will be designed to meet the 'Recommendation on Criteria for Establishing Strong Evidence of Effectiveness' from The National Academies report: Preventing Mental, Emotional, and Behavioral Disorders among Young People: Progress and Possibilities (O'Connell 2009):

"Federal and state agencies should prioritize the use of evidence-based programs and promote the rigorous evaluation of prevention and promotion programs in a variety of settings in order to increase the knowledge base of what works, for whom, and under what conditions. The definition of evidence-based should be determined by applying established scientific criteria.

In applying scientific criteria, the agencies should consider the following standards:

- a. Evidence for efficacy or effectiveness of prevention and promotion programs should be based on designs that provide significant confidence in the results. The highest level of confidence is provided by multiple, well-conducted randomized experimental trials, and their combined inferences should be used in most cases. Single trials that randomize individuals, places (e.g. schools), or time (e.g., wait-list or sometimes-series designs), can all contribute to this type of strong evidence for examining intervention impact.
- b. When evaluations with such experimental designs are not available, evidence for efficacy or effectiveness cannot be considered definitive, even if based on the next strongest designs, including those with at least one matched comparison. Designs that have no control group (e.g., pre-post comparisons) are even weaker.
- c. Programs that have widespread community support as meeting community needs should be subject to experimental evaluations before being considered evidence-based.
- d. Priority should be given to programs with evidence of effectiveness in real-world environments, reasonable cost, and manuals or other materials available to guide implementation with a high level of fidelity."

Specific topics

In addition to the general scientific background for Robusthed.dk / Myresilience.org discussed above, some of the articles on the website also contain information from specific scientific investigations and publications. These references are briefly summarized below in order of appearance on the website. Meta-analyses are referred to when available.

Attention and the inner working model of the brain. This is built on the psychological knowledge and theories of the self as agent and the representation of the world in the inner working model including the representational aspects of the self – the "Me". The research goes back for more than a century to William James and is thoroughly discussed in contemporary mentalization research (see: Fonagy et al 2002, Hawkins 2004, Wilber 2000).

The thinking brain and the alarm system of the brain. A relevant clinical review and introduction to PTSD research is found in (Bisson 2007) – and on Wikipedia. Read also (Rossi 2002, Dyregrov 2011). Highly relevant is also mentalization research (Liotti & Gilbert 2011, Fonagy et al 2002).

Mindfulness – prevention and treatment in stress and depression (Kabat-Zinn 2004, Segal et al 2002).

The Teenage Brain (Blakemore 2008, Gogtay et al 2004).

Dependency. Teenagers who like substances are in high risk of detrimental brain effects (Monti et al 2005).

Physical activity

Physical activity and academic performance (National Center for Chronic Disease Prevention and Health 2010).

Physical activity and 'runners high' (Raichlen et al 2012).

Sleep and academic performance (Dewald et al 2010). **Sleep and obesity** (Cappuccio et al 2008). **Sleep and mortality** (Cappuccio et al 2010). Read also (Rossi 2002, Wulff et al 2010). **Sleepiness** (Thorpy & Billiard 2011).

Enjoyment and oxytocin (Kringelbach 2005, 2007. Moberg 2003, Fonagy & Bateman 2011).

Mind-Body Medicine (Astin et al 2003. Moerman 2002).

- **Psycho-neuro-endocrinology** (Rossi 2002, Perth 1997).
- **Wound healing** (Rice 2007, Kiecolt-Glaser 1995, Marucha 1998).
- **Psycho-neuro-immunology** (Moerman 2002, Cohen 2003).
- **High blood pressure** (www.resperate.com).
- **Pain** (Moerman 2002).

Praise and depression. Unrealistic praise and self-praise may be a risk factor for depression (Kim & Chiu 2011).

How can we understand psychiatric diagnoses and emotional problems such as anxiety and depression in a contemporary evolutionary context? (Nesse & Jackson 2006).

Class room management.

- http://evidencebasedprograms.org/wordpress/?page_id=81
- <http://toptierevidence.org/wordpress/wp-content/uploads/Classroom-Prevention-Program-Manual-Werthamer-1993.pdf>

Smart phone

The smart phone application which is developed in connection with the website contains two programs:

1. A cognitive training protocol including situational control with social support using for instance the smart phone GPS function.
2. A cognitive bias modification and working memory training program.

Studies of Cognitive Bias Modification workouts on computer (CBM) has shown efficacy on anxiety symptoms and behaviors (Beard 2011): When the alarm system is hypersensitive, the attention is attracted by the "alarm-sensory perception" in milliseconds. In CBM training an alarm image + a positive image is displayed simultaneously. The task is to click on the positive picture as fast as possible. In the beginning of a training period, the reaction time is high because the attention first is automatically drawn toward the alarm image. With training decreases reaction time, because the thinking brain gradually takes control of the alarm system.

People with low working memory easily become "overloaded" - leading to stress and alarm symptoms. Studies suggest that working memory can be trained with a PC program (Klingenberg/Cogmed).

In our smart phone application working memory is trained in combination with CBM – because the level of difficulty is gradually increased – presenting more and more negative/positive images simultaneously during the training course – thus gradually stressing the alarm system and the working memory.

Reference List

Adi Y, Killoran A, Janmohamed K, Stewart-Brown S. Systematic review of the effectiveness of interventions to promote mental wellbeing in children in primary education: Report 1: Universal Approaches Non-violence related outcomes. NICE 2007a.

Adi Y, McMillan AS, Kiloran A, Stewart-Brown S. Systematic review of the effectiveness of interventions to promote mental wellbeing in primary schools Report 3: Universal Approaches with focus on prevention of violence and bullying. NICE 2007b.

Ager A: Annual Research Review: Resilience and child well-being – public policy implications. *Journal of Child Psychology and Psychiatry* 2012.

Ahn S, Fedewa AL. A meta-analysis of the relationship between children's physical activity and mental health. *J Pediatr Psychol.* 2011 May;36(4):385-97. Epub 2011 Jan 11.

Allen JG, Fonagy P. *Handbook of Mentalization-Based Treatment.* Wiley 2006.

Allen JP, Pianta RC, Gregory A, Mikami AY, Lun J. An Interaction-Based Approach to Enhancing Secondary School Instruction and Student Achievement. *Science* 2011;333: 1034-7.

Antonovsky A, The Sense of Coherence as a determinant in health. In : Matarazzo JD et al: *Behavioral Health,* John Wiley & Sons 1984.

Antonovsky A. *Unraveling the Mystery of Health. How People Manage Stress and Stay Well.* Jossey-Bass 1987.

Astin JA, Shapiro SL, Eisenberg DM, Forsys KL. Mind-Body Medicine: State of the science, implications for practice. *J Am Board Fam Pract* 2003;16:131-47.

Bandura A. *Social Learning Theory.* Prentice Hall 1977.

Bandura A, Locke EA. Negative Self-efficacy and Goal Effects Revisited. *Journal of Applied Psychology* 2003;88(1):87-99.

Bakar A, Grohol JM. Current and Future Trends in Internet-Supported Mental Health Interventions. *Journal of Technology in Human Services* 2011;29:155–96.

Baskin TW, Slaten CD, Sorenson C, Glover-Russell J, Merson DN. Does youth psychotherapy improve academically related outcomes? A meta-analysis. *J Couns Psychol.* 2010 Jul;57(3):290-6.

Beard C. Cognitive bias modification for anxiety: current evidence and future directions. *Expert Review* 2011;11(2):299-311.

Beck R, Fernandez E. Cognitive-Behavioral Therapy in the Treatment of Anger: A Meta-Analysis. *Cognitive Therapy and Research.* 1998; 22(1); 63-74.

Bisson JI. Post-traumatic stress disorder. *BMJ* 2007;334:789-93.

Bjornstad GJ and Montgomery P. Family therapy for attention-deficit disorder or attentiondeficit/hyperactivity disorder in children and adolescents (Review). *The Cochrane Library* 3 (2010).

Blakemore SJ. The social brain in adolescence. *Neuroscience* 2008;9:267-77.

- Brotman LM, Dawson-McClure S, Huang KY, Theise R, Kamboukos D, Wang J, Petkova E, Ogedegbe G. Early Childhood Family Intervention and Long-term Obesity Prevention among High-risk Minority Youth. *Pediatrics* 2012;129(3):1-8.
- Børne og Ungdomspsykiatrisk Selskab 2008. Referenceprogram for udredning og behandling af børn og unge med ADHD.
- Calabrese EJ. Neuroscience and Hormesis: Overview and General Findings. *Critical Reviews in Toxicology*, 2008;38:249–252.
- Calabrese EJ. Stress Biology and Hormesis: The Yerkes-Dodson law in Psychology – A Special Case of the Hormesis Dose Response. *Critical Reviews in Toxicology*, 2008a;38:453-62.
- Calabrese EJ, Baldwin LA: Defining Hormesis. *Human & Experimental Toxicology* 2002;21:91-9.
- Cappuccio FP, Taggart FM, Kandala NB, Currie A, Peile E, Stranges S, Miller. Meta-Analysis of Short Sleep Duration and Obesity in Children and Adults. *Sleep* 2008;31(5):619-26.
- Cappuccio FP, D’Elia L, Strazzullo P, Miller MA. Sleep Duration and All-Cause Mortality: A Systematic Review and Meta-Analysis of Prospective Studies. *Sleep* 2010;33(5):585-92.
- Castelli F, Frith C, Happé F, Frith U: Autism, Asperger syndrome and brain mechanisms for the attribution of mental states to animated triangles. *Brain* 2002;125:1839-49.
- Christakis NA, Fowler JH. The Spread of Obesity in a Large Social Network over 32 years. *New England Journal of Medicine* 2007;357(4):370-9.
- Christakis NA, Fowler JH. The Collective Dynamics of Smoking in a Large Social Network. *New England Journal of Medicine* 2008;358(21):2249-58.
- Cugelman B, Thelwall M, Dawes P. Online Interventions for Social Marketing Health Behavior Change Campaigns: A Meta-analysis of Psychological Architectures and Adherence Factors. *J Med Internet Res* 2011;13(1):e17. <http://www.jmir.org/2011/1/e17/>
- Fowler JH, Christakis NA. Dynamic spread of happiness in a large social network: Longitudinal analysis over 20 years in the Framingham Heart Study. *British Medical Journal* 2008;337:a2338.
- Christoffersen MN, Hammen I 2011. ADHD-indsatser – en forskningsoversigt. Det Nationale Forskningscenter for Velfærd, København 2011.
- Civiljak M, Sheikh A, Stead LF, Car J. Internet-based interventions for smoking cessation (Review). *The Cochrane Library* 2010, Issue 11.
- Coffman JM, Cabana MD, Halpin HA, Yelin EH. Effects of asthma education on children's use of acute care services: a meta-analysis. *Pediatrics*. 2008 Mar;121(3):575-86.
- Cohen S, Doyle WJ, Turner RB, Alper CM, Skoner DP. Emotional Style and Susceptibility to the Common Cold. *Psychosomatic Medicine* 2003;65:652–57.
- Cushing CC, Steele RG. A Meta-Analytic Review of eHealth Interventions for Pediatric Health Promoting and Maintaining Behaviors. *Journal of Pediatric Psychology* 2010;35(9):937-49.
- Dewald JF, Meijer AM, Oort FJ, Kerkhof GA, Bögels SM. The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. *Sleep Medicine Reviews* 2010; 4(3):179-89.

- Donker T, Griffiths KM, Cuijpers P, Christensen H. Psychoeducation for depression, anxiety and psychological distress: a meta-analysis. *BMC Med.* 2009 Dec 16;7:79.
- Dyregrov A. Akut kriseintervention. *Månedsskrift for Praktisk Lægegerning* 2011;89(11):783-92.
- Eames C, Daley D, Hutchings J, Hughes JC, Jones K, Martin P, Bywater T. The Leader Observation Tool: a process skills treatment fidelity measure for the Incredible Years parenting programme. *Child: care, health and development*, 2008;34(3):391–400.
- Eames C, Daley D, Hutchings J, Whitaker CJ, Jones K, Hughes JC, Bywater T. Treatment fidelity as a predictor of behavior change in parents attending group-based parent training. *Child: Care, Health and Development*, 2009; **35**(5):603–612.
- Eames C, Daley D, Hutchings J, Whitaker JC, Bywater T, Jones K, Hughes JC. The impact of group leaders' behaviour on parents' acquisition of key parenting skills during parent training. *Behaviour Research and Therapy* 2010;48:1221-26.
- Feder A, Nestler EJ, Westphal M, Charney D. Psychobiological Mechanisms of Resilience to Stress. In: Reich JW, Zautra AJ, Hall JS. (Eds.) *Handbook of adult resilience*. Guilford Press 2010.
- Fonagy P, Bateman A, Bateman A. The widening scope of mentalizing: A discussion. *Psychology and Psychotherapy* 2011; 98–110.
- Fonagy P, Gergely G, Jurist E, Target M. *Affect Regulation, Mentalization and the Development of the Self*. Other Press 2002.
- Furlong M, McGilloway S, Bywater T, Hutchings J, Smith SM, Donnelly M. Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Review* 2012.
- Eriksson M, Lindström B, Antonovsky's sense of coherence scale and the relation with health: a systematic review. *J Epidemiol Community Health*. 2006;60(5):376-81.
- Fonagy P, Gergely G, Jurist E, Target M. *Affect regulations, mentalization and the development of the self*. Other Press 2004.
- Gogtay N, Giedd JN, Lusk L, Hayashi KM, Greenstein D, Vaituzis AC, Nugent TF, Herman DH, Clasen LS, Toga AW, Rapoport JL, Thompson PM. Dynamic mapping of human cortical development during childhood through early adulthood. *PNAS* 2004; 101 (21): 8174-9.
- Gollwitzer PM, Sheeran P, Michalsk V, Seifert AE: When Intentions Go Public. Does Social Reality Widen the Intention-Behavior Gap? *Psychological Science* 2009;20(5):612-8.
- Granott N, Parziale J (Eds.). *Microdevelopment – Transition Processes in Development and Learning*. Cambridge University Press 2002.
- Green RW: *Lost at School*. Schribner 2008. In Danish: "Fortabt i Skolen", Pressto 2009. See also: www.livesinthebalance.org.
- Gröpel P, Steel P. A mega-trial investigation of goal setting, interest enhancement and energy on procrastination. *Personality and Individual Differences* 2008;45:406-11.
- Guevara JP, Wolf FM, Grum CM, Clark NM. Effects of educational interventions for self-management of asthma in children and adolescents: systematic review and meta-analysis. *BMJ*. 2003 Jun 14;326(7402):1308-9.

Gweon H, Dodell-Feder D, Bedny M, Saxe R: Theory of Mind Performance in Children Correlates with Functional Specialization of a Brain Region for Thinking about Thoughts. *Child Development* 2012; 83 (6):1853–1868.

Haggerty RJ, Sherrod LR, Garmezy N, Rutter M. *Stress, Risk, and Resilience in Children and Adolescents: Processes, Mechanisms, and Interventions*. Cambridge University Press 1996.

Hains AB, Arnsten AFT. *Molecular mechanisms of stress-induced prefrontal cortical impairment: Implications for mental illness*. Cold Spring Harbor Laboratory Press 2008;15:551-64.

Hawkins J: *On intelligence*. Times 2004.

Hedman E, Furmark T, Carlbring P, Ljótsson B, Rück C, Lindefors N, Andersson G. A 5-Year Follow-up of Internet Cognitive Behaviour Therapy for Social Anxiety Disorder. *J Med Internet Res* 2011(2):e39

Henrich J, Heine SJ, Norenzayan A. The weirdest people in the world? *Behavioral and Brain Sciences* 2010;33:61–135.

Ho B, Carter M, Stephenson J. Anger Management Using a Cognitive-behavioural Approach for Children with Special Education Needs: A literature review and meta-analysis. *International Journal of Disability, Development and Education* 2010: 57(3): 245–65.

Kabat-Zinn J. *Full Catastrophe Living*. Piatkus 2004.

Kazdin AE, Blase SL. Rebooting Psychotherapy Research and Practice to reduce the Burden of Mental Illness. *Perspectives on Psychological Science* 2011;6(1):21-37.

Kastin AJ, Pan W. Peptides and Hormesis. *Critical Reviews in Toxicology*, 2008;38:629-31.

Ken M, Davis MC. The Emergence of Capacity-Building Programs and Models of Resilience. In: Reich JW, Zautra AJ, Hall JS. (Eds.) *Handbook of adult resilience*. Guilford Press 2010.

Kiecolt-Glaser JK, Marucha PT, Mercado AM, Malarkey WB, Glaser R. Slowing of wound healing by psychological stress. *Lancet* 1995;346(8984):1194-6.

Kim YH, Chiu CY. Emotional costs of inaccurate self-assessments: both self-effacement and self-enhancement can lead to dejection. *Emotion*. 2011 Oct;11(5):1096-104.

Klein HJ, Wesson MJ, Hollenbeck JR. Goal Commitment and the Goal-Setting Process: Conceptual Clarification and Empirical Synthesis. *Journal of Applied Psychology* 1999;84(6):885-96.

Klingberg T, Karolinska Institute, Stockholm <http://www.klingberglab.se/index.html> , www.cogmed.com

Kluger AN, DeNisi A. The Effects of Feedback Interventions on Performance: A Historical Review, a Meta-Analysis and a Preliminary Feedback Intervention Theory. *Psychological Bulletin* 1996;119(2):254-84.

Knouse LE, Cooper-Vince C, Sprich S, Safren SA. Recent developments in the psychosocial treatment of adult ADHD. *Expert Rev Neurother*. 2008 Oct;8(10):1537-48.

Kringelbach ML. The human orbitofrontal cortex: linking reward to hedonic experience. *Nature Reviews Neuroscience* 2005;6: 691-702.

Kringelbach ML. *Lykkens Hjernesmed*. Danmarks Pædagogiske Universitetsskole 2007;36:15-7.

Liebenberg L, Ungar M. *Researching Resilience*. University of Toronto Press 2009.

- Liotti G, Gilbert P. Mentalizing, motivation, and social mentalities: Theoretical considerations and implications for psychotherapy. *Psychology and Psychotherapy* 2011;84(1):9-25.
- Lipsey MW, Landenberger NA, and Wilson SJ. Effects of Cognitive-Behavioral Programs for Criminal Offenders. *Campbell Systematic Reviews* 2007.
- Lombardo MV, Chakrabarti B, Bullmore ET, Wheelwright SJ, Sadek SA, Suckling J, MRC AIMS Consortium*, Baron-Cohen S: Shared Neural Circuits for Mentalizing about the Self and Others. *Journal of Cognitive Neuroscience* 2009;22(7):1623–35.
- Lumley J, Chamberlain C, Dowsell T, Oliver S, Oakley L, Watson L. Interventions for promoting smoking cessation during pregnancy. *Cochrane Database Syst Rev.* 2009 Jul 8;(3):CD001055.
- Lundberg O, Nyström MP. Sense of Coherence, Social Structure and Health. *European Journal of Public Health* 1994;4:252-7.
- Lundgaard Bak, P: Mentalizing communities for children, in Midgley N, Vrouva I (eds.): *Mentalization based interventions with children and families*, Routledge 2012.
- Lupien SJ, Buss C, Schramek TE, Maheu F, Pruessner J. Hormetic influence of glucocorticoids on human memory. *Nonlinearity in Biology, Toxicology, and Medicine*, 2005;3:23–56.
- Lyons DM, Parker KJ. Stress Inoculation-Induced Indications of Resilience in Monkeys. *Journal of Traumatic Stress* 2007;20 (4):423–33.
- Lyubomirsky S, Della Porta MD. Boosting Happiness, Buttressing Resilience. In: Reich JW, Zautra AJ, Hall JS. (Eds.) *Handbook of adult resilience*. Guilford Press 2010.
- Macdonald GM, Turner W. Treatment foster care for improving outcomes in children and young people. *Cochrane Database Syst Rev.* 2008 Jan 23;(1):CD005649.
- Marucha PT, Kiecolt-Glaser JK, Favagehi M. Mucosal Wound Healing Is Impaired by Examination Stress. *Psychosomatic Medicine* 1998; 60:362-365.
- Masten AS, Wright MO. Resilience over the Lifespan. In: Reich JW, Zautra AJ, Hall JS. (Eds.) *Handbook of adult resilience*. Guilford Press 2010.
- Mattson MP, Chen A. Neurohormetic phytochemicals: low-dose toxins that induce adaptive neuronal stress responses. *Trends in Neurosciences* 2006;29(1):632-39.
- Midgley N, Vrouva I (eds.): *Mentalization based interventions with children and families*, Routledge 2012 (in press).
- Moberg KU: *The Oxytocin Factor: Tapping the Hormone of Calm, Love, and Healing*. Dacapo Press 2003.
- Moffitt TE, Arseneault L, Belsky D, Dickson N, Hancox RJ, Harrington H, Houts R, Poulton R, Roberts BW, Ross S, Sears MR, Thomson WM, Caspi A. A gradient of childhood self-control predicts health, wealth and public safety. *PNAS* 2011; 108(7): 2693–8.
- Mohr DC, Cuijpers P, Lehman K. Supportive Accountability: A Model for Providing Human Support to Enhance Adherence to eHealth Interventions. *J Med Internet Res* 2011;13(1):e30.
<http://www.jmir.org/2011/1/e30/>
- Montgomery P, Bjornstad G, Dennis J. Media-based behavioural treatments for behavioural problems in children. *Cochrane Database Syst Rev.* 2006 Jan 25;(1):CD002206.

Monti P, Miranda R, Nixon K, Sher K, Swartzwelder H, Tapert SF, White A, Crews FT: Adolescence: Booze, Brains and Behavior. *Alcoholism, Clinical and Experimental Research* 2005;29(2):207-20.

National Center for Chronic Disease Prevention and Health Promotion Division of Adolescent and School Health (www.cdc.gov/HealthyYouth). The Association between School-Based Physical Activity, Including Physical Education, and Academic Performance. US-CDC 2010.

National Institute for Health and Clinical Excellence 2007. NICE technology appraisal guidance 102. Parent-training/education programmes in the management of children with conduct disorder.

National Institute for Health and Clinical Excellence 2008. NICE clinical guideline 72. Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, young people and adults.

Naughton F, Prevost AT, Sutton S. Self-help smoking cessation interventions in pregnancy: a systematic review and meta-analysis. *Addiction*. 2008 Apr;103(4):566-79.

Neenan M. *Developing Resilience, A Cognitive-Behavioral Approach*. Routledge 2009.

Neil AL, Batterham P, Christensen H, Bennett K, Griffiths KM. Predictors of Adherence by Adolescents to a Cognitive Behavior Therapy Website in School and Community-Based Settings. *J Med Internet Res* 2009;11(1):e6. <http://www.jmir.org/2009/1/e6/>

Nesse RM, Jackson ED: Evolution. Psychiatric nosology's missing biologic foundation. *Clinical Neuropsychiatry* 2006;3(2):121-31.

NICE: Promoting children's social and emotional wellbeing in primary education. NICE 2008.

NICE: Promoting young people's social and emotional wellbeing in secondary education. NICE 2009.

Neubert MJ. The Value of Feedback and Goal Setting over Goal Setting Alone and Potential Moderators of this Effect: A Meta-Analysis. *Human Performance* 1998;11(4):3321-35.

O'Connell ME, Boat T, Warner KE. *Preventing Mental, Emotional, and Behavioral Disorders among Young People: Progress and Possibilities*. National Research Council and Institute of Medicine 2009.

Perkins SSJ, Murphy RRM, Schmidt UUS, Williams C. Self-help and guided self-help for eating disorders (Review). *The Cochrane Library* 2009, Issue 1.

Perth CP. *Molecules of emotion*. Touchstone 1997.

Philip RC, Dauvermann MR, Whalley HC, Baynham K, Lawrie SM, Stanfield AC. A systematic review and meta-analysis of the fMRI investigation of autism spectrum disorders. *Neurosci Biobehav Rev*. 2012 Feb;36(2):901-42. Epub 2011 Nov 11.

Pinquart M, Teubert D. Effects of parenting education with expectant and new parents: a meta-analysis. *J Family Psychology*. 2010 Jun;24(3):316-27.

Piquero AR, Jennings WG, Farrington DP. Self-control interventions for children under age 10 for improving self-control and delinquency and problem behaviors. *Campbell Systematic Reviews* 2010:2.

Prinz RJ, Sanders MR, Shapiro CJ, Whitaker DJ, Lutzker JR. Population-Based Prevention of Child Maltreatment: The U.S. Triple P System Population Trial. *Prevention Science* 2009;10(1):1-12. See also http://evidencebasedprograms.org/wordpress/?page_id=888

Poirier J, Cobb NK. Social Influence as a Driver of Engagement in a Web-Based Health Intervention. *J Med Internet Res* 2012;14(1):e36 J <http://www.jmir.org/2012/1/e36/>

Raichlen DA, Foster AD, Gerdeman GL, Seillier A, Giuffrida A. Wired to run: exercise-induced endocannabinoid signaling in humans and cursorial mammals with implications for the 'runner's high'. *Journal of Experimental Biology* 2012;215:1881-6.

Reich JW, Zautra AJ, Hall JS. (Eds.) *Handbook of adult resilience*. Guilford Press 2010.

Rice BI: Clinical Benefits of Training Patients to Voluntarily Increase Peripheral Blood Flow. *The Diabetes Educator* 2007;33(3):442-54.

Rose G: *The strategy of preventive medicine*, Oxford Medical Publications 1992.

Rossi EL: *The psychobiology of gene Expression*, Norton 2002.

Roth A, Fonagy P: *What works for whom (2 Ed.)*. Guildford Press 2006.

Saini M. A meta-analysis of the psychological treatment of anger: Developing guidelines for evidence-based practice. *Journal of the American Academy of Psychiatry and the Law* 2009;37(4):473-88.

Sandseter EBH, Kennair LEO: Children's Risky Play from an Evolutionary Perspective: The Anti-phobic effect of Thrilling Experiences. *Evolutionary Psychology* 2011;9(2):257-84.

Segal ZW, Williams JMG, Teasdale JD. *Mindfulness-based Cognitive Therapy for Depression*. Guilford 2002.

Seligman M. *The Optimistic Child*, Harper 1995.

Seligman M. *Authentic Happiness*. Free Press 2002.

Seligman M. *Flourish – A visionary New Understanding of Happiness and Well-being*. Free Press 2011.

Seligman M, Steen TA, Park N, Peterson C: Positive Psychology Progress. Empirical Validation of Interventions. *American Psychologist* 2005;60(5):410-21.

Shoda Y, Mischel W, Peake PK. Predicting Adolescent Cognitive and Self-Regulatory Competencies from Preschool Delay of Gratification: Identifying Diagnostic Condition. *Developmental Psychology* 1990; 26 (6): 978-86.

Shucksmith J, Summerbell C, Jones S, Whittaker V. Mental wellbeing of children in primary education (targeted/indicated activities). NICE 2007.

Sonuga-Barke EJS, Daley D, Thompson M. Does Maternal ADHD Reduce the Effectiveness of Parent Training for Preschool Children's ADHD? *Journal of the American Academy of Child & Adolescent Psychiatry* 2002; 41(6):696–702.

Sonuga-Barke EJS, Daley D, Thompson M, Daley D, Laver-Bradbury C. Parent training for Attention Deficit/Hyperactivity Disorder: Is it as effective when delivered as routine rather than as specialist care? *British Journal of Clinical Psychology* 2004;43(4):449–457.

Spenser H, Ritchie B, Kondra P, Mills P. *Child and Youth Mental Health Toolkit*. <http://www.shared-care.ca/toolkits> 2012.

Stinson J, Wilson R, Gill N, Yamada J, Holt J. A systematic review of internet-based self-management interventions for youth with health conditions. *J Pediatr Psychol*. 2009 Jun;34(5):495-510. Epub 2008 Nov 23.

Storebø OJ, Skoog M, Damm D, Thomsen PH, Simonsen E, Glud C. Social skills training for Attention Deficit Hyperactivity Disorder (ADHD) in children aged 5 to 18 years. Cochrane Review 2011.

Thorpy MJ, Billiard M: Sleepiness, Causes, Consequences and Treatment. Cambridge Medicine 2011.

Torsheim T, Aaroe LE, Wold B. Sense of Coherence and school-related stress as predictors of subjective health complaints in early adolescence: interactive, indirect or direct relationships? *Social Science & Medicine* 2001;53:603-14.

Turner W, Macdonald G, Dennis JA. Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour. Cochrane Review 2009.

Turner KMT, Sanders MR. Help When It's Needed First: A Controlled Evaluation of Brief, Preventive Behavioral Family Intervention in a Primary Care Setting. *Behavior Therapy* 2006;37:131-42.

Walsh WA, Dawson J, Mattingly MJ. How Are We Measuring Resilience Following Childhood Maltreatment? Is the Research Adequate and Consistent? What is the Impact on Research, Practice, and Policy? *Trauma, Violence & Abuse* 2010;11(1):27-41.

Webb T, Joseph J, Yardley L, Michie S. Using the Internet to Promote Health Behavior Change: A systematic Review and Meta-analysis of the Impact of Theoretical Basis, Use of Behavior Change Techniques, and Mode of Delivery on Efficacy. *J Med Internet Res* 2010;12(1):e4. <http://www.jmir.org/2010/1/e4/>

Weisz JR, Chorpita BF, Palinkas LA, Schoenwald SK, Miranda J, Bearman SK, Daleiden EL, Ugueto AM, Ho A, Martin J, Gray J, Alleyne A, Langer DA, Southam-Gerow MA, Gibbons RD: Testing Standard and Modular Designs for Psychotherapy Treating Depression, Anxiety, and Conduct Problems in Youth. *A Randomized Effectiveness Trial*. *Arch Gen Psychiatry* 2012; 69(3):274-82

Wilber K. Integral Psychology. Shambala 2000.

WHO: What is the evidence on school health promotion in improving health or preventing disease and, specifically, what is the effectiveness of the health promoting schools approach? WHO Europe 2006.

Wilson SJ, Lipsey MW. School-based interventions for aggressive and disruptive behavior: update of a meta-analysis. *Am J Prev Med*. 2007 Aug;33(2 Suppl):S130-43.

Wolf FM, Guevara JP, Grum CM, Clark NM, Cates CJ. Educational interventions for asthma in children. *Cochrane Database Syst Rev*. 2003;1:CD000326.

Wulff K, Gatti S, Wettstein JG, Foster RG. Sleep and circadian rhythm disruption in psychiatric and neurodegenerative disease. *Nature Reviews Neuroscience* 2010;11:1-11.

Wyn J, Cahill H, Holdsworth R, Rowling L, Carson S. MindMatters, a whole-school approach promoting mental health and wellbeing. *Australian and New Zealand Journal of Psychiatry* 2000; 34:594-601.

Xia J, Merinder LB, Belgamwar MR. Psychoeducation for schizophrenia. *Cochrane Database Syst Rev*. 2011 Jun 1;(6):CD002831.

Zaki J, Ochsner K. The neuroscience of empathy: progress, pitfalls and promise. *Nature neuroscience* 2012;5:675-80.

Zautra AJ, Hall JS, Murray KE. Resilience, a new definition of health for people and communities. In: Reich JW, Zautra AJ, Hall JS. (eds.) *Handbook of adult resilience*. Guilford Press 2010.

Zwi M, Jones H, Thorgaard C, York A, Dennis JA. Parent training interventions for Attention Deficit Hyperactivity Disorder (ADHD) in children aged 5 to 18 years. Cochrane Review 2011.

