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Tired Children:  
Burnout or Chronic Fatigue Syndrome? 

Literature study  
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Tired Children: Burnout or Chronic Fatigue Syndrome?

1. Introduction

This literature study is a preparation on a traineeship and master thesis research at the Northern Center for Health Care research. The topic of this traineeship and research will be burnout in children. A question from pedagogical practice to the science shop of the University Medical Centre in Groningen gave cause for this topic.

Dutch media\(^1\) suggest that children are too busy nowadays: children have to achieve well in school, music, and sports, they have to have many peer friends, instead of going home after school they visit a daycare centre, where they have to obey to different rules. Picked up by their busy parents lately, they have to be nice for their parents, because they haven’t seen each other all day. In pedagogical practice the question raised whether children can get burnout as a result of their busy lives.

1.1 Burnout

The use of the term burnout began to appear in the 1970s in the United States, especially among people working in the human services. In the beginning, burnout was a popular psychological, non-scientific concept describing extreme fatigue and the loss of idealism and passion for one’s job. When the concept entered scientific research, burnout was actually defined as job burnout, referring to the origin of the concept. Job burnout was conceptualized as a psychological syndrome in response to chronic emotional and interpersonal stressors on the job (Maslach, Schaufeli, & Leiter, 2001). In recent years, the term burnout has been used to denote a condition of emotional and mental exhaustion at work (Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003). The ICD-10 (World Health Organization, 1992) classifies burnout somewhat less specific under ‘problems related to life-management difficulty’ and describes it as a state of vital exhaustion.

Maslach (1982, 1998; in Maslach et al., 2001) defined a multidimensional theory of burnout, with three key dimensions: a basic individual stress dimension, an interpersonal context dimension, and a self-evaluation dimension. The main symptoms of burnout can be located on these three dimensions: overwhelming exhaustion (individual dimension), feelings of cynicism/depersonalization and detachment from the job (interpersonal context dimension), and a sense of ineffectiveness and a lack of accomplishment (self-evaluation dimension).

\(^1\) In 2002, Sire (Stichting Ideële Reclame) started the campaign “Kinderen hebben het druk. Van wie zouden ze dat nou hebben?”. The campaign consisted of advertisements in newspapers, and television and radio commercials.
Exhaustion is the first reaction to job stress and therefore the central quality of burnout (Angerer, 2003). It is characterized by feelings of being overextended and depleted of one’s emotional and physical resources. Exhaustion is strongly related to depersonalization, which is an attempt to put distance between oneself and service recipients by actively ignoring the qualities that make them unique and engaging people. Someone who is burnout becomes detached from his job and shows a negative, callous, or excessively detached response to various aspects of the job. Exhaustion and depersonalization interfere with effectiveness. On the dimension of self-evaluation, senses of ineffectiveness and a lack of accomplishment are characterized by feelings of incompetence and a lack of achievement and productivity at work (Maslach et al., 2001).

As can be read in the previous part, the definition and conceptualization of burnout is related to professional employment. This might become a problem in answering the question whether children can get burnout, as children are not employed professionally. Some argue that for this reason, the term burnout cannot be used with respect to children (Hielkema, 2006). On the other hand, children do have to go to school, which is ‘work’ for them. What if school is very demanding and moreover, their lives are busy? Would children show burnout-like symptoms by then?

Because of the work-related definition of burnout, it is not researched in children so far. To answer the previous question, another syndrome characterized by exhaustion should be studied as well. Chronic fatigue syndrome (CFS) is such a syndrome, which is reported in both children and adults.

**Chronic Fatigue Syndrome (CFS)**

Although CFS is perceived as a relatively new disorder by most authors, individuals presenting with chronic fatigue states for which no underlying cause can be found have been recorded by clinicians for over 100 years. However, chronic tiredness in young patients is of relatively new attention (Richards, 2000).

CFS is a complex illness characterized by severe, incapacitating fatigue as well as numerous physical complaints and neurological impairments (Jordan et al., 1998). Different theories were developed to explain CFS. Jordan et al. (1998) mentions four of them. The first theory is about autonomic dysfunction. This medical theory associates neurally mediated hypotension with CFS. The second, multisystem theory is medically oriented as well and argues that CFS is triggered by a virus, toxin, or other insult that leads to immune activation. The symptoms of CFS suggest a connection between immune activation and central nervous system. Third, the psychiatric theory gives a psychological explanation to CFS. This theory argues that psychological factors (e.g. family dysfunction, developmental issues, high levels of internalizing symptoms, and depression) give rise to CFS. At last, an amount of etiological
Theories were described. These theories focus on the syndrome as a heterogeneous condition, with multiple psychological and physical causes, and with many psychological and physical factors and different combinations of these factors producing the symptoms in different individuals.

The Diagnostic and Statistical Manual of Mental Disorders (fourth edition) does not classify CFS separately. Together with other syndromes with unexplained somatoform complaints it is classified as Undifferentiated Somatoform Disorder (Treffers, 2003). Diagnostic criteria are: a) one or more physical complaints (e.g. fatigue or loss of appetite); b) duration of the disturbance of at least six months; c) the symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning; and d) the symptoms cannot be explained by any other medical condition or mental disorder (Frances, First, & Pincus, 1995).

A separate classification is given by the Oxford criteria for CFS, given in the box below (Rangel, Garralda, Levin, & Roberts, 2000; Saidi & Haines, 2006).

**Oxford CFS criteria**

- Syndrome characterized by fatigue of definite onset as the main symptom.
- Fatigue should be severe, disabling and affecting physical and mental functioning.
- The symptom of fatigue should have lasted for a minimum of 6 months during which it was present for more than 50% of the time.
- Other symptoms to be present, particularly muscle pain, mood and sleep disturbance.
- Exclusion of established medical conditions known to cause chronic fatigue.
- Exclusion of coexisting diagnosis of specified psychiatric disorders.

Although CFS is reported in both children and adults, no agreed diagnostic criteria for CFS in children exist (Saidi & Haines, 2006). The Oxford criteria are applicable to children, the only exception being six-months symptom duration considered to be too long when applied to children (Garralda & Rangel, 2002). Because children, given their rapid social, emotional and academic growth, may well suffer more disruption than adults within an equal period of illness, it is proposed to lower the minimum fatigue duration criterion for children to 3 months (Richards, 2000; Saidi & Haines, 2006). The criterion that fatigue should be disabling and affecting physical and mental functioning could be adapted for children by adding a criterion of frequent and prolonged school absence (De Jong et al., 1997).

The International Statistical Classification of Diseases and Related Health Problems (tenth revision) classifies CFS separately as Neurasthenia. Two types of neurasthenia are described. The main feature of the first type is a complaint of increased fatigue after mental
effort, often associated with some decrease in occupational performance or coping efficiency in daily tasks. In the other type, the emphasis is on feelings of bodily or physical weakness and exhaustion after only minimal effort, accompanied by a feeling of muscular aches and pains and inability to relax.

Most literature describes CFS by its symptoms: severe physical and mental fatigue. Other common symptoms are tension headaches, muscular pains, sore throat, difficulty in concentrating, inefficient thinking, sleeping problems, mood swings and irritability. Also sensitized lymph glands, joint pains, loss of appetite, sickness, dizziness, and minor degrees of both depression and anxiety occur (Garralda, 1999; World Health Organization, 1992; Jordan et al., 1998; Treffers, 2000). Some literature use the same diagnosis for CFS and ME (myalgic encephalomyelitis) (Garralda & Rangel, 2002; Saidi & Haines, 2006), but in most recent literature, the term chronic fatigue syndrome is preferred (Richards, 2000).

As can be learned from the previous descriptions, burnout and CFS have very different definitions. Most definitions of burnout are related to work and therefore not suitable for children. On the other hand, going to school can be seen as children’s occupation. Moreover, the definition given by the ICD-10 (World Health Organization, 1992) is much more general and does not give any limitations on age or occupation. In that sense, the term burnout could be applied to children as well. Whereas burnout is a psychological concept, the theoretical background of CFS is psychiatric/medical. Therefore, the definitions of CFS emphasize more on symptoms.

By now, burnout is not researched in children. CFS is reported in children, but also on this syndrome most research is on adults (Jordan et al., 1998). The topic of this study will be fatigue problems in children as a result of busy lives and/or stress. To answer the main question whether children can get burnout, burnout and CFS will be compared carefully. The leading question to this comparison is to what degree the classification burnout or CFS fits better to busy, stressed and therefore tired children. Burnout and CFS will be compared on their symptoms, causes, related factors, outcomes and prognosis, comorbidity and differential diagnoses, assessment, and treatment.
2. Method

Literature on the topic of this study was searched for in the databases ERIC, PsychINFO, and PubMed. Also PiCarta and the RuG catalogue were used.

The combination of keywords burnout and children only gave results for burnout in child workers. Therefore, the combination of children and fatigue or chronic fatigue syndrome / CFS was made. To find information on burnout, burnout was used as a keyword separately. Since burnout is not researched in children, results on burnout are given for adults, but results on CFS are given for children.

One literature study on this topic was already done for the science shop of the University Medical Centre in Groningen (Hielkema, 2006). Therefore, one reference list was available. Some important articles, authors, and/or journals were known via this reference list. The authors’ names Bell, Garralda, Maslach, and Rangel were therefore used as a second criterion. To find some specific articles, the searching process was restricted a few times for articles only from the Journal of Child Psychology and Psychiatry, Journal of the Royal Society of Medicine, and Pediatrics.

Except for DSM-IV and ICD-10, only literature published at most 10 years ago (since 1996) was accepted.
3. Results

3.1 Symptoms

3.1.1 Burnout

According to the multidimensional theory of burnout (Maslach et al., 2001), burnout develops over time. Emotional exhaustion emerges first, followed by an attempt to defend him/herself by isolation of affect (depersonalization dimension), leading to the final phase of burnout, which is a decrease in work functioning levels. A decrease in work functioning levels might be the easiest observable symptom, but the onset of burnout symptoms starts earlier with emotional exhaustion (Iacovides et al., 2003).

There are five common elements of the burnout phenomenon. The first are dysphoric symptoms: extreme fatigue, depression, restlessness, malaise, emotional depletion, feelings of mental or emotional discomfort and exhaustion (Ange ger, 2003; Maslach et al., 2001). Exhaustion can be overwhelming: a person suffering from burnout feels overextended and depleted of one’s emotional and physical resources.

Second, mental or behavioral symptoms are more prevalent than physical ones. Nevertheless, the following physical symptoms can occur in persons with burnout: chronic fatigue, insomnia (sleeplessness), dizziness, nausea (sickness), allergies, breathing difficulties, skin problems, muscle aches and stiffness, menstrual difficulties, swollen glands, sore throat, recurrent flu, infections, colds, headaches, digestive problems, and back pain (Angerer, 2003).

Third, burnout symptoms are work-related. People suffering from burnout display a loss of idealism and passion for one’s job and a loss of motivation and commitment. They have feelings of cynicism and detachment from their job, expressed in a negative, callous, or excessively detached response to various aspects of the job. Best observable is the sense of ineffectiveness and lack of accomplishment, reflected in feelings of incompetence and a lack of achievement and productivity at work (Maslach et al., 2001).

Fourth, decreased effectiveness and work performance occur because of negative attitudes and behaviors (Maslach et al., 2001). Burnout has a negative effect on the individual’s performance in the workplace, and it has been related to absenteeism, job turnover, low productivity, overall effectiveness, decreased job satisfaction, and reduced commitment to the job (Angerer, 2003).

The last element is characterized by the fact that the symptoms are manifested in ‘normal’ persons who did not suffer from psychopathology before (Angerer, 2003; Maslach et al., 2001). Persons with burnout usually hide their problem because they feel guilt and shame.
about their behavior, attitudes and mental state (Iacovides et al., 2003). Sometimes, this makes the symptoms of burnout difficult to observe, especially when burnout is in an early stage.

3.1.2 CFS

The main symptom of chronic fatigue syndrome is an unexplained, debilitating fatigue usually worsened by exertion and not resolving with rest (Bell, Jordan, & Robinson, 2001). The main complaint is increased fatigue after mental effort, but there is also physical fatigability with physical weakness and exhaustion after only minimal effort (Garralda, 1999). Both severe physical and mental fatigue and fatigability are unexplained by medical or psychiatric causes (Garralda & Rangel, 2002). The fatigue symptoms are of a relapsing and remitting nature, often made worse by physical exertion or stress, and may persist for months or years (Jordan et al., 1998). Although fatigue is the key characteristic of CFS, it may not always be the initial complaint. Headaches, abdominal or limb pains and anxiety symptoms may be complained of first.

Many physical symptoms are reported in children with CFS. The most common physical symptoms are: sore throat, (tension) headaches, sleeping problems, muscle pain (myalgia), joint pain, abdominal pain, nausea/vomiting, lymph node tenderness, limb pains, fever, diarrhea, anorexia, neurological abnormalities, eye pain/light sensitivity (photophobia), sensitivity to sound, and dizziness (Bell et al., 2001; Garralda, 1999; Garralda & Rangel, 2002; Jordan et al., 1998; Saidi & Haines, 2006).

Besides physical symptoms, also many mental or behavioral problems exist in children with CFS. Severe fatigue is associated with decrease in occupational performance or coping efficiency in daily tasks, cognitive dysfunction, memory difficulties, concentration problems, attention difficulties, mood disturbance, anxiety symptoms, subjective weakness, and worry about decreasing mental and bodily well-being (Bell et al., 2001; Garralda, 1999; Garralda & Rangel, 2002; Jordan et al., 1998; Saidi & Haines, 2006).

Besides fatigue, many different symptoms may exist in CFS. Moreover, fatigue-producing diseases in young children often manifest paradoxical symptoms (Richards, 2000): both physical and mental complaints are very diverse, ranging from headaches, muscle pain, and abdominal pain to cognitive dysfunction and mood disturbance. Different children can display very different symptoms and combinations of symptoms, which could make recognition of CFS in children very difficult.
3.2 Causes

3.2.1 Burnout

Burnout is considered a stress phenomenon (Maslach et al., 2001) and is therefore seen as a result of being exposed to various job stressors (Angerer, 2003). People in emotionally stressful or highly demanding jobs (e.g. in human services and care-giving occupations) are often exposed to job stressors; therefore they are at a high risk to develop burnout (Maslach et al., 2001). In this sense, the causes of burnout are mainly situational. A person has to focus quantitative job demands, which are the experienced workload and time pressure. Workload and time pressure are strongly related to burnout. The environment provides qualitative job demands as well. These demands refer to role conflict or role ambiguity. Also absence of job resources and lack of social support are situational aspects linked to burnout.

The main cause is job stress, but job stress alone does not cause burnout. It seems to be caused by disproportionally high efforts (time, emotional involvement, empathy) and poor (job)satisfaction (negative outcome) in addition to stressful or poor working conditions (high demands). It is a matter of imbalance between resources, values, expectations, and environmental demands (Iacovides et al., 2003). This imbalance is explained by Karasek’s demand-control model, in which jobs vary along two fundamental dimensions: job demands and employee control. Job demands are psychological stressors associated with the job and include time pressure, role conflict and ambiguity, and a heavy workload. Employee control concerns the worker’s authority to make decisions on the job, e.g. autonomy over job timing and methods. According to the model, job stress is expected to increase as perceived job demands increase. Conversely, as perceptions of control increase, job stress is expected to be lower (Probst, 2005). Indeed, high-stress job categories are characterized by high demands and low control (Karasek, 2004).

Different stressors can cause different types of burnout, depending on which stressor is most prominent. If an individual is mainly confronted with too much stress and too little gratification, he/she will become ‘worn-out’ and essentially gives up or performs work in a perfunctory manner. ‘Classic’ burnout is seen when an individual works increasingly hard, to the point of exhaustion, in pursuit of sufficient gratification or accomplishment to match the extent of stress experienced. The ‘underchallenged’ type of burnout is not mainly caused by stress or exhaustion, but rather by monotonous and unstimulating work conditions (Farber, 2000).

The integrative model of burnout (job-person fit model) takes both situational and individual characteristics into account. According to this model, burnout arises from chronic mismatches between people and their work settings in terms of some or all of the following
six areas (and their interactions): workload, control, reward, community, fairness, and values. E.g. exhaustion seems to emerge from mismatches in the workload domain (work overload), cynicism from mismatches in community (social conflict), and lack of efficacy seems to arise from mismatches in control (lack of relevant resources) (Maslach et al., 2001).

It is also argued that the cause of burnout is much more existential and rests in the human need to ascribe meaning to life. When work does not make this possible, burnout is inevitable. This is supported by the fact that the most committed workers tend to burnout most severely (Iacovides et al., 2003).

3.2.2 CFS

CFS is an illness of unknown cause. Hypotheses concerning the cause of CFS have ranged from persistent infection with viral or other agents to a primary psychiatric disturbance (Bell et al., 2001). Garralda & Rangel (2002) propose two approaches to the causes of CFS: CFS as a medical problem with established pathophysiology, or a multi-factorial biological and psychosocial approach. However, many different etiologies are described. All etiologies cause different clinical presentations or interact together, resulting in CFS (Jordan et al., 1998). The literature hypothesizes three main ‘causes’: medical/physical, psychological/psychiatric, and interactions between the previous two.

CFS can occur in epidemic or sporadic forms (Richards, 2000), which is seen as an argument for a viral onset of CFS (medical etiology) (Patel, Smith, Chalder, & Wessely, 2003). Individuals suffering CFS may display abnormalities of immune function as well (Garralda & Rangel, 2002). Concerning immune dysfunction and/or viral causes, infection by Epstein-Bar virus (EBV) and the human T-lymphotropic type-II-like virus (HTLV-II) may play a role, but are definitely not the only and single cause of CFS (Jordan et al., 1998). Sometimes genetic explanations of CFS are given. Fatigue was found to have a common genetic background with a cluster of depression, anxiety, and distress (Ter Wolbeek, Van Doornen, Kavelaars, & Heijnen, 2006).

Recent studies point towards abnormalities in autonomic nervous system function (Bell et al., 2001). These autonomic dysfunction theories argue that neurally mediated hypotension could cause CFS (Jordan et al., 1998). Autonomic dysfunction may also lead to poor modulation of daily activity and rest cycles, which is very often seen in children with CFS (Garralda & Rangel, 2002). Abnormalities of neuroendocrine (i.e. low cortisol levels and abnormal adrenal response to stress and exertion) and serotonergic neurotransmitter systems may play a role in causing CFS as well, although findings have either been inconsistent or not always specific to CFS (Garralda & Rangel, 2002).

The multisystem theory provides a medical explanation which takes both the role of the immune system and the central nervous system into account. According to this theory, a
virus leads to immune activation. A connection between immune activation and central nervous system injury accounts for abnormalities in hormone production in the hypothalamus. Hormone deficiencies contribute to a positive feedback loop which maintains immune activation, and lead to reduced cellular metabolism, including impaired oxygen consumption during exercise. There has been little empirical testing of this model (Jordan et al., 1998). Another indication for the role of hormones is given by severe fatigue in adolescents caused by hormonal changes during puberty (Ter Wolbeek et al., 2006).

There are some proved organic associations with CFS, such as EBV and abnormal hormonal stress response in CFS patients. Organic etiologies are strongly supported by many self-help groups and patients, but many are not scientifically proved (Richards, 2000).

If physical explanations cannot be found, the question arises if psychosocial problems exist. Although it still is unclear what causes CFS, it is known that behavioral aspects can maintain fatigue complaints (De Jong et al., 1997). Psychiatric theories point out that CFS is of psychological origin or that CFS symptoms are attributed to family dysfunction or developmental issues. No empirical evidence has been found for these theories (Jordan et al., 1998). Nevertheless, some psychological aspects are associated with CFS; e.g. emotional upset, psychological struggles, stress of relationships, school stresses, and educational and social demands (Patel et al., 2003; Ter Wolbeek et al., 2006).

No single causative factor for CFS has been identified so far. It is likely that a complex interaction of physiological, cognitive, affective and psychosocial factors is involved in causation and maintenance of CFS (Garralda & Rangel, 2002). Combinations of physical and psychological stresses may contribute to the development of CFS through reduction in sense of wellbeing (Rangel et al., 2000).

With respect to the interaction between physical and psychological causes, Jordan et al. (1998) present four possible models. The first model deals with CFS as a non-specific response with multiple psychological and physical causes. The second model states that psychological and physical factors interact together. Third, physical and psychological factors are thought to have a reciprocal influence. The fourth model is concerned with CFS as a heterogeneous condition, with different factors and combinations of factors producing the symptoms.

A special interaction between psychological and physical factors is handled by the diathesis-stress model. In this model, a genetic predisposition may play a role. A constitutional predisposition (physical factor) triggered by stressful life events (psychological factor) produces the disease state.
3.3 Related factors

3.3.1 Burnout

For many years, burnout was viewed as a problem of a particular individual; it was attributed to flaws in an individual’s character, behavior or drive (Angerer, 2003). Burnout research identified many individual factors that play a role in developing burnout.

Age is an individual factor that seems to matter: higher levels of burnout are found among younger employees (<30-40 years). Another factor is sex, but it is not a strong predictor. Different studies report different results about sex: some studies report higher levels of burnout in women, others report no differences between men and women. A factor with a positive effect is marital status: those who are unmarried seem to be more prone to burnout compared with those who are married (Maslach et al., 2001).

With respect to educational level, higher levels of burnout are reported in those with a higher level of education. This is due to the fact that higher educated people have jobs with greater responsibilities and higher stress or they may have higher expectations from their jobs (Maslach et al., 2001). Nevertheless, sometimes position and training seem to have a larger influence than educational level: e.g. in health care services, more nurses suffer from burnout than doctors (Iacovides et al., 2003).

Research on burnout and the big five personality traits pointed out that burnout is strongly related with neuroticism and extraversion. Neuroticism and extroversion are positively related with emotional exhaustion and continue to contribute to its development during true burnout (Iacovides et al., 2003). Especially high levels of neuroticism are seen as a risk factor in developing burnout. High levels of neuroticism also make individuals more depression-prone, and being vulnerable to depression is a risk factor for burnout development as well (Maslach et al., 2001).

Not only being depression-prone, but also being stress-prone makes an individual more vulnerable to burnout. Low levels of hardiness, poor self-esteem, external locus of control, and an avoidant coping style typically constitute the profile of a stress-prone individual and are therefore risk factors for burnout. Being mentally healthy serves as a protective factor, as it makes people better able to cope with stress.

The level of hardiness deserves some special attention, as it reflects two sides of the same coin. Hardiness is determined by involvement (in contrast to alienation), control (in contrast to helplessness), and love of challenge (in contrast to indifference). The existence of hardiness traits makes people deal with stressors in a more effective way, but the obsession with competition itself is a stress that some people never overcome (Iacovides et al., 2003). In other words, both too low and too high levels of hardiness can be risk factors in burnout development.
With respect to personality traits, Iacovides et al. (2003) discovered that a type-A personality or behavior pattern correlates highly with burnout. This behavior pattern is characterized by unbridled ambition, a need for high achievement, impatience, competitiveness, and a sense of urgency (World Health Organization, 1992).

An individual’s attitude towards the job also plays a role in developing burnout. Inadequate control over one’s work, frustrated hopes and expectations and the feeling of losing the meaning of life, are highly determined by the individual’s personality and original attitude towards work. The dreams, ambitions, and the beliefs a person has about the social status of his/her work can also be of influence (Iacovides et al., 2003). High expectations from the job are a risk factor, as high expectations lead people to work too hard and do too much, thus leading to exhaustion and eventual cynicism when the high effort does not yield the expected results (Maslach et al., 2001). Job engagement (including organizational commitment, job satisfaction, job involvement) is a protective factor, as well as perceived control: the more the person believes he/she has control over events, the less stress he/she experiences. (Iacovides et al., 2003; Maslach et al., 2001).

The attitude towards work is not only determined by the individual, but of course also by the environment. Recent research argues that burnout develops through interaction between personality and environment (Iacovides et al., 2003). The job-person fit model focuses on the compatibility between six domains of the job environment (work overload, lack of control, insufficient reward, breakdown of community, absence of fairness, conflicting values) and the employee. The balance between factors on these six domains and individual factors determines the possibility of burnout (Angerer, 2003). For example, job control, skill use and worksite support, as well as qualitative job demands have great effects on psychological distress, which could create a risk of burnout development (Iacovides et al., 2003).

Reinforcement, reward, and gratification are important. These factors stem from both the environment and the individual. An individual’s locus of control (internal/external) determines whether he/she will perceive an event as a gratification or not (Iacovides et al., 2003). Also efficient coping strategies can be an important factor in the interaction between the individual and its environment (Maslach et al., 2001).

Low personal achievements are found to be vulnerability traits towards burnout development. Hard work may lead to burnout, but on the contrary, achieving through work, being estimated by others, and value-rich work, all correlate negatively with job stress. (Iacovides et al., 2003). So it seems burnout has everything to do with a disturbed balance in individual and environmental factors.
Although both individual and situational factors are important, situational and organizational factors play a bigger role in burnout than individual ones (Angerer, 2003). Many individual characteristics are related to burnout, but the relation between situational factors and burnout is much stronger: burnout is more of a social phenomenon than an individual one (Maslach et al., 2001). In other words, in the interaction between individual and environmental factors responsible for burnout, the environment weighs more than the individual characteristics.

3.3.2 CFS

In the literature about factors that play a role in CFS, three categories of factors are presented. The first category are factors that predispose to develop CFS, second are factors that trigger the illness (precipitating factors), and the third category are factors that perpetuate CFS (Sharpe, Chalder, Palmer, & Wessely, 1997). In each of these categories, biological factors, psychiatric/psychological factors, and social factors can be distinguished.

Predisposing biological factors can be of a genetic nature: CFS symptoms are found in family members of children with CFS (Garra1da & Rangel, 2002; Jordan et al., 1998). Most children with CFS are between the ages of 10 and 12 years (Jordan et al., 1998), but others argue that there is no association between CFS and age. Although the same results are reported for sex (Rangel et al., 2000), Ter Wolbeek et al. (2006) found that girls are much more fatigued than boys. Those fatigued girls were characterized by a larger use of medication and a lower age at menarche.

Risk factors are a history of allergies or asthma or other persistent troubles through childhood (e.g. repeated infections, speech problems, constipation). Nevertheless, most children were healthy before the start of the CFS (Jordan et al., 1998; Rangel et al., 2000).

Psychiatric/psychological predisposing factors have to do with personality traits or disorders. A ‘typical’ child with CFS is conscientious, vulnerable, emotionally labile, obsessional, sensitive, insecure, anxious, and feels worthless (Garra1da, 1999; Garra1da & Rangel, 2002). Iacovides et al. (2003) reported a combination of high scores on neuroticism and low scores on extraversion in chronic fatigue syndrome. Children with CFS display higher rates of personality disorder and difficulty, also previous to the onset of illness (Garra1da & Rangel, 2002). They score higher on both depression and anxiety (Ter Wolbeek et al., 2006). The usual young CFS patient was previously athletic and ambitious (Jordan et al., 1998). Being too athletic and ambitious is a risk factor in CFS development, but on the other hand, higher levels of exercise in childhood are also shown to lower the risk for development of CFS (Ter Wolbeek, 2006). Lifestyle and stress predispose to CFS development as well (Sharpe et al., 1997). With respect to school attendance, it turned out that
children who do not attend school because of their illness, were also poor attenders before the diagnosis was made (Sankey, Hill, Brown, Quinn, & Fletcher, 2006).

Socioeconomic status (SES) could be a predisposing social factor, but more research in different SES groups is needed. Most young CFS patients seem to be upper middle class (Jordan e.a, 1998): an over-representation of high SES in families with children with CFS is found (Garralda & Rangel, 2002). Other family risk factors that play a role in CFS development are family health problems, psychological distress, limitations in the development of intimate relationships and of family conflict resolution, or (on the other hand) closeness or togetherness between family members around health issues. In a minority of cases profound disorganization or sexual abuse was found (Garralda, 1999).

Research on precipitating factors has up to now focused on biological aspects, e.g. viral infection (Sharpe et al., 1997). A number of parents report CFS as starting with flu-like symptoms or after infections such as Epstein-Bar Virus (EBV). However, studies found no association between self-reported viral infections and subsequent fatigue, and only a minority of patients develops CFS after EBV infection. If viruses play a role in precipitating CFS, this may only apply to certain types of viruses (e.g. Epstein-Barr), infecting vulnerable persons (Garralda & Rangel, 2002).

Impressive life-events could play a role in triggering CFS (Sharpe et al., 1997). In most young patients, CFS is diagnosed after secondary school transfer, which is a well-recognized stress requiring both physical and psychological adaptation (Rangel et al., 2000). Except for secondary school transfer, psychological and social precipitants are rarely reported and should be researched (Garralda & Rangel, 2002).

Perpetuating biological factors are reduced physical activity and prolonged rest. These affect physiological mechanisms and lead to physical deconditioning or reduced physiological ability to exercise. Sleep disturbance may be a consequence of fatigue but may also contribute to its continuation. Both lack of, and, on the other hand, too much sleep is associated with CFS (Garralda & Rangel, 2002). Also prolonged inactivity is associated with CFS; lower levels of physical activity may cause higher perceived fatigue (Ter Wolbeek et al., 2006). Sharpe et al. (1997) found cerebral dysfunction to have a perpetuating influence.

With respect to psychiatric/psychological perpetuating factors, child and family health/illness attitudes and cognition play a part in the maintenance of the disorder. Children with CFS and their parents underestimate both ill children’s actual activity levels and expected fatigue levels (Garralda & Rangel, 2002). Especially attributions and reactions of the parents determine how the complaints are dealt with (De Jong et al., 1997).
Many parents display an enhanced tendency to believe in the presence of disease in spite of medical evidence. This persists after recovery and may therefore represent enduring health beliefs (Garralda & Rangel, 2002). As long as parents and patient assume that the complaints are a result of a physical disorder, normal physical symptoms will be interpreted as signals pointing to illness. This is often seen at the onset of puberty: due to physical changes children do not feel familiar any more with their own body. Symptoms that go with normal developmental processes can be interpreted by both child and parents as symptoms of illness, e.g. CFS. Parents that tend to consider their own bodily sensations as illness symptoms, do the same with their children. Moreover, they can confirm illness behavior and helplessness of their children (De Jong et al., 1997). The fear by children and parents that exertion will lead to lasting damage promotes avoidance behavior and inactivity (Garralda & Rangel, 2002). These effects are strengthened by feelings of not being understood and being rejected (De Jong et al., 1997), and by the stress of having to deal with the lack of recognition of the illness and validation of the symptoms (Garralda & Rangel, 2002).

Other family features of possible importance are high levels of parental attention, solicitude, tolerance and emotional involvement towards the child’s symptoms. It is not known to what extent these factors are a consequence of illness and whether they contribute to its continuation (Garralda & Rangel, 2002).

If a child develops CFS in its (early) puberty, developmental stage can become a risk factor. During puberty, autonomy and identity are developed and separation from the parents starts. These developmental processes conflict with the dependency due to illness, and may therefore be disturbed. In this sense, the developmental stage provides extra risks in maintaining the complaints (De Jong et al., 1997).

Other psychological factors that attribute to the persistence of fatigue are severity of fatigue itself, ineffective coping skills, sleeping problems, anxiety, and depression (if present) (Bell et al., 2001; Sharpe e.a, 1997; Ter Wolbeek et al., 2006).

The most important social perpetuating factor is SES. A significant association is found between better CFS outcome and high SES (Garralda & Rangel, 2002; Rangel et al., 2000). This seems to be contradictory to the predisposing role of SES, where high SES can serve as a risk factor. In fact, most young CFS patients stem from high SES families. High SES can be a risk factor for development of CFS, but once ill, high SES children show a better recovery as well. Also psychiatric maternal symptoms and/or maternal chronic health problems are found to be risk factors in the maintenance of CFS (Garralda & Rangel, 2002; Rangel et al., 2000). No association was found with broken homes (Rangel et al., 2000).
In all stages of CFS development, biological, psychological and social factors interact with each other. This interaction is best illustrated by the biopsychosocial model, presented below (Van de Putte, 2006).

Biopsychosocial model of chronic fatigue syndrome.

### 3.4 Outcomes and prognosis

#### 3.4.1 Burnout

The short term outcomes of burnout are on the domain of job performance, characterized by lower productivity and effectiveness at work, decreased job satisfaction, and reduced commitment to the job or the organization (Maslach et al., 2001). Significantly more days are lost from work and productivity is reduced (Iacovides et al., 2003).

Long term effects of burnout on the mental and physical health of professionals, although not well studied, are considered to be significant. With respect to physical health outcomes; cardiovascular disorders, gastrointestinal disorders, musculoskeletal disorders, and problems associated with dysfunction of the immune system are associated with burnout (Iacovides et al., 2003). The effects of burnout on mental health outcomes can be even more devastating: it afflicts every aspect of the individual’s life, may have a deleterious effect in interpersonal and family relationships, and may lead to a general negative attitude towards life (Iacovides et al., 2003). It has a negative effect on people’s home life as well as work (Angerer, 2003).
It is also shown that a large number of professionals retire prematurely due to burnout (Iacovides et al., 2003).

**3.4.2 CFS**

Prognosis of most children with CFS is fairly good, but the course of recovery is variable and often prolonged (Sankey et al., 2006).

On short term, CFS causes severe impairments in most areas of functioning with marked inactivity, prolonged bed rest, absence from school and loss of contact with the peer group. Functional impairment is central to CFS, and therefore impairment in school attendance and other activities or even bedridden conditions are reported generally (Garralda & Rangel, 2002; Rangel et al., 2002). The literature is not unanimous about the duration and severity of these short term outcomes. Some report severe handicapping, with at least half of children not going to school (Patel et al., 2003; Rangel et al., 2000; Saïdi & Haines, 2006), while others report that only a minority of children were persistently and severely affected (Bell et al., 2001). Also results about mean illness duration are not consistent, varying from 1 year till 5 years (Jordan et al., 1998; Patel et al., 2003; Rangel et al., 2000; Saïdi & Haines, 2006). However, after longer periods of illness or a more severe form of the illness, the rate of recovery diminishes (De Jong et al., 1997; Jordan et al., 1998).

On long term, children and adolescents with CFS appear to a more favorable outcome than adults: about 60-80% recovers after treatment (Bell et al., 2001; Garralda & Rangel, 2002; Patel et al., 2003; Rangel et al., 2000). Although most literature report these recovery rates, there are also varying results on long term outcomes. Some studies point out that even after recovery several children are left with psychopathology (e.g. anxiety disorders), residual symptoms and handicap (Garralda & Rangel, 2002; Rangel et al., 2000), while others argue that most children recover completely. Qualitative outcomes on long term may depend on many factors: poor outcome in children has been found to be associated with lower socioeconomic status, chronic maternal health problems, immunological anomalies, introspective personality traits, presence of personality disorder before onset, and the lack of well-defined acute physical triggers. Neuropsychological deficits involving impaired sustained attention, concentration and recall could impede rehabilitation into full education, and therefore worsen the long term educational and social outcomes (Garralda, 1999; Garralda & Rangel, 2002).

Educational outcomes are of special interest for children with CFS. CFS is a common cause of long term absenteeism from school and children with CFS may have more time off school than other chronically ill children (Rangel et al., 2000; Sankey et al., 2006). Attempts to return to school are often a source of great anxiety to many young people who require carefully supported reintegration programs (Sankey et al., 2006). In general, those with best
illness outcome also missed less time at school during illness, and those who had longer symptom persistence found it more difficult to return to school (Bell et al., 2001; Sankey et al., 2006). Very often there is a persisting tendency to miss school even after recovery from CFS. The young people who did not return to school full time after treatment were also the poor attenders before the diagnosis was made. It is of great importance that these children and adolescents are recognized quickly when absent from school for any length of time. They may represent a subgroup which has some features of chronic school refusal and need a more prompt but flexible approach to school reintegration after lengthy absence which aims, wherever possible, to maintain the child in school even on a very reduced timetable (Sankey et al., 2006).

Social outcomes parallel the perceived illness outcome: the better the outcome, the smaller the overall social effect on life (Bell et al., 2001). For children, parents can play a large role in improving children’s social outcome. Moreover, parental beliefs that exclude the possibility of a psychological contribution to the perpetuation of CFS have been found to be associated with poor outcome (Garralda & Rangel, 2002).

Long term outcomes can also be affected by recognition of the illness: delays in recognition and treatment could have a significant impact on the social, emotional and educational development at a crucial stage of children’s lives (Sankey et al., 2006).

### 3.5 Assessment

#### 3.5.1 Burnout

During the 1980s, research focused on assessing burnout. Many different measures were developed; however, the most widely used measure is the Maslach Burnout Inventory (MBI) developed by Maslach and Jackson (1981) (Angerer, 2003). The MBI is the only measure that assesses all three of the core dimensions of burnout (exhaustion, cynicism, and reduced professional efficacy) (Maslach et al., 2001).

The first version of the MBI was designed for people working in the human services and health care: the MBI-Human Services Survey (MBI-HSS). A second version was developed for use by people working in educational settings (the MBI-Educators Survey, or MBI-ES). In expanding the study of burnout to occupations beyond human services and education, a third, general version of the MBI was developed: the MBI-General Survey, or MBI-GS (Angerer, 2003; Maslach et al., 2001).

In research, burnout is often assessed by absenteeism from work. Absenteeism is easily measured and thus it is an accessible focus of research (Iacovides et al., 2003).
3.5.2 CFS

At the present time, no appropriate instruments are available to evaluate fatigue and disability in CFS children. The diagnosis of CFS is based on clinical findings as there is no laboratory test for CFS. Therefore, the diagnosis is one of exclusion (Jordan et al., 1998). Unfortunately, diagnostic criteria are available for adults, but criteria specific for children have not been developed (Bell et al., 2001). Research and diagnosis on CFS in children is often based on adult diagnostic criteria, but patterns of symptoms may be different from those in adults. Another problem in assessing CFS in children is that younger children may not be able to describe their fatigue and activity limitations, and they may not be able to articulate their symptoms and fatigue owing to developmental limitations of verbal skills (Jordan et al., 1998).

A good measure for functional impairment and severity of CFS is prolonged school absenteeism (Patel et al., 2003). Therefore, poor school attenders should be recognized quickly as they could be at a risk for CFS (Sankey e.a, 2006).

According to the Oxford CFS criteria, a patient with CFS must have long-lasting and debilitating fatigue as a primary complaint. The complaints must be present for six months or longer, and although recommended by several authors, the criterion of six-months symptom duration is not officially adapted for children (Jordan e.a, 1998). To adapt this criterion for children, most literature proposes a symptom duration of three months (Richards, 2000; Saidi & Haines, 2006), but also periods of six weeks or two months are mentioned. On one hand a quick diagnosis is considered important to lower the chance of developmental delays, but on the other hand a patient should have the opportunity to recover spontaneously. Moreover, physical examination could increase somatic attributions, which could contribute to maintenance of the complaints (De Jong et al., 1997). Too many highly technical investigations are also likely to provoke patients’ anxiety if a specific cause cannot be found for their symptoms (Richards, 2000).

Despite these emotional drawbacks of medical assessments, many physical investigations are done in assessing CFS, e.g. blood count, liver function tests, and urine screen (Garralda, 1999; Richards, 2000). These medical tests are used primarily to assist in exclusion of other organic causes of fatigue (Jordan et al., 1998). To exclude any other explanatory medical or psychiatric disorder, full and comprehensive medical and psychiatric history taking can be very informative. Besides medical and psychiatric history, this also includes physical and developmental problems, presence of functional symptoms and school adjustment, information on family health, functioning and relationships, the child’s temperament and personality features (Garralda, 1999; Garralda & Rangel, 2002).
Other helpful assessments are identification of predisposing, precipitating and perpetuating factors, cognitive/educational assessment, and physiotherapy and occupational therapy assessments. Observations of or an interview with the child are helpful to explore the handicap and restrictions caused by the physical symptom. A full discussion with parents about the condition, its onset, family beliefs and concerns, psychiatric comorbidity and rationale for treatment, or observations of the family create insight in communication around the physical and psychological issues and beliefs about the nature of the illness (Garralda, 1999; Garralda & Rangel, 2002).

Besides many assessments that try to make a diagnosis based on exclusion, some specific questionnaires are developed. Chalder (1990) designed the Chronic Fatigue Syndrome Questionnaire, but this questionnaire is not published yet (Richards, 2000). The Checklist Individual Strength (CIS) consists of four subscales: severity of fatigue, concentration, motivation, and physical activity. This questionnaire is not normalized for young children (De Jong, 1997), but relatively high reliability coefficients (Cronbach’s $\alpha$ between .80 and .93) were reported for adolescents, with the highest reliability ($\alpha = .93$) on the fatigue subscale (Ter Wolbeek, 2006).

### 3.6 Comorbidity and differential diagnosis

#### 3.6.1 Burnout

Burnout is related to anxiety and depression. Especially depression can occur secondary to burnout. However, burnout is specific to the work context, whereas depression is multifaceted and pervades every domain of a person’s life. Burnout is more job-related and situation-specific than general depression (Angerer, 2003; Maslach et al., 2001).

Comparative research in burnout patients vs. other mental disorder patients points out that the former group has a less pathological profile than the latter (Maslach et al., 2001). Depressive symptoms and alcohol abuse are suggested to be two distinct results of job stress and not sequential components of a stress process (Iacovides et al., 2003).

Burnout is not synonymous with ‘job stress’, ‘fatigue’, ‘alienation’ or ‘depression’, but it could be expected to share some common features with depression. Especially younger subjects with burnout display symptoms of ‘mild’ depression quite often (comorbidity). In the more severe forms of burnout, and in individuals that have a vulnerability trait to develop burnout, it seems that depressive and burnout symptoms share similar qualitative characteristics. Even though burnout and depression may share several common characteristics, they are separate entities. A person could suffer from a major depression and at the same time not suffer from burnout. Naturally, depression, a pervasive disorder that
influences all aspects of life, causes problems with work as well. However, the two syndromes could co-exist and produce a qualitatively different symptomatology compared to either syndrome alone. In this case, both diagnoses should be applied (Iacovides et al., 2003).

3.6.2 CFS

Many physical and mental disorders should be distinguished from CFS. Physical diseases may cause easy fatigability, whereas CFS is characterized by an overwhelming exhaustion that is often mental and physical (Jordan et al., 1998). Therefore, all medical conditions in which fatigue can occur, such as autoimmune disease (e.g. juvenile rheumatoid arthritis), chronic infection, lung disease (e.g. cystic fibrosis), diabetes, HIV/AIDS, leukemia, neuromuscular disease (e.g. multiple sclerosis), congestive heart failure, and sleep disorder, should be excluded (De Jong et al., 1997; Jordan et al., 1998). Fibromyalgia and migraine also share common symptoms with CFS, and should be differentiated carefully as well (Bell et al., 2001).

Very often, fatigue remains unexplained by medical conditions. In these cases, it should be ascertained whether it can be attributed to a depressive or anxiety disorder, since bipolar disorders can ‘masquerade’ as CFS (Garralda & Rangel, 2002).

In many studies, the differential diagnosis of depression and CFS is mentioned. With CFS, the unexplained, persistent, or relapsing chronic fatigue must be the primary complaint, whereas with depression, the primary complaint may be consistent and persistent lowering of mood or loss of interest or pleasure (Jordan et al., 1998). Children with CFS can be distinguished from those with primary depressive disorder diagnoses on clinical features. In children with CFS compared to controls with depressive disorders were found more somatic symptoms and more problems in being able to enjoy usual activities, but fewer marked depressive or suicidal symptoms, less self-accusation, less anti-social behavior and better self-esteem and feelings of self-efficacy (Garralda & Rangel, 2002; De Jong, 1997). Depression could be secondary to the severe functional impairment, disability and peer isolation characteristic of CFS (Garralda & Rangel, 2002), so there is comorbidity with CFS and depression as well. However, children with CFS are not depressed in the conventional sense although they are psychologically distressed (Richards, 2000).

According to the DSM-IV, CFS is classified as Undifferentiated Somatoform Disorder (Treffers, 2003). This implies that other somatoform disorders (e.g. somatoform pain disorder, conversion disorder, somatization disorder) should be differentiated from CFS. Abdominal pains and headaches occur both in CFS and somatoform pain disorder. In pain disorder, pain is the major complaint and is more persistent, severe, and distressing, whereas in CFS, fatigue is the major complaint. The same distinction is for CFS and conversion disorder: in CFS fatigue is most prominent, but conversion disorder is characterized by a
partial or complete loss of bodily sensations or movements (Garralda, 1999). CFS and somatization disorder are most difficult to discriminate. Somatization is the physical experience and/or expression of human stress. Somatization in children is characterized by experience of pain, loss of function, and fatigue (Richards, 2000). The discrimination between CFS and somatization disorder is best made in observation of the patient: individuals with somatization disorder describe their complaints in a colorful, sensational, and emotional manner terms, with specific factual information missing. People with CFS describe their symptoms clearly and concisely (Jordan et al., 1998).

Other mental disorders that should be differentiated from CFS are anxiety disorders (with prominent, prolonged, and persistent feelings of anxiety, worry, and restlessness), posttraumatic stress disorder, psychotic disorders, ADHD, eating disorders (e.g. anorexia nervosa), and school phobia and refusal (Bell et al., 2001; Garralda, 1999; Garralda & Rangel, 2002; Jordan et al., 1998; Richards, 2000; Sankey et al., 2006).

Psychiatric comorbidity was found to be present in a third to a half of children with somatization related disorders (Garralda, 1999). Moreover, adolescents with CFS are found to display more psychological distress and depressive symptoms than those with medical diseases such as cystic fibrosis, juvenile arthritis or cancer (Garralda & Rangel, 2002). Emotional spectrum disorders (anxiety or depression disorders), emotional distress, and internalizing symptoms are the most common association (Garralda, 1999; Garralda & Rangel, 2002; Jordan et al., 1998). Comorbid syndromes of physical disease and allergic problems (eczema, asthma) can occur as well (Garralda & Rangel, 2002; Patel et al., 2003).

### 3.7 Treatment

#### 3.7.1 Burnout

Over the last decade, the literature on teacher burnout has focused on etiology, but models of treatment continue to be underrepresented. Suggestions for remediation of burnout tend to parallel those for any stress-related disorder: relaxation, meditation, and exercise; time management; seeking alternative sources of satisfaction; strengthening coping skills; and enhancing social support (Farber, 2000). Yet Freudenberger, who introduced the term burnout (1974), proposed that, therapeutically, it is not a good idea to shift into medication or yoga, which he believes causes a mental dropping, underactivation and mental fatigue. Introspection is not what the burnt out person requires; he/she requires physical exhaustion, not further mental strain and fatigue (Iacovides et al., 2003).

What lacks ‘classical’ stress treatment in remediation of burnout is attention to the person’s sense that the efforts on his/her job are not met with commensurate rewards,
satisfactions, or fulfillment (Farber, 2000). Therefore, an integrative treatment is thought to be more successful. An effective way of dealing with burnout is to teach individual techniques to alleviate the symptoms of burnout and to combine that with changes of the workplace environment. The management of a company must address the six areas of work life, in conjunction with individual interventions, to effectively combat burnout (Angerer, 2003).

Different forms of treatment can be required, depending on which subtype of burnout is most prevalent (worn-out, classic, or underchallenged). For example, the worn-out individual manifests depression-like symptoms, including a perceived loss of self-esteem, and often requires cognitive approaches that aim to rebalance his or her perceptions. By contrast, the more classically burned-out person is helped by a more psychodynamic approach that focuses on the person’s strong need for great achievement (Farber, 2000). In remediating an underchallenged type of burnout, attention to situational aspects is most important.

Two aspects should be taken into account in burnout treatment. First, therapists should avoid treating burnout as if it were a single phenomenon and instead should tailor their treatment to the specific type of burnout manifested by their client. Second, these treatments, while embodying different elements, should be essentially integrative in nature (Farber, 2000).

3.7.2 CFS

In treatment of CFS, attention should be paid to all possible contributing factors including the biological, social, and psychological (Richards, 2000). The best approach is multidisciplinary: treatment takes place in partnership with the child and the family, with school and other professionals (Garralda & Rangel, 2002).

Early engagement of the family is crucial for therapeutic success, as parents play an important role in the maintenance of the disorder. Parental beliefs on the nature of the disorder can confirm illness behavior and can undermine treatment (Garralda, 1999; Garralda & Rangel, 2002; De Jong et al., 1997).

Besides family therapy, a multifactorial approach also contains a graded behavioral program and additional graded approach for return to school (Patel et al., 2003). Psychological factors are of particular relevance in maintaining the condition and should therefore be treated (Garralda, 1999). In adults, cognitive-behavioral therapy is shown to be an effective treatment. Although it is not researched in children yet, it is expected to be effective in younger patients as well (Garralda & Rangel, 2002; Richards, 2000). A behavioral approach enables the treatment of avoidance behavior; cognitive techniques can be used to modify attributions and cognitive factors that trigger avoidance behavior and sustain the fatigue and to promote self-efficacy (Garralda, 1999). In promoting self-efficacy, the development of non-maladaptive coping strategies for anxiety is very important (Patel et al.,
Cognitive-behavioral therapy can also be used to reduce physical attributions and to decrease the attention on physical complaints (De Jong et al., 1997). During treatment, a discussion regarding stressors can be helpful, but direct confrontations about beliefs concerning etiology should be avoided (Patel et al., 2003; Richards, 2000).

In CFS rehabilitation, a gradual return to normal physical activity and gradual exercise is very important (Garralda, 1999). The patient’s activities should be gradually increased in all areas of life, including school, leisure, social and physical activities (Richards, 2000). This can be done in a structured graduated daytime activity program with self identified goals and graduated stepwise reintroduction to previous main daytime activity (Patel et al., 2003). There is evidence that graded exercise is effective treatment (Richards, 2000). However, treatment must involve balancing of rest and activity. This involves management of sleep disturbance, aiming at normalization of sleep patterns (Jordan et al., 1998; Patel et al., 2003).

Rest is often seen as the best way to deal with the complaints, but prolonged rest is ineffective and may actually be harmful (Garralda & Rangel, 2002). Activities that cause fatigue symptoms or pain are avoided. This way of behaving causes even more inactivity; in the end, the patient feels sick and tired after only minimal effort (De Jong et al., 1997). The levels of rest necessary for children and adolescents with CFS will fluctuate with illness severity (Jordan et al., 1998). So in order to gradually increase physical activity, the balance between rest and activity needs to be fitted to the stage of illness.

Besides psychological treatment, psychopharmacological treatment is quite common as well (Jordan et al., 1998). Antidepressants are very often prescribed, although there is a lack of sufficient evidence for the use of these medications (Garralda & Rangel, 2002). Almost all authors agree that antidepressants can be helpful for associated depressive symptoms, but not for treating CFS (Garralda, 1999; Richards, 2000). Also medication for headaches, beta-blockers, antibiotics and alternative medicine (e.g. acupuncture, reflexology, hormonal derivative, mineral replacement) may cause some relief, but always on side-effects of CFS. By now, no consistently effective pharmacological treatment for CFS itself has been found (Jordan et al., 1998; Rangel et al., 2000; Saidi & Haines, 2006).

De Jong et al. (1997) argues that, in order to reduce physical attributions, medical treatment should be limited. However, to treat CFS effectively, the connections between physical and psychological factors should be fully understood (Garralda, 1999).
4. Discussion

Both of burnout and CFS an overview was given of symptoms, causes, related factors, outcomes and prognosis, comorbidity and differential diagnoses, assessment, and treatment. The leading question of this literature study was to what degree the classification burnout or CFS fits better to busy, stressed, and therefore tired children. To answer this question, burnout and CFS will now be compared on all aspects handled in the results section.

The main symptoms of burnout are emotional exhaustion, isolation of affect and a decrease in work functioning levels. Five common elements of the burnout phenomenon were found in the literature. The first are dysphoric symptoms, such as extreme fatigue and depression. Also physical symptoms are found (e.g. insomnia, dizziness, muscle aches, sore throat, and headaches), but mental or behavioral symptoms are more prevalent than physical ones. Third, burnout symptoms are work-related, reflected in feelings of incompetence and a lack of achievement or productivity. Fourth, decreased effectiveness and work performance are caused by negative attitudes and behaviors. The fifth common element is that all previous burnout symptoms are manifested in ‘normal’ persons who did not suffer from psychopathology before.

The main symptoms of CFS are severe physical and mental fatigue, often made worse by exertion or stress. Besides fatigue, many different physical symptoms occur, such as sore throat, headaches, sleeping problems, dizziness, muscle pain, and abdominal pain. Common mental or behavioral problems are mood disturbance, anxiety symptoms, and difficulties with memory, concentration, and attention.

The emphasis of both syndromes is somewhat different: burnout focuses on work-related problems, whereas in CFS, fatigue is central. Nevertheless, many symptoms mentioned are in fact more or less the same. Although physical symptoms are somewhat less common in burnout, the same physical complaints are mentioned by the literature. Mental or behavioral symptoms are obviously present in both syndromes, with mood disturbance/depression being a major problem.

Although the symptoms of burnout and CFS are comparable, recognition of these symptoms as reflecting burnout or CFS in children can be problematic. Due to a large diversity of (combinations of) physical and behavioral symptoms in children, many different expressions of tiredness can be found.

The main cause of burnout is job stress, but job stress alone does not cause burnout. Karasek’s demand-control model shows that high job demands and low employee control
enlarge job stress and therefore increase the risk of burnout. Job demands are mainly situational and can be quantitative, such as workload and time pressure, or qualitative (e.g. role conflict and ambiguity). The job-person fit model takes both situational and individual characteristics into account and argues that burnout is caused by mismatches between people and their work-settings in terms of workload, control, reward, community, fairness, and values. Whatever approach to the causes of burnout is used, it is a matter of imbalance between resources, values, expectations, and environmental demands.

The causes of CFS are unknown. However, the literature hypothesizes three main causes: medical/physical, psychological/psychiatric, and interactions between these two. Medical causes that can play a role are immune dysfunction and/or viral infection, e.g. by Epstein-Bar virus (EBV). In some studies, abnormalities in autonomic nervous system function are found. Also genetic explanations are given. No empirical evidence for psychiatric theories concerning the origin of CFS is found so far. What is known, is that some psychological aspects, such as emotional upset, (school) stresses, and educational and social demands can maintain fatigue complaints. According to most literature, a complex interaction of physiological, cognitive, affective, and psychosocial factors seems most likely in causation of CFS. Different interactional models are designed.

Research on causes of either burnout or CFS have very different approaches. Burnout is thought to be caused by some imbalance either between demands and control, or between individuals and work-settings. Imbalance is not a direct focus of etiological studies to CFS: CFS is approached as an illness with medical and psychological causes and their interactions. However, some overlap can be seen in psychological aspects: stress and demands play a role in causation and maintenance of both syndromes. With respect to stress, work stress is considered in burnout, and school stress is considered in childhood CFS. With respect to demands, burnout deals with job demands, while educational and social demands can play a role in children with CFS.

Many factors are determined in burnout research. Although situational factors are thought to have the largest influence, also many individual factors are identified. Age is negatively related to burnout, sex is not a strong predictor, and being married serves as a protective factor. Educational level is positively related to burnout, and also position and training can be of influence. With respect to personality, burnout is strongly related to extraversion and neuroticism. High levels of neuroticism create vulnerability to depression and emotional exhaustion, which are risk factors for burnout development. Poor self-esteem, external locus of control, either low or high levels of hardiness, and an avoidant coping style make an individual more vulnerable to stress, and are therefore risk factors for burnout. On the contrary, being mentally healthy is a protective factor.
An individual’s attitude towards the job is an important aspect in burnout development. Attitude towards work is determined by many factors, such as job engagement, feelings of control, ambitions, expectations, skill use, worksite support, reinforcement, gratification, and reward. Low personal achievements are found to be a risk factor for burnout.

Despite many identified individual factors, situational factors are thought to play a bigger role in burnout than individual ones. Although situational factors are very important, the individual factors might be underestimated in current research. This is particularly due to the work-related definition of burnout. This definition emphasizes the (work)environment, and pays much less attention to individual factors. Moreover, it is easier to change environmental rather than individual aspects, which might explain the current emphasis on environmental factors.

Research on development of CFS identifies predisposing, precipitating, and perpetuating factors. In each of these stages, biological, psychiatric/psychological, and social factors can be distinguished. According to the biopsychosocial model, these factors interact with each other. All factors associated with CFS are presented in the table below.

<table>
<thead>
<tr>
<th>Predisposing</th>
<th>Precipitating</th>
<th>Perpetuating</th>
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<tbody>
<tr>
<td>Biological</td>
<td></td>
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<tr>
<td>- Heredity.</td>
<td>- Viral infection.</td>
<td>- Reduced physical activity.</td>
</tr>
<tr>
<td>- History of allergies or asthma (risk factor).</td>
<td>- Prolonged rest.</td>
<td>- Child and family health/illness attitudes and cognition.</td>
</tr>
<tr>
<td>- Personality traits: conscientious, vulnerable, emotionally labile, obsessional, sensitive, insecure, anxious, poor self-esteem.</td>
<td>- Impressive life-events.</td>
<td>- Attributions and reactions of parents.</td>
</tr>
<tr>
<td>- Personality disorders: depression, anxiety disorder.</td>
<td>- Secondary school transfer.</td>
<td>- Ineffective coping skills.</td>
</tr>
<tr>
<td>- Lifestyle and stress.</td>
<td></td>
<td>- Anxiety.</td>
</tr>
<tr>
<td>Psychiatric/ Psychological</td>
<td></td>
<td>- Depression.</td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td>- Developmental stage (risk factor).</td>
</tr>
<tr>
<td>- SES: most young CFS patients from high SES families.</td>
<td>- Not identified so far.</td>
<td>- SES: association better outcomes and high SES.</td>
</tr>
<tr>
<td>- Family risk factors: health problems, psychological distress.</td>
<td></td>
<td>- Psychiatric maternal symptoms, maternal chronic health problems.</td>
</tr>
</tbody>
</table>

What becomes clear from this table, is that almost nothing is known so far about factors that trigger CFS (precipitating factors), which is consistent with the finding in the literature that the causes of CFS are unknown.
Due to very different categorizations of factors used in the literature about burnout and CFS, it is difficult to draw a comparison. Moreover, the literature used about burnout was on adults, while the literature used about CFS was on children. This explains why many different and incomparable factors were found. However, some corresponding factors were found: for both syndromes, the presence of depression is mentioned as a risk factor. Both in adults with burnout and in children with CFS poor self-esteem is observed. Educational level was found to be positively related to burnout. In other words, the higher the level of education, the higher the risk of burnout development. In many studies, educational level is seen as an indicator of SES. In that sense, the roles of educational level in burnout and of SES in CFS are comparable, as most young CFS patients stem from high SES families.

Both in burnout and CFS research, many factors are identified. The ways in which all related factors can interact together, is explained by the biopsychosocial model. This model is multifactorial and emphasizes interactions between different factors. To analyze all contributing factors, both main effects of individual and situational factors and interaction effects between factors should be investigated.

The short term outcomes of burnout are on the domain of job performance, characterized by decreased productivity, satisfaction, and commitment. Significantly more days are lost from work and a large number of professionals retire prematurely due to burnout. On the long term, both physical and mental health outcomes are identified. Physical health problems due to burnout can be cardiovascular disorders and problems associated with dysfunction of the immune system. The effects of burnout on mental health outcomes can be even more devastating: it afflicts every aspect of the individual’s life and therefore has a negative effect on home life as well as work.

Results on outcomes and prognosis of children with CFS are varying. With respect to short term outcomes, many studies report functional impairment: marked inactivity, prolonged bed rest, absence from school, and loss of contact with the peer group. However, the literature is not unanimous about the duration and severity of these short term outcomes. With respect to long term outcomes, most literature report recovery rates of 60-80%, but the quality of outcomes is variable. Some argue that most children recover completely, while others point out that even after recovery several children are left with psychopathology (e.g. anxiety disorders), residual symptoms, and handicap. In general, outcomes are better after shorter periods of illness or after less severe forms of the illness. Educational outcomes are of special interest in children with CFS. CFS is a common cause of long term school absenteeism, and very often there is a persisting tendency to miss school even after recovery.

Probably, the outcomes of children with CFS depend on whether a child is affected during a crucial stage of social, emotional, and educational development. If CFS commences
during a crucial developmental stage in a certain domain, this domain might be severely affected and outcomes can be unfavorable. On the other hand, if CFS does not affect any crucial developmental stages, outcomes can be generally good. This also provides an explanation why results on outcomes after childhood CFS are very differentiated.

What becomes clear from the results on outcomes, is that both disorders have a significant impact on all areas of life. Nevertheless, results on duration and severity of symptoms, recovery speed, and quality of recovery are very diverse. A parallel could be drawn between professional outcomes in burnout and educational outcomes in CFS children. In both cases, many days are lost from work/school and attempts to return to work/school are often not succeeded completely. However, this can be a larger problem for children: whereas an adult can decide to quit his job or go into early retirement, education is compulsory for all children.

The most widely used clinical burnout assessment is the Maslach Burnout Inventory (MBI), which measures exhaustion, cynicism, and reduced professional efficacy. In research, burnout is often assessed by absenteeism from work.

At the present time, no appropriate instruments are available to evaluate fatigue and disability in CFS children. Therefore, the diagnosis is one of exclusion. To exclude any other explanatory medical or psychiatric disorder, many physical investigations are done, and a full and comprehensive medical and psychiatric history taking is important. Other helpful assessments are identification of predisposing, precipitating and perpetuating factors, cognitive/educational assessment, physiotherapy and occupational therapy assessments, observations of the child, and an interview with both child and parents.

The Questionnaire Individual Strength (CIS) assesses fatigue in one of its subscales. Although this questionnaire is not normalized for young children, some promising results were published for adolescents. A useful classification is provided by the Oxford CFS criteria, but these criteria are not adapted for children. Most literature proposes a minimum symptom duration of three months instead of six as a good adaptation.

An appropriate, antecedent assessment focusing on the origin of CFS is not available. This problem is due to a lack of clarity in definition of the illness and a lack of knowledge about causes. Therefore, assessment sometimes focuses on school absence, which is at least reliably measurable. However, absenteeism actually is a consequence of chronic fatigue and should therefore be interpreted as a measure for functional impairment and severity of fatigue, but not as an assessment of the illness itself.

Different instruments are used to assess burnout and CFS. For both disorders, absenteeism is sometimes used as a measure. In the case of burnout absenteeism form work is
measured, and the severity of CFS can be assessed by hours of school absenteeism. This again draws a parallel between work for adults and school for children.

Burnout is related to anxiety and depression. However, burnout is more job-related and situation-specific than general depression. Most of the subjects who suffer from burnout do not manifest depressive symptoms, but especially younger subjects with burnout display symptoms of ‘mild’ depression quite often. Despite this possible comorbidity of burnout and depression, depressive symptoms are suggested to be distinct results of job stress.

Many physical and mental disorders should be distinguished from CFS. Physical diseases may cause easy fatigability, so all medical conditions in which fatigue can occur (e.g. autoimmune diseases, chronic infection, lung diseases), should be excluded. Mental disorders that should be differentiated from CFS are depression, somatoform disorders, anxiety disorders, posttraumatic stress disorder, psychotic disorders, ADHD, eating disorder and school phobia and refusal. A rule of thumb for these differential diagnoses is that with CFS, the primary complaint must be an unexplained, persistent, or relapsing chronic fatigue, whereas with all other disorders, fatigue (if present) is secondary to the main disease.

Some comorbid mental disorders with CFS are known as well, such as anxiety, depression, emotional distress, and internalizing symptoms. In almost all cases, these syndromes are secondary to the severe functional impairment of CFS. Comorbid physical diseases and allergic problems can occur as well.

Comorbidity and differential diagnosis is more extensively researched in CFS than in burnout. The literature on burnout only mentions anxiety and depression as related syndromes. Among many other disorders, anxiety and depression are also mentioned to be related to CFS.

When dealing with burnout, an integrative treatment is thought to be most effective. Such treatment consists of teaching individual techniques that alleviate the symptoms of burnout and changes of the workplace environment. Treatments that focus on relaxation are dissuaded. Therapists should avoid treating burnout as if it were a single phenomenon and should tailor their treatment to the specific type of burnout manifested by their client. The first type, a worn-out individual, often manifests depression-like symptoms and is best helped by cognitive approaches. Second, the more classically burned-out person often requires a psychodynamic approach that focuses on the person’s strong need for great achievement. For the third, underchallenged type of burnout attention to situational aspects is important. These treatments, while embodying different elements, should be essentially integrative in nature.

The best approach to CFS is multidisciplinary: treatment should take place in partnership with the child, the family, school, and other professionals. A multifactorial
approach is recommended and pays attention to both biological, psychological, and social factors. To deal with all contributing factors, many different therapies can be integrated considering treatment. Family therapy is often required, as parents play an important role in the maintenance of the disorder. Cognitive behavioral therapies are very often used, and include treatment of avoidance behavior, promoting self-efficacy, development of non-maladaptive coping strategies, reducing physical attributions, and decreasing attention on physical complaints. The patient’s activities should be gradually increased in all areas of life (school, leisure, social and physical activities). This can be done in graded behavioral programs and/or structured graduated daytime activity programs with self identified goals and graduated stepwise reintroduction to previous main daytime activity. However, treatment must involve balancing of rest and activity, and this balance needs to be fitted to the stage of illness. Prolonged rest is often ineffective.

With respect to psychopharmacological treatment, antidepressants are often prescribed. These can be helpful for associated depressive symptoms, but not for treating CFS itself. Medical treatment should better be limited in order to reduce physical attributions.

When comparing treatment strategies of burnout and CFS, it becomes clear that both emphasize on integrative treatments, that pay attention to all contributing factors. The literature about treatment also points out for both syndromes that rest as a treatment is ineffective. A cognitive approach for treatment of (secondary) depressive symptoms has been found to be effective in both burnout and CFS. Nevertheless, many different treating methods are also mentioned. These differences might be due to differences between both diseases with respect to symptoms, causes, and related factors, and also because of differences in age (adults vs. children). The latter is also a limitation of this study: due to different conceptualisations of burnout and CFS, results on adults and children had to be compared. This might have produced incomparable results in some cases.

Although many differences between burnout and CFS were mentioned, some important parallels could be drawn as well. Comparing the symptoms, the emphasis turned out to be somewhat different, but the same physical complaints are mentioned by both burnout and CFS patients. Comparable mental or behavioral symptoms occur as well (e.g. depression). Both syndromes are reported to have different causes, but some overlap in psychological aspects were found: stress and demands in work or school play a role in causation and maintenance of burnout or CFS. The literature categorized the related factors of both syndromes in different ways. Nevertheless, some corresponding factors were mentioned: risk factors for both syndromes are presence of depression and poor self-esteem. A positive relation was found between educational level/SES and burnout/CFS. With respect to outcomes, both disorders have a significant impact on all areas of life. Adults with burnout
and children with CFS face comparable difficulties concerning professional (adults) and educational (children) outcomes. Burnout and CFS are assessed in different ways, but absenteeism from work or school can be used as an additional assessment for both disorders. With respect to comorbidity and differential diagnosis, anxiety and depression are mentioned to be related to both burnout and CFS. Many different treatments are mentioned, but integrative approaches are recommended for both disorders. Although fatigue is a (main) complaint in both burnout and CFS, rest as a treatment is thought to be ineffective. A cognitive approach for treatment of depressive symptoms is helpful in both burnout and CFS patients.

The previous conclusions make clear that burnout and CFS are distinct syndromes, but there is some overlap as well. This overlap is seen in the (secondary) role of depression: patients of both disorders display depressive symptoms, presence of depression serves as a risk factor, and secondary depression can be treated in the same way. Another important conclusion is that, as suggested in the introduction, school can be seen as ‘work’ for children. This became clear from comparable results on causes, outcomes, and assessment with respect to work for adults with burnout and school for children with CFS.

If school is ‘work’ for children, the probability of burnout in children rises. As burnout is related to work in adults, it could be school-related in children and might therefore be called ‘school burnout’. An important goal of this research project is to identify children at risk for school burnout. Children at risk for burnout are probably those who are busy, stressed, and tired due to environmental circumstances. Also children with other disorders, such as ADHD, autism/PDD-NOS, and learning disabilities, could be at risk for burnout development: due to their difficulties, they might experience an imbalance between their resources and demands from their environment, so they might be at risk to become exhausted. In that sense, ‘school burnout’ would be a better diagnosis than CFS, because exhaustion is central to burnout, whereas the diagnosis of CFS is of a more medical nature. However, fatigue should be assessed carefully: as soon as it is brought about by any other cause than exhaustion or imbalance, burnout should not be applied to children.

Especially the results on causes, related factors, assessment, and treatment turned out to have a multidimensional character: many different causes, related factors and their interactions are mentioned; and several assessments and treatments are advised to be used simultaneously. This is consistent with a recent description of Minnaert en Vermunt (2006) that educational psychology is taking a more and more multidimensional perspective: several studies are reported within one research, multivariate and multilevel research is conducted, multi-method procedures are used, more a priori conditions are set, and more dynamic models are used. This emphasizes the importance of a multidimensional approach to school burnout.
A difficulty with respect to identifying children at risk for school burnout, is the lack of appropriate assessments. This is particularly due to the lack of knowledge about causes. What is known, is that burnout is often a matter of imbalance and exhaustion. Stress and demands play a role in creating a state of imbalance. In order to know more about imbalance and exhaustion in children, stress and coping in children will be investigated in a next literature study. The goal is to identify common childhood stressors, what factors make children vulnerable to these stressors, and the ways children cope with stress.

Identifying children at risk for burnout has important implications for pedagogical practice. Treatment and interventions for tired children can be made much more effective if more is known about school burnout. Moreover, if children at risk for school burnout are identified, early intervention programs can be developed.
References


