Special Articles

What is this thing called "SAD"?
A critique of the concept of seasonal affective disorder

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SUMMARY. **Background** – Seasonal Affective Disorder (SAD) is supposed to be caused by lack of daylight in winter. Yet the population of Northern Norway, living without sun for two winter months, does not spontaneously complain about depression during the dark period. **Aims** – To summarize research bearing upon the validity of the concept of SAD. **Method** – Review of relevant literature concerning the epidemiology of SAD and the questionnaire developed to measure it in general populations, the Seasonal Pattern Assessment Questionnaire (SPAQ). **Results** – Large population studies from northern Norway do not point to a higher prevalence of depression in winter than expected in any other general population. The psychometric properties of SPAQ are rather poor, and the diagnosis of SAD based on SPAQ bears little relationship to a meaningful concept of depression. **Conclusions** – Seasonal Affective Disorder is not a valid medical construct. Instead, "Recurrent depression with seasonal pattern" as defined in the DSM-IV and the ICD-10 should be used as terms. However, more research is needed to establish whether it is at all fruitful to single out such a subtype of recurrent depression.
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A NEGLECTED MENTAL DISORDER?

In 1984, Rosenthal and associates published what they claimed was the discovery of a neglected mental disorder: A type of depression that occurs annually at the same time of the year, in the autumn/winter, and remits the following spring. They termed the phenomenon Seasonal Affective Disorder, and gave it the seductive acronym SAD (Rosenthal *et al.*, 1984a). In their paper, they state that "The single outstanding clinical feature of the patients with SAD is their apparent sensitivity to changes in season and latitude and the approximately annual

occurrence of their affective episodes". Furthermore, they wrote that "The sensitivity of the patients with SAD to changes in season and latitude lead us to conclude that some environmental variable or variables are of major importance in causing and sustaining depression in these patients"… and "of all possible climatic variables, day length, daily hours of sunshine, and temperature, seem to be the most promising candidates for future study". Thus, from the very start, the SAD construct was linked to a theory of causality: disturbance in the circadian rhythm of release of melatonin from the pineal gland. The release of melatonin is inhibited by environmental light stimulation of the retina, and researchers at National Institute of Mental Health, where Rosenthal worked, had recently shown that this release could also be inhibited by artificial light of high intensity (Lewy *et al.*, 1980). They had started to experiment with treating a patient with recurrent depression every winter with such light, with seemingly promising results (Lewy *et al.*, 1982). This was the back-

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ground for the biological hypothesis that reduction in environmental light during winter was the cause of recurrent winter depression. From this hypothesis, it followed logically that the population prevalence of SAD should be rising with increasing distance from the equator, the "latitude-hypothesis". And indeed, the first epidemiologic studies seemed to substantiate this hypothesis (Lingjærde *et al.*, 1986; Potkin *et al.*, 1986; Rosen *et al.*, 1990).

In the following years, the group was very active in doing research and treatment with bright light, and in promoting their discovery. As a consequence, when DSM-III-R came (American Psychiatric Association, 1987), there was already included a possibility to specify "seasonal pattern" for a major depressive disorder or a bipolar disorder with regular onset at the same time of the year in three separate years. This first acceptance of the existence of a distinct type of depression with a seasonal pattern was based only on papers from the Rosenthal group itself, mainly dealing with light treatment of small and highly selective samples of patients (Hellekson *et al.*, 1986; James *et al.*, 1985; Potkin *et al.*,1986; Rosenthal *et al.*, 1985; 1986; Sherer *et al.*, 1985). In the latest version of the DSM, from the year 2000 (American Psychiatric Association, 2000), this possibility to add a "seasonal pattern" specifier to a diagnosis of mood disorder has been upheld, but there is still no separate diagnostic category or classification code for Seasonal Affective Disorder. The WHO has been even more cautious: when ICD-10 came in 1992 (World Health Organisation, 1992), Seasonal affective disorder was placed in an annex called "provisional criteria for selected disorders". Consequently, the diagnosis "Seasonal Affective Disorder" does not exist in any of the two international classification systems that are used in psychiatry. Nevertheless, the concept of SAD, or "winter depression" as it is more commonly called, leads its own life, and has crept into the mind of the general public and the medical community as something real, and presumably an important public health problem.

NORTHERN NORWAY: A NATURAL LABORATORY FOR STUDYING MENTAL REACTIONS TO EXTREME VARIATION IN ENVIRONMENTAL LIGHT

The northern part of Norway is really one of the very few places in the world where mental reactions to extreme variation in environmental light may be investigated under natural conditions, in a Caucasian population living in a modern, urbanised western society. Owing to the Gulf stream, a temperate water stream coming from the Caribbean and warming the sea along the coast of Norway, a population of about 450 000 persons is living in this area, under climatic conditions which are very similar to those at much lower latitudes. The region stretches from the Arctic Circle at 66° 33´ north to Cape North at 71° north. The Arctic Circle marks the beginning of "The land of the midnight sun", the region where the sun is continuously above the horizon for two months in summer, but where there is also the opposite situation in winter, with a so-called "dark period". This is the period in winter when the sun does not rise above the horizon at all. During the dark period there is only a dim light for a couple of hours during midday. The duration of this dark time, and the deepness of the darkness at midday, depends on the latitude. The winter is longer than in the south of Norway, but the mean temperature is not very different from that in the capital of Oslo at 60° north, and the general living conditions are very similar. Thus, the largest difference between northern Norway and the south of Scandinavia is really in environmental light. The northernmost university in the world is located in the town of Tromsø, at 69° north. The town has about 70 000 inhabitants and some 6000 students. Here, the dark period lasts two months, from the 20th of November until the 20th of January. At such latitudes elsewhere in the world, like Greenland, Canada, Alaska or northern Russia, there are mainly rather isolated indigenous populations living in small traditional fishing and hunting communities. Apart from the studies from Northern Norway, we are aware of only three studies from areas with a "dark period", and they are all studies of indigenous populations (Näyhä *et al.*, 1994; Saarijärvi *et al.*, 1999; Haggarty *et al.*, 2005).

The scientific community in psychiatry in Tromsø was rather taken aback by the SAD concept, and the claim that prevalence increased with latitude of living. We had not observed any increase in depression in winter neither in psychiatric patients nor in the general population. Of course, the dark period is generally considered to be a very special time of the year, a time with sleeping-problems for many, and some lack of energy. On the other hand, the subjective experience of the dark period varies much with the weather conditions: when the sky is clear, there are fascinating changes from darkness to dim light during the day, and the sky and the landscape have beautiful shades of blue. The northern light is also abundant in this period, and is a great attraction. It is also a time for lively in-door socialising. Many find the extreme changes between the midnight-sun period and the dark period very fascinating. The most prominent spontaneous complaint connected to the dark period is the so-called "midwinter insomnia", the tendency not to become sleepy in

the evening, and consequently to go to bed later, or lying awake in bed, and therefore getting fewer hours of sleep. This problem has been documented to concern 18% of the women and 9% of the men (Husby & Lingjærde, 1990), and was reported in Norwegian medical literature already in 1957 (Devold *et al.*, 1957). This complaint had been causally linked to the lack of daylight, but not to depression, since people only complained about tiredness and sleeplessness, and not about depressed mood.

When the SAD concept was launched, we tried to examine if we had overlooked something. Why had this phenomenon not been discovered in northern Norway, but in Washington, a city situated at the same latitude as Rome? We did not recognize ourselves in Rosenthal's own explanation for this, in his book about winter depression: "In the winter, it is conceivable that their (the northern Norwegian investigators') low energy level did not provide them with the creativity or enthusiasm to undertake such a study" (Rosenthal, 1993). First, we reanalysed data from a large population-study in Tromsø, performed in 1979-1980, which focused on coronary heart disease. The strength of this study is that it was performed before the first publication about SAD, and consequently the population was naive in regard to knowledge of the construct. Our re-analyses showed that the 14-day prevalence of self-reported depression in nearly 8000 adult persons measured in the months November to March was 10 % in men and 12 % in women (Hansen *et al.*, 1991). This prevalence was at the same level as had been reported from USA, at 39º N and 41º N (Kasper *et al.*, 1989; Rosen *et al.*, 1990). Also, the variation in prevalence between winter months was small, even if the amount of environmental light differs substantially over these four months. These findings of no correlation between depressive symptoms and amount of environmental light strengthened our scepticism towards SAD. In the following years, questions about depression in winter were entered into several large population-studies in northern Norway. These studies had other health problems as main focus, and comprised representative samples of the general population. Selection bias based on knowledge of the SAD concept was thus avoided. From 1980, depression in winter has been investigated in 5 different samples of the general population in northern Norway, totally comprising some 30 000 different subjects (Hansen *et al.*, 1991; 1998; Lund & Hansen 2001; Skou Nilsen *et al.*, 2004). Our findings consistently indicate that living in almost complete darkness for two months does not increase the prevalence of depression above the expected population level of depression in general. A study from the island of Spitsbergen at 78º north

adds interesting angles to this picture (Nilssen *et al.*, 1999). At Spitsbergen, the dark period lasts 4 months, and the darkness is almost total. Here you find the two definitively northernmost communities in the world, one Russian and one Norwegian, situated at the same latitude, but with very different socio-economical conditions, the Norwegian community being affluent, and the Russian rather poor. Prevalence of depression in the dark period was 4-5 times higher in the Russian population than in the Norwegian, showing that psychosocial factors are much more influential than lack of daylight.

In these population studies, we have used self-report on a few questions related to depression, not comprehensive questionnaires or personal interview, and hence we are not able to report prevalence according to DSM-IV or ICD-10. There are two recent population studies from Norway reporting prevalence of depression (Kringlen *et al.*, 2001; Sandanger *et al.*, 1999), both using the *Composite International Diagnostic Interview* (Robins *et al.*, 1988), and in one of them (Sandanger *et al.*, 1999), about half of the sample is from northern Norway. Both these studies report prevalence of depression at about the same level as in other large European and US-studies, from far more southern locations. If SAD had been a valid concept, tied to lack of daylight in winter, the prevalence of depression in Norway should be substantially higher. Finally, two studies of cognitive performance have shown that subjects in northern Norway actually perform better in winter than in summer on tasks that are negatively influenced by depression, like memory, attention and simple reaction time (Brennen, 2001; Brennen & Martinussen, 1999).

Prevalence studies of SAD have now been performed all over the world, at quite different latitudes. A systematic review of prevalence studies from 1999 (Mersch *et al.*, 1999), and a meta-analysis from 2001 (Haggarty *et al.*, 2001) conclude that the evidence for the influence of latitude on prevalence is weak. More recent studies also contradict the latitude hypothesis (Hansen *et al.*,1998; Saarijärvi *et al.*, 1999; Levitt & Boyle, 2002; Axelsson *et al.*, 2002a, b; 2004). These findings challenge the very core of the SAD concept, but nevertheless, the validity of the concept itself has only rarely been questioned (Eastwood & Peter, 1988; van Praag, 1993; Grof, 2002), and the critique has largely been ignored.

THE PROBLEMATIC VALIDITY OF SAD

The main problem with the SAD concept is really poor construct validity. The Rosenthal group gathered their original sample by writing an article in the Washington

Post, describing in some detail the syndrome they were looking for and the proposed treatment, and invited persons with seasonal mood changes to contact them (Rosenthal *et al.*, 1984a). People were promised treatment free of charge, and light therapy was introduced as a probable "major breakthrough in the treatment of a devastating disorder that often strikes the most attractive and creative people" (van Praag, 1993). It is obvious that a recruitment procedure like this is highly suggestive, and most probably creates a very biased sample. Of more than 2000 people that made contact, they selected 29 persons on which they based their description of the clinical picture of SAD. The most prevalent symptoms in these persons were lowering of mood, energy and social activities, and the so-called "atypical symptoms" (because they are the opposite of the usual vegetative symptoms in depression) of hypersomnia, carbohydrate craving and weight gain.

Clinical studies of this and similarly small and highly selected samples, were to our knowledge the only existing empirical basis for including the specifier "seasonal pattern" to the affective disorders chapter in the DSM-III-R in 1987, still existing with minor adjustments in the DSM-IV-TR (American Psychiatric Association, 2000), and as a provisional diagnosis needing further research evidence in the ICD-10 (World Health Organisation, 1992). For the further discussion of the validity of SAD, it is vital to keep in mind that both major diagnostic systems share the core criteria of a depressive disorder: that of lowered mood and loss of pleasure. If a patient does not suffer from markedly depressed mood causing clinically significant stress or impairment, the patient simply does not have a depressive disorder. In addition to these core symptoms both systems require other definite symptoms to be present within the same time frame; vegetative symptoms (appetite or weight, sleep, fatigue and changed motor activity), and emotional and cognitive symptoms (feelings of worthlessness or inappropriate guilt feeling, difficulties in concentration and ability to think, and thoughts of suicide) (American Psychiatric Association, 2000). This definition of depression describes a disorder which is incapacitating, and which the WHO describes as one of the main threats to public mental health, and the fourth most important cause of mortality corrected for disability worldwide (Tansella, 2006).

In the DSM-IV-TR (American Psychiatric Association, 2000) the specifier for a seasonal pattern of a mood disorder only specifies the temporal relationships of occurrence and remission of mood episodes, in that the mood disorder episodes should reoccur and remit during the same seasons for at least two consecutive years. There is no mention of the so-called atypical symptoms of hypersomnia,

weight gain and carbohydrate craving in these criteria. Still, under the heading "associated features", these atypical symptoms are listed. A clinical picture of SAD with atypical vegetative symptoms has never been documented in representative samples from the general population. The studies that have confirmed the original description of the syndrome are biased by being based on mass-media recruitment (Thompson *et al.*, 1988; Thompson & Isaacs, 1988; Allen *et al.*, 1993; Lingjærde & Reichborn-Kjennerud, 1993; Tam *et al.*, 1997). In contrast, when a large sample from the general population living at 70° N was asked open questions about problems in winter, disguised within a project focusing on air-pollution, the picture was very different: The main problem concerned sleeping pattern, but of the opposite kind of what is supposed to be central to SAD: they slept too little. The only other spontaneously reported problem was loss of energy. None of the subjects reported problems with weight gain or carbohydrate craving (Hansen *et al.*, 1998).

Self-selection bias is a major problem in the definition of the clinical picture of SAD. Self-selected SAD-sufferers score higher on the openness dimension of personality (Bagby *et al.*, 1996; Jain *et al.*, 1999). High openness refers to being unconventional, imaginative, curious, and having a broad field of interests. Incidentally, volunteers to research are also characterized by high openness (Dollinger & Leong, 1993). Furthermore, sufferers of SAD are heavy users of health care services (Eagles *et al.*, 2002). These findings may reflect that self-selected SAD-sufferers are patients with a heavy symptom load, both somatically and psychologically, who are broadly oriented, curious and imaginative, and who are searching for explanations to their subjective discomfort. Being widely published, the SAD-concept may offer a plausible explanation to their distress.

We are puzzled by the use of advertising after subjects through media campaigns describing the SAD syndrome, which seems to be the sampling method of choice for the Rosenthal group and many others in this field. By a funny coincidence, the bias created by this method is called "the Rosenthal effect", but the name comes from another Rosenthal, the psychologist Robert Rosenthal. He has demonstrated that communicating the expectancy of the researcher, however subtly, will influence subjects into trying to fulfil and comply to these expectations (Rosenthal & Rubin, 1978). Double-blind designs are attempts to safeguard against this expectancy bias. When even subtle nonverbal communication of the experimenter's expectations can influence results, how strong then is the effect of blatantly proclaiming your expectancies in the mass-media immediately before collecting your data?

Finally, one of the key arguments for the SAD as a separate entity has been that there exsists a specific treatment: Light therapy. But neither the specificity nor the effect of light therapy for seasonal depression is at all established. A recent systematic review from The Swedish Council on Technology Assessment in Health Care (2007) concludes that the existing evidence is so weak that it is impossible to conclude whether light therapy works or not, and for whom.

THE CONSTRUCT VALIDITY OF THE SEASONAL PATTERN ASSESSMENT QUESTIONNAIRE

At an early stage, Rosenthal and co-workers constructed the self-administered Seasonal Pattern Assessment Questionnaire, SPAQ (Rosenthal *et al.*, 1984b). The SPAQ asks for the subject's habitual reactions to the seasons in six areas: Sleep, mood, social activity, energy, weight and appetite, selected from the most prominent symptoms of the 29 patients in the first study (Rosenthal *et al.*, 1984a). These six symptoms are rated on a scale from 0 to 4, and adds up to the Global Seasonality score (GS-score). Originally designed to measure degree of sensitivity to the seasons, termed "seasonality", the Rosenthal group soon proposed criteria for using the questionnaire to diagnose SAD (Kasper *et al.*, 1989). SAD was originally defined as a depressive disorder, but the core criterion for depression, as applied both in DSM-IV and ICD-10, that of a markedly depressed mood, is not a necessary criterion for the SAD-diagnosis by the SPAQ. If you have enough variation in the domains of sleep, social activity, energy, appetite and weight, it is not necessary to have variation in mood at all to get a score above threshold. Consequently, a diagnosis of SAD according to SPAQ is a far cry from any reasonable definition of depression. Rather surprisingly, SPAQ was quickly taken into widespread use as a diagnostic instrument before proper testing of validity and reliability had been done. Almost all we know about SAD is based on this questionnaire.

For identifying a mood disorder with seasonal variations we hold that a requirement is that SPAQ should identify core mood symptoms. Secondly the instrument should identify seasonal variations in these core symptoms. Thirdly the instrument should be able to predict future seasonal mood variations.

We performed a search in November 2007 in the PubMed database, with the search term "Seasonal Affective Disorder" limited to publications in English, and restricting the search to the fields of title and/or abstract. We thus located 783 papers dating back to 1984.

Of these, 70 studies also had "prevalence" as a search term. A review of these papers showed that 36 of them were not original research, or comprised small and selected samples. In addition, we located 32 other papers concerning SAD and prevalence by going through the reference lists of the 34 prevalence-studies. Of these altogether 66 prevalence studies, 45 studies used the Seasonal Pattern Assessment Questionnaire (SPAQ) as the diagnostic instrument. The 21 others used 12 different instruments, of which DSM was most commonly used.

The six prevalence studies employing the DSM-criteria for major depressive disorder with seasonal pattern (Williams & Schmidt, 1993; Blazer *et al.*, 1998; Levitt *et al.*, 2000; Avasthi *et al.*, 2001; Levitt & Boyle, 2002; de Graaf *et al.*, 2005), show consistently low prevalence, only between 0.4% and 2.9 % (Williams & Schmidt, 1993; Blazer *et al.*, 1998; Levitt *et al.*, 2000; Avasthi *et al.*, 2001; Levitt & Boyle, 2002; de Graaf *et al.*, 2005), do not support the latitude hypothesis (Williams & Schmidt, 1993; Blazer *et al.*, 1998; Avasthi *et al.*, 2001; Levitt & Boyle 2002), and contradict the proposed female:male ratio, only showing higher risk for women in a Canadian study (Levitt *et al.*, 2000; Levitt & Boyle, 2002), while the majority of studies are showing the opposite, that men have higher risk for seasonal pattern of depressive disorder (Blazer *et al.*, 1998; Avasthi *et al.*, 2001; de Graaf *et al.*, 2005). Of great interest is the study of seasonal affective disorder from Northern India at latitude 27° to 29° N (Avasthi *et al.*, 2001), where they have very wet and hot summers, showing an increase in depression in summer, indicating that other climatic conditions than daylight most likely contribute to explain seasonal variations in mood. Two studies from the tropical climate zone in Thailand (Srisurapanont & Intaprasert, 1999) and Australia (Morrissey *et al.*, 1996), employing the *Seasonal Pattern Assessment Questionnaire*, show similar results for Summer SAD.

In our literature-search we found only seven studies addressing the construct validity of SPAQ (Hardin *et al.* 1991; Raheja *et al.*, 1996; Magnusson, 1996; Murray, 2003; Christensen *et al.*, 2003; Mersch *et al.*, 2004; Thompson *et al.*, 2005). It is surprising that the first study, by the Rosenthal group itself (Hardin *et al.*, 1991), came as late as 1991, seven years and many epidemiological studies after SPAQ was launched. The paper concerns the discriminative validity of the SPAQ, and thus addresses the second of our requirements. That is the instruments ability to discriminate seasonal affective disorder patients from patients with other mental disorders and from non-patients. Interestingly, all patient groups, apart from a group who report feeling worst in summer,

demonstrated the same seasonality pattern as non-patients: they reported feeling worst in autumn and winter months and best in summer months. In temperate climate zones most people tend to like summer better than winter, so this finding is not very surprising. Winter SAD patients had the most pronounced variations in the proposed core symptoms of SAD. This follows naturally from the fact that the Winter SAD patients in this study were the same group that Rosenthal's criteria for SAD were built upon. It seems to us that the authors' conclusion that the SPAQ can be used for discriminating SAD patients from other patient groups is on thin ice based on this study.

The SPAQ's ability to predict future seasonal mood swings was studied by Raheja *et al.* (1996). They found that the SPAQ had poor test-retest reliability and that the instrument was unable to predict the future course of illness in a patient sample. In a study from Australia, where the same group was measured four times in the course of two years, Murray (2003) found that the GS-score failed to show a significant association with prospectively measured seasonality of mood, and concluded that SPAQ "has restricted validity as a predictor of mood seasonality within individuals".

Furthermore, in a study of bipolar patients followed over more than one year in Denmark, researchers found no relationship whatsoever between the SPAQ-scores of the patients and their episodes of mood disorder (Christensen *et al.*, 2003). Actually none of the patients who fulfilled the DSM-III-R criteria for a seasonal pattern of their bipolar disorder were identified by the SPAQ. This study strongly challenges the validity of the SPAQ, and clearly demonstrates that a DSM mood disorder with seasonal pattern is very different from the phenomenon identified with the SPAQ.

Specificity and sensitivity of SPAQ was also studied in a Dutch patient sample by Mersch *et al.* (2004). They compared SAD patients with non-seasonal depressed outpatients and with non-depressed outpatients and a control group. They conclude that SPAQ showed low sensitivity, only able to identify 44% of the seasonally depressed persons, but that the specificity was good. In a comparison of the sensitivity and specificity of SPAQ and a new instrument for diagnosing SAD based on diagnostic criteria in DSM and ICD, the *Seasonal Health Questionnaire*, Thompson *et al.* (2005) found that SPAQ resulted in more false positives than the Seasonal Health Questionnaire. In another paper from 2001 (Thompson & Cowan, 2001), they conclude that the SPAQ should no longer be used as a screening instrument in general populations, as it gives misleading high estimates of prevalence.

"SPAQ-IASIS", NOT DEPRESSIVE DISORDER

So what does the SPAQ identify? The most frequently cited study of the validity of SPAQ is Magnusson's study from Iceland (Magnusson, 1996). This study deserves special attention, since it is the first population-based study trying to identify SAD both by screening with the SPAQ questionnaire and by structured clinical interview of identified cases and controls. Magnusson found a very low prevalence of SPAQ-defined SAD in the Icelandic general population, only 19 (3%) among the 600 who returned the questionnaire. Magnusson obtained clinical interviews and/or hospital records from 18 of these subjects. Of these, only half met the diagnostic criteria for a mood disorder according to the DSM-III (7 major depression, 1 bipolar and 1 dysthymic disorder). The remaining 9 subjects had anxiety disorders, personality disorders or disorders in the somatoform spectrum. Interestingly, the SPAQ identified the same number of cases, that is seven subjects, with Generalized anxiety disorder (GAD) as with Major depressive disorder, and only two of these subjects had the double diagnosis (GAD plus MD). Curiously enough, from these results Magnusson concludes that "the construct validity of the SPAQ was supported". But if you study the data in his article, you could put up an equally strong argument for SPAQ as an instrument for identifying seasonal anxiety disorder as for seasonal affective disorder. What Magnusson's study really demonstrates is that SPAQ may be used to identify subjects with a high level of mental distress who feel worst during the winter months, regardless of type of distress.

In the only one of our own studies where we used the SPAQ, in a population living at 70° N, we measured the same sample at four different times during one year (Lund & Hansen, 2001). The prevalence of SAD varied between 5.6% and 14.4%. The highest prevalence of SAD was reported in March, when day and night are of equal length and no lack of daylight is experienced in northern Norway. Even in June, the prevalence of SAD was higher than in the dark January. Our interpretation of these findings is that SPAQ does not measure peoples' general response to the season, as it purports to do. Instead, SPAQ score is probably heavily influenced by the weather condition at the time of completion. In March 1997, there was an extreme blizzard for several days during the data collection. Thus, one of the explanations for the differences in prevalence of SAD in SPAQ-studies could be widely differing weather-conditions at the time the studies were performed. Very few studies do in fact report at what time of the year the data have been collected, and certainly not the actual weath-

er-conditions, making comparisons between studies of rather limited value.

Summing up, we conclude that the SPAQ has very serious methodological flaws, with low test-retest reliability, low sensitivity, low predictive validity, and finally that it seriously overestimates the prevalence of seasonal depression. As a result of most research in this field employing the SPAQ, we in fact know very little about seasonal depression. Instead we do know quite a lot about a condition we propose to call "SPAQ-iasis", a condition you have if you score above threshold on the SPAQ. "Seasonal Affective Disorder" is nothing more than a "SPAQ-iasis", a constructed disease. The DSM diagnostic entity "Major Depressive Disorder with seasonal pattern" seems to be more valid. But even if some people have depressive episodes that tend to recur at about the same time of the year, the value of placing such a syndromes in a separate diagnostic category is highly questionable, particularly so if the therapy recommendations are the same for non-seasonal and seasonal depression.

CONCLUSION

The extensive use of the concept Seasonal Affective Disorder, and the instrument to measure it, SPAQ, has lead to great confusion in the study of the possible connection between depression and seasonal changes in light and climatic conditions, since the concept does not correspond to the definition of recurrent depression with seasonal pattern in the DSM-IV or the ICD-10 diagnostic classification systems. Even these definitions have a rather weak research base, and should still be regarded as provisional.

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