The Impact of the invisible
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General discussion
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In the previous chapters, various neuropsychological consequences of subarachnoid hemorrhage were studied (cognitive deficits, behavioral disturbances, and fatigue), with a focus on higher-order prefrontal cognitive functions. Furthermore, the relationship between these consequences and long-term outcome, i.e. resumption of social and leisure activities and return to work, was investigated. Additionally, the association between several SAH-related factors and outcome as well as neuropsychological consequences was evaluated. In the following paragraphs, a summary and discussion of the major findings and their implications for clinical practice and future research are presented.

Summary of main findings

In chapter 2, we presented a study on the long-term resumption of leisure and social activities after aSAH, and the influence of executive complaints and lesion location. Overall, the results showed that cognitive, executive, and depressive problems influenced resumption of previous leisure activities and social interaction. Furthermore, aneurysm location was not found to be related to this resumption. A description of mental and physical fatigue after both aSAH and anSAH, and their association with long-term functional outcome was given in chapter 3. Results showed more mental fatigue than physical fatigue post-SAH, with mental fatigue being significantly related to functional outcome in the long-term. In chapter 4, a comparison of cognitive outcome between aSAH and anSAH patients was presented, with a focus on higher-order prefrontal functions executive functioning and emotion recognition. Patients with aSAH had cognitive deficits regarding memory, processing speed, attention, executive functions, and emotion recognition. Interestingly, anSAH patients did not perform significantly worse than healthy controls, however they also did not perform significantly better than aSAH patients on the majority of tests, indicating suboptimal performance after anSAH. In chapter 5, several aspects of social cognition were examined in aSAH patients, by comparing performance on tasks for emotion recognition, Theory of Mind, and empathy with healthy controls. Also, the relationship between social cognition deficits and behavioral disturbances and focal as well as diffuse brain damage was investigated. Results showed impairments in all aspects of social cognition and significant associations between these impairments and behavioral disturbances as reported by patients’ significant others. No evidence
was found for a relationship between social cognitive deficits and lesion location. Lastly, the predictive value of cognitive functions, specifically complex attention and executive functions, for return to work after both aSAH and anSAH was presented in chapter 6. It was concluded that neuropsychological measures for complex attention and executive functions had added value to demographic and SAH-related variables alone, in the prediction of long-term return to work.

**Cognitive and behavioral consequences of SAH**

**Higher-order prefrontal functions**

Since executive functions and social cognition have not been studied extensively in anSAH and aSAH patients, we aimed to examine these higher-order prefrontal functions post-SAH. We reported clear deficits in executive functions and emotion recognition after aSAH. Also, we demonstrated suboptimal performance in these domains after anSAH (Chapter 4). Our findings expand previous work on cognitive functioning post-SAH and emphasize the need for a thorough neuropsychological assessment, including higher-order prefrontal functions, after both aSAH and anSAH. Subsequently, we aimed to determine the extent to which several aspects of social cognition were related to behavioral problems, by investigating Theory of Mind, empathy, and emotion recognition after aSAH (Chapter 5). We found apathy and impaired interpersonal behavior in approximately one third of all patients, which is in line with previous research (Caeiro, Santos, Ferro, & Figueira, 2011). Moreover, we demonstrated impairments in Theory of Mind, empathy, and emotion recognition after aSAH. In agreement with our expectations based on studies in stroke and TBI (Blonder, Pettigrew, & Kryscio, 2012; Radice-Neumann, Zupan, Babbage, & Willer, 2007; Spikman et al., 2013; Yuvaraj, Murugappan, Norlinah, Sundaraj, & Khairiyah, 2013), social cognitive deficits were found to correlate with behavioral problems. Specifically, emotion recognition and Theory of Mind impairments were related to apathy and impaired interpersonal behavior. Interestingly, these behavioral deficits appeared from data provided by a patient’s relative or spouse, not from the affected patient. Better emotion recognition and Theory of Mind were associated with less daily life problems as reported by proxies. These results support the idea that the recognition of social signs, such as emotional expressions, is important for adequate social functioning. Furthermore, being able to take another person’s perspective appears also to be a prerequisite for intact social interaction. Therefore, deficits in emotion recognition and Theory of Mind might
be useful indicators of obstacles that interfere with social reintegration.

Additionally, measures of social cognition were related to impaired self-awareness. A possible explanation for these results might be that patients with social cognitive deficits have difficulties in appreciating social feedback of others, that is needed to analyze their own behavior. Subsequently, they are less able to accurately describe their behavioral problems. Another explanation might be that patients with impaired self-awareness have more trouble perceiving their own behavioral and cognitive changes and consequently, are less able to take another person’s perspective. Both options suggest a possible mediating role of alexithymia: a disorder characterized by an inability to notice emotions in oneself. In TBI patients, alexithymia has been associated with both emotion recognition deficits and lack of empathy (Neumann, Zupan, Malec, & Hammond, 2014; Williams & Wood, 2010) and behavioral problems (Neumann, Malec, & Hammond, 2017), making further research on this topic in SAH patients appealing.

A subsequent question was: “Are deficits in these so called higher-order prefrontal cognitive functions after aSAH in fact related to frontal brain damage?” Based on our results (Chapter 5), the short answer for social cognition appears to be “No”: social cognitive impairments were found irrespective of the location of cortical lesions on MRI. Also, patients with an aneurysm in the anterior circulation did not have more social cognitive deficits than patients with a posterior circulation aneurysm. Social cognition deficits in SAH patients do not seem to be associated exclusively to the presence of focal frontal lesions. However, the frontal cortex is part of a larger frontal-subcortical circuit subserving social behavior, in which also other brain areas participate. Thus, it is conceivable that lesions in different areas that are part of this circuit can affect social cognition. Additionally, in SAH various pathophysiological mechanisms appear to play an important role in determining the eventual neurological deficits, so outcome prediction based on lesion location is difficult. Importantly, our results indicate that social cognition tests should be incorporated in standardized neuropsychological follow-up, also for SAH patients with solely non-frontal lesions or aneurysms in the posterior circulation.

**Predictors of everyday life functioning**

Considering the relatively young age of occurrence of SAH, impact of residual cognitive and behavioral problems on the resumption of daily life activities can be serious, resulting in reduced Quality of Life, life satisfaction, and working
capacity (Al-Khindi, Macdonald, & Schweizer, 2010). Previous studies have identified several predictors of post-SAH dysfunction, such as acute clinical variables (severity of the bleeding, complications) (Carter, Buckley, Ferraro, Rordorf, & Ogilvy, 2000; Vilkki et al., 2004), and psychological factors, such as depression and anxiety (Hedlund, Zetterling, Ronne-Engstrom, Carlsson, & Ekselius, 2011; Turi, Conley, & Stanfill, 2017). To advance our understanding of factors related to long-term outcome post-SAH, we aimed to investigate two specific predictors of outcome post-SAH, namely cognitive functioning (Chapter 2 and 6) and fatigue (Chapter 3). In this investigation, several components of long-term outcome were described, i.e. return to work, leisure resumption and social activities.

**Cognitive functions**

Overall, we reported several cognitive factors that were related to the resumption of work, leisure, and social activities. Changes in leisure and social activities were found in a significant proportion of patients up to 10 years post-SAH (Chapter 2). Moreover, resumption of those activities was influenced by cognitive problems, i.e. planning difficulties, forgetfulness, and distractibility, as well as mood and fatigue. Additionally, patients who were employed post-SAH experienced less problems with the resumption of leisure and social activities than patients who were not employed. Interestingly, this sub-group of working patients also had less cognitive complaints and a better initial neurological condition, suggesting an influence of both cognitive functions and acute SAH-related variables on work resumption. Therefore, cognitive functioning was investigated as possible predictor for incomplete return to work (RTW), as well as acute SAH-related variables and demographic characteristics (Chapter 6). We showed that patients who did not resume their work in the chronic stage (between 1 year and 8 years) after SAH, performed significantly worse on measures of complex attention and executive functions than patients who did resume their pre-SAH occupation. Moreover, neuropsychological measures for complex attention and executive functioning collected in the subacute phase were found to have additional predictive value for RTW above acute SAH-related and demographic variables.

Based on our results, cognitive deficits appear to be important in the prediction of everyday life functioning after SAH. In both studies (Chapter 2 and 6), predominantly executive functioning and complex attention had a significant influence on resumption of activities. As has been described in the theoretical
framework for non-routine, goal-directed behavior by Norman and Shallice (1986), these cognitive functions can be assigned to an overarching system: the Supervisory Attentional System (SAS). According to this theory, the SAS is required in novel or complex situations, when adaptive behavior is required in balancing between initiating and inhibiting actions. Thus, the importance of both complex attention and executive functioning possibly shows the importance of executive control processes across a wide variety of tasks and daily activities. This kind of cognitive control of actions is important in several daily life activities, such as work and social interaction. Based on our studies, it could be suggested that some of the crucial cognitive impairments post-SAH concern elements of the SAS. Although deficits in the SAS often are associated with brain damage in frontal regions of the brain, no relationship between executive functions and injury location was found in our study (Chapter 2). Consistent with our findings on social cognition (Chapter 5), both frontal and non-frontal brain areas appear to be required for intact executive functioning and complex attention.

Although patients might appear fully recovered when assessed at follow-up because of the absence of neurological deficits, they still might have subtle cognitive deficits or complaints that hamper effective participation and social and occupational reintegration. Importantly, outcome as measured by return to work was affected in both aSAH and anSAH patients. These findings emphasize the importance of assessing complex attention and executive functioning in both groups in clinical practice, to improve long-term outcome prediction.

**Fatigue**

Fatigue is among the most common and problematic consequences of brain injury in general, but it still is difficult to assess and consequently problematic to treat. After SAH, fatigue is reported in 31 to 90% of patients (Boerboom et al., 2017; Eskesen, Sorensen, Rosenorn, & Schmidt, 1984; Passier et al., 2011). Despite the fact that mental and physical fatigue are notably different in nature and can influence outcome in different ways, post-SAH fatigue has often been investigated as a unitary construct. Moreover, the relationship between post-SAH fatigue and functional outcome, including return to work, is unclear. Therefore, we found it valuable to investigate the predictive value of specific aspects of post-SAH fatigue (mental and physical) for long-term functional outcome.

High levels of both mental and physical fatigue were found (Chapter 3), with mental fatigue being present in almost half of all SAH patients, which was
significantly more than the proportion of physical fatigue (almost 40 percent). Moreover, mental fatigue was a better predictor of functional outcome, when compared to physical fatigue and mood disorders. These findings emphasize the relevance of determining multiple components of fatigue after SAH, as has been suggested for other types of brain injury (Hinkle et al., 2017; Wu et al., 2015). The proper distinction between both types of fatigue is crucial in counseling of patients and their relatives and for designing appropriate treatment or coping methods for fatigue post-SAH. Possibly, physical exercise is more appropriate in treating patients with physical fatigue, whereas energy conservation strategies and cognitive behavioral therapy can alleviate mental fatigue. No significant differences in mental fatigue were found between aSAH and anSAH patients, which makes it paramount to assess mental fatigue in both groups.

The cause or underlying mechanism of post-SAH mental fatigue is still unknown, however several theories about post-stroke fatigue have been proposed. For instance, impairments in information processing speed and attention may cause the need for more effort in the performance of everyday tasks, leading to greater fatigue (‘Coping hypothesis’, van Zomeren & van den Burg, 1985). This possible association between cognitive functioning and mental fatigue would be of interest, considering the presence of both cognitive deficits and high rates of fatigue post-SAH.

**SAH: a heterogeneous condition**

**Aneurysmal SAH**

Historically, specific cognitive deficits and problems in everyday life functioning were related to the site of the aneurysm. Specifically, deficits after treatment of aneurysms of the anterior communicating artery (ACoA) have been described as a distinct syndrome with severe memory deficits, personality changes, and confabulation (Bornstein, Weir, Petruk, & Disney, 1987; Norlen & Olivecrona, 1953). More recently, literature has emerged with contradictory findings about the presence of such a specific, isolated ‘ACoA syndrome’ (Bottger, Prosiegel, Steiger, & Yassouridis, 1998; Hutter, Gilsbach, & Kreitschmann, 1995). Also, we did not find any evidence for an association between aneurysm location and the resumption of daily activities, self-reported social cognitive and executive problems (Chapter 2), or cognitive deficits (Chapter 4). Nowadays, more patients undergo endovascular coiling for ACoA aneurysms, which is a less invasive procedure and leads to significantly less treatment-related injury.
compared to clipping. Clipping is associated with higher rates of structural injury and the basal forebrain has been proposed as being the most common site of infarction (Mortimer et al., 2016). Lesions in the basal forebrain have been linked to cognitive deficits in memory, which might be a reason for the previously described severe memory deficits and confabulation as part of the ACoA syndrome. Indeed, several studies have found significantly more memory and executive function impairments in patients with ACoA aneurysm who had undergone clipping compared to coiling (Chan, Ho, & Poon, 2002; Fontanella, Perozzo, Ursone, Garbossa, & Bergui, 2003). These results likely explain the lack of recent significant findings on the ACoA syndrome. Also, in our studies, patients who underwent endovascular coiling were overrepresented. Furthermore, the existing body of research on the association between SAH-related variables and cognitive consequences suggests that various pathophysiological mechanisms affect the ultimate impairments. Over the past three decades, multiple acute SAH-related variables have been associated with cognitive and functional outcome, such as the amount of extravasated blood (Woo et al., 2017), complications (Doerfler et al., 2018; Stenhouse, Knight, Longmore, & Bishara, 1991), and secondary brain damage due to vasospasm related ischemia and perfusion disturbance (Stehouwer, van der Kleij, Hendrikse, Rinkel, & De Vis, 2018).

**Angiographically negative SAH**

Traditionally, anSAH is regarded a relatively mild disorder, considering good neurological outcome and low number of complications. However, our results show that problems with return to work and functional outcome are also present after anSAH. Although cognitive functioning was not clearly impaired, it was certainly not optimal in anSAH patients (Chapter 4). Moreover, no significant differences in cognitive complaints, mood, and fatigue between aSAH and anSAH were found (Chapter 2). This interesting profile of mild cognitive impairments, while reporting serious complaints, is partly in accordance with findings in patients with mild traumatic brain injury (mTBI; Stulemeijer, Vos, Bleijenberg, & van der Werf, 2007). Comparing data on mTBI and anSAH could be intriguing and useful in exploring complaints and fatigue post-anSAH.

In mTBI research on post-injury complaints, the value of conventional imaging such as Magnetic Resonance Imaging (MRI) is limited, considering the lack of significant associations between lesions or MRI and complaints. Recent studies have started to focus on advanced imaging methods such as functional MRI (fMRI), Diffusion Tensor Imaging (DTI), or Susceptibility Weighted
Imaging (SWI). These methods might also be helpful in elucidating possible neural mechanisms underlying fatigue and cognitive complaints after anSAH. For example, in a fMRI study by van der Horn et al. (2015), stronger deactivation of the default mode network was found in mTBI patients without complaints, which indicates that these patients need less cognitive effort and consequently experience fewer mental fatigue and cognitive complaints. DTI has also been used in mTBI studies to investigate the connectivity of white matter tracts, leading to comparable results: global and local efficiency values were lower in patients without complaints (van der Horn et al., 2017). White matter injury is not well understood after SAH compared to other subtypes of stroke. Although there is some evidence for the sensitivity of DTI in detecting white matter tract injury in hemorrhagic stroke (Chaudhary et al., 2015), correlations with cognitive functions and outcome are unclear.

**Cerebrospinal fluid drainage after SAH**
Throughout this dissertation, we investigated several acute SAH-related variables. Interestingly, temporary external drainage and permanent internal shunting for increased intracranial pressure were the only significant factors associated with deficits and outcome. External CSF drainage was related to higher mental fatigue (Chapter 3) and a significant association between early external CSF drainage and long-term incomplete RTW appeared (Chapter 6). These results seem to be consistent with other research describing an association between CSF drainage and poor functional outcome. However, in our hospital, external drainage is not only initiated in case of hydrocephalus, but in all patients with suspected increased intracranial pressure, who are somnolent and have severe headache, with or without enlarged ventricles on CT-scan. This might explain the relatively high rate of patients with external CSF drainage in our data, compared to the literature (Germanwala, Huang, & Tamargo, 2010). Interestingly, a higher rate of external CSF drainage in aSAH patients might, at least partly, contribute to the subtle differences in cognitive functioning and functional outcome between aSAH and anSAH patients. Additionally, scores on measures for memory, executive functions and emotion recognition were significantly lower in SAH patients with internal shunting (VP shunt) than in patients without permanent shunt. This is in line with previous research indicating an association between neuropsychological deficits and chronic hydrocephalus (Stienen et al., 2014). Overall, treatments for increased intracranial pressure were related to more problems in everyday life functioning:
higher levels of fatigue, more cognitive impairments and incomplete RTW. Lastly, we did not define a significant association between other SAH-related variables and cognitive functions as well as functional outcome.

**Indications for future research**

Given the association between deficits in social cognition and behavioral problems post-SAH (Chapter 5), an interesting topic for future research would be the effectiveness of interventions for social behavior. Previous studies have shown that treatment of emotion recognition deficits is promising (Driscoll, Dal Monte, & Grafman, 2011), however generalization of taught skills to everyday life functioning appears to be poor. Interestingly, the majority of social cognition interventions focuses on one aspect, while social cognition is a multifaceted construct. We found deficits in several aspects of social cognition, i.e. Theory of Mind, empathy, and emotion recognition (Chapter 5). In this light, a recently developed intervention in the Netherlands, the Treatment for Impairments in Social Cognition and Emotion Regulation (T-ScEmo), seems promising. After evaluating the effects of this multifaceted treatment in a group of TBI patients, it was concluded that impairments in social information processing could be effectively dealt with, leading to improvements in social functioning (Westerhof-Evers et al., 2017).

Given the high prevalence and the negative effect on long-term outcome in SAH patients, more research is needed to establish the underlying mechanism and related factors of fatigue. Specifically mental fatigue would be of interest, as this is most distinctive for post-SAH fatigue. Mental fatigue is often accompanied by concentration difficulties and feeling even more tired after cognitive activities, which makes the relationship between cognitive functioning and mental fatigue interesting. Previous studies in in traumatic brain injury and stroke patients have shown significant correlations between attention and speed of information processing and subjective assessments of fatigue (Johansson, Berglund, & Ronnback, 2009; Pihlaja, Uimonen, Mustanoja, Tatlisumak, & Poutiainen, 2014; Radman et al., 2012; Ziino & Ponsford, 2006). The coping hypothesis about mental or cognitive fatigue in brain injury patients (van Zomeren & van den Burg, 1985) states that fatigue is the result of constant effort that patients need to maintain performance at an adequate level while compensating for slower information processing speed and deficits in attention. This would mean that, although patients report subjective feelings of fatigue, their performance on cognitive tests is comparable to the performance of healthy controls. Indeed,
significant correlations between subjective measures of fatigue and mental speed were found in brain injury patients, while performance on objective tests did not differ significantly between brain injury patients and healthy controls (Ashman et al., 2008; Azouvi et al., 2004; LaChapelle & Finlayson, 1998). In the previous chapters, it has been shown that SAH results in a range of cognitive impairments, including deficits in complex attention and speed of information processing. Further research examining the relationship between mental fatigue and attention following SAH would therefore be interesting.

Furthermore, brain imaging studies, specifically research using resting-state fMRI, might also increase our understanding of mental fatigue after SAH. An indication of increased mental effort to keep task accuracy at a normal level, is stronger activation of several brain networks, i.e. higher neuronal activity, when task difficulty is higher. This in turn, could lead to mental fatigue. Indeed, previous studies found higher neuronal activity in patients compared to controls during mental activities, while task performance was comparable in both groups. Studies have shown increased resting state connectivity in SAH patients (da Costa et al., 2016; Maher et al., 2015; Su, E, Guo, Lei, & Gu, 2018), which is suggested to be related to mental fatigue. Increased resting-state fMRI connections are considered a compensatory mechanism; patients need to use additional neural resources to compensate for the loss of function and maintain performance at a sufficient level. Taking into account the high levels of both cognitive impairments and mental fatigue post-SAH, it would be informative to investigate whether these are related to altered resting-state fMRI signals post-SAH.

Consequently, studies could focus on developing interventions for fatigue. Research on treatment of post-SAH fatigue is scarce, mainly consisting of studies on stroke with a relatively small sub-set of SAH patients. There is a wide range of interventions for post-stroke fatigue, however there are no objective criteria about which intervention to favor (McGeough et al., 2009). For SAH patients, with both mental and physical fatigue, it could be hypothesized that a combined treatment of both physical exercise and cognitive therapy is useful. Cognitive behavioral therapy has been used successfully for the treatment of fatigue after traumatic brain injury (Ponsford et al., 2012) and exercise therapy has been suggested to relieve fatigue in other patient groups, such as cancer patients (Velthuis, Agasi-Idemburg, Aufdemkampe, & Wittink, 2010). Results of a recent multicenter randomized controlled trial (Zedlitz, Rietveld, Geurts, & Fasotti, 2012) indicate that a cognitive therapy together with activity training
could reduce fatigue after stroke. Future work is required to see whether such an intervention program could be beneficial in reduction of post-SAH fatigue.

**Recommendations for clinical practice**

**Diagnosis**

In this dissertation, associations between several cognitive and behavioral consequences of SAH and impaired everyday life functioning have been presented. Not surprisingly, one of our recommendations for clinical practice is to assess these consequences through neuropsychological assessment as a part of standard follow-up of SAH patients. Previous studies have shown cognitive deficits in several domains, which calls for a comprehensive neuropsychological assessment. Based on our results, specifically higher-order prefrontal functions, i.e. social cognition, executive functioning, and complex attention, should be assessed routinely.

Interpersonal problems and apathy appear to be present in more than one third of aSAH patients, which requires timely and adequate neuropsychological assessment of these problems. As we found a relationship between social cognition impairments and behavioral problems after aSAH, social cognition tests appear to be a sensitive method to detect these problems. Because several aspects of social cognition can be impaired after aSAH (emotion recognition, Theory of Mind, empathy), we recommend that a broad range of social cognition tests is included. Moreover, no significant difference was found in emotion recognition between anSAH and aSAH patients, so at least a test for emotion recognition should also be applied after anSAH. Furthermore, indications of impaired self-awareness were found (Chapter 5), thus using both self-report and proxy measures should be part of standardized follow-up in clinical practice after SAH.

In addition, assessment of executive functions and complex attention should be part of routine follow-up, considering the associations of these cognitive functions with return to work, and resumption of leisure and social activities. With a thorough assessment including these cognitive domains, in the subacute phase post-SAH, clinicians can identify those patients at the highest risk for incomplete return to work and offer appropriate and timely tailored professional support. Moreover, tests for (complex) attention may also be useful in case of subjective complaints of fatigue, as associations between mental fatigue and attentional deficits have been found in other patient groups. Measuring fatigue with objective tests in addition to subjective assessment, might be of relevance.
in diagnosis and eventually treatment of fatigue.

**Treatment**
An important question for the future is to determine the effectiveness of specific interventions aimed to treat post-SAH consequences such as fatigue and social cognition impairments, as described above. An interesting possibility to treat several post-SAH consequences is Acceptance and Commitment Therapy (ACT). ACT is a form of cognitive behavioral therapy with a focus on the way environmental interactions influence thoughts and behaviors. It adheres to a health model: (emotional) problems are thought inevitable and the goal of ACT is to help individuals to live a purposeful life, and not to focus on symptom reduction per se. Its three core components are (1) accepting that emotional problems cannot be changed, (2) choose a direction based on own values, and (3) take action. In light of the fact that consequences of SAH can be chronic and the future is unpredictable, this might be useful in helping patients to accept and to move forward. There is increasing support for the benefits of ACT interventions in several medical and psychological populations (Hayes et al., 2006). Although studies on ACT in patients with acquired brain injury (ABI) are rare, a recent review indicated that ACT and other mindfulness-based interventions may be useful in helping patients with ABI to accept their deficits (Kangas & McDonald, 2011). However, studies are needed to test the efficacy of ACT in ABI patient groups, like after SAH.

**Conclusions**
Although post-SAH cognitive and behavioral problems may vary in degree and extent from patient to patient, this dissertation broadened our knowledge on post-SAH consequences and their influence on everyday life functioning. Despite the relatively good clinical outcome of the patients in our studies, not all patients were able to perform as well as they previously did in work and social and leisure activities. Executive functioning, complex attention, and mental fatigue appear to be important factors to determine which patients resume their pre-SAH activities. Moreover, impaired social cognition has been proposed as a possible underlying construct of behavioral problems post-SAH. Screening for those so called 'invisible consequences' (i.e. cognitive, behavioral, and emotional problems) is crucial to identify patients at-risk for impaired everyday life functioning. Importantly, careful assessment should be performed in both aSAH and anSAH patients. Lastly, there is a need for designing adequate treatment methods, and ultimately improve outcome post-SAH.
References


