

Exploring Metacognitive Beliefs and Attentional Control as Statistical
Predictors of Social Anxiety, Depression Symptoms and Work Status
Among High Socially Anxious Individuals

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Foreword

The research question was formulated together with my co-supervisor with the aim of creating an interesting graduate thesis and to hopefully contribute with new knowledge to this field of investigation. I conducted the data collection and analyzes during the spring of 2018, and further worked with writing the thesis until it was finished in November the same year. During this project I have learnt a lot about the process of conducting a scientific investigation and writing a scientific paper, and about the metacognitive model and social anxiety. I would like to thank Henrik Nordahl for excellent supervision, and for always being available for advice and guidance. I would also like to thank Odin Hjemdal for his valuable input, Solveig Løken for assistance in the translation of the Attentional Control Scale and my friends and family for supporting me and helping me with recruiting participants to the survey.

Abstract

Background: Social anxiety disorder (SAD) is associated with substantial individual suffering, lower quality of life and considerable economic cost for society. It is also considered a major risk factor for developing depression and is associated with poor occupational functioning. Prominent cognitive models focus on the content of thoughts and social fears as mechanisms underlying social anxiety and its related problems. However, the metacognitive model emphasizes metacognitive beliefs and individual differences in attentional control as important transdiagnostic factors underlying emotional disorders and related problems in general, and could therefore potentially provide new knowledge about which factors underlie social anxiety and its related problems. However, research on the metacognitive model for social anxiety is scarce, and no studies have, to the author's knowledge, investigated the relative contribution of attentional control and metacognitive beliefs in this context. *Aims:* The current study therefore aimed to investigate the relative contribution of attentional control and metacognitive beliefs in explaining severity of social anxiety and depression symptoms, and as potential determinants of work status in an analogue SAD-sample. *Method:* In a cross-sectional design, 346 high socially anxious individuals participated in an online survey about psychological factors in social anxiety and related problems. *Results:* Attentional control- and metacognitive belief domains were unique predictors of social anxiety, symptoms of depression and work status even when controlling for social fears. *Conclusions:* These findings suggest that metacognitive beliefs and attentional control are important underlying factors of social anxiety, depression symptoms, and work status in individuals with social anxiety. These findings are in line with the metacognitive model and suggest that targeting poor attentional control and maladaptive metacognitive beliefs has the potential to reduce social anxiety and depression symptoms, and to facilitate return to work among those with social anxiety.

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1.1 Aims and Purpose of the Present Thesis

The present thesis aims to investigate the relative contribution of metacognitive beliefs and individual differences in attentional control as statistical predictors of social anxiety, depression symptoms and work status among high socially anxious individuals. These aims are important as recent research has indicated that metacognitive beliefs and attentional control are important factors associated with social anxiety and related problems such as depression and work ability, but to the authors' knowledge, has not been investigated in conjunction among those high socially anxious in previous research. Identifying possible determinants of emotional distress and functional problems have the potential to enhance conceptualization and treatment and should therefore be a priority in clinical psychology research (Kazdin, 2007).

1.2 Social Anxiety Disorder

The essential feature of Social anxiety disorder (SAD) is “a marked, or intense, fear or anxiety of social situations in which the individual may be scrutinized by others” (American Psychiatric Association (APA), 2013, p. 203). The main diagnostic criteria listed in The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013) include a) a marked fear or anxiety about one or various social or performance situations; b) fear of being negatively evaluated by others or acting in an embarrassing way; c) exposure to feared situations almost always provokes fear or anxiety; d) the individual avoids social situations or endure them with intense anxiety; e) the fear is excessive; f) the fear, anxiety and avoidance have a persistent nature lasting six months or more and; g) the fear, anxiety or avoidance interferes with the individual's everyday functioning.

In addition, the DSM-5 (APA, 2013) specifies that SAD should be viewed along a severity continuum. “Social anxiety disorder” is used as the correct diagnostic label when an individual fears two or more social situations. However, if a person's fear is restricted to speaking or performing in public only, the correct diagnostic label is “SAD - performance type”. Individuals with the performance only type of SAD have performance fears that are typically most impairing in their professional lives (e.g., musicians, dancers, performers, athletes) or in roles that require regular public speaking, but do not fear or avoid nonperformance social situations. Thus, number of social fears is usually used as an indicator of social anxiety severity and has also been hypothesized as an important underlying factor in social anxiety (Acarturk, de Graaf, van Straten, ten Have, & Cuijpers, 2008; Ruscio et al., 2008).

1.2.1 Prevalence. SAD has a lifetime prevalence of 12-13% (Kessler, Petukhova, Sampson, Zaslavsky & Wittchen, 2012; Ruscio et al., 2008), making it one of the most common mental disorders. The median age of onset of the disorder is found to be in mid-adolescence, as studies indicate onset between age 13 (Kessler et al., 2005) and 15-17 (Kessler et al., 2012). In addition, SAD is associated with a chronic course if left untreated (Bruce et al., 2005). According to DSM-5 (APA, 2013), SAD prevalence rates are higher in females compared to males in the general population but not in clinical samples, where gender rates are equivalent or slightly higher for men. This heighten help-seeking behavior in male patients is assumed to be explained by gender roles and social expectations (APA, 2013). Rapee (1995) suggests that men with social anxiety might experience a more disrupted life compared to women with social anxiety, as men are expected to e.g. initiate dating relationships and to be career-oriented, and as Turk et al. (1998) argue, men with social anxiety will be more likely to receive negative feedback about inhibited social behavior compared to women, which could contribute to men being more motivated to seek help.

1.2.2 Comorbidity and associated problems. SAD is associated with high levels of comorbidity. Ruscio et al. (2008) reported that 63% of participants with lifetime SAD met criteria for at least one other lifetime DSM-IV disorder, and Fehm, Beedso, Jacobi and Fiedler (2008) reported that 88% of individuals with SAD had at least one other DSM-IV disorder during the past 12 months. SAD is also associated with significantly reduced quality of life in domains as satisfaction with family, social relations, work and financial situation (Fehm et al., 2008; Rapaport, Clary, Fayyad and Endicott, 2005) and comorbidity is associated with more severe impairment (Ruscio et al., 2008).

Due to the early onset of SAD, it often precedes other disorders (Fehm et al., 2008). Specifically, several studies indicate that SAD is a powerful risk factor for the development of depression (Beesdo et al., 2007; Belzer & Schneier, 2004; Dalrymple & Zimmerman, 2007). Ohayon and Schatzberg (2010) reported that SAD-patients were five times more likely to develop MDD compared to controls, and Dalrymple and Zimmerman (2007) found that 42% of individuals with SAD had comorbid major depressive disorder (MDD). Comorbid SAD and MDD is particularly problematic compared to pure MDD, as it is associated with a more severe course of depression with more suicidal ideation and suicide attempts (Stein et al., 2001; Dalrymple & Zimmerman, 2007), higher persistence of SAD (Blanco et al., 2011), greater impairment in work, studies and social life (Aderka et al., 2012; Dalrymple & Zimmerman, 2007), worse quality of life (Barrera & Norton, 2009) and higher probability of comorbid alcohol use disorders (Dalrymple & Zimmerman, 2007).

1.2.3 Occupational status and functioning in SAD. Work disability due to mental health issues is a particular challenge, with mental illness being responsible for high rates of unemployment, significant loss of potential work force and reduced productivity at work (Organisation for Economic Co-operation and Development (OECD), 2012). Between one in three and one in two of all new disability benefit claims can be attributed to mental-ill health (OECD, 2012). It has been indicated that SAD has an especially negative impact on occupational functioning compared to other common mental disorders (Moitra, Beard, Weisberg, & Keller, 2011). Disability days among individuals with SAD is reported to be three times as high compared to non-SAD individuals (Fehm et al., 2008), and social anxiety in adolescence is associated with unemployment and sickness absence in young adulthood (Narusyte, Amin & Svedberg, 2017). Moreover, the economic costs associated with SAD, including costs related to health service uptake, patients' "out-of-pocket" expenses and costs of production losses, have been reported to be substantial (Acarturk, Smit, De Graaf, Van Straten, Ten Have & Cuijpers, 2009). Interestingly, Acarturk and colleagues also reported that costs associated with subthreshold SAD approach those of full-blown SAD, which underscores the impact symptoms of social anxiety has, not only on high socially anxious individuals, but also on individuals with subclinical symptoms.

Hence, poor work ability is a considerable challenge among socially anxious individuals, with huge personal and societal consequences. To be in work has positive effects on mental health, yielding e.g. social status, a source of self-esteem, time structure and secure income (OECD, 2012). Recovery from mental ill-health can potentially be facilitated by work (Modini et al., 2016). For example, work participation could facilitate social contact, which is considered an essential factor for recovery from the disorder across recognized therapy models. The identification of psychological factors contributing to work-status among socially anxious individuals is therefore of great importance.

1.3 Towards a Better Conceptualization and Treatment

In sum, SAD is potentially an enormously disabling disorder associated with substantial individual suffering and lower quality of life, and economic costs for society. Moreover, SAD is considered a major risk factor for developing comorbid problems, such as depression, and is associated with poor occupational functioning. Therefore, it is of great conceptual, therapeutic and socioeconomic importance to identify which factors constitute social anxiety and the vulnerability associated with it such as proneness to depression symptoms and poor work ability.

A key characteristic of social anxiety that is widely accepted as an important maintenance factor of distress and functional impairment, is the engagement in self-focused attention when put under pressure to perform (e.g., Ingram, 1990; Mor & Winquist, 2002; Bögel & Mansell, 2004). However, different theories offer distinct perspectives on which factors constitute the disposition to engage in maladaptive self-attentional processes (attention bias). Cognitive-behavioral therapy (Wells, 1997) is the current treatment of choice for SAD (National Institute for Health and Care Excellence (NICE), 2013) and is founded upon Beck's schema theory (Beck, 1976) which emphasize schemas and negative automatic thoughts (social fears) as the underlying factors in SAD (Clark & Wells, 1995; Rapee & Heimberg, 1997; Hofmann, 2007). However, the emphasis on schemas or negative automatic thoughts as central factors underlying social anxiety has been criticized by theories that are more recent.

1.4 Theories of Attentional Control

1.4.1 Bottom-up. One theory offering a different perspective on the role of attention in psychopathology is the attentional control theory (ACT; Eysenck, Derakshan, Santos & Calvo, 2007). A general assumption within the ACT is that the effects anxiety has on attentional processes are fundamental in understanding how anxiety affects cognitive performance (Eysenck et al., 2007). The theory suggests that anxious individuals use greater attentional resources to attend to potential threatening stimuli, thus reducing attentional resources available for task-relevant stimuli. This means that the individual has increased stimulus-driven bottom-up processing, which facilitates attention for threat but impedes inhibition of task-irrelevant information. Further, the individual has decreased goal-directed top-down processing, which prevents disengagement from threat and therefore interrupts attention shifting. Thus, anxiety increase attentional bias towards threat and impairs attentional control, which further generate poor cognitive performance on tasks involving the two executive functions inhibition and shifting (Miyake et al., 2000).

1.4.2 Top-down. In an alternative approach to understanding the role of attention in psychopathology, Wells and Matthews (1994) proposed specific multiple influences on attention bias including metacognitive beliefs and the individual's goals and strategies for self-regulation of which volitional attentional control is a major component. Attentional control has been conceptualized as the ability to control attention in inhibiting a dominant response in favor of a less accessible, subdominant response that may be more functional (Derryberry & Reed, 2002; Rothbart & Bates, 1998). Thus, attentional control is viewed as a self-regulatory capacity, and it has been shown to moderate the association between attention

bias towards threat and anxiety in adults (e.g., Derryberry & Reed, 2002; Bardeen & Orcutt, 2011) and in children (e.g., Lonigan & Vasey, 2009; Susa, Piticâ, Benga & Miclea, 2012). Consequently, individual differences in attentional control could contribute to resilience or vulnerability to emotional distress (e.g., Lonigan, Vasey, Phillips & Hazen, 2004; Muris, de Jong & Engelen, 2004; Muris, Meesters & Rompelberg, 2007; Muris, Mayer, van Lint & Hofman, 2008; Susa et al., 2012). The role of such influences on attention and their link with emotional vulnerability is captured in most detail in the Self-Regulatory Executive Function (S-REF) model (Wells & Matthews, 1994; 1996), which is the basis of the metacognitive model of emotional disorder and treatment (Wells, 2009).

1.5 The Self-regulatory Executive Function (S-REF) Model

The Self-regulatory Executive Function (S-REF) model (Wells & Matthews, 1994; 1996) can be seen as a metaphor for the cognitive architecture and offers an account of the factors involved in top-down control or maintenance of emotional distress. In the model, cognitive processes are spread across three interacting levels involving automatic and reflexive processing (lower-level processing), online conscious processing of thoughts and behaviors (cognitive style) and a library of knowledge or beliefs that are metacognitive in nature and stored in long-term memory. According to this framework, emotional disorder is a result of perseverative maladaptive self-regulation due to biased top-down monitoring and/or control of conscious processing which is the more proximal cause of distress.

This dysfunctional pattern of processing is called the cognitive attentional syndrome (CAS) and consists of prolonged and/or intensified processing of internal events, repetitive thinking in the form of worry and rumination, increased self-monitoring and attentional bias towards potential threats, and maladaptive coping strategies like avoidance and thought suppression. The CAS will sustain self-focused attention and initiate, intensify and maintain emotional distress. Moreover, it will lower the persons cognitive and attentional capacity, which will interfere with adaptive coping and the person's ability to attend to information that could disconfirm maladaptive beliefs.

Furthermore, the metacognitive model proposes that beliefs about thinking (i.e. metacognitive beliefs) underlie the self-regulatory strategies that constitute the CAS. Wells (2009) described metacognitions as the conductor behind thinking that is responsible for healthy and unhealthy control of the mind, as metacognitions shape the cognitive style, e.g., what we pay attention to and which strategies we use to regulate thoughts and feelings, and therefore what enters consciousness through biasing lower-level reflective processes.

Especially two types of beliefs are important in maintenance of emotional distress (Wells, 2009); positive metacognitive beliefs, which are beliefs about how aspects of the CAS can be helpful and/or beneficial (e.g., “Worrying keeps me safe”); and negative metacognitive beliefs, which are beliefs about the uncontrollability and dangerousness of thinking and internal events (e.g., “I have no control over my thinking”). According to the metacognitive model, positive metacognitive beliefs create proneness to engage in the CAS, while negative metacognitive beliefs prohibit disengagement from the CAS and also give rise to negative interpretation and further worry over cognitive- and emotional states.

In addition to maladaptive metacognitive beliefs, the metacognitive model emphasizes the role of executive functions in the top-down regulation of cognitive style. Attentional control is considered a general resource that facilitates cognitive regulation and the ability to disengage from conceptual processing and perseverative self-focused attention (i.e. the CAS). This ability is separate from but related to the effects of metacognitive knowledge (Wells & Matthews, 1994). Individual differences in attentional control could affect the individual’s ability to disengage from the CAS. For example, problems with shifting attention could lead to perseverative processing of threat and/or difficulties disengaging from repetitive negative thinking (i.e. the CAS) which further would maintain emotional distress. Consequently, both metacognitive beliefs and higher-order executive functions (e.g., attentional control abilities) may contribute in the initiation, maintenance and/or intensifying of symptoms as they both impact on engaging and disengaging the CAS (Wells & Matthews, 1994). Thus, while CAS is seen as the proximal cause of emotional distress, metacognitive knowledge and executive functioning are seen as underlying factors of the CAS and therefore the more distal factors constituting emotional disorder and psychological vulnerability.

1.5.1 Metacognitive beliefs and social anxiety. In line with the S-REF model, maladaptive metacognitive beliefs have been associated with social anxiety. In a recent systematic review, Gkika, Wittkowski and Wells (2018) reported that positive metacognitive beliefs about CAS strategies such as worry, anticipatory processing, post-mortem processing and general rumination in relation to social situations, as well as negative metacognitive beliefs about the uncontrollability and dangerousness of thoughts, were positively and significantly associated with social anxiety in non-clinical samples. Regression analyses further showed that positive beliefs about worry and about post-mortem, post-mortem processing and negative beliefs about thoughts uniquely predicted social anxiety. In clinical samples, metacognitive beliefs about the need to control thoughts and positive and negative metacognitive beliefs were positively associated with SAD.

Subsequent to this review, Nordahl, Nordahl, Hjemdal and Wells (2017) investigated change in negative metacognitive beliefs in SAD-patients undergoing treatment and found that a large proportion of the variance in symptoms of SAD at post-treatment were explained by change in negative metacognitive beliefs. The authors argue that negative metacognitive beliefs seem to be an important underlying factor in symptom improvement and therefore, in line with the metacognitive model, should be targeted in treatment of SAD. This is further supported in a study by Nordahl and Wells (2017b) using structural equation modelling in a longitudinal dataset, where they found that the metacognitive model fitted the data well, and that negative metacognitive beliefs and judgements of confidence in memory seemed to be of particular importance. Nordahl, Nordahl and Wells (2016) found that positive metacognitive beliefs were positively associated with negative self-evaluation, which is a core feature of social anxiety, and argue that treatment of social anxiety therefore is likely to require metacognitive intervention. Taken together these findings provide support to an association between metacognitions and social anxiety.

Few studies have investigated the associations between metacognitions and depression and work status among individuals with social anxiety. Nordahl, Nordahl, Vogel and Wells (2018) reported that metacognitions predict depressive symptoms in individuals with social anxiety disorder. In particular, negative metacognitive beliefs and cognitive confidence were significant predictors of depressive symptoms in this group, with negative beliefs being the strongest predictor. Further, it has been indicated that maladaptive metacognitive beliefs may be associated with work status. Nordahl and Wells (2017a) found that in a group of socially anxious individuals, negative metacognitive beliefs uniquely predicted whether they were in or out of work, with a positive association between stronger endorsement of negative metacognitive beliefs and belongingness to the out-of-work group.

1.5.2 Attentional control and social anxiety. Several studies have been conducted on the association between attentional control and social anxiety. For example, Wieser, Pauli and Mühlberger (2009) used an emotion saccade task with facial expressions and found that socially anxious individuals showed problems with inhibition of reflexive responses, with more errors in response to all facial expressions. The authors argued that a deficit in attentional control in social anxiety could account for this finding. Further, Judah, Grant, Mills and Lechner (2013) investigated a socially anxious sample using a mixed-antisaccade task and found that this group demonstrated impaired efficiency of attentional control compared to a non-anxious group. Moreover, Liang (2018), using a mixed antisaccade task, reported that socially anxious individuals demonstrated impairments in inhibition compared to

non-anxious individuals. Other studies have used self-report measures. Taylor, Cross and Amir (2016) investigated whether individual differences in attentional control moderated the association between social anxiety and engagement and disengagement bias for threat relevant cues, and confirmed this hypothesis for attention shifting, but not for attention focusing. In a recent study, Sluis, Boschen, Neumann and Murphy (2018) investigated whether lower levels of attentional control were associated with increased levels of repetitive negative thinking (RNT) in social anxiety. RNT processes are considered to be maladaptive and to maintain social anxiety and could be compared to processes of worry and rumination in the metacognitive model. They found that higher levels of social anxiety were associated with decreased attentional control, and that higher levels of the post-event processing (PEP) component of RNT were associated with poorer attentional control. Thus, previous research indicates that there is an association between individual differences in attentional control and social anxiety. However, to the author's knowledge, no studies have investigated the association between attentional control and depression and work status among individuals with social anxiety.

1.6 Aims and Hypotheses

In sum, the metacognitive model emphasizes both metacognitive beliefs and attentional control as important transdiagnostic factors underlying emotional disorders and related problems. These factors are seen as central in the top-down control of attention and may, according to the model, be the key factors underlying perseverative self-attention and self-processing in high socially anxious individuals and therefore the more distal causes of social anxiety and related problems. In a study on a non-clinical sample, Fergus, Bardeen and Orcutt (2012) reported that attentional control moderated the association between activation of the CAS (i.e. self-attention; self-processing) and symptoms of depression, anxiety and stress. They further reported that the relationship between activation of the CAS and assessed symptoms increased in strength as attentional control decreased, which indicates that for individuals with low attentional control (i.e. inability to shift and disengage attention from threat information), the use of CAS coping strategies has especially deleterious psychological effects. However, to the author's knowledge, the relative contribution of metacognitive beliefs and attentional control has not yet been simultaneously investigated as statistical predictors of social anxiety, depression symptoms and work status among socially anxious individuals.

Thus, the aim of the current study was to test a prediction set forward by the metacognitive model through investigating the relative contribution of attentional control and

metacognitive beliefs in explaining severity of social anxiety and depression symptoms, and as potential determinants of work status in an analogue SAD-sample. These aims are important because SAD is a seriously disabling disorder with various associated challenges, and identifying mechanisms underlying the disorder can enhance conceptualization and treatment interventions.

The use of analogue research designs has been argued to be a valid approach, permitting the use of large sample sizes and the piloting of hypotheses (Stopa & Clark, 2001). In the current study, the Liebowitz Social Anxiety Scale – self report version (LSAS; Liebowitz, 1987) was used to identify high socially anxious individuals. To be eligible for the study, the individual had to score 30 points or above on this scale, which is the recommended cut-off (e.g., Mennin et al., 2002; Rytwinski et al., 2009).

The hypotheses were as follows; 1) symptoms of social anxiety and depression would be negatively correlated with attentional control; 2) symptoms of social anxiety and depression would be positively correlated with metacognitive beliefs. It was also expected positive inter-correlations between social anxiety and depression, within the metacognitive belief's subscales and within the attentional control subscales. Furthermore, it was expected a negative association between the subscales of attentional control and the subscales of metacognitive beliefs; 3) Attentional control and metacognitive beliefs would explain unique and independent variance in symptoms of social anxiety and depression; 4) Compared to the working group, the out-of-work group would have higher scores on symptoms of social anxiety and depression, lower scores on attentional control and higher scores on metacognitive beliefs; 5) Attentional control and metacognitive beliefs would explain unique and independent variance in work status.

In order to provide a stringent test for a potential role of metacognitive beliefs and attentional control in explaining social anxiety- and depression symptoms, age, gender and number of social fears, measured by the fear of negative evaluation scale (FNE; Watson & Friend, 1969), were controlled for. There were several reasons for controlling social fears in the regressions. Number of social fears has been suggested as one important factor underlying social anxiety severity and vulnerability for developing depression and lower work ability. For example, higher number of social fears is associated with a more severe degree of SAD including lower quality of life, which further increases the chance of depressive symptoms (Acarturk, et al., 2008; Ruscio et al., 2008). In addition, social fears are formulated as central underlying factors of self-processing in prominent cognitive models of SAD which to date constitute the theoretical underpinnings of recommended treatments (NICE, 2013; Mayo-

Wilson et al., 2014). If metacognitive beliefs and/or attentional control could show incremental validity over social fears, this would provide a stronger argument for the importance of these factors in social anxiety and comorbid symptoms in those with analogue SAD.

In order to provide a stringent test for a potential role of metacognitive beliefs and attentional control in explaining work status, gender, age, social fears and depression were controlled for. Being older and female is associated with poorer work ability (e.g. Bekker, Rutte & van Rijswijk, 2009; OECD, 2012), and emotional distress, in particular social anxiety and depression, is a major risk factor for poorer work ability (e.g. Moitra, et al., 2011; Lerner & Henke, 2008). In addition, symptoms of emotional distress were controlled to rule out the potential overlap between metacognitive beliefs/attentional control and emotional distress in explaining work status.

2. Methods

2.1 Participants and Procedure

The study was conducted in Norway and was therefore reported to and registered by the Norwegian Centre for Research Data (NSD; ref. nr. 59447) before initiating data collection. Participants were invited to participate in an online survey on psychological factors in depression and anxiety, through social media. Different mental health organizations helped spread information about the survey to their followers. The respondents had to be 18 years or above. The first page of the survey constituted an information sheet that provided the necessary information about the study and its purpose, and stated that moving to the next page would be regarded as consent to participate in the study (see appendix A).

A total of 645 participants signed up for the survey, of which 299 were excluded after completing the LSAS as they scored below the recommended cut-off (30 or above) to be considered a socially anxious person (see e.g., Mennin et al., 2002), and thus not eligible for the present study. Hence, the remaining sample ($N = 346$) consisted of high socially anxious individuals and could therefore be considered to be an analogue SAD sample.

In the final sample, the mean age was 33.41 ($SD = 12.41$) and 303 (87.6%) of the participants were female. As their occupational status, 104 (30.1%) reported to be students, 113 (32.7%) reported to be recipients of disability benefits meaning that they had been out of work for at least one year, 108 (31.2%) reported to be working, 9 (2.6%) reported to be on short term sick leave, 7 (2.0%) reported to be jobseekers and 5 (1.4%) reported to be retired. Concerning civil status, 145 (41.9%) reported to be single, 173 (50.0%) reported to be in a

relationship, to cohabit or to be married, 24 (6.9%) reported to be separated or divorced and 3 (0.9%) reported to be widowed. Regarding educational level, 48 (13.9%) reported to have finished primary education, 67 (19.4%) reported to have finished vocational secondary education, 62 (17.9%) reported to have finished academic secondary education and 84 (24.3%) reported to have finished 3 or more years of higher education.

With means to explore predictors of work status, participants reporting to be working or out of work were selected as a subsample, excluding those reporting to be students, jobseekers or retired as they could not be used to explore the research hypothesis in question. This subsample consisted of 230 individuals, of which 108 (47.0%) individuals reported to be working, and 122 individuals reported to be currently out of work. In the working group 95 (88.0%) were female and in the out of work group 112 (91.8%) were female. A Chi-square test and an independent samples t-test indicated that there was no significant difference in gender distribution, $X^2(1, N = 229) = 1.39, p = .238$, or in age between the working group ($M = 37.66, SD = 11.93$) and the out of work group ($M = 37.63, SD = 11.65$), $t(225) = -.017, p = .987$.

2.2 Measures

Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987; see appendix B) is a 24-item scale assessing symptoms of social anxiety and avoidance. In this study the self-report version was used. The respondent is asked to rate the degree of fear and avoidance in different social situations during the past week. Each item is rated on a 4-point scale, indicating degree of fear (0 = none, 1 = mild, 2 = moderate, 3 = severe) and avoidance (0 = never, 1 = occasionally, 2 = often, 3 = usually) separately. The instrument has shown good internal consistency ($\alpha = .96$; Dos Santos, Loureiro, Crippa, & de Lima Osório, 2013; $\alpha = .95$; Fresco et al., 2001), and good test-retest reliability ($r = .82$; Dos Santos et al., 2013). This well-validated instrument can be considered a standard tool in the assessment of social anxiety disorder. The recommended cut-off score to identify a highly socially anxious person is 30 and above (e.g., Mennin et al., 2002; Rytwinski et al., 2009). In the current study the internal consistency was good ($\alpha = .97$).

Fear of negative evaluation (FNE; Watson & Friend, 1969; see appendix C) is a 30-item self-report questionnaire assessing beliefs and expectations about being negatively evaluated by others and avoidance of being evaluated (social fears). Each statement (e.g. "I am afraid others will not approve of me", "I often worry that I will say or do the wrong

things”, “Other people’s opinions of me do not bother me”) is rated true or false. The instrument has demonstrated excellent internal consistency ($\alpha = .94$) and acceptable test-retest reliability ($r = .78$; Watson & Friend, 1969). In the current study the internal consistency was good ($\alpha = .92$).

The Patient Health Questionnaire Depression Scale (PHQ-9; Kroenke, Spitzer, & Williams, 2001; see appendix D) is a 9-item self-report questionnaire assessing the severity of depression. The respondent is asked to indicate how often during the past 2 weeks he or she has been bothered by the listed problems (e.g. “Feeling down, depressed or hopeless”, “Poor appetite or overeating”). Each item is scored on a 4-point scale (0 = not at all, 1 = several days, 2 = more than half of the days, 4 = nearly every day). The instrument has shown good internal consistency ($\alpha = .89$) and test-retest reliability. ($r = .84$; Kroenke et al., 2001). In the current study the internal consistency was good ($\alpha = .89$).

Attentional Control Scale (ACS; Derryberry & Reed, 2002; see appendix E) is a 20-item self-report questionnaire intended to assess individual differences in attentional control capacity. The original version of the scale consisted of three subscales, but more recent evaluation of its psychometrics has indicated that it consists of two factors (Ólafsson et al., 2011; Judah, Grant, Mills, & Lechner, 2014); a) attention focusing (e.g. “When concentrating, I can focus my attention so that I become unaware of what’s going on in the room around me”) and b) attention shifting (e.g. “I can quickly switch from one task to another”). The factors consist of seven and five items respectively. Each item is rated on a 4-point scale (1 = almost never; 2 = sometimes; 3 = often; 4 = always). A higher total score indicates relatively better attentional control abilities. The ACS has proved satisfactory psychometric properties, with the focusing subscale showing good internal consistency ($\alpha = .82$), and the shifting subscale acceptable internal consistency ($\alpha = .71$; Judah et al., 2014). The test-retest reliability for the total score has been reported as acceptable ($r = .77$; Reinholdt-Dunne, Mogg, & Bradley, 2009). In the current study, the internal consistency was good for the focusing subscale ($\alpha = .85$) and acceptable for the shifting subscale ($\alpha = .65$).

Metacognitions Questionnaire 30 (MCQ-30; Wells & Cartwright-Hatton, 2004; see appendix F) is a 30-item self-report measure assessing beliefs about cognition (i.e. metacognitive beliefs). It consists of five subscales; a) positive beliefs about worry (pos; e.g. “Worrying helps me to avoid problems in the future”), b) negative beliefs about uncontrollability and danger of worry (neg; e.g. “I could make myself sick with worrying”), c) cognitive confidence (cc; e.g. “My memory can mislead me at times”), d) beliefs about the need to control thoughts (nc; e.g. “I should be in control of my thoughts all of the time”), and

e) cognitive self-consciousness (csc; e.g. “I think a lot about my thoughts”). Each item is rated on a 4-point scale according to how much the respondent generally agrees with the statements (1 = do not agree; 2 = agree slightly; 3 = agree moderately; 4 = agree very much). Higher scores indicate higher endorsement of the belief domain in question. The instrument has shown acceptable to good internal consistency for each subscale ($\alpha = .77-.89$; Spada, Mohiyeddini, & Wells, 2008) and acceptable test-retest reliability ($r = .75$; Wells & Cartwright-Hatton, 2004). In the current study the internal consistency was acceptable to good (pos: $\alpha = .83$, neg; $\alpha = .85$, cc; $\alpha = .89$, nc; $\alpha = .84$, csc; $\alpha = .76$).

2.3 Overview of Data Analyses

All analyses were conducted using IBM SPSS statistics version 24. Pearson bivariate correlations were used to explore the correlational relationship between the variables. Two multiple hierarchical regression analyses were run to test the relative contribution of attentional control and metacognitive beliefs in explaining variance in symptoms of social anxiety and depression. Measures treated as dependent variables were LSAS and PHQ-9, respectively. The control variables were the same in both analyses; gender and age were controlled in the first step, social fears (FNE) in the second step, the two ACS-subcales (focusing and shifting) in the third step and all five subscales of the MCQ-30 (positive beliefs about worry, negative beliefs about uncontrollability and danger of worry, cognitive confidence, need for control and cognitive self-consciousness) in the fourth and final step.

With means to explore predictors of work status, independent samples t-tests were conducted to compare the working and out-of-work groups on FNE total score, PHQ-9 total score, ACS subscales and MCQ-30 subscales. Binary logistic regression was run to test the unique contribution of variables to work status. In the first block gender and age were controlled for. In the second block emotional distress, which were social fears (FNE) and depression (PHQ-9), were controlled for. In the third and fourth block respectively, it was controlled for the dimensions of ACS and MCQ-30 that discriminated between the working and out-of-work group in group comparisons after Bonferroni corrections were applied. In the fourth step, Wald forward entry was selected to determine the optimal set of possible additional metacognitive predictors.

3. Results

3.1 Correlational Analyses

LSAS, FNE and PHQ-9 were all negatively and significantly correlated with both of the ACS subscales, indicating that higher levels of symptoms of social anxiety, social fears and depression are associated with lower levels of attentional focusing and -shifting. LSAS, FNE and PHQ-9 were also positively and significantly associated with all of the MCQ-30 subscales, indicating that higher levels of symptoms are associated with higher levels of maladaptive metacognitive beliefs. Further, ACS focusing was negatively and significantly associated with all of the MCQ-30 subscales, indicating that lower levels of attentional focusing is associated with higher levels of maladaptive metacognitive beliefs. ACS shifting was negatively and significantly associated with the MCQ-30 subscales negative metacognitive beliefs, cognitive confidence and need for control, indicating that lower levels of shifting is associated with higher levels of these domains of metacognition. However, ACS shifting was not significantly associated with the MCQ-30 subscales positive metacognitive beliefs and cognitive self-consciousness. LSAS, FNE and PHQ-9 were all positively and significantly inter-correlated. This indicates that higher levels of symptoms of social anxiety, social fears or depression is associated with higher levels of any of the other symptom domains as well. The ACS subscales focusing and shifting were positively and significantly intercorrelated, indicating that lower levels of attentional focusing is associated with lower levels of attentional shifting. The MCQ-30 subscales were all positively and significantly intercorrelated, indicating that higher levels on one of the subscales is associated with higher levels on the other subscales as well. The bivariate correlations between all variables are presented in table 1.

3.2 Linear Regression Analyses

3.2.1 Social anxiety. In the first step of the regression, gender and age were not significant as predictors of the dependent variable symptoms of social anxiety (LSAS). In the second step, social fears (FNE) was significant and explained an additional 18.0% of the variance. In the third step, the two domains of attentional control explained an additional 20.0% of the variance, and in this model, FNE and ACS focusing were independent significant predictors of social anxiety, while ACS shifting was non-significant as an independent predictor. In the fourth step, metacognitions were added to the model and explained an additional 9.1% of the variance. In the final step of the equation, FNE, ACS focusing, MCQ-30 cognitive confidence and MCQ-30 need for control were significant

independent predictors of social anxiety, while gender, age, ACS shifting, MCQ-30 positive beliefs, MCQ-30 negative beliefs and MCQ-30 cognitive self-consciousness did not explain unique variance in social anxiety. ACS focusing and MCQ-30 need for control were the strongest predictors of social anxiety. The regression summary statistics for social anxiety are presented in table 2.

3.2.2 Depression. In the first step of the regression, gender and age were not significant as predictors of the dependent variable symptoms of depression (PHQ-9). In the second step, social fears (FNE) was significant and explained an additional 10.5% of the variance. In the third step, the two domains of attentional control explained an additional 20.8% of the variance, and in this model, FNE and ACS focusing were independent significant predictors of depression, while ACS shifting was non-significant as an independent predictor. In the fourth step, metacognitions were added to the model and explained an additional 20.6% of the variance. In the final step of the equation, ACS focusing, MCQ-30 negative beliefs, MCQ-30 cognitive confidence and MCQ-30 need for control were significant independent predictors of depression, while gender, age, FNE, ACS shifting, MCQ-30 positive beliefs and MCQ-30 cognitive self-consciousness did not explain unique variance in depression. MCQ-30 negative beliefs and MCQ-30 need for control were the strongest predictors of depression. The regression summary statistics for depression are presented in table 3.

3.3 Group Comparisons

Initially, before investigating metacognitive beliefs and attentional control domains as potential statistical predictors of work status, group comparisons using independent samples t-tests were run. Taking into consideration that nine t-tests were run, Bonferroni corrections were applied, and it was found that the out-of-work group showed significantly greater severity of depression symptoms than the working group. They also reported significantly greater severity of the focusing and shifting dimension of attentional control, negative beliefs about the uncontrollability and danger of thoughts, cognitive confidence and beliefs about the need to control thoughts compared to the working group. However, there were no significant differences between the groups on FNE, MCQ-30 positive beliefs and MCQ-30 cognitive self-consciousness. The group comparisons are presented in table 4.

3.4 Logistic Regression Analyses

To explore the potential role of attentional control and metacognitive beliefs in work status, a logistic regression analysis was run. In this analysis, work status (in versus out-of-work) was used as the dependent variable. To provide a stringent test for a potential contribution of attentional control and metacognitions to work status, it was controlled for emotional distress in a broad sense by including social fears (FNE) and depression (PHQ-9) in the model. This was done to ensure that the potential overlap between emotional distress and attentional control and metacognitions were accounted for. Following the group comparisons, PHQ-9, FNE, both ACS-subcales and the MCQ-30 subscales negative metacognitive beliefs, cognitive confidence and need for control were included in the analysis. Social fears (FNE) did not discriminate between the in- and out-of-work groups but was included in the model, as highlighting the relative contribution of severity of social fears to work status in high socially anxious individuals compared to other factors is of particular interest. In the final model, symptoms of depression, the focusing dimension of attentional control, and the metacognitive domain need for control were significant predictors of work status. Symptoms of depression and need for control had an odds ratio below 1, indicating that a higher score on depression symptoms and need for control were associated with belonging to the out of work group. The attentional control dimension focusing had an odds ratio above 1, indicating that a lower score on attentional focusing was associated with belonging to the out of work group. Gender, age, social fears and the shifting dimension of attentional control were not significant as predictors. The final step of the binary logistic regression is presented in table 5.

4. Discussion

4.1 Summary of the Main Findings

To the author's knowledge, this is the first study to investigate the relative contribution of attentional control and metacognitive beliefs to severity of social anxiety and depression symptoms, and as potential correlates of work status, among high socially anxious individuals. In short, the results of the current study do suggest that metacognitive beliefs and attentional control are predictors of severity of social anxiety, symptoms of depression and work-status among high socially anxious individuals.

Consistent with the hypotheses, symptoms of social anxiety and depression were negatively correlated with attentional control and positively correlated with metacognitive beliefs, indicating that symptoms are associated with lower attentional control capabilities and stronger endorsement of maladaptive metacognitive beliefs. Further, a negative correlation

between the ACS subscale focusing and all the MCQ-30 subscales was found. A negative correlation was also found between the ACS subscale shifting and the MCQ-30 domains negative beliefs about the uncontrollability and danger of thoughts, cognitive confidence and beliefs about the need to control thoughts, but no association was found between ACS shifting and MCQ-30 positive metacognitive beliefs and cognitive self-consciousness.

The results of the linear regression analyses were consistent with the hypotheses, showing that attentional control and metacognitive beliefs explain unique and independent variance in symptoms of social anxiety and depression. More specifically, in the last step of the regression, social fears, attentional focusing and the metacognitive domains cognitive confidence and beliefs about the need to control thoughts explained unique and independent variance in symptoms of social anxiety. Gender, age, attentional shifting and the metacognitive domains negative beliefs, positive beliefs and cognitive self-consciousness did not contribute to symptoms of social anxiety when metacognitive beliefs were entered. Moreover, the ability to focus attention and the metacognitive domains negative beliefs about uncontrollability and danger of worry, cognitive confidence and beliefs about the need to control thoughts explained unique and independent variance in symptoms of depression. Gender, age, social fears, attentional shifting and the metacognitive domains positive metacognitive beliefs and cognitive self-consciousness did not contribute to symptoms of social anxiety when metacognitive beliefs were entered.

In terms of work status, the out-of-work group was significantly more depressed, reported poorer attentional control and stronger endorsement of maladaptive metacognitive beliefs (negative metacognitive beliefs, cognitive confidence, need for control) compared to the working group. Somewhat surprising, social fears were not a significant predictor of work status, but as expected severity of depression symptoms was. Consistent with the hypothesis, attentional control (in the form of attention focusing) and metacognitive beliefs (in the form of need for controlling thoughts) were significant predictors of work status. However, gender, age, attentional shifting and the remaining domains of metacognitive beliefs were not significant predictors of work-status.

4.2 Meaning and Importance of the Findings

These findings are important both theoretically and therapeutically, as they indicate that attentional control capabilities and metacognitive beliefs should be incorporated in conceptualization and treatment of social anxiety and related problems.

4.2.1 Predictors of social anxiety. The findings suggest that poor ability to focus attention, lower confidence in memory and stronger beliefs about the need to control thoughts are important correlates of social anxiety. This is in line with the metacognitive model (Wells & Matthews, 1994; 1996), as it emphasizes both attentional control and metacognitive beliefs as important underlying factors of social anxiety. More specifically, the theory proposes that low attentional control could impair the ability to disengage from the CAS. Moreover, the theory suggests that low cognitive confidence could lead to the individual focusing more on internal processes to try to compensate for this lack of confidence in memory. In social situations this could result in problems with the ability to maintain focus on the task in question when task-irrelevant distractions appear (e.g. maladaptive self-beliefs about not being good enough). This could further increase self-focus. Moreover, low cognitive confidence could lead to more biased memory of social situations, as the individual might not trust disconfirming information about the self. Trying to achieve mental control could be a strategy to lower anxiety and worry, as it creates a feeling of being in control. Low attentional focusing, low cognitive confidence and higher beliefs about the need to control thoughts may all result in impairment of behavior or performance in social situations, which could further reinforce these processes and preserve worry and self-focus.

The current results are in line with some previous research, although these studies did not test the relative predictive value of metacognitive beliefs and attentional control. Sluis et al. (2018) found that low attentional focusing was correlated with higher levels of social anxiety. In a recent review on the relationship between metacognitive beliefs and social anxiety Gkika et al. (2018) describes that most research on metacognitive beliefs and social anxiety has focused on exploring the relationship between negative- and positive metacognitive beliefs and social anxiety, and that only one study included in the review investigated the relationship between other metacognitive beliefs and social anxiety. This study showed that beliefs about the need to control thoughts and social anxiety were associated (McEvoy & Perini, 2009). Subsequent to this review, Nordahl & Wells (2017b) investigated the fit of the metacognitive model in a longitudinal dataset and found that judgements of lower confidence in memory could be particularly relevant for social anxiety, but also reported a moderate association between social anxiety and metacognitive beliefs about the need for controlling thoughts. In the current study, negative metacognitive beliefs did not significantly account for unique variance in social anxiety, which was somewhat surprising taking into consideration that the metacognitive model argues that these beliefs are the most relevant metacognitive belief domain to symptoms in general (Wells, 2009) and that

previous studies consistently have demonstrated this association (Gkika & Wells, 2018; Nordahl et al., 2017; Nordahl & Wells, 2017a). Taking the bivariate correlations into consideration, this observation could be accounted for by the fact that social fears were controlled for in predicting social anxiety, and one explanation could be that there is a considerable statistical overlap between social fears and negative metacognitive beliefs.

4.2.2 Predictors of symptoms of depression. The findings further suggest that predictors of symptoms of depression among high socially anxious individuals are low ability to focus attention, higher beliefs about the uncontrollability and danger of worry, judgements of lower confidence in memory and higher beliefs about the need to control thoughts. This is also in line with the metacognitive model (Wells & Matthews, 1994; 1996), as the theory emphasizes both attentional control and metacognitive beliefs as important underlying factors of depression. In particular, the metacognitive model proposes that a central feature of the CAS in depression is rumination, a process consisting of brooding over questions aimed at understanding the reason for the depression and finding ways to deal with it (Wells, 2009). The current findings concerning predictors of depression could be understood in this framework. An individual with stronger negative metacognitive beliefs will believe that depressive thinking is uncontrollable, and he or she will therefore not interrupt the ruminative process, leading to preservative brooding and thus maintenance of low mood. Believing that thoughts need to be controlled is likely to increase private self-consciousness, a component of the CAS that is thought to maintain depressive states (Reeves, Watson, Ramsey, & Morris, 1995). Low confidence in memory could both be a consequence and cause for depression (Papageorgiou & Wells, 2001) and could maintain depression by prohibiting a person from activating adaptive coping strategies as the person believes his or her cognitive capabilities are impaired. Lastly, lower ability to focus attention could contribute to difficulties with executive functioning in keeping the individual from entering a ruminative process (i.e. disengaging the CAS).

Few studies have investigated the predictive value of metacognitive beliefs to symptoms of depression among high socially anxious, but the current results are consistent with the findings of Nordahl et al. (2018). In this study they found that among patients diagnosed with SAD, negative beliefs about the uncontrollability and danger of worry and cognitive confidence predicted symptoms of depression when controlling levels of social anxiety severity. Two other studies have investigated the association between metacognitive beliefs and symptoms of depression among individuals with SAD, but not tested the predictive value of metacognitive beliefs. These studies investigated change in metacognitive

beliefs in SAD-patients undergoing cognitive-behavioral treatment and found a positive correlation between reductions in negative metacognitive beliefs, cognitive confidence and beliefs about the need to control thoughts and reductions in depressive symptoms (McEvoy et al., 2009), and a positive correlation between reductions in cognitive confidence and beliefs about the need to control thoughts and reductions in depressive symptoms (McEvoy & Perini, 2009). These findings suggest a relationship between these domains of metacognitive beliefs and symptoms of depression, which are in line with the findings of the current study.

4.2.3 Predictors of work-status. The current study suggests that symptoms of depression, poor ability to focus attention and stronger beliefs about the need to control thoughts are statistical predictors of work status when controlling for gender, age and severity of social fears. The finding that depression is associated with work status is consistent with previous findings (e.g. OECD, 2012). The finding that social fears are not associated with work status is not in line with most previous studies on this topic (e.g., Moitra, et al., 2011; Lerner & Henke, 2008), however, Nordahl and Wells (2017a) also reported social fears as a non-significant predictor of work status among high socially anxious individuals when the contribution of negative metacognitive beliefs were accounted for. In the current study, negative metacognitive beliefs did not emerge as a predictor of work status but need for control did. An explanation for why need to control thoughts would affect work-status, could be that dysfunctional metacognitive beliefs in general lead to the activation of the CAS, which consists of prolonged processing of internal events, worry, rumination, heightened self-focus, attentional bias towards threat and maladaptive coping strategies. The CAS maintain and intensify emotional distress and is likely to interfere with the ability to handle work related tasks and stress, something which ultimately could lead to the person avoiding work, or not being able to work. The relationship between need for control and work status has been reported in a non-selected sample where levels of psychological vulnerability (trait-anxiety) and the presence/absence of a mental disorder were controlled (Nordahl & Wells, 2018a).

4.2.4 Summary. To sum up, the results suggest that metacognitive beliefs and attentional control are predictors of severity of social anxiety, symptoms of depression and work-status among high socially anxious individuals. This is the case even when controlling social fears, which is seen as a marker for social anxiety severity (Acarturk, de Graaf, van Straten, ten Have, & Cuijpers, 2008; Ruscio et al., 2008), and as an important factor thought to underlie social anxiety in prominent cognitive models of SAD (e.g., Clark & Wells, 1995). Moreover, it seems that both the same and different domains of attentional control and metacognitive beliefs are implicated in different issues associated with social anxiety among

those high socially anxious. These results are in line with the metacognitive model, which suggests that metacognitions and higher-order executive functions (i.e. attentional control) are underlying factors constituting emotional disorder and psychological vulnerability, and with the notion that some domains of metacognitive factors are likely to be universally implicated in giving rise to distress and problems (i.e. need for control), while others make more specific contributions (cognitive confidence).

4.3 Clinical Relevance of the Findings

The current gold standard treatment for SAD is individual cognitive behavioral therapy (CBT) developed to treat SAD, and more specifically, based on the models of Clark and Wells (1995) or Rapee and Heimberg (1997; NICE, 2013). Mayo-Wilson et al. (2014) compared the effect of psychological, pharmacological and self-help interventions in a systematic review and network meta-analysis and found that individual CBT is more effective than other psychological treatments and drug treatments, and that the treatment based on the Clark and Wells model (1995) is highly effective. This model is built on the assumption that schemas or negative cognitive beliefs about the social self and safety behaviors maintain SAD, and therefore should be targeted in treatment. For example, when an individual with social anxiety enters social situations, maladaptive self-beliefs (e.g. “I am going to make a fool of myself”) arise. These beliefs will further initiate negative feelings, negative interpretations of experiences and maladaptive safety behaviors (e.g. avoidance) aimed at preventing embarrassment and failure. However, CBT-models have overlooked metacognitive beliefs and individual differences in attentional control abilities which is the key belief domains underlying maladaptive self-processing and social anxiety according to the metacognitive model (Wells & Matthews, 1994; 1996).

In line with the metacognitive model (Wells & Matthews, 1994; 1996), the current findings suggest that maladaptive metacognitive beliefs and poor attentional control are important factors contributing to social anxiety, depression and work status among high socially anxious individuals. The implication of these findings is that cognitive models of SAD should be modified to include metacognitive beliefs and attentional control to better conceptualize SAD. Moreover, targeting metacognitive beliefs and attentional control could potentially also lead to better treatment outcomes. In addition, one pronounced advantage of a metacognitive approach to treatment is that it targets transdiagnostic factors, which means that various disorders or symptoms can be treated at the same time. Thus, instead of providing several interventions to treat different problems related to SAD, increasing attentional control

and modifying maladaptive metacognitive beliefs could have an impact across symptom- and problem areas.

While CBT for SAD is mainly concerned with changing the content of thinking (Wells, 1997), Metacognitive therapy (MCT; Wells, 2009) was specifically devised to interrupt the CAS and to modify underlying metacognitive beliefs and executive problems. Several studies approaching pure MCT in the treatment of SAD have been associated with positive outcomes over a short treatment period. Wells and Papageorgiou (2001) used a single case series methodology to investigate the effect of a brief and more metacognitive focused treatment with emphasis on modification of negative beliefs and attentional processes. They treated 6 patients with SAD, and found the intervention to be effective, with all patients demonstrating clinically significant improvements on measures of social avoidance, self-consciousness and negative beliefs. Nordahl et al. (2017) compared the effectiveness of metacognitively enhanced cognitive therapy (CT), paroxetine (serotonin reuptake inhibitor) and the combinations of these interventions in a sample of patients with SAD. The results showed that CT was significantly more effective than paroxetine and placebo both at post-treatment and at follow-up measured by FNE, and that the combined intervention showed a reduced effect compared to CT alone. Further, Vogel et al. (2016) investigated the effect of Attention Training Technique (ATT) in combination with Situational Attentional Refocusing (SAR), which are metacognitive interventions for enhancing attentional control and flexibility, usually delivered as a part of MCT treatment. The interventions were administered to 24 individuals with SAD, and they found that they produced large and clinically significant reductions in symptoms of SAD and on a measure of metacognitions. Full MCT has also been tested for individuals with different presentations of SAD. In a case-series study, Nordahl and Wells (2018b) investigated the effects of generic MCT for different severities of SAD. The results showed that all patients achieved substantial symptom reduction, which also was largely maintained at 6-months' follow-up, and a change in cognitive style (the CAS) and metacognitive beliefs.

Taken together, these studies suggest that treatments with metacognitive components and pure MCT interventions are effective in the treatment of SAD, which is consistent with findings from the current study, that indicate a role of attentional control and metacognitive beliefs to social anxiety and related problems.

4.4 Limitations of the Study and Suggestions for Further Research

The current study has several limitations that need to be acknowledged. A cross-sectional design was applied, which does not allow causal interferences. Further, the study-sample was predominantly female, which could also limit the generalizability of the results. The use of self-report measures may have led to measurement errors due to factors in the respondent like e.g. self-report biases, poor recall, social desirability, lack of understanding or introspective ability. Further, it can be speculated if the ACS measures the respondents' subjective beliefs about, or perception of, attentional control, rather than being an actual index of attentional control. To avoid this issue a more objective measure of executive functions could have been used, in the form of behavioral measures of actual performance on tasks requiring attentional control (e.g. Attentional Network Task; Fan, McCandliss, Sommer, Raz, & Posner, 2002; Eye Tracking Task; Ainsworth & Garner, 2013). However, the metacognitive model emphasizes both core executive functions and beliefs about executive functions (i.e. cognitive confidence) as important factors underlying emotional distress, so this limitation in itself would not impede the relevance of the current study.

Future research might apply longitudinal research designs to investigate whether there exists a temporal relationship between attentional control, metacognitive beliefs, and symptoms of social anxiety and depression in a high socially anxious sample, which could reveal causal interferences. Further, replications of the current results in samples with patients diagnosed with SAD would be of value for more robust clinical findings. Additionally, more research is needed to examine whether changes in metacognitive beliefs and attentional control in therapy has an effect on work status, to see if targeting these factors is useful in interventions aimed at helping people to get back to work.

4.5 Conclusions

The current study provides support for the assumption that attentional control and metacognitive beliefs are important underlying factors of symptoms of social anxiety and depression, as well as work status, among high socially anxious individuals, even when controlling for other important factors such as severity of social anxiety and gender. These findings are in line with the metacognitive model and indicate that these factors should be included in conceptualization and treatment of SAD, with the potential to provide greater reductions in social anxiety severity, depression symptoms/vulnerability, and facilitate return to work.

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Table 1
 Mean value and standard deviations for all variables, and the bivariate correlations between them (N = 346)

	2	3	4	5	6	7	8	9	10	Mean (SD)
1. LSAS	.435**	.614**	-.540**	-.302**	.241*	.499**	.404**	.541**	.109**	70.06 (30.14)
2. FNE		.351**	-.238**	-.183**	.214**	.433**	.221**	.440**	.148**	22.45 (7.10)
3. PHQ-9			-.521**	-.294**	.285**	.615**	.421**	.574**	.226**	14.20 (6.60)
4. ACSfoc				.415**	-.203**	-.462**	-.433**	-.386**	-.161**	16.61 (4.60)
5. ACSshift					-.032	-.196**	-.232**	-.140**	.080	10.99 (2.71)
6. MCQpos						.276**	.186**	.445**	.344**	9.86 (3.56)
7. MCQneg							.320**	.578**	.463**	15.30 (4.62)
8. MCQcc								.280**	.115*	13.30 (5.25)
9. MCQnc									.377**	12.12 (4.66)
10. MCQcsc										14.24 (3.92)

Notes. LSAS = Liebowitz Social Anxiety Scale, FNE = Fear of Negative Evaluation, PHQ-9 = Patient Health Questionnaire, ACSfoc = Attentional Control Scale focusing, ACSshift = Attentional Control Scale shifting, MCQpos = positive metacognitive beliefs, MCQneg = negative metacognitive beliefs, MCQcc = cognitive confidence, MCQnc = need for control, MCQcsc = cognitive self-consciousness. *p<.05, **p<.01.

Table 2

Statistics for each step of the regressions and betas on the final step with LSAS as the dependent variable and gender, age, FNE, ACS subscales and MCQ-30 subscales (stepwise entry) as predictors (N = 346)

Step		F change	R ² change	β	t
1		1.341	.008		
	Gender			.09	1.637
	Age			.01	.100
2		74.635	.180**		
	Gender			.03	.678
	Age			.08	1.665
	FNE			.44	8.639**
3		54.636	.200**		
	Gender			.02	.362
	Age			.06	1.249
	FNE			.33	7.181**
	ACSfoc			-.43	-8.865**
	ACSshift			-.07	-1.522
4		11.515	.091**		
	Gender			.00	.098
	Age			.06	1.440
	FNE			.18	3.830**
	ACSfoc			-.26	-5.075**
	ACSshift			-.08	-1.770
	MCQpos			-.01	-.231
	MCQneg			.10	1.737
	MCQcc			.11	2.495*
	MCQnc			.29	5.163**
	MCQcsc			-.03	-.600

Notes. FNE = Fear of Negative Evaluation, ACSfoc = Attentional Control Scale focusing, ACSshift = Attentional Control Scale shifting, MCQpos = positive metacognitive beliefs, MCQneg = negative metacognitive beliefs, MCQcc = cognitive confidence, MCQnc = need for control, MCQcsc = cognitive self-consciousness. *p<.05, **p<.01.

Table 3

Statistics for each step of the regressions and betas on the final step with PHQ-9 as the dependent variable and gender, age, FNE, ACS subscales and MCQ-30 subscales (stepwise entry) as predictors (N = 346)

Step		F change	R ² change	β	t
1		1.624	.010		
	Gender			.10	1.768
	Age			-.01	-.265
2		39.848	.105**		
	Gender			.05	1.037
	Age			.05	.862
	FNE			.33	6.313**
3		51.215	.208**		
	Gender			.04	.786
	Age			.02	.313
	FNE			.22	4.614**
	ACSfoc			-.44	-8.709**
	ACSshift			-.06	-1.232
4		28.701	.206**		
	Gender			.01	.309
	Age			.01	.237
	FNE			-.01	-.260
	ACSfoc			-.17	-3.539**
	ACSshift			-.07	-1.555
	MCQpos			.02	.556
	MCQneg			.34	6.337**
	MCQcc			.15	3.360**
	MCQnc			.29	5.427**
	MCQcsc			-.08	-1.847

Notes. FNE = Fear of Negative Evaluation, ACSfoc = Attentional Control Scale focusing, ACSshift = Attentional Control Scale shifting, MCQpos = positive metacognitive beliefs, MCQneg = negative metacognitive beliefs, MCQcc = cognitive confidence, MCQnc = need for control, MCQcsc = cognitive self-consciousness. *p<.05, **p<.01.

Table 4

Group comparisons between the working group and the out-of-work group; mean score, standard deviation and t-value (N = 230)

	In-work group (n = 108)	Out-of-work group (n = 122)	t-value
	Mean (SD)	Mean (SD)	
FNE	21.72 (7.23)	23.70 (7.20)	2.075
PHQ-9	12.06 (6.17)	17.63 (5.84)	7.029*
ACSfoc	18.14 (4.40)	14.52 (4.15)	-6.413*
ACSshift	11.83 (2.81)	10.60 (2.69)	-3.402*
MCQpos	9.44 (3.18)	10.42 (4.02)	2.071
MCQneg	14.58 (4.50)	16.85 (4.21)	3.953*
MCQcc	12.71 (4.84)	15.32 (5.48)	3.806*
MCQnc	10.87 (4.10)	14.06 (4.84)	5.406*
MCQcsc	13.65 (4.26)	14.83 (3.41)	2.305

Notes. SD = standard deviation, FNE = Fear of Negative Evaluation, PHQ-9 = Patient Health Questionnaire, ACSfoc = Attentional Control Scale focusing, ACSshift = Attentional Control Scale shifting, MCQpos = positive metacognitive beliefs, MCQneg = negative metacognitive beliefs, MCQcc = cognitive confidence, MCQnc = need for control, MCQcsc = cognitive self-consciousness. Bonferroni correction applied. *p<.005.

Table 5

Logistic regression statistics with group membership (in work/out of work) as the outcome variable and gender, age, FNE, PHQ-9, ACS subscales and MCQ-30 need for control as predictor variables (N = 230)

	B	S.E.	Wald	Sig.	Exp(B)
Gender	.484	.535	.818	.366	1.622
Age	-.017	.014	1.435	.231	.983
FNE	.026	.024	1.112	.292	1.026
PHQ-9	-.089	.031	8.111	.004**	.915
ACSfoc	.108	.043	6.427	.011*	1.114
ACSshift	.048	.065	.535	.464	1.049
MCQnc	-.088	.044	3.992	.046*	.915

Notes. $R^2 = .22$ (Cox & Snell) $.29$ (Nagelkerke). Model $\chi^2(8) = 6.22, p > .05$. FNE = Fear of Negative Evaluation, PHQ-9 = Patient Health Questionnaire, ACSfoc = Attentional Control Scale focusing, ACSshift = Attentional Control Scale shifting, MCQnc = need for control. * $p < .05$, ** $p < .01$.

Appendix A

Invitation to participate in research about psychological issues, beliefs about thinking and perception of attentional control

In this investigation we wish to look more closely on whether metacognition (beliefs about thinking) and attentional control could contribute to the maintenance of psychological disorders. You will therefore get questions about normal symptoms, beliefs about thinking and about your perception of your attentional control. Anyone can participate, independent of whether you have psychological issues or not.

The project leader has the responsibility of the daily management of the investigation and to make sure information about you is dealt with in a secure manner. The project is estimated to end the 1st of January 2019, and the data-material will be anonymized by this date. It is totally voluntary to participate in the project, and you can withdraw or cancel your participation at any moment without giving any reason for this. It will have no consequences for you. It will take about 10 minutes to answer the questions. The survey is not completed until you click on “Finish” on the last page.

The data material will be used in the graduate thesis of Ingunn Harsvik Ødegaard (tlf. 95 75 15 90), as part of the clinical psychology program at the Norwegian University of Science and Technology (NTNU). If you have any questions regarding the study, or would like to delete your answers, you can contact the project manager Odin Hjemdal (tlf. 73 59 78 89) or Henrik Nordahl (tlf. 95 16 82 46) at the Department of Psychology, NTNU. If you, by answering this survey, would become in need of talking to a psychologist, you can contact Specialist in Clinical Psychology Odin Hjemdal or Psychologist Henrik Nordahl.

The project has been reported to the Norwegian Centre for Research Data (NSD). If you choose to continue from this page, we will consider it as your consent to be a participant in our investigation.

Appendix B

Liebowitz Social Anxiety Scale (LSAS)

Please base your ratings on the way that the situations have affected you in the last week. If you come across a situation that you ordinarily do not experience, imagine “what if you were faced with that situation,” and then, rate the degree to which you would fear this hypothetical situation and how often you would tend to avoid it. For each situation, rate the degree to which you feel anxious or fearful and how often you avoid the situation.

		Fear or anxiety	Avoidance
		0 = None	0 = Never
		1 = Mild	1 = Occasionally
		2 = Moderate	2 = Often
		3 = Severe	3 = Usually
1.	Telephoning in public		
2.	Participating in small groups		
3.	Eating in public spaces		
4.	Drinking with others in public spaces		
5.	Talking to people in authority		
6.	Acting, performing or giving a talk in front of an audience		
7.	Going to a party		
8.	Working while being observed		
9.	Writing while being observed		
10.	Calling someone you don't know very well		
11.	Talking with people you don't know very well		
12.	Meeting strangers		
13.	Urinating in a public bathroom		
14.	Entering a room when others are already seated		
15.	Being the center of attention		
16.	Speaking up at a meeting		
17.	Taking a test		
18.	Expressing a disagreement or disapproval to people you don't know very well		
19.	Looking at people you don't know very well in the eyes		
20.	Giving a report to a group		
21.	Trying to pick up someone		
22.	Returning goods to a store		
23.	Giving a party		
24.	Resisting a high-pressure salesperson		

Appendix C

Fear of negative evaluation (FNE)

Consider each item and decide whether it is true or false for you.

		True	False
1.	I rarely worry about seeming foolish to others		
2.	I worry about what people will think of me even when I know it doesn't make any difference		
3.	I become tense and jittery if I know I am being judged by my supervisors		
4.	I am unconcerned even if I know people are forming an unfavorable impression of me		
5.	I feel very upset when I commit some social error		
6.	The opinions that important people have of me cause me little concern		
7.	I am often afraid that I may look ridiculous or make a fool of myself		
8.	I react very little when other people disapprove of me		
9.	I am frequently afraid that I may look ridiculous or make a fool of my self		
10.	The disapproval of others would have little effect on me		
11.	If someone is evaluating me I tend to expect the worst		
12.	I rarely worry about what kind of impression I am making on someone		
13.	I am afraid that others will not approve of me		
14.	I am afraid that people will find fault with me		
15.	Other people's opinions of me do not bother me		
16.	I am not necessarily upset if I do not please someone		
17.	When I am talking to someone, I worry about what they may be thinking about me		
18.	I feel that you can't help making social errors sometimes, so why worry about it		
19.	I am usually worried about what kind of impression I make		
20.	I worry a lot about what my superiors think of me		
21.	If I know someone is judging me, it has little effect on me		
22.	I worry that others will think I am not worthwhile		
23.	I worry very little about what others may think of me		
24.	Sometimes I think I am too concerned with what other people think of me		
25.	I often worry that I will say or do the wrong things		

26.	I am often indifferent to the opinions others have of me		
27.	I am usually confident that others will have a favorable impression of me		
28.	I often worry that people who are important to me won't think very much of me		
29.	I brood about the opinions my friends have about me		
30.	I become tense and jittery if I know I am being judged by my supervisors		

Appendix D

Patient Health Questionnaire (PHQ-9)

Over the last two weeks, how often have you been bothered by any of the following problems?

		0 = Not at all 1 = Several days 2 = More than half of the days 3 = Nearly every day
1.	Little interest or pleasure in doing things?	
2.	Feeling down, depressed or hopeless?	
3.	Trouble falling or staying asleep, or sleeping too much?	
4.	Feeling tired or having little energy?	
5.	Poor appetite or overeating?	
6.	Feeling bad about yourself – or that you are a failure or have let yourself or your family down?	
7.	Trouble concentrating on things, such as reading the newspaper or watching television?	
8.	Moving or speaking so slowly that other people could have noticed? Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual?	
9.	Thoughts that you would be better off dead, or of hurting yourself in some way?	

Appendix E

Attentional Control Scale (ACS)

Items are scored on a 4-point scale:

1 = Almost never 2 = Sometimes 3 = Often 4 = Always

1.	It's very hard for me to concentrate on a difficult task when there are noises around	
2.	When I need to concentrate and solve a problem, I have trouble focusing my attention.	
3.	When I am working hard on something, I still get distracted by events around me	
4.	My concentration is good even if there is music in the room around me.	
5.	When concentrating, I can focus my attention so that I become unaware of what's going on in the room around me	
6.	When I am reading or studying, I am easily distracted if there are people talking in the same room	
7.	When trying to focus my attention on something, I have difficulty blocking out distracting thoughts.	
8.	I have a hard time concentrating when I'm excited about something	
9.	When concentrating I ignore feelings of hunger or thirst	
10.	I can quickly switch from one task to another	
11.	It takes me a while to get really involved in a new task	
12.	It is difficult for me to coordinate my attention between the listening and writing required when taking notes during lectures	
13.	I can become interested in a new topic very quickly when I need to	
14.	It is easy for me to read or write while I'm also talking on the phone	
15.	I have trouble carrying on two conversations at once	
16.	I have a hard time coming up with new ideas quickly	
17.	After being interrupted or distracted, I can easily shift my attention back to what I was doing before	
18.	When a distracting thought comes to mind, it is easy for me to shift my attention away from it	
19.	It is easy for me to alternate between two different tasks	
20.	It is hard for me to break from one way of thinking about something and look at it from another point of view	

Appendix F

Metacognitive Questionnaire 30 (MCQ-30)

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you *generally* agree with it by selecting the appropriate number. Please respond to all the items, there are no right or wrong answers.

1 = Do not agree 2 = Agree slightly 3 = Agree moderately 4 = Agree very much

1.	Worrying helps me to avoid problems in the future.	
2.	My worrying is dangerous for me.	
3.	I think a lot about my thoughts.	
4.	I could make myself sick with worrying.	
5.	I am aware of the way my mind works when I am thinking through a problem.	
6.	If I did not control a worrying thought, and then it happened, it would be my fault.	
7.	I need to worry in order to remain organized.	
8.	I have little confidence in my memory for words and names.	
9.	My worrying thoughts persist, no matter how I try to stop them.	
10.	Worrying helps me to get things sorted out in my mind.	
11.	I cannot ignore my worrying thoughts.	
12.	I monitor my thoughts.	
13.	I should be in control of my thoughts all of the time.	
14.	My memory can mislead me at times.	
15.	My worrying could make me go mad.	
16.	I am constantly aware of my thinking.	
17.	I have a poor memory.	
18.	I pay close attention to the way my mind works.	
19.	Worrying helps me cope.	
20.	Not being able to control my thoughts is a sign of weakness.	
21.	When I start worrying, I cannot stop.	
22.	I will be punished for not controlling certain thoughts.	
23.	Worrying helps me to solve problems.	
24.	I have little confidence in my memory for places.	
25.	It is bad to think certain thoughts.	
26.	I do not trust my memory.	
27.	If I could not control my thoughts, I would not be able to function.	
28.	I need to worry in order to work well.	
29.	I have little confidence in my memory for actions.	
30.	I constantly examine my thoughts.	

