

Title:

In or out of work: A preliminary investigation of mental health, trait-anxiety and metacognitive beliefs as predictors of work status.

Authors:

Henrik Nordahl^{1,2}

Adrian Wells^{3,4}

Author Affiliations:

1) Department of Psychology, Norwegian University of Science and Technology, Trondheim, Norway.

2) St. Olavs Hospital, Division of Psychiatry, Nidaros DPS, Trondheim, Norway

3) Division of Psychology and Mental Health, School of Health Sciences, Faculty of Biology, Medicine and Health, University of Manchester, Manchester Academic Health Science Centre, UK

4) Greater Manchester Mental Health NHS Foundation Trust, Prestwich, UK

Running head:

Metacognitive beliefs and work status

Corresponding Author:

Henrik Nordahl, Ph.D-candidate, Department of Psychology, Norwegian University of Science and Technology, Dragvoll, 7491 Trondheim

E-mail: henrik.nordahl@ntnu.no

Phone: +47 95 16 82 46

Fax: +47 73 59 76 94

Abstract

Objective: Common mental disorders are associated with significant economic, social and personal costs that are primarily incurred through loss of work status. Psychological interventions based on cognitive-behavioural therapy have been implemented to enhance return to work, but have not proved sufficiently successful. According to the metacognitive model of psychological disorders, metacognitive beliefs are the key factors underlying self-regulation and could therefore potentially be important for work status. The aim of the current study was therefore to investigate whether metacognitive beliefs could have predictive utility for work status. *Method:* In a cross-sectional design, 427 working age individuals reporting to be working (n=292) or receiving disability benefits (n=135) participated in the study. *Results:* We found that metacognitive beliefs about the need for mental control were significant as predictors of work status over and above the presence of a diagnosed mental disorder and levels of trait-anxiety. *Conclusions:* These findings imply that metacognitive beliefs have predictive utility for work status even when controlling for mental health status, and that metacognitive beliefs might therefore be addressed in treatment to enhance return to work and with the aim of reducing long-term sick leave.

Key words:

Metacognition; metacognitive beliefs; return to work; sick leave; trait-anxiety; work status

Key points:

- The presence of a mental disorder and levels of trait-anxiety predicted work status
- Metacognitive beliefs have predictive utility for work status even when controlling for the presence of a mental disorder and levels of trait-anxiety
- Metacognitive beliefs might be addressed in treatment to enhance return to work and with the aim of reducing long-term sick leave

Introduction

The cost of mental ill-health for society is enormous, and has been estimated to be 3-4 % of the gross domestic product in the European Union. Such costs are not mainly incurred in the health care utilisation sector, but are directly or in-directly connected to work status (OECD, 2012). Having mental health problems is related with an increased risk of receiving disability pension or becoming unemployed (van Rijn, Robroek, Brouwer & Burdorf, 2014), and common mental disorders (CMD) such as anxiety and depression are related to high incidence of sickness absence and are the biggest single cause for disability benefit claims (OECD, 2012). Therefore, the identification of factors contributing to work status and interventions enhancing return to work (RTW) among individuals suffering from mental ill-health have significant implications.

The relationship between mental health and work is complex and several factors have been found to be associated with work status including health related factors (e.g., Flach, Groothoff, Krol & Bültmann, 2011), work-related factors (e.g., Blank, Pickvance, Wilford & MacDonald, 2008; Slany, Schütte, Chastang, Parent-Thirion, Vermeylen & Niedhammer, 2014), and individual characteristics (e.g., Roelen, Norder, Koopmans, Rhenen, van der Klink & Bültmann, 2012). At the individual level, there is strong evidence that older age is associated with continuing disability and longer RTW in individuals with CMDs (Cornelius, van der Klink, Groothoff & Brouwer, 2011). From the mental health treatment perspective, identifying factors amenable to change is relevant as these factors may be targeted in prevention strategies and treatment interventions. For example, self-efficacy, an individual's belief in his/hers ability to succeed in a specific behaviour, has been suggested to be a key prognostic factor of RTW in individuals with CMDs (Nigatu et al., 2017).

Substantial resource has been invested in best practice psychological interventions such as Cognitive-behavioural therapy (CBT) with means to enhance RTW (e.g., the IAPT initiative in the UK; Clark, 2011). However, a recent systematic review and meta-analysis of CBT-based interventions for enhancing RTW in CMDs found that the interventions were associated with a decrease in the number of sick leave days, but found no significant difference between the intervention and the control groups in overall success of RTW (Nigatu et al., 2016). This finding suggest that CBT-based interventions may not address the underlying factors contributing to work status, and that the search for individual predictors and factors likely to moderate or mediate the relationship between contextual factors and work status should be continued.

Metacognitive beliefs and work status

One model that recently has advanced understanding of CMD is the metacognitive model (Wells, 2009). The metacognitive model is based on a theoretical framework called the Self-Regulatory Executive Function (S-REF) model (Wells & Matthews, 1994; 1996) which emphasizes biased metacognitive knowledge (e.g., beliefs about thinking) as a key factor underlying psychological disorder. According to this model, metacognitive beliefs (e.g., “I cannot stop worrying”) give rise to a perseverative negative thinking style, called the cognitive attentional syndrome (CAS; Wells, 2009) consisting of worry/rumination, threat monitoring and maladaptive coping behaviours. The CAS compromises maladaptive self-regulatory strategies and maintains emotional distress and symptoms. The metacognitive model differs substantially from the theory underlying CBT in its emphasis on the factors that control cognitive styles rather than on content and could potentially advance understanding of intrapsychic factors (e.g. metacognitive beliefs) contributing to work status.

Consistent with the metacognitive model, negative metacognitive beliefs about the uncontrollability and corresponding danger of thoughts, have been demonstrated to be transdiagnostic factors across psychological disorders (Sun, Zhu & Ho-wai So, 2017) and there is preliminary evidence suggesting that Metacognitive therapy (MCT; Wells, 2009) can be a more effective treatment for anxiety and depression than CBT (Normann, Emmerik & Morina, 2014). Furthermore, metacognitive beliefs may be important for work status over the presence of emotional distress: Nordahl and Wells (2017a) found that negative metacognitive beliefs about the uncontrollability and danger of worry was a significant predictor of work status in a group of high socially anxious individuals when symptom severity and the components emphasised in CBT were controlled. These findings are consistent with the S-REF model where metacognitive beliefs may be an underlying factor in psychological vulnerability more generally (Wells & Matthews, 1994). For example, it is likely that metacognitive beliefs about mental control contribute to an individual’s sense of mastery and confidence in the workplace and perceived ability to deal with occupational stress. Thus, the metacognitive model may provide a theoretical framework to understand the relationship between psychosocial stress factors (work-related factors), mental health and self-regulatory strategies relevant to work status more generally.

To further explore the potential relationship between metacognitive beliefs and work status, we set out to explore the predictive value of metacognitive beliefs for work status in a sample of working age individuals reporting to be working or recipients of disability benefits. In order to test for the utility of metacognitive beliefs in relation to work status, it is necessary to control for the overlap between metacognitive beliefs and psychopathology as a potential

Metacognitive beliefs and work status

association between metacognitive beliefs and work status might merely reflect elevated psychopathology symptoms in individuals out of work (Wells, 2009; Sun et al., 2017). To provide a stringent test, we controlled for this overlap by including both the presence of a self-reported mental disorder and trait-anxiety in our model. Trait-anxiety (STAI-T; Spielberger, Gorsuch & Lushene, 1983) was originally developed to reflect proneness to react with anxiety under stressful circumstances. However, psychometric evaluation of the measure has shown that the STAI-T is multifactorial, consisting of factors measuring vulnerability to both anxiety and depression (Bieling, Antony & Swinson, 1998; Bados, Gómez-Benito & Balaguer, 2010; Balsamo, Romanelli, Innamorati, Ciccarese, Carlucci & Saggino, 2013). Trait-anxiety is therefore a measure of general vulnerability to emotional disorder but at the same time not a measure of metacognitive beliefs. Our hypotheses were as follows; 1) The presence of a diagnosed mental disorder will be positively associated with belonging to the out of work group, 2) greater levels of trait-anxiety will be associated with belonging to the out of work group, and 3) metacognitive beliefs will have significant predictive value for belonging to the out of work group over the presence of a diagnosed mental disorder and trait-anxiety.

Methods

Participants and procedure

Participants were invited to participate in a survey of mental health through advertisement on social media. Voluntary organizations for mental health in Norway distributed information about the survey to their members and social media followers. The study was approved by the Regional committees for medical and health research ethics (ref.nr. 2016/705). Four-hundred and twenty-seven participants were recruited at convenience using an online survey program. Participants had to be working age, and currently working or on long-term sick leave (at least 1 year absent from work and therefore recipients of disability benefits). All participants reported age, gender, if they ever had been diagnosed with a mental disorder (yes/no answer), and current work status. They also completed the State-Trait Anxiety Inventory; trait version, (Spielberger et al., 1983) and the Metacognitions questionnaire 30 (Wells & Cartwright-Hatton, 2004).

Three-hundred and forty-five (80.8%) in the total sample were female, and the mean age was 34.98 (st.d. 10.38). Two-hundred and eighty-four (66.5%) of the participants reported that they had been diagnosed with a mental illness. One-hundred and thirty-five (31.6%) of the participants reported to currently be recipients of disability benefits. In the working group, 225 (77.1%) were female, 152 (52.1%) reported that they had been diagnosed with a mental

Metacognitive beliefs and work status

disorder, and the mean age was 34.87 (st.d. 10.23). In the disability group, 120 (88.9%) were female, 132 (97.8%) reported that they had been diagnosed with a mental disorder, and the mean age was 35.21 (st.d. 10.75). There was no significant difference in age between the groups ($p=.762$), but there were significantly more females in the out of work group ($p=.004$), and significantly more individuals with a diagnosed mental disorder in the out of work group ($p<.001$).

Measures

The Metacognitions questionnaire 30 (MCQ-30; Wells & Cartwright-Hatton, 2004) is a 30-item self-report scale measuring metacognitive beliefs and processes about thinking. Responses are required on a four-point scale ranging from 1 (do not agree) to 4 (agree very much), and each subscale has a potential range of scores from 6-24. The measure has a five-factor structure: 1) positive beliefs about worry (pos); 2) negative beliefs about the uncontrollability of thoughts and corresponding danger (neg); 3) cognitive confidence (cc); 4) beliefs about need to control thoughts (nc); and 5) cognitive self-consciousness (csc). Higher scores reflect stronger endorsement of the beliefs in question. The measure has shown good internal consistency with Cronbach's alpha ranging from 0.72 to 0.93 (Wells & Cartwright-Hatton, 2004), and has demonstrated utility for use in the general population (e.g., Spada, Mohiyeddini & Wells, 2008). In the current study, the Cronbach alpha's were: pos: $\alpha = .86$, neg: $\alpha = .88$, cc: $\alpha = .89$, nc: $\alpha = .83$, csc: $\alpha = .78$.

The State-Trait Anxiety Inventory (form Y2: trait-anxiety) (Spielberger et al., 1983) is a 20 item self-report questionnaire employed as an index of general anxiety proneness. Respondents are asked to rate how much they agree with each of the statements on a four-point Likert scale. Total scores can range from 20 to 80, with higher scores reflecting stronger traits of anxiety proneness. The STAI-T has good psychometric properties, with Cronbach's alpha in the range of .86 to .95, and test-retest correlations ranging from .73 to .86 (Spielberger et al., 1983). In the current study, the internal consistency was excellent ($\alpha = .96$).

Overview of data analyses

In order to explore if being out of work and a recipient of disability benefits was associated with higher levels of trait-anxiety and metacognitive beliefs, we conducted independent samples t-tests. Binary logistic regression was used to test if metacognitive beliefs were significant predictors of whether a person was working or out of work and a

Metacognitive beliefs and work status

recipient of disability benefits. We controlled for gender in the first block, for the presence of a diagnosed mental disorder on the second block, and for trait-anxiety in the third block. In the final block, we used forward (Wald) entry selecting all the subscales of the MCQ-30. All data were analysed using IBM SPSS Statistics version 24.

Results

Group comparisons

When compared to the working group, the out of work group scored significantly higher on all domains of metacognitive beliefs and on trait-anxiety. The group comparisons are presented in Table 1.

Insert table 1 here

Binary logistic regression analysis

A binary logistic regression analysis was used to determine the independent predictors of being in one category or the other and the associated odds. The odds are represented by the exponentiation of the beta coefficient ($\text{Exp}(B)$) which indicates the change in the dependent variable given a one-unit change in the predictor variable. Group membership (working or being out of work) was the dependent variable. We controlled for gender in the first block, the presence of a diagnosed mental disorder in the second block, and trait-anxiety in the third block. All the MCQ-30 subscales were entered in the final block using Wald forward entry. Gender was not a significant predictor of group membership in our study. However, we found that both being diagnosed with a mental disorder and trait-anxiety were significant predictors of group membership showing an odds ratio above 1, indicating that having a diagnosis of a mental disorder, and higher levels of trait-anxiety, were associated with higher odds for belonging to the out of work group. Crucially for our hypothesis, MCQ-30 need for control had predictive value for group membership above the presence of a diagnosis and trait-anxiety, with an odds ratio over 1, indicating that higher need for control over thoughts was associated with higher odds of belonging to the out of work group. In the final equation, the Nagelkerke R^2 for the model was .440, $\chi^2(4) = 160.590$, $p < .001$, and the odds ratios were as follows; 12.291 for the presence of a diagnosed mental disorder, 1.058 for trait-anxiety, and 1.083 for MCQ-30 need for control. Overall, 77.5 % of the participants were correctly classified in the final model. The Hosmer and Lemeshow's test was not significant ($p = .725$) indicating a good model fit. The binary logistic regression results are presented in Table 2.

Insert table 2 here

We followed up our first results with an exploratory analysis, but this time we did not control for trait-anxiety as there has been reported substantial overlap between trait-anxiety and metacognitive beliefs, negative metacognitive beliefs in particular (Nordahl & Wells, 2017b). We controlled for gender in the first step, the presence of a diagnosed mental disorder in the second, and entered all subscales of the MCQ-30 using Wald forward entry in the final step. In this analysis, the presence of a diagnosed mental disorder was still a strong predictor of group membership ($p < .001$) with an odds ratio of 19.445. Further, we found that MCQ-30 need for control remained a significant predictor over the presence of a diagnosis of mental disorder ($p = .003$) with an odds ratio of 1.113, but now MCQ-30 negative metacognitive beliefs about uncontrollability and danger also had predictive value for group membership over and above the presence of a mental disorder and MCQ-30 need for control ($p = .007$), with an odds ratio of 1.096.

Discussion

Our results show that MCQ-30 need for control over thoughts has predictive value for work status over and above the presence of a diagnosed mental disorder and psychological vulnerability operationalized as trait-anxiety. Specifically, that higher scores on need for thought control are associated with higher odds of belonging to the group being out of work and receiving disability benefits. While gender was not a significant predictor, both the presence of a diagnosed mental disorder and trait-anxiety had predictive value for work status, and were as hypothesised associated with belonging to the out of work group. This finding implies that metacognitive beliefs such as need for cognitive control may be important for work status, and therefore could be targeted in treatment as a means to facilitate return to work and to prevent long-term sick leave.

Trait-anxiety had predictive value over the presence of a mental diagnosis, a finding similar to a Norwegian population-based cohort study showing that anxiety and depressive symptoms were robust predictors of disability pension in general, even after controlling for disability pension awarded as a consequence of mental disorder (Mykletun et al., 2006). This suggests that it is important to address psychological vulnerability and distress to facilitate RTW and prohibit long term sick leave when these factors are present. The metacognitive model is intended to account for psychological vulnerability from a metacognitive perspective

Metacognitive beliefs and work status

and could offer a means of dealing with metacognitive beliefs that predict being out of work more specifically and also with psychological vulnerability in general.

According to the metacognitive model, maladaptive metacognitive knowledge would be one of the key factors underlying emotional distress and psychological vulnerability (Wells, 2000), but our study also indicates that metacognitive beliefs are likely to be important for work status even when overlap with these variables are controlled. Thus, even in the context of enduring psychological ill-health specific metacognitive beliefs may determine work status. When trait-anxiety was not controlled, negative metacognitive beliefs about the uncontrollability and danger of worry was also a significant predictor of work status over the presence of a mental disorder. This finding is in line with previous studies (e.g., Nordahl & Wells, 2017b; Wells & Cartwright-Hatton, 2004) suggesting a substantial overlap between trait-anxiety and metacognitive beliefs, in particular negative metacognitive beliefs.

Metacognitive beliefs may be important for work status because they give rise to the cognitive attentional syndrome (CAS; Wells, 2009), a perseverative negative thinking style consisting of worry/rumination, threat monitoring and maladaptive coping strategies. The CAS contributes to persistent and negative interpretations of inner experience, limits the choice of effective coping strategies, and hence is likely to bias perceived ability to deal with workplace stress and challenges. For example, metacognitive beliefs about the need to control thoughts may lead to excessive worrying about experiencing certain thoughts and enhanced cognitive monitoring and attempts to control them. These strategies (i.e. the CAS) are likely to have paradoxical effects such as increasing awareness of thought intrusions, using up processing capacity thereby compromising spare processing capacity for work and enhancing negative interpretations of ability to work effectively.

Our findings therefore suggest that the metacognitive model can inform further research in this field by enhancing understanding of mechanisms underlying work status that have not previously been addressed. This finding is in line with a recent study that showed that negative metacognitive beliefs had predictive value for work status over and above symptom severity and factors emphasized in CBT in a high socially anxious sample (Nordahl & Wells, 2017a). While CBT-based interventions have not proved sufficiently effective in enhancing RTW (Nigatu et al., 2016), Metacognitive therapy (MCT; Wells, 2009) could potentially be more effective as this treatment directly address metacognitive beliefs which seem to be important statistical predictors of work status. Furthermore, metacognitive beliefs are implicated across psychological disorders (Wells, 2009; Sun et al., 2017) and MCT is a highly effective treatment (Normann et al., 2014). Our findings indicate that modifying the

Metacognitive beliefs and work status

same metacognitive beliefs which underlie emotional distress might also facilitate return to work or reduce the risk of long-term sick leave in individuals with mental ill-health. In other words, MCT may have the potential to reduce mental ill-health and facilitate working ability at the same time.

The current study has several limitations. A cross-sectional design was used, and therefore no causal inferences can be made. All the data relied on self-report which could threaten the validity of the study. There were substantially more females than males in our sample, which compromise the generalisability of our findings. We used no formal assessment of diagnosis, but relied on self-report of the presence/absence of a mental disorder together with trait-anxiety to account for mental ill-health and psychological vulnerability. Moreover, we did not control for state anxiety and depression which could be relevant for work status over general vulnerability or potentially affect the completion of the questionnaires. However, the trait-anxiety subscale can be considered a measure of general vulnerability to anxiety and depression symptoms, which offers some control over these factors. We suggest further research to replicate our study with a longitudinal design including more detailed information concerning psychopathology, and to overcome the issues associated with self-report questionnaires. In addition, the utility and efficacy of metacognitive therapy in increasing return to work and/or reducing risk of long-term sick leave should be evaluated in controlled studies.

In conclusion, the current study suggests that metacognitive beliefs may be an important factor underlying work status, and showed that metacognitive beliefs about the need for control of thoughts predicted work status over and above the presence of a diagnosed mental disorder and trait-anxiety.

References

- Bados, A., Gómez-Benito, J., & Balaguer, G. (2010). The state-trait anxiety inventory, trait version: does it really measure anxiety?. *Journal of Personality Assessment*, *92*(6), 560-567. <http://dx.doi.org/10.1080/00223891.2010.513295>
- Balsamo, M., Romanelli, R., Innamorati, M., Ciccarese, G., Carlucci, L., & Saggino, A. (2013). The state-trait anxiety inventory: shadows and lights on its construct validity. *Journal of Psychopathology and Behavioral Assessment*, *35*(4), 475-486. doi:10.1007/s10862-013-9354-5
- Bieling, P. J., Antony, M. M., & Swinson, R. P. (1998). The State-Trait Anxiety Inventory, Trait version: structure and content re-examined. *Behaviour Research and Therapy*, *36*(7), 777-788. [https://doi.org/10.1016/S0005-7967\(98\)00023-0](https://doi.org/10.1016/S0005-7967(98)00023-0)
- Blank, L., Peters, J., Pickvance, S., Wilford, J., & MacDonald, E. (2008). A systematic review of the factors which predict return to work for people suffering episodes of poor mental health. *Journal of Occupational Rehabilitation*, *18*(1), 27-34. doi:10.1007/s10926-008-9121-8
- Clark, D. M. (2011). Implementing NICE guidelines for the psychological treatment of depression and anxiety disorders: the IAPT experience. *International Review of Psychiatry*, *23*, 318-327. doi:10.3109/09540261.2011.606803
- Cornelius, L. R., van der Klink, J. J., Groothoff, J. W., & Brouwer, S. (2011). Prognostic factors of long term disability due to mental disorders: a systematic review. *Journal of Occupational Rehabilitation*, *21*(2), 259-274. doi:10.1007/s10926-010-9261-5
- Flach, P. A., Groothoff, J. W., Krol, B., & Bültmann, U. (2011). Factors associated with first return to work and sick leave durations in workers with common mental disorders. *The European Journal of Public Health*, *22*(3), 440-445. <https://doi.org/10.1093/eurpub/ckr102>
- Mykletun, A, Overland, S, Dahl, AA, Krokstad, S, Bjerkeset, O, Glozier, N. et al. (2006). A Population-Based Cohort Study of the Effect of Common Mental Disorders on Disability Pension Awards. *The American Journal of Psychiatry*, *163*, 1412-1418.
- Nigatu, Y. T., Liu, Y., Uppal, M., McKinney, S., Gillis, K., Rao, S., & Wang, J. (2017). Prognostic factors for return to work of employees with common mental disorders: a meta-analysis of cohort studies. *Social Psychiatry and Psychiatric Epidemiology*. doi:10.1007/s00127-017-1402-0
- Nigatu, Y. T., Liu, Y., Uppal, M., McKinney, S., Rao, S., Gillis, K., & Wang, J. (2016). Interventions for enhancing return to work in individuals with a common mental

Metacognitive beliefs and work status

illness: systematic review and meta-analysis of randomized controlled trials.

Psychological Medicine, 46, 3263-3274. <https://doi.org/10.1017/S0033291716002269>

Nordahl, H. & Wells, A. (2017a). Social anxiety and work status: the role of negative metacognitive beliefs, symptom severity and cognitive-behavioural factors. *Journal of Mental Health*. 1-5. doi:10.1080/09638237.2017.1340622

Nordahl, H. & Wells, A. (2017b). Individual differences in metacognitive knowledge contribute to psychological vulnerability more than the presence of a mental disorder does. *Mental Health and Prevention*, 7, 17-20.
<https://doi.org/10.1016/j.mhp.2017.07.003>

Normann, N., Emmerik, A. A., & Morina, N. (2014). The efficacy of metacognitive therapy for anxiety and depression: A meta-analytic review. *Depression and Anxiety*, 31, 402-411. doi:10.1002/da.22273

Organisation for Economic and Co-operation Development (2012). *Sick on the job?: myths and realities about mental health and work*. Paris, France: OECD Publishing.

Slany, C., Schütte, S., Chastang, J. F., Parent-Thirion, A., Vermeulen, G., & Niedhammer, I. (2014). Psychosocial work factors and long sickness absence in Europe. *International Journal of Occupational and Environmental Health*, 20, 16-25.
<http://dx.doi.org/10.1179/2049396713Y.0000000048>

Spada, M. M., Mohiyeddini, C., & Wells, A. (2008). Measuring metacognitions associated with emotional distress: Factor structure and predictive validity of the metacognitions questionnaire 30. *Personality and Individual Differences*, 45, 238-242.
<http://dx.doi.org/10.1016/j.paid.2008.04.005>

Spielberger, C., Gorsuch, R., & Lushene, R. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Sun, X., Zhu, C., & So, S. H. W. (2017). Dysfunctional metacognition across psychopathologies: A meta-analytic review. *European Psychiatry*. 45, 139-153.
<https://doi.org/10.1016/j.eurpsy.2017.05.029>

van Rijn, R. M., Robroek, S. J., Brouwer, S., & Burdorf, A. (2014). Influence of poor health on exit from paid employment: a systematic review. *Occup Environ Med*, 71, 295-301.
<http://dx.doi.org/10.1136/oemed-2013-101591>

Wells, A. (2000). *Emotional disorders and metacognition: Innovative cognitive therapy*. John Wiley & Sons.

Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. New York: Guilford press.

Metacognitive beliefs and work status

- Wells, A., & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. *Behaviour Research and Therapy*, *42*, 385-396. doi:10.1016/S0005-7967(03)00147-5
- Wells, A., & Matthews, G. (1994). *Attention and Emotion: A clinical perspective*. Hove UK: Erlbaum.
- Wells, A. & Matthews, G. (1996). Modelling cognition in emotional disorder: The S-REF model. *Behaviour Research and Therapy*, *34*, 881-888. doi:10.1016/S0005-7967(96)00050-2

Metacognitive beliefs and work status

Table 1: Group comparisons between the group working and the group receiving disability benefits; mean score, standard deviation and t-value.

	Working group (n = 292)	Disability group (n = 135)	t-value
MCQ-30: positive beliefs	9.35 (3.45)	10.62 (4.37)	2.970*
MCQ-30: negative beliefs	12.69 (4.91)	17.51 (4.09)	10.628*
MCQ-30: cognitive confidence	11.70 (4.86)	15.04 (5.09)	6.518*
MCQ-30: need for control	9.68 (3.62)	13.47 (4.50)	8.596*
MCQ-30: cognitive self-consciousness	12.66 (3.85)	15.30 (4.02)	6.497*
STAI-T: trait-anxiety	47.94 (14.18)	64.30 (10.55)	13.296*

Note: *p<.01

Metacognitive beliefs and work status

Table 2: Hierarchical logistic regression statistics with group membership (working/disability benefits) as the outcome variable and gender, the presence of a diagnosed mental disorder, trait-anxiety, and metacognitive beliefs as predictor variables (n=427).

	B	S.E.	Wald	Sig.	Exp(B)
Gender	.355	.366	.943	.332	1.426
Mental disorder	2.509	.626	16.075	.000**	12.291
Trait-anxiety	.057	.015	15.049	.000**	1.058
MCQ-30: nc	.080	.036	4.850	.028*	1.083
Constant	-7.368	.893	68.103	.000**	.001

Note: *p<.05, **p<.01, nc = need for control