

Coping and Perceived Stress as a Function of Positive Metacognitions and Positive Meta-Emotions

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ABSTRACT - Based on the recently developed construct of adaptive metacognitive traits and classic theories of coping, it was hypothesized that Confidence in Extinguishing Perseverative Thoughts and Emotions would correlate negatively with maladaptive coping, Confidence in Interpreting Own Emotions as Cues and in Setting Flexible and Feasible Hierarchies of Goals would correlate positively with adaptive coping, and both metacognitive traits would correlate negatively with perceived stress. A sample of 212 workers and students completed the Positive Metacognitions and Positive Meta-Emotions Questionnaire, Meta-Cognitions Questionnaire 30, Brief Coping Questionnaire, and Perceived Stress Scale. Structural equation modeling supported the hypotheses suggesting that adaptive metacognition fosters adaptive coping and prevents maladaptive coping and perceived stress controlling for maladaptive metacognition. Directions for future research are outlined.

Metacognition refers to the knowledge and beliefs about one's own cognitive regulation and the capability to deconstruct and understand them through reflection and problem solving (Flavell, 1979). The study of metacognition was pioneered in the field of developmental and educational psychology (Flavell, 1979; Nelson & Narens, 1990), and has been applied in the field of clinical psychology (Wells & Matthews, 1994; Wells, 2000, 2009) and most recently in the field of positive psychology (Beer & Moneta, 2010).

Wells and Matthews' (1994) and Wells' (2000, 2009) theory of psychological dysfunction focuses on maladaptive metacognitions, and posits that they drive coping in response to external stimuli and to one's own internal states. Beer and Moneta's (2010) kernel theory focuses on adaptive metacognitions and meta-emotions, maintains that these are not just reversed maladaptive metacognitions, and posits that they prevent maladaptive coping and foster adaptive coping.

To date, the metacognition-coping link has not been conceptualized and tested with reference to classic theories of appraisal and coping (e.g., Lazarus & Folkman, 1984). The present study investigates the relationships between adaptive metacognitions and meta-emotions, conceptualized as independent variables, and maladaptive coping

strategies, adaptive coping strategies, and perceived stress, conceptualized as dependent variables, in a mixed community sample of workers and students. The goal of the present study is to show that adaptive metacognition explains variance in coping and perceived stress over and beyond that explained by maladaptive metacognition, and hence that Beer and Moneta's (2010) kernel theory is a useful addition to Wells and Matthews' (1994; Wells, 2000, 2009) theory.

Conceptualizations and Measurement of Metacognitive Traits

Wells and Matthews' (1994) Self-Regulatory Executive Function (S-REF) model and Wells' (2000, 2009) theory of emotional disorders state that psychological dysfunction is maintained by maladaptive metacognitions that foster (a) dysfunctional use of attention, (b) rumination and worry, and (c) adoption of maladaptive coping strategies, which conjointly constitute a cognitive-attentional syndrome (CAS; Wells, 2000, 2009). Maladaptive metacognitions are theorized to become active when a problematic situation is encountered, and to subsequently foster prolonged S-REF activity, thus maintaining the CAS.

Maladaptive metacognition has been studied using the Meta-Cognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997) or its shorter form (MCQ-30; Wells & Cartwright-Hatton, 2004) to measure five interrelated traits: (1) Positive Beliefs about Worry, i.e., the extent to which a person believes that worrying is useful; (2) Negative Beliefs about Worry concerning Uncontrollability and Danger, i.e., the extent to which a person believes that worrying is uncontrollable and dangerous; (3) Cognitive Confidence (lack of), i.e., the extent to which a person lacks confidence in his or her attention and memory; (4) Beliefs about the Need to Control Thoughts, i.e., the extent to which a person believes that disturbing thoughts should be suppressed; and (5) Cognitive Self-Consciousness, i.e., the extent to which a person focuses attention inwards to monitor own thoughts.

Beer and Moneta's (2010) kernel theory of adaptive metacognition and meta-emotion proposes that absence of maladaptive metacognition is not a sufficient asset for an individual to succeed when tackling a problematic situation. In particular, successful resolution requires (a) metacognitive beliefs that help to switch S-REF activity on and off based on the strategic demands of the situation, (b) the meta-emotions of interest and curiosity (Mitmansgruber, Beck, Höfer, & Schüßler, 2009) in one's own primary emotional responses to challenges, and (c) metacognitive beliefs of an agentic type that support identification of alternative pathways and flexible goal restructuring.

Adaptive metacognition can be studied using the recently developed Positive Metacognitions and Positive Meta-Emotions Questionnaire (PMCEQ; Beer & Moneta, 2010), which measures adaptive metacognitive beliefs people hold on their own cognitive and emotional processes when facing challenging situations in the form of three traits: (1) Confidence in Extinguishing Perseverative Thoughts and Emotions, (2) Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving, and (3) Confidence in Setting Flexible and Feasible Hierarchies of Goals.

On one hand, Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) targets a core construct of Wells and Matthews' (1994; Wells, 2000, 2009)

theory. Conceptually, individuals who lack Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) are likely to believe simultaneously that worrying is useful to overcome a challenge (MCQ-30-1) and that worrying is uncontrollable and dangerous (MCQ-30-2). Because prolonged perseveration depletes attention resources, these individuals are also likely to lack confidence in their attention and ability to store and retrieve information (MCQ-30-3). Finally, because they believe they lack ability to regain equilibrium after experiencing even minor disturbing thoughts or emotions, these individuals are likely to have an increased belief that they need to monitor their own internal states (MCQ-30-5) and to control disturbing thoughts (MCQ-30-4). Empirically, PMCEQ-1 and the MCQ-30 sub-scales are strongly and negatively intercorrelated (Beer & Moneta, 2010). In all, PMCEQ-1 and the MCQ-30 appear to measure maladaptive metacognition, with the former representing a concise and reversed measure of the construct.

On the other hand, Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving (PMCEQ-2), and Confidence in Setting Flexible and Feasible Hierarchies of Goals (PMCEQ-3) target constructs that are not explicitly dealt with in Wells and Matthews' (1994; Wells, 2000, 2009) theory. Conceptually, these traits capture metacognitions that foster neutral self-reflectiveness, systematic effort toward goal achievement, flexibility and resilience in the midst of challenge. Empirically, these traits are strongly intercorrelated, and hence can be regarded as a single trait (see general discussion in Beer & Moneta, 2010), which henceforth will be referred to as PMCEQ-2*. This trait correlates only weakly with the MCQ-30 traits, and hence is not a reversed maladaptive metacognitive trait. In all, PMCEQ-2* measures authentic adaptive metacognitions and meta-emotions.

Appraisal Processes and Coping Strategies

Lazarus and Folkman's (1984) transactional model of stress postulates dynamic relationships between potential stressors and psychological stress responses. The person-environment interaction is emphasized by defining stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being." (Lazarus & Folkman, 1984, p. 10).

An individual's response to a stressor is theorized to depend on primary and secondary appraisal processes. In the primary appraisal process a stressor can be perceived as harmful (i.e., a person believes that psychological and/or physiological damage has already occurred), threatening (i.e., a person anticipates to be harmed) or challenging (i.e., a person is confident to overcome the stressor). The secondary appraisal process involves the simultaneous assessment of external demands and own coping ability. Coping is defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person." (Lazarus & Folkman, 1984, p. 141). Coping comprises cognitive, emotional, and behavioral strategies an individual employs to manage a problematic person-environment relationship (Folkman & Lazarus, 1985). Lazarus (1991) hypothesized that both primary and secondary appraisal processes influence the emotional response to a stressor. Empirical evidence supports this view,

with stress having been found to evoke negative emotional responses (e.g., Kamarck, Peterman & Raynor, 1998) and to correlate with anxiety and depression (e.g., Bergdahl & Bergdahl, 2002).

Two main classes of coping strategies have been identified, *problem-focused* and *emotion-focused*. Problem-focused coping aims taking direct action for problem solving or seeking strategic information on the problem at hand, whereas emotion-focused coping aims reducing the emotional impact of the problem (Lazarus & Folkman, 1984). Although emotion-focused coping can provide temporary relief from negative emotions, there is consensus that in the long run problem-focused coping is adaptive whereas emotion-focused coping is maladaptive (e.g., Zuckerman & Gagne, 2003).

Adaptive Metacognitions as Predictors of Coping Strategies and Perceived Stress

Lazarus (1999) postulates that confidence in overcoming obstacles increases the likelihood that a stressor is appraised as a challenge rather than as a threat. Extending this argument, we propose that the three metacognitive confidence traits measured by the PMCEQ (Beer & Moneta, 2010) should foster more positive appraisal processes and, in turn, more adaptive coping and less maladaptive coping. Yet, the different traits are likely to act at different appraisal levels, and hence to have distinct effects on coping.

On one hand, Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) taps the ability to quickly refrain from rumination and worry when confronted with a stressor. People who score low on this trait believe they lack the ability to regain equilibrium after experiencing even minor disturbing thoughts. As such, they are likely to have an increased need for micro-monitoring external events and internal states. This increases the likelihood that a stressor is primarily appraised as threat. In turn, primary threat appraisal should foster maladaptive coping. Therefore, the following hypothesis is posited:

(H1) Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) will correlate negatively with maladaptive coping.

On the other hand, Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving and Confidence in Setting Flexible and Feasible Hierarchies of Goals (PMCEQ-2*) taps the ability to correctly interpret complex stressors and tackle them flexibly and strategically. People who score low on this trait believe they lack ability to act upon a stressor. As such, they are likely to experience an increased dissonance between the perceived demands of the situation and their own coping ability. This increases the likelihood that a stressor is secondarily appraised as a threat. In turn, secondary threat appraisal should prevent adaptive coping. Therefore, the following hypothesis is posited:

(H2) Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving and Confidence in Setting Flexible and Feasible Hierarchies of Goals (PMCEQ-2) will correlate positively with adaptive coping.*

Finally, perceived stress is the extent to which a stressor is appraised as stressful, and is postulated to be an outcome of both primary and secondary appraisal processes (Lazarus, 1999). The PMCEQ traits, although theorized to act at different levels of the appraisal process, should all foster a positive-challenge perception of stressors, and hence prevent perceived stress. Therefore, the following hypothesis is posited:

(H3) Both metacognitive traits (PMCEQ-1 and PMCEQ-2) will correlate negatively with perceived stress.*

Maladaptive metacognitive traits as measured by the MCQ-30 (Wells & Cartwright-Hatton, 2004) have weak to strong negative correlations with adaptive metacognitive traits as measured by the PMCEQ (Beer & Moneta, 2010), and hence are potential confounders of the hypothesized relationships. Therefore, the research hypotheses are tested controlling for maladaptive metacognition as measured by the MCQ-30.

Method

Participants

A convenience sample of 212 workers and students was recruited comprising 108 (50.9%) students from various London metropolitan universities, and 104 (49.1%) workers from various occupations. The age range was 18 to 70 years ($M = 30.2$, $SD = 11.27$); 61 (28.8%) were males, 151 (71.2%) were females. The sample comprised 120 (56.6%) Whites, 36 (17.0%) Asians, 28 (13.2%) Blacks, and 28 (13.2%) participants of other ethnicity. Participants were approached individually, briefed about the study, and invited to sign an individual consent form prior to completing the following questionnaires.

Measures

Meta-Cognitions Questionnaire 30 (MCQ-30, Wells & Cartwright-Hatton, 2004). The MCQ-30 measures the five maladaptive metacognitive traits described in the introduction, each measured by six items. Items are scored on a 4-point scale ranging from 1 (*Do not agree*) to 4 (*Agree very much*). The sub-scale scores have internal consistency in the range of .72-.89 and correlate with measures of emotional vulnerability and self-consciousness.

Positive Metacognitions and Positive Meta-Emotions Questionnaire (PMCEQ; Beer & Moneta, 2010). The PMCEQ assesses individual differences in adaptive metacognitive and meta-emotional beliefs when facing challenging or unpredictable situations. It measures the three traits described in the introduction, each measured by six items. Items are scored on a 4-point scale ranging from 1 (*Do not agree*) to 4 (*Agree very much*). The sub-scale scores have internal consistency in the range of .76-.86 and correlate with measures of trait intrinsic motivation.

Brief Coping Questionnaire (Brief COPE, Carver, 1997). The Brief COPE measures individual differences in coping strategies on 14 sub-scales comprising 2 items each. The following eight scales were used in this study: (1) Active Coping, (2) Planning and Strategy Use, (3) Using Functional Support, (4) Positive Reframing, (5) Denial, (6) Substance Use, (7) Behavioral Disengagement, and (8) Self-Distraction. Coping

strategies 1-4 and 5-8 represent adaptive and maladaptive coping, respectively. Items are scored on a 4-point scale ranging from 1 (*I have not been doing this at all*) to 4 (*I have been doing this a lot*). The sub-scale scores have internal consistency in the range of .50-.90, and the factor structure of the inventory is very similar to that of the full inventory from which it was derived.

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS measures individual differences in the stress perceived over the course of the previous month on a single scale comprising 14 items. Items are scored on a 5-point scale ranging from 0 (*Never*) to 4 (*Very often*). The scale scores have internal consistency in the range of .84-.86 across samples and correlate with measures of impact of life events and depressive symptomatology.

Statistical Analysis

The hypotheses were tested using structural equation modeling (SEM), as implemented in LISREL 8.8 (Jöreskog & Sörbom, 1996), in which perceived stress, adaptive coping, and maladaptive coping were the dependent variables, adaptive metacognitions and meta-emotions were the predictors, and maladaptive metacognition was the control variable. All study variables were defined as latent variables.

The measurement model defined PMCEQ-1 and PMCEQ2* in terms of their constituent items. The five sub-scales of the MCQ-30 were defined as the indicators of maladaptive metacognition, the four adaptive Brief COPE sub-scales were defined as indicators of adaptive coping, and the four maladaptive Brief COPE sub-scales were defined as indicators of maladaptive coping. Indicators of perceived stress were created using parceling as follows. We first fitted a single-factor principal components model to the items of the PSS. The scree-plot confirmed that the scale is unidimensional. Using the item factor pattern coefficients as a guide and following the “item-to-construct balance” method (e.g., Little, Cunningham, Shahar & Widaman, 2002) we then created three parcels of items.

Results

Data Description

Descriptive statistics, Cronbach’s alpha coefficients, and Pearson product-moment correlation coefficients for all the study variables are presented in Table 1. The internal consistency of the study variables was satisfactory (coefficients exceeded .70) except for the MCQ-30 sub-scales, whose alpha coefficients were lower than in previous studies.

Maladaptive coping correlated negatively with PMCEQ-1, which is consistent with hypothesis 1, as well as with PMCEQ-2*. Adaptive coping correlated positively with PMCEQ-2*, which is consistent with hypothesis 2. Both PMCEQ sub-scales correlated negatively with perceived stress, which is consistent with hypothesis 3.

All MCQ-30 sub-scales correlated positively with maladaptive coping and perceived stress. Only MCQ-30-3 and MCQ-30-4 correlated with adaptive coping, and their correlations were weak and unexpectedly positive.

Table 1
Means, Standard Deviations, Ranges, Cronbach's Alphas, and One-Tailed Pearson Product-Moment Correlations of the Study Variables

Variable	<i>M</i>	<i>SD</i>	Scale Range	Range	Alpha	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. PMCEQ-1 – Confidence in Extinguishing Perseverative Thoughts and Emotions	16.8	4.3	6-24	6-24	.84	.47**	-.52**	-.52**	-.36**	-.39**	-.45**	.09	-.39**	-.60**
2. PMCEQ-2* – Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving and Confidence in Setting Flexible and Feasible Hierarchies of Goals	31.7	7.1	12-48	15-48	.88		-.17**	-.27**	.01	-.05	-.24**	.33**	-.24**	-.52**
3. MCQ-30-1 – Positive Beliefs about Worry	10.9	4.3	6-23	6-23	.69			.76**	.71**	.75**	.71**	.03	.28**	.44**
4. MCQ-30-2 – Negative Beliefs about Worry concerning Uncontrollability and Danger	12.1	4.9	6-24	6-24	.67				.69**	.72**	.79**	-.01	.29**	.43**
5. MCQ-30-3 – Cognitive Confidence	10.1	3.9	6-24	6-24	.57					.73**	.65**	.16**	.23**	.31**
6. MCQ-30-4 – Beliefs about the Need to Control Thoughts	11.6	4.4	6-24	6-24	.62						.71**	.15*	.17**	.35**
7. MCQ-30-5 – Cognitive Self-Consciousness	15.5	4.4	6-24	6-24	.68							.03	.20**	.39**
8. Brief COPE – Adaptive Coping	22.0	5.1	8-32	8-32	.75								-.03	-.13*
9. Brief COPE – Maladaptive Coping	12.7	3.6	8-32	8-25	.65									.43**
10. PSS – Perceived Stress	25.1	7.8	0-56	8-51	.82									

Note. *N* = 212. **p* < .05 ***p* < .01

Structural Equation Models

Three models were tested. Model 1 specified two paths from PMCEQ-1 to maladaptive coping and perceived stress and two paths from PMCEQ-2* to adaptive coping and perceived stress. Model 1 tests the research hypotheses without controlling for maladaptive metacognition as measured by the MCQ-30. Model 2 specified three paths from MCQ-30 to adaptive coping, maladaptive coping, and perceived stress. Model 2 tests all the possible effects of maladaptive metacognition as measured by the MCQ-30 on the outcome variables without controlling for adaptive metacognition. Model 3 specified all the paths of Model 1 and all the paths of Model 2 that turned out to be significant. As such, Model 3 tests the research hypotheses controlling for maladaptive metacognition as measured by the MCQ-30.

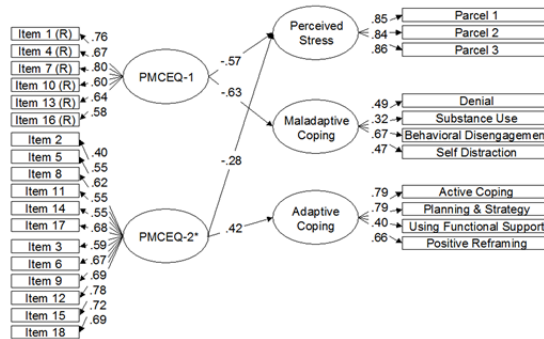
Model 1 did not fit in a strict statistical sense (chi-square = 623.48, *df* = 372, *p* < .001), but the other goodness of fit indices revealed that the fit of the model was satisfactory (CFI = .96; RMSEA = .057). Figure 1 (1) shows the path diagram with estimated standardized path coefficients. PMCEQ-1 predicted, with negative and strong coefficients, maladaptive coping and perceived stress, supporting hypothesis 1 and hypothesis 3, respectively. PMCEQ-2* predicted, with a positive and moderate coefficient, adaptive coping, supporting hypothesis 2, and, with a negative and weak coefficient, perceived stress, supporting hypothesis 3. All the hypothesized paths were significant at the *p* < .001 level. In all, the findings support hypotheses 1-3 without controlling for maladaptive metacognition as measured by the MCQ-30.

Model 2 had nearly satisfactory fit (chi-square = 260.12, *df* = 101, *p* < .001; CFI = .94; RMSEA = .086). Figure 1 (2) shows the path diagram with estimated standardized path coefficients. MCQ-30 predicted, with positive and fair coefficients that were significant at the *p* < .001 level, maladaptive coping and perceived stress, but did not predict adaptive coping.

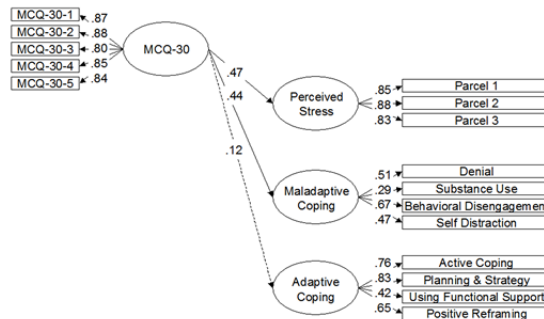
Model 3 had satisfactory fit (chi-square = 880.22, *df* = 518, *p* < .001; CFI = .96; RMSEA = .058). Figure 1 (3) shows the path diagram with estimated standardized path coefficients. All the hypothesized paths from PMCEQ-1 and PMCEQ-2* to coping and perceived stress were significant at the *p* < .001 level in the hypothesized direction. Both paths from MCQ-30 to maladaptive coping and perceived stress, which were significant

Figure 1
The Path Diagram, with Standardized Path Coefficients, of the Estimated Structural Equation Models of Perceived Stress and Coping Strategies as a Function of (1) Adaptive Metacognition, (2) Maladaptive Metacognition, and (3) Adaptive and Maladaptive Metacognition

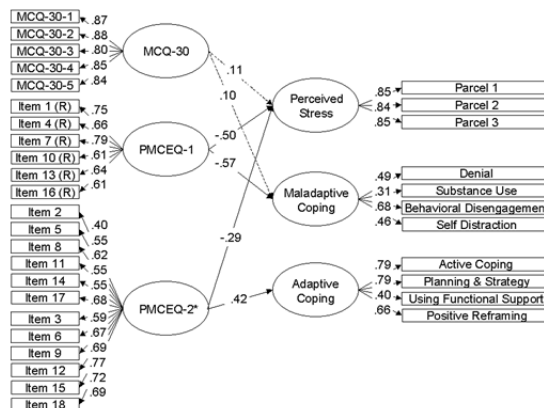
(1)



(2)



(3)



Note. All paths were significant at the $p < .001$ level except for the paths represented by a dotted arrow, which were not significant.

in Model 2, were not significant. In all, the findings support hypotheses 1-3 controlling for maladaptive metacognition.

Discussion

The findings provide support for all three hypotheses and the model as a whole. In particular, Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) predicted less maladaptive coping as stated by hypothesis 1; Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving and Confidence in Setting Flexible and Feasible Hierarchies of Goals (PMCEQ-2*) predicted more adaptive coping, as stated by hypothesis 2; both PMCEQ-1 and PMCEQ-2* predicted less perceived stress, as stated by hypothesis 3. Finally, all the hypotheses were supported controlling for maladaptive metacognition measured as a single trait using the MCQ-30. The findings shed light on the metacognitive and meta-emotional processes underlying adaptive coping, maladaptive coping, and perceived stress in daily life, and suggest directions for future research.

The Effects of Maladaptive Metacognition

Confidence in Extinguishing Perseverative Thoughts and Emotions (PMCEQ-1) and maladaptive metacognition measured as a single trait using the MCQ-30 were both good predictors of maladaptive coping and perceived stress, and both did not predict adaptive coping. As such, they behaved essentially the same way in the model of the present study, which indicates that both variables measure maladaptive metacognition. The finding that maladaptive metacognition did not predict adaptive coping points out a limitation of the S-REF model (Wells & Matthews, 1994) in that absence of maladaptive metacognition is not sufficient for a person to engage in adaptive coping.

The Effects of Adaptive Metacognition

Confidence in Interpreting Own Emotions as Cues, Restraining from Immediate Reaction, and Mind Setting for Problem Solving and Confidence in Setting Flexible and Feasible Hierarchies of Goals (PMCEQ-2*) that measures adaptive metacognition was a moderate predictor of adaptive coping and a modest predictor of perceived stress. The finding that adaptive metacognition predicted adaptive coping points out that the construct of adaptive metacognition is a useful addition to the S-REF model (Wells & Matthews, 1994) in that presence of adaptive metacognition is necessary for a person to engage in adaptive coping.

Key Implications

Wells and Matthews' (1994; Wells, 2000, 2009) theory posits that when facing a problematic situation, an individual can operate in two distinct modes: 'object' and 'metacognitive'. In the object mode one interprets thoughts as facts, whereas in the metacognitive mode one interprets thoughts as cues that have to be subsequently evaluated. The object mode is theorized to be functional only in genuinely threatening situations, and to be dysfunctional in all other situations because it fosters perseverative

thinking and hence maladaptive coping. The metacognitive mode is theorized to be functional across the board because it enhances evidence-based belief elaboration and hence fosters adaptive coping.

Adaptive functioning in Wells and Matthews's (1994; Wells, 2000, 2009) theory is seen as an ability to suspend the object mode – and hence to control worry and rumination – and to enter the metacognitive mode – and hence to use attention and thinking in a task-focused and flexible way. The theory has to date identified, and focused on only maladaptive metacognitive traits. The question that led to the development of the PMCEQ as a measure of adaptive metacognitive traits was: is mere absence of maladaptive metacognition sufficient for shifting from object to metacognitive mode and successfully solving the problem at hand?

The findings of the present study indicate that absence of maladaptive metacognition (measured either by PMCEQ-1 or by the MCQ-30 as a single trait) may prevent maladaptive coping but does not foster adaptive coping. Moreover, the findings of the present study indicate that the presence of adaptive metacognition (measured by PMCEQ-2*) may foster adaptive coping but does not prevent maladaptive coping. In most real life situations successful tackling of stressors and resolution of problems require both refraining from maladaptive coping and engaging in adaptive coping. Therefore, the findings of the present study indicate that both the construct of maladaptive metacognition and the construct of adaptive metacognition are needed to explain successful coping. In all, the findings of the present study suggest that Beer and Moneta's (2010) kernel theory is a useful addition to Wells and Matthews's (1994; Wells, 2000, 2009) theory in that it provides a new factor (PMCEQ-2*) which is the only metacognitive factor to date capable of explaining adaptive coping.

Study Limitations and Directions for Future Research

The finding that maladaptive metacognition as measured by the MCQ-30 as a single trait was no longer a significant predictor of maladaptive coping and perceived stress when entered as a predictor together with the reversed maladaptive metacognitive trait PMCEQ-1 and the adaptive metacognitive trait PMCEQ-2* should be interpreted cautiously for two reasons. First, the internal consistency of the MCQ-30 sub-scales in this study was low, and hence may have caused attenuation of the path coefficients of the latent variable of maladaptive metacognition. Second, due to the relatively small sample size, maladaptive metacognition as measured by the MCQ-30 was modeled as a single construct. However, it is possible that specific MCQ-30 traits have effects that complement those of the PMCEQ-1 and PMCEQ-2* traits. Therefore, future research should investigate the effects of distinct MCQ-30 traits.

The model explained more variance in maladaptive coping than in adaptive coping. This finding is open to two complementary interpretations. First, it is possible that the recently developed PMCEQ is incomplete in that it does not measure additional adaptive metacognitive traits that foster adaptive coping. Second, it is possible that adaptive coping has a more complex, multifactorial etiology than that of maladaptive coping. Therefore, future research should identify additional explanatory factors for adaptive coping.

Cognitive appraisal and implementation of a coping strategy depend on three factors: the typology of the stressful situation, the environment, and inter-personal factors (Kaplan, 1996). The present study ignored the typology of everyday life stress experienced by the study participants, and hence the model of this study is generic. It is possible that adaptive and maladaptive metacognitive traits exert different effects across social contexts, such as achievement and interpersonal relations. Therefore, future research should replicate the test of the model on specific stressors.

Conclusions

Despite its limitations, this preliminary study establishes links between the adaptive and maladaptive metacognitive traits, the strategies people use to cope with everyday life stress, and their level of perceived stress. The findings support Wells and Matthews' (1994; Wells, 2000, 2009) theoretical claim that maladaptive metacognition drives coping, extend it to adaptive metacognition, and provide suggestions on how to further investigate the metacognition-coping link.

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