

Development of the Short Scale of the Multidimensional Emotional Competence Questionnaire in a German Sample

SAGE Open
April-June 2021: 1–15
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DOI: 10.1177/21582440211009220
journals.sagepub.com/home/sgo


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Abstract

The aim of this study is the development of a short self-report tool of the Multidimensional Emotional Competence Questionnaire (MECQ). The MECQ consists of 109 items representing 11 factors resulting in an ineffective usability in combination with other measurement instruments and constitutes the reason for this study. Based on the selection criteria at content and statistical level, the results of the analyses of 777 participants suggest the creation of a 32-item short version (MECQ-s). Confirmatory factor analysis supports a four-dimensional structure, including 11 factors of emotional competence (EC). The internal consistency reliability coefficients ranged from $\alpha = .75$ to $.76$. A comparison between the MECQ and the MECQ-s provides evidence of construct validity. The main difference between the MECQ-s and other existing self-report tools is its multidimensionality integrating several factors of EC. Researchers and practitioners can use it to measure, map and describe, or evaluate EC.

Keywords

emotional competence, self-report, confirmatory factor analysis, psychometric properties

Introduction

Previous research has indicated that the competence to deal with emotional situations while interacting with other people is a complex construct. This field of research has been dominated over the past decade by a focus on unidimensional constructs from a trait perspective. However, there is a demand to consider this competence as a multidimensional construct. Individuals often react differently when experiencing emotions during specific interactions (Siemer et al., 2007). Within an individual, self-awareness, the understanding and analysis of one's own emotions, and the regulation of emotions are of particular importance in terms of the emotional reactions triggered by such interactions (Gross & Barrett, 2011; Schmidt et al., 2010; Siemer et al., 2007). The expression and perception of the emotions of others, in addition to empathic abilities, help one understand their interaction partner and send them unambiguous emotional messages (Van Kleef, 2016). We introduce another way of conceptualizing individual differences in emotional situations by taking a competence perspective. We consider competences as motivational, volitional, and social readiness and skills, as well as cognitive abilities and skills to successfully solve problems and use them in a responsible manner in variable situations (Weinert, 2001). Furthermore, a multidimensional view of emotional competence (EC) aligns closely to the complex

characteristics and behaviors of emotional reactions during interactive situations. In this context, EC can be defined as a set of competences for dealing with one's own emotions as well as the emotions of others during interactions, thus helping the individual process any emotion-driven information and behave in an adaptive manner (Stamouli, 2014). Research in this area suggests a heterogeneous set of ECs, namely, in terms of attention to one's own emotions, clarity in the perception of emotions, empathy, emotional expressivity, the influencing of one's own emotions, and the reflexive handling of emotions (Côté, 2014; Mayer et al., 2016; Morgan et al., 2009; Petrides et al., 2007; Saarni, 1999). These sets of competences point to the multidimensionality of EC, which is in line with the multiple competences individuals need to effectively handle emotional situations (Saarni, 1999). Because the assessment of EC in interactive situations comprises a multitude of personal and contextual variables, including self-awareness, understanding emotions, and handling emotions, well-developed multidimensional measurement instruments are critical.

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One such measurement instrument that manages the multidimensionality of EC is the Multidimensional Emotional Competence Questionnaire (MECQ) by Stamouli et al. (2006). Although the MECQ focuses on the necessary multidimensionality in the EC construct, it has rarely been used by researchers in the past. Researchers and practitioners are interested in more complex and specific research questions leading to the inclusion of various variables in their work and questionnaires (Rammstedt & Beierlein, 2014; Ziegler et al., 2014). To fulfill this inclusion, one has to consider the included constructs against the questionnaire length and completion time. The MECQ is not able to meet quality criteria related to usefulness due to the questionnaire length of 109 items and therefore required completion time of 25 min. With an average of eight items per scale and an average Cronbach's $\alpha = .80$ per factor, the MECQ exceeds the criteria proposed by MacCallum et al. (1999) of three to seven items per factor. Therefore, the accuracy of the measurement is improved by using multiple items (Moosbrugger & Kelava, 2012). Nevertheless, the findings of a study by Galesic and Bosnjak (2009) indicate that the length of a questionnaire (10 or 30 min) has a strong influence on the participation rate and that the longer a questionnaire lasts, the lower the quality of participants' answers is. This inefficiency becomes particularly clear as soon as other constructs as well as various background and control variables need to be captured. In contrast, considerably shorter instruments with a shorter completion time (e.g., 5 min completion time for the Assessing Emotions Scale (AES) by Schutte et al., 2009) are therefore more attractive for usage in large-scale surveys and studies. Thus, there is a demand for short-scale instruments that capture a construct in its entirety on one hand and possess a high degree of psychometric quality on the other.

The development of short measurement instruments, thus, currently revolves around two questions: Is the shortened version able to fully capture the construct in terms of its validity and does the short version still have a high reliability (Ziegler et al., 2014)? Kruijen et al. (2013) reported a loss of reliability due to removal of items. It is also questioned whether deleting items eliminates the content-relevant aspects of the single competences from the actual intention behind measuring a certain variable. Rammstedt and Beierlein (2014) found that, in the development of short-scale versions, especially for broad constructs with numerous facets, lower internal consistency is reported when the selected items are only based on content. Nevertheless, items should have a strong relationship with the targeted variable rather than be as homogeneous (and therefore achieve high internal consistency) with each other as possible. Smith et al. (2000) argue that the coverage of the content and the comparability of the reliabilities, structure and variance of items, factors, and dimensions are essential for the construction of a short version. In terms of content coverage, researchers should carefully analyze the content range of the factors and ensure that items are proportionally represented in the short version. Reducing the instrument by 1/3 of the items should

also proportionally reduce the number of items equally in the factors by 1/3, but without threatening the content coverage of the factor.

Research Background

A frequently used term strongly related to EC is emotional intelligence (EI; Mayer et al., 2016; Mayer & Salovey, 1997; Petrides & Furnham, 2003). In the academic discourse, there has been disagreement regarding the use of the terms EI and EC for several years (Asendorpf, 2018; Petrides, 2011; Zeidner et al., 2008). The controversial research situation becomes particularly clear when considering various research approaches of EC. O'Connor et al. (2019) distinguish between different streams in the research of EC: the ability approach, the trait approach, and the mixed approach. Most of the concepts of the ability approach are based on Mayer and Salovey's four-branch model (Mayer & Salovey, 1997) and their attempt to measure EI in terms of the maximum performance of an ability (e.g., the Mayer–Salovey–Caruso Emotional Intelligence Test [MSCEIT] by Mayer et al., 2003). Ability EI tests such as the MSCEIT (141 items) have the limitation that they require a lot of time due to the individual and comprehensive tests and are usually based on a consensus-based scoring questioning whether a participant's answer is "correct" or only the tendency to answer like the majority of the sample (Maul, 2012). In contrast to the ability approach, researchers of the trait approach try to capture typical behavior in emotional situations rather than the maximum performance of an ability (Petrides & Furnham, 2000). Many instruments based on the trait approach, such as the AES (Schutte et al., 2009), use respondent self-reports, conceptualize EC as a unidimensional construct, and generate a global EC score. In contrast to the existing unidimensional concepts, multidimensionality is necessary to capture individual differences in the social-emotional context (Asendorpf, 2018). Building on the ability and trait approach, researchers of the mixed approach combine the ability in dealing with emotions with other social competences and abilities. In most cases, the concepts overlap with personality traits (O'Connor et al., 2019) and other established constructs (e.g., self-efficacy), with the aim of creating a comprehensive model for consultants in the work context to improve the skills of employees (Goleman, 2001). Well-known representatives of measurement instruments in this field are probably the Emotional Quotient Inventory (EQ-I; Bar-On, 2004) and the Emotional Competence Inventory (ESCI) (Boyatzis & Goleman, 2001). Based on the research findings of both emotional intelligence and EC, in the present research, we preferred to use the term "emotional competence" due to its multidimensional framework. Stamouli et al. (2006) analyzed the components found in the various models of different approaches to EC concerning their direct relationship to dealing with emotions and their non-inclusion in other superordinate constructs, such as personality traits. The identified components of EC include the perception of one's own emotions (including analyzing and

Table 1. Content Validity of the Multidimensional Emotional Competence Questionnaire.

Instrument	Psychometric properties	Number of included items
Trait Meta-Mood Scale ^a (German Version; Otto et al., 2001)	30 items 3 factors $\alpha = .81-.88$	22 items ➤ 8 items (attention to one's own emotions) ➤ 8 items (clarity of perception of emotions) ➤ 6 items (influencing of one's own emotions)
Interpersonal Reactivity Index (Davis, 1980, 1983)	28 items 3 factors $\alpha = .71-.77$	18 items ➤ 7 items (empathy) ➤ 5 items (perspective-taking) ➤ 6 items (phantasy)
Five Expressivity Facet Scale (Gross & John, 1998)	62 items 5 factors $\alpha = .71-.77$	41 items ➤ 11 items (expressive confidence) ➤ 12 items (positive expressivity) ➤ 10 items (negative expressivity) ➤ 5 items (masking emotions) ➤ 1 item (aggression control) ➤ 2 items (empathy)
Emotion Control Questionnaire (Roger & Najarian, 1989)	56 items 4 factors $\alpha = .77-.86$	28 items ➤ 9 items (reflexive handling of emotions) ➤ 2 items (empathy) ➤ 5 items (negative expressivity) ➤ 5 items (masking emotions) ➤ 7 items (aggression control)

^aOriginal measurement by Mayer et al. (2003), α = Cronbach's alpha.

understanding emotions), the perception of the emotions of others (empathy), emotional awareness, the expressivity of emotions, the masking of emotions, and the reflexive or impulsive regulation of emotions (Bar-On, 2000; Goleman, 2001; Mayer & Salovey, 1997; Petrides & Furnham, 2003; Saarni, 1999; Stamouli, 2014). With regard to the components of EC, only moderate intercorrelations between the components were found to support a multidimensional view (Fiori & Antonakis, 2011; Rossen et al., 2008). Thus, it can be concluded that the concept of EC is complex and multidimensional (Mestre et al., 2016).

The MECQ

This multidimensionality has already been addressed by Stamouli et al. (2006) and was included in the development of the MECQ. Thirteen factors were identified in the theoretical approaches of EC (Stamouli, 2014), including *attention to one's own emotions* and the *clarity of the perception of emotions*, which describe the determined competence of the perception of one's own emotions. *Empathy, phantasy, and perspective-taking*, which correspond to the perception of others' emotions, were included as well as the expressivity of emotions, which includes *trust in one's own expressivity* and the *expression of negative and positive emotions*. The *masking of emotions* as well as the *control of aggression*, the *influencing of one's own emotions*, and the *reflexive handling of emotions* are examples of masking and the impulsive as well as reflexive regulation of emotions and form the final part of the instrument. The instrument consists of a total of 109 items. The items were based on well-validated

instruments, each measuring a specific component of EC. Table 1 presents the four instruments that were used for the initial item pool.

The Trait Meta-Mood Scale (TMMS; Salovey et al., 1997) is based on the assumption that stable interindividual differences exist in the handling of one's own emotions. Salovey et al. (1997) distinguished three dimensions: attention to one's own emotions, clarity of the perception of emotions, and influencing one's own (negative) emotions. According to Davis (1980) and his Interpersonal Reactivity Index (IRI; Davis, 1983), empathy is a multidimensional construct with both emotional and cognitive aspects. The distinction between perspective-taking, empathic concern, and phantasy has been proven in several studies (Davis, 1980, 1983; Holz-Ebeling & Steinmetz, 1995; Mischo, 2003). The Five Expressivity Facet Scale (FEF; Gross & John, 1995) measures emotional expressivity as a multidimensional construct that consists of expressive confidence, positive and negative expressivity, impulse intensity, and masking (Gross & John, 1998). The regulation of emotions captures the extent to which people are able to control or regulate their emotions in difficult and demanding situations. Roger and Neshschover (1987) found four factors, rehearsal, emotional inhibition, aggression control, and benign control, in their attempt at constructing an earlier version of the Emotional Control Questionnaire (ECQ).

The Development of a Short Scale

The aim of this study is to develop a short version of the MECQ that fits the quality criteria for measurement instruments, has good psychometric properties, is stable, and still

maintains multidimensionality (see American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014; DeVellis, 2017; Kline, 2000; Kruyen et al., 2013; Lane et al., 2016). This pragmatic approach strives to include as few items as possible to facilitate the usability of this instrument in future research when other variables must be included. Moreover, long questionnaires increase the likelihood of attrition. Therefore, we aim to reduce the items to 30 to 35 items in total resulting in a completion time of 10 min. It is important to establish a similar number of items for each dimension in the short scale of the Multidimensional Emotional Competence Questionnaire (MECQ-s). Based on the previous studies of the MECQ, we expected to replicate the structure in the short version and achieve identical or slightly lower reliabilities for each dimension while avoiding redundancy in the content of items. Based on the findings from the literature concerning the construction of short versions and measurement instruments, the present study's aim was divided into specific sub-aims as follows:

Sub-Aim 1: Reduce the number of items included in the MECQ by (a) reducing the length of the measurements regarding usability as a quality criterion, (b) measuring and preserving the dimensions of EC and its components, and (c) obtaining a minimum of three items per factor.

Sub-Aim 2: Provide a short version of the MECQ with acceptable reliability estimates and a factor structure (construct validity) in which indices meet acceptable fits.

Sub-Aim 3: Ensure that the short version of the MECQ is comparable with the original measurement instrument in terms of structure and profiles.

To fulfill these aims, we have conducted three development phases, each of which examines a partial aspect of the reduction and is related to a specific sub-aim. In the first phase, we wanted to determine by how many items the measurement instrument can be shortened. It is essential to define the measured construct grounded in a theory that considers EC as a multidimensional concept and to describe the item pool. To reduce the number of items without losing its quality, an item selection strategy was based on the test and item statistics as well as item content determined through the judgment of experts (Kruyen et al., 2013). The second phase investigates the factor structure of the short version. The third phase focuses on whether the short version is comparable with the original version.

Method

Research Design

For the construction of a short scale of EC that fits the quality criteria and retains multidimensionality, the original version was reviewed in the first phase regarding the quality criteria of a reduction sample (RS; see below). The analysis

contributed to the verification of the original version and was crucial in the development of the short version. The findings of the initial phase were then compared with the findings of the archive sample (AS; see below) to fulfill item stability and construct validity across different samples. Based on the findings from this first phase, suitable items were selected based on selection criteria at the content and data levels. When selecting the selection criteria, proposals to maintain the content coverage of the construct were taken into account; therefore, both content and statistical criteria were selected (Schipolowski et al., 2014). The selected items were investigated during the second phase (RS) in terms of their factor structure, which was done using exploratory factor analysis (EFA) as well as confirmatory factor analysis (CFA). In the third phase, the determined structure of the short version was compared with a large comprehensive sample to ensure their comparability in terms of the multidimensionality of EC using the 109-item instrument as well as the short form. Furthermore, the comparison of RS and AS was essential to fulfill stability as a first indicator for construct validity.

Sample

The procedures for data collection and the criterion for choosing participants were the same across all our samples. Data were collected at the university, and students majoring in teacher education were considered. The MECQ-s integrated a protocol to evaluate the quality of adaptation and adjustment of second-year student participants, including sociodemographic data and academic background. Student participation was voluntary, and written informed consent was given by every participant. The research was performed in accordance with the principles stated in the 1964 Declaration of Helsinki and its later amendments.

RS. The RS consisted of 271 university students in teacher education who completed the 109-item version of the questionnaire; 82.7% of the respondents were female: 193 students were between 18 and 21 years old, 66 students between 22 and 25 years, 10 students between 26 and 29 years, and two students were above 30 years. The survey was conducted at the end of the 2018/2019 winter semester at the university of Regensburg. Participants were recruited for participation via advertising in courses at the university. With the aid of this advertising, the target audience was approximately 500 students, of which 271 ultimately took part in the study. Participants completed an online questionnaire form of the MECQ, and their data were used during the item reduction stage.

AS. The AS consisted of 506 participants who completed the 109-item version of the questionnaire; 63.6% of the participants were female, and the average age was $M = 27.07$ ($SD = 8.66$). The data were collected between 2004 and 2006. The archive data were collected through printed and online advertising for anonymous and voluntary participation as

well as advertising at the university of Regensburg and university hospital of Regensburg. The AS enabled a cross-comparison of the short version regarding factor structure and scale reliability as a first indicator of criterion validity.

Instrument

EC was measured with the 109-item version of the instrument proposed via an online questionnaire (RS and AS) and paper–pencil questionnaire (AS). The instrument contained 13 different facets of EC, with 109 items on a 5-point Likert-type scale (ranging from 1 = *does not apply* to 5 = *fully applies*). *Attention to one's own emotions* was measured using eight items related to one's competence to draw attention to emotional situations. An example item is as follows: "It is usually a waste of time to think about your emotions" (reversed). Eight items were also used to measure the *clarity of emotional perception*, which is intended to measure one's competence to recognize his or her own emotional state and distinguish between different emotions (e.g., "I almost always know exactly how I am feeling"). *Empathy, phantasy*, and *perspective-taking* measure a person's competence to perceive the emotions of others or fictitious characters, empathize with them, and understand them (11 items for empathy, six items for phantasy, and five items for perspective-taking). Examples include the following: "I sometimes try to understand my friends better by imagining how things look from their perspective"; "Other people's misfortunes do not usually disturb me a great deal" (reversed); and "I get really involved with the feelings of the characters in a novel." *Positive and negative expressivity* measures the competence of a person to express emotions and was measured with 12 items for positive emotions and 15 items for negative emotions. Examples include the following: "When I'm happy, I show my feelings"; "What I am feeling is written all over my face"; and "Whenever people do nice things for me, I feel 'put on the spot' and have trouble expressing my gratitude." These were supplemented by the scale *trust in one's own expressivity*, which was based on 11 items measuring a person's confidence in the competence to express himself or herself in public or private circles. An item-example includes the following: "I would probably make a good actor." *Aggression control* measures a person's competence to control the emotion of anger: "If someone pushed me, I would push back" (reversed). *Emotion masking* measures a person's competence to hide their own emotions and exhibit emotions adapted for the situation: "In different situations and with different people, I often act like very different people." Moreover, through six items related to *influencing one's own emotions* and nine items related to the *reflexive handling of emotions*, the competence of a person to influence his emotions and adapt them to a given situation on one hand and process his emotions reflexively on the other hand are measured. Examples include the following: "No matter how badly I feel, I try to think about pleasant things" and "I

find it hard to get thoughts about things that have upset me out of my mind" (reversed).

Analyses

Phase 1. To achieve the aim of reduction (Sub-Aim 1), the following selection criteria were used in accordance with the suggestions of Smith et al. (2000), Krueger et al. (2013), and Rammstedt and Beierlein (2014):

1. items that best measure the facets of EC on the basis of the discriminatory power (corrected item-total correlations) and size of the factor loadings;
2. items that best measure the individual dimensions of EC with regard to the loadings of the factor analyses and the correlations with the sum values;
3. items that have minimal correlated error terms with other items in the same factor; and
4. items that measure the width of a factor at content level to maintain the width of the constructs of EC.

Analyses for the item psychometric properties and a factor analysis were carried out using a maximum likelihood estimations as well as principal axis factoring and promax rotation with SPSS 25 (IBM, Inc.). Reliability was tested with Cronbach's alpha, whereby slightly lower Cronbach's alpha was expected in shortening the instrument. Scree plot and Velicer's minimum average partial (MAP) test were analyzed to get insight into the underlying factor structure (Bühner, 2010). Furthermore, a CFA using maximum likelihood estimations with AMOS 25 (IBM, Inc.) was carried out to confirm the original 13-factor structure of the 109-item version of the instrument, to analyze the variance of the items, and to identify correlated error terms to remove the items that explain the same variance. Hair et al. (2014) suggest model fit indices RMSEA (root mean square error of approximation) < .80 and SRMR (standardized root mean square residual) < .10, and CFI (comparative fit index) > .90 for acceptable model fit and RMSEA < .60, SRMR < .80, and CFI > .95 for good fitting data, but they point out that a comparison with several indices always has to take place to finally discard a model. For reduction, we reviewed content-wise the items and identified content identical items ("People tell me that I would make a good actor or actress" and "I would probably make a good actor") and core statements of each item to gain insight into the overall structure of the underlying content. The content analysis ensures that the content coverage of the measurement instrument is also reflected in the short version. After removing the items, then we checked with a content analysis whether the content coverage of the instrument was still maintained. Both separate factor analyses and a factor analysis over all items were conducted to identify those items that best represented their factors and to ensure that the theoretical integrity of the construct was not compromised when removing these items. Items

with low psychometric properties (item difficulty, discriminatory power), low factor loadings ($<.30$), high covariance and items, which cross-loaded on other latent factors, were identified and removed.

Phase 2. Factor analyses (EFA and CFA) were carried out to get insight into the factor structure based on the remaining 32 items of the short version of EC. EFA with maximum likelihood estimations and promax rotation with SPSS 25 (IBM, Inc.) as well as a CFA using maximum likelihood estimations with AMOS 25 (IBM, Inc.) were carried out. We additionally conducted separate CFA for each content-related factor (e.g., empathy, phantasy, and perspective-taking) to get a clearer image of the underlying factor structure and explain different findings based on intercorrelations. When calculating EFA and CFA in the same sample, better model-fits for CFA can be expected. Therefore, we additionally performed all models of the CFA in the AS following the recommendations of Buehl (2008) and Morgado et al. (2017). For evaluation of model fit, the CFI, the RMSEA, as well as the SRMR were examined (see Phase 1 for criteria). With regard to reliability, McDonald's Omega (ω) using JASP v0.11.1 (JASP Team—University of Amsterdam) was also included in addition to Cronbach's alpha, which provides more stable estimates for reliability with multidimensionality (Zinbarg et al., 2005).

Phase 3. Analysis, including correlations, psychometric properties, and internal consistency using Cronbach's alpha and McDonald's Omega, was performed with SPSS 25 (IBM, Inc.) and JASP v0.11.1 (JASP Team, University of Amsterdam) to compare the short version with the large version across the RS and AS in terms of construct validity.

Results

Phase 1

The original 109-item measurement (MECQ) can be supported by its psychometric properties (Table 2). The Cronbach's alpha ranged from .65 to .88. With regard to the AS, the quality and reliability of the scales remained very good and comparable across the different samples. Significant differences between gender can be observed: The women scored higher in the expressivity of both positive and negative emotions as well as in the sensitivity to the emotions of others (empathy, perspective-taking, and phantasy). In contrast, the men achieved higher scores in the reflexive handling of emotions and trust in their own emotional expression.

To achieve the goal of reduction, we first conducted a context-based analysis of the items. Therefore, we identified their content core statements and selected those best representing the content of the 13 factors. Concerning the items related to *clarity of emotional perception*, we determined two core statements around which the items revolved: clarity about one's own emotional state and understanding the

appraisal of one's own emotions. The items related to *attention to one's own emotions* could be classified into three core statements: considering one's own emotions, thinking about one's own emotions, and perceived value of emotions in general. Three items must be critically assessed because of their proximity to personality traits. For the subscale *Empathic Concern*, the items revolved around compassion toward other people. One item was further examined due to its content proximity to a personality trait. Meanwhile, the items relevant to *perspective-taking* all referred to one's understanding of a situation through a change of perspective. For the subscale *Phantasy*, the items differed regarding the perspective-taking of a fictitious character as well as compassion for a fictitious character. Concerning *positive expressivity*, expressions of joy and the intensity of emotions were identified as core statements. Due to the proximity to the influence of one's own emotions, one item was seen problematic. For *negative expressivity*, the items revolved around the outer expression of negative emotions (e.g., anger and sadness) and the masking of emotions. Together with the items related to the masking of emotions included in the *Negative Expressivity* subscale, we analyzed the items in the *Masking Emotions* subscale as well. The following key statements were found: impulsivity without thinking about the consequences, the control of one's own emotions, and emotional dissonance caused by masking. The items related to *aggression control* revolved around observable expression of negative emotions after perceived unfair treatment. The subscale *Influencing One's Own Emotions* refers almost entirely to evoking emotions. One item had to specifically examine for the reduction due to its proximity to an attitude in terms of definition. Meanwhile, the items related to the *reflexive handling of emotions* involved reflexive thinking about an emotional situation. The subscale *Trust in One's Own Expressivity* contained items related to being at the center of a social interaction or imitating or performing expression. Based on this content-based item analysis, the reduction considered that the identified content of the 13 factors was represented in the short scale. The second step of reduction included an analysis of the psychometric properties of the items, identifying 24 items with low item-total correlations and four items close to the borderline of low item-total correlations. In the third step, factor analyses were calculated to gain insight into the entire construct and the structures of EC. The aim was then to select the items that best represented the factors. The resulting factor structure did not clearly point to the 13 content factors (parallel analysis), but Velicer's MAP test (Velicer et al., 2000) suggests a 10-factor solution instead. Due to deviations in the identified factor structure, subscales with similar contents could coincide into one factor. This concurrence can be explained by the correlations found between the 13 subscales. The 10-factor solution led to three large uninterpretable factors, which is why the 13-factor solution was assumed based on the theoretical model. For reduction, items were identified that exhibited the highest

Table 2. Descriptive Statistics and Internal Consistency of the MECQ.

Dimension	M	SD	G	M _G	SD _G	1	2	3	4	5	6	7	8	9	10	11	12	13	
1. Attention to one's own emotions (AE)	4.08 (4.20)	0.54 (0.57)	m f	3.73 (4.15)	(4.06) (4.29)	.79 (.79)	0.54 (0.52)												
2. Clarity of the perception of emotions (CP)	3.72 (3.80)	0.62 (0.73)	m f	3.94 (3.68)	(3.78) (3.80)	.18** (.88)	0.54 (0.74)												
3. Empathic concern (EM)	3.91 (3.54)	0.57 (0.61)	m f	3.39 (4.02)	(3.30) (3.68)	.42** (.35**)	0.57 (0.55)	.78 (.78)											
4. Perspective-taking (PT)	3.54 (3.52)	0.69 (0.70)	m f	3.29 (3.60)	(3.49) (3.54)	.28** (.18**)	0.77 (0.67)	.74 (.73)											
5. Phantasy (PH)	3.55 (3.49)	0.74 (0.87)	m f	3.33 (3.60)	(3.31) (3.60)	.34** (.22**)	0.72 (0.85)	.78 (.85)											
6. Trust in one's own expressivity (TE)	2.76 (2.83)	0.65 (0.72)	m f	3.19 (2.67)	(2.95) (2.76)	-.02 (.19**)	0.62 (0.72)	.80 (.82)											
7. Positive expressivity joy (PEJ)	3.77 (4.01)	0.68 (0.66)	m f	3.46 (3.84)	(3.84) (4.09)	.50** (.30**)	0.61 (0.64)	.79 (.78)											
8. Positive expressivity fun (PEF)	3.94 (3.89)	0.72 (0.77)	m f	3.79 (3.94)	(3.81) (3.94)	.37** (.27**)	0.77 (0.79)	.76 (.80)											
9. Negative expressivity (NE)	3.29 (3.31)	0.64 (0.66)	m f	3.07 (3.40)	(3.14) (3.40)	.42** (.34**)	0.65 (0.65)	.88 (.87)											
10. Masking emotions (MA)	3.50 (3.33)	0.54 (0.63)	m f	3.49 (3.50)	(3.30) (3.34)	.24** (.21**)	0.47 (0.60)	.67 (.72)											
11. Influencing one's own emotions (IN)	3.39 (3.31)	0.69 (0.81)	m f	3.32 (3.27)	(3.38) (3.27)	.35** (.13**)	0.73 (0.81)	.78 (.81)											
12. Reflexive handling of emotions (RE)	2.91 (3.06)	0.77 (.78)	m f	3.11 (2.87)	(3.24) (2.96)	.07 (.06)	0.85 (0.77)	.85 (.86)											
13. Aggression control (AC)	2.22 (2.64)	0.59 (0.68)	m f	2.55 (2.15)	(2.61) (2.63)	-.19** (-.09)	0.68 (0.67)	.65 (.72)											

Note. N = 271 (RS), N = 506 (AS) in parentheses, Cronbach's alpha (internal consistency) on the diagonal. MECQ = Multidimensional Emotional Competence Questionnaire; G = gender; M_G = gender-wise mean; SD_G = gender-wise standard deviation; m = male, f = female.

*p < .05. **p < .01.

factor charges and which, ideally, had no secondary charges. To not only identify the best items for the individual factors based on the entire model but also to identify the best items in relation to the content dimensions, four different EFAs were carried out. The scree plot and Velicer's MAP test identified two factors for the *perception of one's own emotions*, one to three factors for the *perception of the emotions of others*, five factors for *emotional expressivity*, and three factors for *emotional management*.

In total, regarding the item selection criteria, 77 items were removed, resulting in 32 items selected for the short version of the questionnaire. These items are listed in Table 3 with their means, item-total correlations, factors loadings (entire model and separate EFA), and item-dimension correlations. These results lead to the conclusion that the short version of the measurement, in terms of content, represents the original version with the exception of the factors aggression control and masking emotions, which were removed due to the low quality (wording, low item-total correlations, low factor loadings) of their items.

Phase 2

For the remaining 32-item version, the factor analysis pointed to a four-factor solution (scree plot, Velicer's MAP test) as well as an 11-factor solution (parallel analysis). The 11-factor solution corresponded to the factor structure of the MECQ. The four-factor solution led to well interpretable factors, resulting in the hypothesized four dimensions of EC. The items related to the original factors *attention to one's own emotions* and *negative expressivity* had high cross-loadings and were therefore surprisingly loaded in factors other than those assumed in terms of content. Looking at the correlations found between the factors (see Table 2), the unexpected results can be explained by the high degree of correlations between the factors *attention to one's own emotions*, *empathy*, and *phantasy*. To enhance insight into the factor structure and identified correlations, we conducted in a first step four separate CFAs with only the items out of the theoretically assumed four dimensions of EC. Therefore, we hypothesized second-order models with a single common factor based on the theoretical assumptions of each dimension of EC. For the *perception of one's own emotions*, the CFA showed an excellent fit ($\chi^2/df = 1.640$, $p = .11$, CFI = .990, RMSEA = .049, confidence interval [CI] = [.000, .094], SRMR = .034), which was also true for the *perception of the emotions of others* ($\chi^2/df = 1.460$, $p = .04$, CFI = .976, RMSEA = .041, CI = [.022, .077], SRMR = .049) and *emotional management* ($\chi^2/df = 0.928$, $p = .49$, CFI = 1.000, RMSEA = .000, CI = [.000, .068], SRMR = .032). Moreover, *emotional expressivity* showed a good fit ($\chi^2/df = 2.016$, $p = .00$, CFI = .956, RMSEA = .061, CI = [.040, .083], SRMR = .055). Table 3 shows the factor loadings (λ_{EFA} and λ_{CFA}) of each item as well as the second-order factor loadings (λ_{Fac}) based on the separate CFAs.

Based on the findings from the separate factor analyses, we constructed in a second step six models for the CFA including all items of the entire short version. Models 1 and 2 represent the 11 factors of the EFA corresponding to the original version, in which the models differ in the correlation of their factors. Models 3 and 4 result from the explorative factor analysis with four primary factors. Models 5 and 6 result from the separately conducted CFA for the individual dimensions of EC as well as the insights gained from them concerning the factor structure. Model 5 proposes four correlated second-order factors corresponding to the four content dimensions of EC. Model 6 combines the four second-order factors in one third-order factor and represents a unidimensional model for EC. Table 4 shows the model-fits of the hypothesized six models. Model 2, with $\chi^2/df = 1.39$, CFI = .942, RMSEA = .038, CI = [.030, .045], and SRMR = .053, shows a good fit representing the 11 former factors. Model 4 shows less good fit with $\chi^2/df = 1.61$, CFI = .905, RMSEA = .048, CI = [.041, .054], and SRMR = .088. According to the EFA findings, Model 5 presents an acceptable fitting of data, with $\chi^2/df = 1.61$, CFI = .900, RMSEA = .048, CI = [.041, .054], and SRMR = .086. Models 4 and 5 fit equally well and, considering the Akaike information criterion (AIC) and Bayesian information criterion (BIC), Model 5 exhibits the lower values. All models with their factor loadings are presented in Supplemental Material 1. A cross-comparison with the AS presents better model-fits for each of the six models contained. The results from the RS are also evident in the AS, which suggests a stability of the factor structure across the samples. Based on Model 5, we calculated Cronbach's alpha and McDonald ω for the four dimensions: *perception of one's own emotions*, *perception of the emotions of others*, *emotional expressivity*, and *emotional management*. The Cronbach's alpha ranged from $\alpha = .75$ to $.76$ ($\alpha = .73$ – $.77$ in the AS) and McDonald ω ranged from $\omega = .75$ to $.77$ ($\omega = .73$ – $.77$ in the AS). The intercorrelations of the four dimensions ranged from $r = .03$ to $.37$, supporting the multidimensional structure (see Table 5).

Phase 3

To maintain the comparability of the short version as a first indicator for construct validity, comparisons were made to the 109-item version presented by Stamouli et al. (2006) and the items removed from the original instrument with regard to a large AS. In Table 6, the means, Cronbach's alpha, correlations, and the differences between the two versions and between the different samples are listed. The Cronbach's alphas for the four dimensions of EC of MECQ-s were between $.73$ and $.77$ in the AS, and between $.75$ and $.76$ in the RS. Building similar dimensions for the MECQ resulted in a Cronbach's alpha between $.83$ and $.88$ for the AS. Examining the four dimensions of EC shows that, for the *perception of one's own emotions* as well as the *emotions of others*, the Cronbach's alpha of the short version exhibits higher values

Table 3. Means, Factor Loadings, Item-Total Correlation, and Item–Dimension–Correlations of the Items of the MECQ-s ($N = 271$).

Item	Dimension	Factor	M	SD	Reduction phase				Separate CFAs		Total CFA	
					λ_{total}	$\lambda_{separate}$	r_{it}	r_D	λ_{CFA}	λ_{Fac}	λ_{CFA}	λ_{Fac}
ae 01 (–)	SEE	AE	4.63	0.59	.81	.75	.64	.58	.90	.61	.83	.69
ae 03 (–)	SEE	AE	4.53	0.72	.56	.60	.51	.54	.63		.67	
ae 04 (–)	SEE	AE	4.13	0.83	.52	.64	.55	.50	.56		.59	
cp 03	SEE	CP	3.59	0.86	.83	.78	.67	.58	.78	.49	.79	.48
cp 04 (–)	SEE	CP	3.95	0.90	.79	.80	.71	.65	.86		.85	
cp 05 (–)	SEE	CP	4.08	0.91	.72	.75	.69	.70	.77		.78	
em 04	SEA	EM	3.25	1.29	.68	.62	.53	.57	.61	.67	.58	.78
em 05	SEA	EM	3.78	0.90	.58	.63	.52	.51	.58		.56	
em 06	SEA	EM	3.73	0.97	.69	.68	.61	.63	.78		.82	
pt 01	SEA	PT	2.96	1.08	.63	.66	.54	.40	.68	.49	.63	.38
pt 02	SEA	PT	3.51	1.01	.55	.65	.58	.48	.69		.65	
pt 03	SEA	PT	3.92	0.93	.59	.63	.58	.54	.73		.77	
pt 04	SEA	PT	3.91	0.87	.65	.63	.51	.31	.55		.54	
ph 01	SEA	PH	3.84	1.01	.55	.61	.53	.50	.66	.68	.68	.64
ph 03	SEA	PH	3.75	1.05	.63	.62	.54	.51	.60		.59	
ph 04	SEA	PH	3.68	1.04	.72	.78	.66	.56	.77		.77	
te 05 (–)	EXP	TE	2.99	1.01	.37	.57	.48	.53	.75	.55	.73	.38
te 06	EXP	TE	2.27	0.96	.39	.43	.46	.53	.78		.76	
pej 01	EXP	PEJ	3.66	1.02	.55	.66	.60	.37	.85	.44	.83	.64
pej 02	EXP	PEJ	2.98	1.17	.67	.74	.67	.45	.75		.76	
pef 01 (–)	EXP	PEF	3.96	1.05	.72	.67	.57	.50	.62	.82	.57	.68
pef 04	EXP	PEF	3.80	1.18	.65	.35	.51	.44	.68		.68	
pef 05	EXP	PEF	4.17	0.91	.66	.47	.57	.50	.78		.81	
ne 02	EXP	NE	3.17	1.12	.74	.72	.67	.50	.77	.37	.79	.44
ne 04	EXP	NE	2.85	1.05	.85	.85	.71	.51	.77		.76	
ne 05	EXP	NE	3.34	1.12	.71	.73	.58	.45	.68		.67	
in 01	EMG	IN	3.19	0.97	.75	.80	.68	.54	.92	.55	.90	.59
in 02	EMG	IN	3.21	0.93	.60	.58	.50	.44	.59		.60	
in 04	EMG	IN	3.65	1.05	.55	.71	.62	.51	.60		.61	
re 01 (–)	EMG	RE	2.51	1.16	.68	.69	.62	.63	.75	.57	.76	.56
re 03 (–)	EMG	RE	2.32	1.06	.76	.84	.72	.64	.87		.86	
re 04 (–)	EMG	RE	2.66	1.20	.84	.89	.76	.67	.79		.61	

Note. MECQ-s = short scale of the Multidimensional Emotional Competence Questionnaire; CFAs = confirmatory factor analyses; λ_{total} = factor loadings of the exploratory factor analysis (entire model); $\lambda_{separate}$ = factor loadings of the separate exploratory factor analysis of the dimensions; r_{it} = item-total correlation; r_D = correlation with the dimension mean-score of the 109-item version; λ_{CFA} = factor loadings of items; λ_{Fac} = second-order factor loadings; SEE = perception of one’s own emotions; AE = attention to one’s own emotions; CP = clarity of the perception of emotions; SEA = perception of emotions of others; EM = empathic concern; PT = perspective-taking; PH = phantasy; EXP = emotional expressivity; TE = trust in one’s own expressivity; PEJ = positive expressivity joy; PEF = positive expressivity fun; NE = negative expressivity; EMG = emotional management; IN = influencing one’s own emotions; RE = reflexive handling of emotions.

than those of the removed items. Meanwhile, *emotional expressivity* as well as *emotional management*, with $\alpha = .73$ and $\alpha = .77$, showed lower values than the removed items ($\alpha = .83$ and $\alpha = .79$). For some dimensions and facets, the discarded items showed higher Cronbach’s alpha values than the selected ones, due to the high number of discarded items in the dimension or factor (Kline, 2000). Overall, the discarded items had similar Cronbach’s alpha than the short scale, which indicates that the selected as well as the removed items measured similar constructs. This became particularly

clear when looking at the correlations between the long version and short version as well as the discarded items. Specifically, there are high correlations between the long version and short version, $\Delta r = .90/.90$ (AS/RS) for the dimensions, $\Delta r = .88/.85$ (AS/RS) for the factors, as well as high correlations between the short version and the removed items, $\Delta r = .75/.72$ (AS/RS) for the dimensions, $\Delta r = .64/.57$ (AS/RS) for the factors. Overall, the results support the comparability as well as the stability of the short version of the original measure instrument across two samples,

Table 4. Model-Fits of the Confirmatory Factor Analysis.

Model	Reduction sample						Archive sample					
	χ^2/df	CFI	RMSEA [CI]	SRMR	AIC	BIC	χ^2/df	CFI	RMSEA [CI]	SRMR	AIC	BIC
Model 1 Uncorrelated 11-factors	2.13	.809	.065 [.059, .070]	.132	1,182.10	1,208.28	3.04	.794	.064 [.060, .067]	.120	1,605.82	1,618.96
Model 2 Correlated 11-factors	1.39	.942	.038 [.030, .045]	.053	869.83	911.32	1.73	.935	.038 [.033, .043]	.045	1,007.09	1,027.93
Model 3 Uncorrelated 4-factors	1.82	.870	.055 [.049, .061]	.111	1,041.38	1,075.92	2.20	.886	.049 [.045, .053]	.093	1,207.59	1,224.93
Model 4 Correlated 4-factors	1.61	.905	.048 [.041, .054]	.088	952.60	988.81	1.89	.917	.042 [.037, .046]	.065	1,071.48	1,089.66
Model 5 11-factors with four second-order factors	1.61	.900	.048 [.041, .054]	.086	945.87	976.78	1.92	.911	.043 [.038, .047]	.067	1,082.24	1,097.76
Model 6 11-factors with four second- order factors (unidimensional)	1.64	.895	.049 [.042, .055]	.087	956.90	986.69	1.99	.903	.044 [.040, .048]	.068	1,114.31	1,129.27

Note. $N = 271$ (reduction sample), $N = 506$ (archive sample), $CFI > .90$, $RMSEA < .60$, $SRMR < .10$, for good fit. CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

Table 5. Descriptive Statistics, Intercorrelations, and Internal Consistency of the MECQ-s.

Dimension	No.	Reduction sample				Archive sample				Combined sample				Dimension		
		ω	α	M	SD	ω	α	M	SD	ω	α	M	SD	SEE	SEA	EXP
1. Perception of one's own emotions (SEE)	6	.76	.75	4.15	0.38	.75	.74	4.13	0.42	.74	.73	4.13	0.38			
2. Perception of emotions of others (SEA)	10	.75	.75	3.63	0.31	.76	.75	3.51	0.44	.75	.75	3.55	0.38	.18**/.24**/.22**		
3. Emotional Expressivity (EXP)	10	.75	.75	3.32	0.58	.73	.73	3.43	0.44	.74	.73	3.39	0.48	.34**/.20**/.24**	.25**/.37**/.31**	
4. Emotional management (EMG)	6	.77	.76	2.93	0.51	.77	.77	2.87	0.42	.76	.76	2.89	0.44	.16**/.11*/.12**	.09/.05/.06	.03/.10*/.08*

Note. $N = 271$ (reduction sample), $N = 506$ (archive sample), $N = 777$ (combined sample of reduction sample and archive sample). MECQ-s = short scale of the Multidimensional Emotional Competence Questionnaire; No. = Number of items; ω = McDonald's Omega; α = Cronbach's alpha, correlations of the samples separated.

* $p < .05$. ** $p < .01$.

demonstrating the good quality of the single items and factor structure.

Discussion

With the MECQ-s, we succeeded in developing a short measurement instrument that captures the multidimensionality of the concept of EC while retaining comparability with the

original longer version (109 items) in terms of content. With its remaining 32 items, the MECQ-s is not only a measurement instrument of good quality but is short enough to satisfy the criteria of usability and economy (Moosbrugger & Kelava, 2012). The MECQ-s meets the criterion of content validity because of the MECQ, whose items are based on well-validated measurement instruments, each of which covers a subset of the components of EC. For the shortening of

Table 6. Descriptive Statistics for the MECQ, MECQ-s, and Discarded Items Based on Responses From the Archive Sample and Reduction Sample for Cross-Comparison.

Scale	Archive sample												Reduction sample									
	Long form				Short form				Discarded items				Correlations			Short form			Correlations			
	No.	α	M	SD	No.	α	M	SD	No.	α	M	SD	Long-short	Long-discarded	Short-discarded	α	M	SD	Long-short	Long-discarded	Short-discarded	
Perception of one's own emotions (SEE)	16	.85	4.00	0.35	6	.74	4.13	0.42	10	.74	3.92	0.30	.91**	.96**	.77**	.75	4.15	0.38	.89**	.95**	.95**	.70**
Perception of emotions of others (SEA)	22	.83	3.52	0.46	10	.75	3.51	0.44	12	.71	3.53	0.50	.90**	.92**	.67**	.75	3.63	0.31	.91**	.91**	.91**	.64**
Emotional expressivity (EXP)	38	.88	3.37	0.61	10	.73	3.43	0.44	28	.83	3.35	0.67	.87**	.98**	.74**	.75	3.32	0.58	.89**	.98**	.98**	.77**
Emotional management (EMG)	15	.88	3.16	0.50	6	.77	2.87	0.42	9	.79	3.36	0.47	.93**	.96**	.80**	.76	2.93	0.51	.92**	.95**	.95**	.76**
Attention to one's own emotions (AE)	8	.79	4.20	0.35	3	.68	4.44	0.25	5	.66	4.05	0.33	.85**	.95**	.64**	.73	4.43	0.27	.80**	.95**	.95**	.59**
Clarity of the perception of emotions (CP)	8	.88	3.80	0.23	3	.81	3.81	0.28	5	.80	3.79	0.23	.92**	.96**	.78**	.84	3.87	0.26	.88**	.93**	.93**	.67**
Empathic concern (EM)	11	.78	3.54	0.47	3	.61	3.31	0.40	8	.67	3.63	0.49	.85**	.96**	.65**	.69	3.59	0.29	.83**	.94**	.94**	.60**
Perspective-taking (PT)	5	.73	3.52	0.53	4	.74	3.54	0.61	1	—	3.41	1.17	.95**	.63**	.35**	.76	3.57	0.46	.96**	.53**	.53**	.28**
Phantasy (PH)	6	.85	3.49	0.45	3	.79	3.66	0.21	3	.71	3.32	0.62	.92**	.93**	.70**	.72	3.76	0.08	.88**	.89**	.89**	.59**
Trust in one's own expressivity (TE)	11	.82	2.83	0.60	2	.78	3.05	0.36	9	.78	2.78	0.65	.70**	.98**	.54**	.74	2.63	0.51	.65**	.98**	.98**	.47**
Positive expressivity joy (PEJ)	6	.78	4.01	0.43	2	.72	3.65	0.43	3	.64	4.19	0.34	.88**	.93**	.64**	.78	3.32	0.48	.86**	.91**	.91**	.59**
Positive expressivity fun (PEF)	6	.80	3.90	0.35	3	.72	3.81	0.37	3	.66	3.98	0.37	.91**	.90**	.64**	.74	3.98	0.19	.85**	.83**	.83**	.44**
Negative expressivity (NE)	15	.87	3.31	0.29	3	.72	3.16	0.26	12	.84	3.35	0.30	.82**	.98**	.69**	.79	3.12	0.25	.84**	.98**	.98**	.71**
Influencing one's own emotions (IN)	6	.81	3.31	0.46	3	.75	3.18	0.35	3	.59	3.44	0.60	.93**	.92**	.71**	.73	3.35	0.26	.92**	.89**	.89**	.65**
Reflexive handling of emotions (RE)	9	.86	3.06	0.53	3	.76	2.56	0.14	6	.77	3.14	0.46	.90**	.92**	.74**	.84	2.50	0.17	.90**	.95**	.95**	.72**
Masking emotions (MA)	10	.72	3.33	0.39																		
Aggression control (AC)	8	.72	2.64	0.48																		

Note. N = 506 (archive sample), N = 271 (reduction sample). Long-short, Long-discarded, and Short-discarded refer to correlations between scores based on each set of items. MECQ = Multidimensional Emotional Competence Questionnaire; MECQ-s = short scale of the Multidimensional Emotional Competence Questionnaire; No. = number of items; α = Cronbach's alpha. ** $p < .01$.

the instrument, we selected the items that best represented the individual competences in terms of content and their statistical aspects. The findings revealed 11 factors supporting the theoretical integrity of the multidimensional construct of EC and the comparability with the MECQ, and four factors supporting the four dimensions of EC often emphasized in research (Hughes & Evans, 2018; Mayer et al., 2016; O'Connor et al., 2019). The contrast in the structures was not only due to the reduction of the MECQ but also indicate relationships between the EC components not included in the MECQ. Based on the results, a model was designed that assigned the 11-factor model to four second-order factors (see Supplemental Material 1). The four second-order factors represent the four dimensions: *perception of one's own emotions*, *perception of the emotions of others*, *emotional expressivity*, and *emotional management*. The found structure supports the approaches considering the components of EC as multidimensional (Davis, 1983; Gross & John, 1998, 2003). In conclusion, the 32 items of the MECQ-s are able to measure EC based on the four dimensions, including following 11 factors: attention to one's own emotions, clarity of perception of emotions, empathy, phantasy, perspective-taking, trust in one's own expressivity, expression of negative as well as positive emotions (joy and fun), the influencing of one's own emotions, and the reflexive handling of emotions.

For practitioners and researchers, there are advantages of the MECQ-s over other measurement instruments. On one hand, despite its short length, the instrument measures on a multidimensional level. On the other hand, the MECQ-s is useful in terms of its compactness. Reducing the number of items from 109 to 32 (with four dimensions measuring the 11 factors of EC), the MECQ-s can be included in large-scale research. The instrument is particularly suitable for studies that want to collect a large number of variables, as it requires less time to process than the original long version (MECQ). In terms of practical implications, the use of the MECQ-s as an evaluative tool (for peer and self-evaluation) by creating employees' or students' profiles of EC and comparing the individual competences with other characteristics and personality factors over time is possible. Furthermore, interventions and training programs can be adapted by using the profiles generated by the MECQ-s and allow personalized learning in training. Researchers might consider using the MECQ-s in studies as an indicator of understanding emotional reactions at workplace or work engagement. EC, as addressed in our questionnaire, can be linked to a wide range of work outcomes, such as job performance (Joseph et al., 2015; Joseph & Newman, 2010; O'Boyle et al., 2011), well-being, and aspects of health (Martins et al., 2010; Zeidner et al., 2012). Regarding the sample used in this study, the MECQ-s, in combination with other constructs such as personality traits and self-efficacy, can be used to understand teacher's EC and its influences on a teacher's work and work outcomes. The teaching profession requires a high degree of

emotional labor (Isenbarger & Zembylas, 2006), similar to that of other service professions, such as in health care or social work. Upon the theoretical framework of the MECQ-s, a training program for education of future teachers at university can be developed.

This study comes with limitations that should be addressed in future research. Our data were derived from a homogeneous sample in terms of age and gender of [blinded for peer-review] students in teacher education implying the limited generalizability of our findings. We attempted to address this limitation by conducting cross-comparison with an AS, that had a more heterogeneous composition in terms of gender (63.6% female), age (wider age range), and domain (students and staff at university). Although the short version was successfully compared with the long version across two samples to counteract an overestimation of the goodness of the short version, it must be acknowledged that this strategy did not fully address these concerns. Therefore, the MECQ-s needs a further validation in an independent heterogeneous sample led by the suggestions of Smith et al. (2000). In addition, future research on the factorial invariance of the MECQ-s should include, for instance, other occupational domains, such as managers, trainers, or physicians. Domain-specific samples of employees should be taken, with the demand for emotional labor and the degree of cooperation with other employees used as control variables based on the findings of Wong and Law (2002). In addition, related to the student sample of this study, future studies could focus on validations in other age groups (e.g., 13–17 years based on the findings by Fiorilli et al., 2020) to extend the possibility of using the MECQ-s for other target groups. The use of the MECQ-s enables the creation of different domain profiles of EC, which provide information about the requirements of the relevant professions based on which implications for the selection of applicants can be derived. As the MECQ-s was developed as a self-report measurement instrument, it should be noted that the data obtained are based on the respondents' self-reports and therefore are biased. To further increase the generalizability of the findings, it would be beneficial to control for social desirability in future studies. Another limitation is the construct validation, which was examined in our study by means of a comparison with the MECQ. Future studies should further support the psychometric quality and validity of the test and examine whether the results of this study were influenced by sample characteristics, such as age, profession, organizational context, or personality and intelligence. To address the sample characteristics, the MECQ-s could be compared in terms of construct and criterion validity using other measurement instruments, such as the Big Five (Rammstedt & John, 2005), self-efficacy (Schwarzer & Jerusalem, 1999), the scales for experiencing emotions (Behr & Becker, 2004), and crystal and fluid intelligence (Liepmann et al., 2007). Based on the findings of Ekermans (2009), dimensions or factors of EC, such as emotion regulation, may be affected by cultural bias. LaPalme et al. (2016) found

that items on the scale assessing the emotions of others were more susceptible to cultural influences, for instance. Moreover, cultures that pay close attention to social harmony may enact stricter standards for the self-assessment (ratings on the Likert-type scale) of ECs, which may then lead to item bias. Future studies should address any expected cultural bias at the item content level and conduct comparative studies across cultures. Another limitation of our study was its cross-sectional design. The focus on emotions also required a consideration of the time framework. Emotions can be triggered in the short term in the form of affects or in the long term in the form of moods (Ketal, 1975). Gross and John (2003) found that, surprisingly, impulse control (control of short-term affects) does not correlate with emotion regulation. Future studies should therefore include longitudinal studies that address the temporal stability of EC and the influence of EC on the temporal aspects of emotions.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

According to the ethical committee of the University of Regensburg, some projects considered to be of negligible risk may not require human ethics review. No personal data were collected from the participants. Participation in the survey was voluntary and not rewarded. For this voluntary survey in German student participants without any risk of putting harm to the respondents and without any direct medical research focus, a formal ethical approval was not necessary, although all procedures performed in this study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments. Participants gave their informed consent prior to data collection.

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Supplemental Material

Supplemental material for this article is available online.

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