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Emotional Clarity –

Measurement, Training and its Role in Affect Regulation

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Table of Contents

Volume I:

Volume II:

Summary

Emotional clarity as the ability to label, describe and distinguish among one's own emotions has consistently been found to be beneficial for affect regulation, well-being and psychological health. Therefore, it has received certain attention in recent years. However, most research on emotional clarity has stuck to correlational analyses and self-report measures of trait emotional clarity so that knowledge of this concept is limited. Therefore, the present project aimed at a more comprehensive exploration of affective clarity by realizing experimental and quasi-experimental settings and utilizing self-report measures of trait and state clarity as well as more indirect instruments that do not rely on self-insight. With regard to the beneficial associations of emotional clarity, the first aim of this project was to develop training interventions to foster emotional clarity. The second aim of the dissertation was to explore the role of emotional clarity in affect regulation. An additional goal of this thesis was to develop alternative measures of affective clarity to the well-used self-report scale of trait experience.

This thesis consists of two parts: In part 1, a synopsis provides a theoretical introduction to the topic and the research aims, an overview of the four conducted studies and a summarizing discussion. Part 2 contains three original papers, which are outlined in the following.

Paper 1 presents two studies aiming at developing and evaluating trainings that enhance affective clarity. In study 1, a direct approach - an intervention training the skills defining clarity - and an indirect approach - a mindfulness training with formal and informal meditation exercises - were realized. Each training had a duration of one hour. In study 2, the indirect approach to train mindfulness and a second indirect approach to train self-reflection were implemented. These trainings were divided into two sessions of one and a half hours each. In both studies, the experimental interventions were compared with each other and with a control

intervention. Interventions were evaluated with (a) self-report instruments of state and trait emotional clarity, (b) an indirect measure of emotional clarity, (c) certainty ratings, and (d) an emotion recognition test. In study 1, both experimental groups indicated significant changes within groups on different measures. In view of the very short training duration of one hour, this result gives tentative support to the idea that emotional clarity can be fostered by training. In study 2, neither of the experimental groups showed significant pre-post differences. This was mainly ascribed to the trainings' focus on distress and its regulation rather than on emotional clarity. Thus, it seems promising to follow the approaches chosen in study 1. Future studies should profit from keeping the focus on emotional clarity, extending the training duration, working with volunteers, implementing diaries as intervention and evaluation instrument, and realizing a follow up-measurement some months after the interventions.

Papers 2 and 3 of this dissertation each report one quasi-experimental study exploring the role of emotional clarity in affect regulation. In both studies *state* emotional clarity and affective state were measured at the beginning of the experiment, right after an affect induction and after a recovery phase. Both variables were related to each other and *trait* emotional clarity. Paper 3 additionally investigated these relations after a re-induction. Whereas paper 2 engaged in anxiety that was induced by film, paper 3 dealt with global positive and negative affect in connection with the induction of negative affect through an ostensible intelligence test with unsolvable items. With regard to *trait* clarity, both studies confirmed previous research on individual differences. Persons with high trait clarity generally reported more positive affect and less negative affect and anxiety than persons with low trait clarity. Furthermore, high clarity persons demonstrated advantages in recovery from induced negative affect and anxiety compared to the low clarity persons. In contrast, no significant differences between persons high and low in trait emotional clarity were found in affective state after the induction and after the re-induction when

prior affect ratings were controlled. With respect to *state* emotional clarity, both studies confirmed its positive relations to trait emotional clarity and positive affect and its negative associations with negative affect and anxiety. However, state clarity surprisingly hardly changed in the course of the experiment. Future studies should consider indirect instruments of state clarity that are not biased by global self-evaluations and therefore more sensitive to changes.

With regard to the alternative measures utilized in this thesis, the new self-report scales demonstrated adequate capability to distinguish between state and trait experience and were correlated with each other and measures of affect in the expected manner, but they did not prove sensitivity to changes. The new indirect measure captured marginal differences between groups in one study and was positively correlated to the self-report scales, but did not map changes. The certainty measure demonstrated convergent correlation to self-report clarity, mapped changes within one group, and moreover, is easy to apply.

In summary, this doctoral thesis provides some support to the idea that emotional clarity can be fostered by short training interventions. Especially, the direct approach to train the abilities defining emotional clarity and the indirect approach to foster mindfulness are worth further studying. Furthermore, the present dissertation presents new self-report scales of trait and state clarity and a new indirect measure of emotional clarity. Continuative research is necessary with regard to these instruments' validity and sensitivity to changes. With respect to the role of emotional clarity in affect regulation, the present research confirmed the associations of emotional clarity to greater positive and lower negative affect as well as advantages in recovery from induced negative affect. Future studies with indirect measures of emotional clarity and multiple data points *during* the recovery phase should help to further explore the exact role of emotional clarity in the regulation process.

Part 1: Synopsis

Introduction and Theoretical Framework

In the past two decades, the concept of emotional intelligence (EI) has received growing interest both in science as well as in general public (Petrides & Furnham, 2001). Concerning the latter, Goleman (1995) is the most famous representative who can take credit for establishing emotional intelligence and pointing out the advantages of being emotional intelligent with regard to health, relationships and work performance. With respect to science, Salovey and Mayer (1990) were the first who proposed a theoretical model of emotional intelligence.

In the following, Salovey, Mayer and colleagues pursued two different approaches. On the one hand, they further developed their model of EI and presented in 1997 an *ability* model of EI (Mayer & Salovey, 1997) that emphasizes a cognitive definition of EI and measures it with maximum performance test (Multifactor Emotional Intelligence Scale; MEIS; Mayer, Caruso, & Salovey, 1999; Mayer-Salovey-Caruso- Emotional Intelligence Test; MSCEIT; Mayer, Salovey, & Caruso, 2002). Thereby, they clearly delineated their model from mixed models of EI (e.g., the most prominent one by Bar-On, 1997) that incorporate noncognitive abilities as well as a wide range of personality variables and utilize self-report instruments.

On the other hand, Salovey, Mayer and colleagues presented the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995) as a self-report measure of "perceived emotional intelligence" (Salovey, Stroud, Woolery, & Epel, 2002) or "trait EI" that is embedded in personality research (Petrides & Furnham, 2001). The TMMS measures relatively stable qualities (trait) of the reflective processes that accompany affective experience (meta-mood), namely the degree of attention persons spend to their affective experience (attention), the clarity of this experience (clarity) as well as the degree to which it is regulated (repair).

PART 1: SYNOPSIS

The trait meta-moods and in particular the emotional clarity received certain attention in recent years because of their predictive validity with regard to the recovery from a distressing event (Salovey et al., 1995). In subsequent studies, affective clarity was consistently found to be positively related to well-being, mental and physical health and other variables that are related to quality of life (Austin, Saklofske, & Egan, 2005; Gohm & Clore, 2002). These beneficial associations make affective clarity an interesting variable that shall be explored by this research.

Before describing the concrete aims of this project, it is outlined what is known about emotional clarity from previous research. Affective clarity is defined as the ability to identify, describe and distinguish between the own emotions (Salovey et al., 1995; Gohm & Clore, 2000). Apart from its associations with eligible variables, negative associations to variables like anxiety, depression (Extremera & Fernández-Berrocal, 2006) and distress (Salovey et al., 1995) were consistently reported. More generally, it was positively related to positive affect and negatively related to negative affect (e.g. Kokkonen & Pulkkinen, 2001; Mayer & Stevens, 1994; Ramos, Fernández-Berrocal, & Extremera, 2007).

In line with Salovey and colleagues (1995; 2002), Lischetzke et al. (2005) as well as Wilkowski and Robinson (2008) postulate that these associations of emotional clarity are mediated by affect regulation. Based on cybernetic models of affect regulation (e.g. Larsen, 2000), they suggest that high emotional clarity permits individuals to recognize an undesirable level or kind of affective state early and hence enables them to implement appropriate regulation strategies quickly. In line with these ideas, studies that realized an affect induction and a recovery phase consistently reported that individuals high in clarity compared with those low in clarity were associated with greater recovery from induced affect (Fernández-Berrocal & Extremera, 2006; Lischetzke, Cuccodoro, Gauger, Todeschini, & Eid, 2005; Salovey et al., 1995).

Some of these experimental studies found evidence also for a greater reactivity of persons with high emotional clarity (Fernández-Berrocal & Extremera, 2006, anger condition; Salovey et al., 2002), whereas some did not (Fernández-Berrocal et al., 2006, sadness and amusement conditions; Salovey et al., 1995). From a theoretical perspective, a positive relation between affective clarity and reactivity could result from increased sensitivity to emotion-laden stimuli (Petrides & Furnham, 2003). However, a negative relation is likewise possible and based on the idea that high clarity persons can initiate antecedent-focused affect regulation before the affect has developed (Wilkowski & Robinson, 2008). A nonsignificant relation could follow from the interaction of both mechanisms.

Only two experimental studies engaged in differences between high and low clarity persons with regard to habituation (Ramos, Fernández-Berrocal & Extremera, 2007; Salovey et al., 2002). High clarity persons in contrast to low clarity persons indicated a significant decline in ruminative thought after a distressing event (Salovey et al., 1995). As rumination is an indicator for the discrepancy between the primary cognitive schemata and the distressing event (Horowitz, 1997), persons high in affective clarity seem better in integrating a stressful experience into their cognitive schemata and therefore should respond to a lesser extent to re-experience of the same event than individuals low in emotional clarity (Lepore, Ragan, & Jones, 2000). However, both studies could not confirm this expectation.

Apart from these few experimental studies, most other research utilized cross-sectional designs that stick to correlational and regression analyses. Another deficit is concerned with the very few studies engaging in emotional clarity as a state variable (Kokkonen & Pulkkinen, 2001; Lischetzke et al, 2005; Lischetzke, Angelova, & Eid, 2011; Mayer & Gaschke, 1988; Mayer & Stevens, 1994). Of the experimental studies investigating the role of emotional clarity in affect regulation only two utilized trait as well as state measures (Lischetzke et al., 2005; Lischetzke et

al., 2011). Nevertheless, applying state measures of clarity is particularly important to learn more about its role in affect regulation processes over time.

Almost all studies employed the clarity subscale of the TMMS or translated versions respectively as a measure of trait clarity (e.g., German version by Otto, Doering-Seipel, Grebe, & Lantermann, 2001; Spanish version by Fernández-Berrocal, Extremera, & Ramos, 2004). This instrument captures a quite global evaluation of whether individuals *think* to be usually clear about their affective experience. This requires self-insight, is affected by social desirability bias and often made without recalling any trait-relevant behavior or experience (Robinson & Neighbors, 2006). In this sense, it would be promising to study emotional clarity not only via self-report but also with more indirect measures. To this date, this was only done by Lischetzke et al. (2005; 2011).

Altogether, very little is known about emotional clarity apart from its associations to other constructs. No study at all employed some kind of training intervention aiming at the enhancement of emotional clarity. This is remarkable with regard to the positive evaluation of the concepts that affective clarity is associated with. Furthermore, developing interventions that foster emotional clarity would help to gain a better understanding of it. There are training programs that engage in the enhancement of emotional intelligence (e.g. Brackett & Katulak, 2007; Ciarrochi, Blackledge, Bilich, & Bayliss, 2007; Stohl, Dangerfield, Christensen, Justice, & Mottonen, 2007), but they include several components of EI in the same program so that it is not possible to conclude, which of the training modules were effective with respect to discrete components and which were not. Furthermore, none of the trainings explicitly included emotional clarity and none was evaluated with regard to this specific component of EI.

Therefore, the aims of this thesis were to contribute to a bigger picture of what emotional clarity is. Specifically, it aimed at (a) developing trainings that can foster emotional clarity

(studies 1 and 2) and (b) exploring the role of affective clarity in affect regulation from a process perspective (studies 3 and 4). An additional goal of the intervention studies was to develop alternative instruments measuring emotional clarity. In the following, the methods that were utilized to investigate the research questions as well as the results are summarized.

Enhancing Students' Emotional Clarity by Training: An Intervention Study (Manuscript 1)

Two studies with 178 university students investigated the question whether emotional clarity can be enhanced by training intervention. In both studies, two experimental interventions were compared with each other as well as with a control intervention. All trainings used activating constructive methods. In study 1, a direct and an indirect approach were realized. For the direct approach, an intervention that trains the skills defining clarity was developed. For that purpose, we designed exercises to increase the factual and experiential knowledge of two specific emotions and their distinctness with regard to associated feelings, sensations, thoughts and expressions. This was realized by providing information, inducing these emotions and requesting the participants to describe their experiences (Ekman, 2003). For the indirect approach, the participants took part in a mindfulness intervention, as mindfulness is positively associated with emotional clarity (Brown & Ryan, 2003; Nielsen & Kaszniak, 2006). We therefore developed an intervention with formal meditation practices like walking meditation and sitting meditation as well as an informal mindfulness meditation as it can be practiced throughout the day in everyday life. Both trainings lasted for one hour.

In study 2, both interventions aimed at indirectly enhancing affective clarity. This time, a mindfulness training and a self-reflection training were implemented. The self-reflection approach followed the idea that introspection and structured self-reflection should enhance the ability to label and to clearly talk about the own emotions (Lyubomirski, Sousa, & Dickerhoof,

2006; Salovey & Mayer, 1990). To foster solution-focused self-regulation, the participants trained self-reflection by reflecting on objects and their meaning to the ideal and the real self as well as on a distressing experience. Furthermore, the training provided knowledge about the distinction between rumination and constructive reflection as well as guiding questions for systematic reflection. With regard to mindfulness, formal as well as informal meditations were chosen again to practice it. Compared to study 1, the training duration was extended to 3 hours and divided into two sessions of one and a half hours each. This should foster the elaboration of the training contents and their transfer to everyday life.

In both studies, the interventions were evaluated with (a) self-report instruments of state as well as trait emotional clarity, (b) an indirect measure of affective clarity, (c) certainty ratings and (d) an emotion recognition test. (a) In study 1, the subscale clarity of the TMMS (Salovey et al., 1995) was applied to assess trait experience. Its items were adapted to ask for state experience; that way a self-report scale of state emotional clarity was developed. For the study 2, new self-report scales were developed to cover a broader definition of emotional clarity by utilizing matching items from other scales that capture affective clarity (Gohm & Clore, 2000). (b) To measure emotional clarity indirectly, the participants were requested to label their affective state, to describe their affective experience in detail and to describe the source of their affective state. Two independent judges rated the answers with regard to how accurate and how matching they were. (c) Additionally, we asked for the participants' certainty regarding their answers. By this, we followed an idea of Otto et al. (2001) and Lischetzke et al. (2005). (d) Finally, an emotion recognition test was applied, because theoretical considerations as well as empirical results suggest that affective clarity is positively associated with the performance in such tests (Otto et al., 2001). Here, we adapted a test procedure used by Otto et al. (2001; pictures by Merten, 2003; 2005).

PART 1: SYNOPSIS

The results of study 1 show that both experimental groups indicated significant changes from pre- to posttest on the within-group level, while the control group did not. The experimental groups changed significantly on different instruments. On the between-groups level, a significant difference between the group that participated in the direct intervention *clarity* and the control group was found in the emotion recognition test; the group *clarity* significantly increased their performance in this test whereas the control group hardly changed. In study 2, no significant changes from before to after the interventions were found for the experimental groups. On the between-groups level, the experimental groups tended to differ significantly from the control group with regard to their accuracy of the provided affect information (indirect measure). The control group reported a marginal decrease, whereas the experimental groups indicated marginal increases. Altogether, study 1 gives tentative support to the idea that affective clarity is improvable by intervention.

The Role of Emotional Clarity in Affect Regulation: A Process Perspective

(Manuscripts 2 and 3)

We conducted two quasi-experimental studies with 258 participants to investigate the relation of emotional clarity to affect before and after an affect induction as well as after a recovery period. In study 4, we additionally explored the relation after re-induction of affect. Whereas we studied the specific emotion anxiety in study 3, we investigated global positive and negative affect in study 4. In both studies, the following procedure was applied: At the beginning, the participants rated their dispositional clarity, their state clarity (both by self-developed instruments; cf. study 2) and their momentary level of anxiety (study 3; subscale state anxiety of the State-Trait Anxiety Inventory; Spielberger, Gorsuch, & Lushene, 1970; German version by Laux, Glanzmann, Schaffner, & Spielberger, 1981) or positive and negative affect (study 4; Positive and Negative Affective Schedule; Watson, Clark, & Tellegen, 1988; German

version by Krohne, Egloff, Kohlmann, & Tausch, 1996). Subsequently, they were exposed to an affect induction. To induce anxiety (study 3), the participants saw a clip of the movie "The silence of the Lambs" (Hewig, Hagemann, Seifert, Gollwitzer, Naumann, & Bartussek, 2005). In study 4, negative affect was induced by asking the participants to complete an intelligence test that consisted of mostly unsolvable problems (Langens, 2006). Right after the induction, the participants again rated their state clarity and their affective state. In study 3, a three-minute recovery phase followed, after which state clarity and anxiety were measured a third time. In study 4, state clarity and affect were collected for the third time at a second experimental day. Right after that, negative affect was re-induced in the participants with a test parallel to the first one. To test for differences in habituation, the momentary levels of positive and negative affect as well as emotional clarity were measured after the re-induction for a fourth time.

With regard to trait clarity, both studies showed consistent results. The participants were classified as high in dispositional clarity and low in dispositional clarity with respect to the median on this variable. In the beginning of the experiments, the High Clarity and the Low Clarity group significantly differed from each other. The persons with high dispositional clarity reported more positive affect and less negative affect and anxiety than the persons with low trait clarity. With regard to affect after the induction, no significant differences between groups were found when baseline affect was taken into account. After the recovery period, the groups significantly differed with regard to negative affect and anxiety respectively when the prior affect ratings were accounted for. The high clarity persons indicated a slightly greater decrease from before to after the recovery period in negative affect and anxiety than the low clarity persons. With regard to habituation, study 4 found no difference between groups regarding positive or negative affect.

With respect to state emotional clarity, the results are a bit more heterogeneous. In both studies, the relation of state clarity to trait clarity was positive, significant correlation indices ranging from .50 to .71. Both studies also confirmed the positive relation of momentary clarity to positive affect and the negative association with negative affect and anxiety. However, the level of state clarity unexpectedly hardly changed in the course of both experiments.

Discussion

The aim of this project was to contribute to a broader picture of emotional clarity. Four studies were conducted to answer two research questions: (a) Is it possible to enhance emotional clarity by training intervention, and (b) what is the role of emotional clarity in affect regulation? An additional goal was to develop alternative instruments measuring emotional clarity. In the following, the results are discussed with respect to the research questions. The discussion concludes with a consideration of limitations and future perspectives.

Research Question 1: Is it Possible to Enhance Emotional Clarity Through Intervention?

With regard to the first research question, the here presented studies were the first dealing with the development of training interventions aiming at the enhancement of emotional clarity. Therefore, three different approaches were tested, of which one was direct and two were indirect. These interventions were kept short to allow for clear conclusions about the interventions' effectiveness with regard to the exclusive enhancement of emotional clarity as one specific aspect of EI. This is in contrast to other EI interventions, which train several EI components with a variety of exercises so that it remains unclear which of the training components are effective and which are not. The interventions' effectiveness was evaluated not only by a self-report measure of trait emotional clarity, but also with direct and indirect measures of state clarity as well as an external criterion.

PART 1: SYNOPSIS

What have we learned with regard to the first question? Study 1 gives small support to the idea that affective clarity is possible to enhance by training intervention. With an intervention duration of one hour only, significant changes of the experimental groups on the within-group level were found. Study 2 brought no encouragement for the hypothesis that affective clarity can be fostered by training. The reason for that probably lies in the interventions' focus on affect regulation and distress rather than on affective clarity. This modification had been implemented to improve the participants' motivation to actively take part in the training by better illustrating the benefit from and the application of emotional clarity. Together, it seems promising to follow up the intervention concepts that were applied in study 1, that is, the direct intervention *clarity* and a *mindfulness* training.

With somewhat longer durations of the training interventions it could be possible to effect greater changes within groups that also differ significantly from that in a control group. The here realized duration of one hour left very little time to go into the subject of emotions. It was obvious that the participants, who took part in the training as a course requirement, were very sceptical in the beginning and had problems to make themselves familiar with the sensitive subject, the other participants and the trainers. Future interventions should take some time for that. Moreover, it is probable that affective clarity as a trait variable is not easy to change (Salovey et al., 1995; Nielsen & Kaszniak, 2006) and that learning processes continue to work after the interventions have ended (Kirkpatrick, 1998). Therefore, future studies should realize a follow up measurement some months after the training to test for changes in emotional clarity after the intervention.

Structured diaries could help to support learning processes that were initiated by the trainings (e.g. Perels, Otto, Landmann, Hertel, & Schmitz, 2007) and to transfer training contents to everyday life. In study 2, the participants received such diaries that asked for emotion-laden

situations, use of strategies and conclusions for the period of the week between the two intervention sessions. Future studies should employ diaries not only during intervention time but also some weeks after that. The data gained by the diaries could be used also for evaluation as they allow for time series analyses (e.g. Perels et al., 2007) and offer information about *how* affective clarity developed. By this, it would be possible to explore the development of emotional clarity from before to directly after the intervention and in the time after the intervention.

However, one has to keep in mind that the self-report measures deployed in study 2 were newly developed. It is therefore uncertain whether the trainings in study 2 did not effect changes or whether the instruments could not map them. Because both scales exclusively consist of items from validated scales of emotional clarity, it is not probable that the instruments are less sensitive to differences than the original scales. Nevertheless, further research has to prove the instruments' sensitivity to changes. All deployed measures will be discussed in detail in the third section of the discussion.

Research Question 2: What is the Role of Emotional Clarity in Affect Regulation?

To investigate the second research question, that is, the role of emotional clarity in affect regulation, we conducted two quasi-experimental studies with multiple data points. In study 4, four measurement points were implemented to investigate the affect not only before and after an affect induction but also before and after a re-induction, which was done that systematically for the first time. Again, we utilized measures of trait as well as of state clarity, which was only realized by Lischetzke et al. (2005; 2011) before. State clarity was collected as a process variable at all data points.

What have we learned with regard to the second research question? Interestingly, we found consistent results in both studies despite of the differences in the implemented affect induction, the deployed affect measures and the duration of recovery periods. We could confirm previous research with regard to the significant relation of affective clarity to negative affect after a recovery period when prior affect was accounted for. In connection with previous research, the results indicate that persons high in clarity are better in recovering from induced negative affect than those low in clarity.

No evidence was found for a greater reactivity of persons high in clarity to affect induction. Some previous studies found evidence for this greater reactivity (Fernández-Berrocal & Extremera, 2006, anger condition; Salovey et al., 2002) whereas some did not (Fernández-Berrocal et al., 2006, sadness and amusement conditions; Salovey et al., 1995). Thus, an interesting question for future research could be to investigate the conditions when this relation is found and when it is not.

We also found no evidence for differences between persons high and low in clarity with regard to habituation. Though this was congruently found in the two studies investigating this question formerly, the theoretical considerations speak in favour of such a relation. The results of Salovey et al. (1995) that high and low clarity persons significantly differed in their decline of ruminative thought within the first 30 minutes after a distressing experience suggest that persons high in clarity are not necessarily better but rather faster in integrating a stressful event into their cognitive schemata than persons low in clarity (Horowitz, 1997). Based on the idea that the degree of habituation corresponds with the degree of how much a stressful experience was integrated in existing cognitive schemata (Lepore, Ragan, & Jones, 2000), it therefore might be possible to find a significant difference between high and low clarity persons with regard to habituation if a shorter recovery phase of some minutes would be realized.

PART 1: SYNOPSIS

At the beginning of the experiments significant differences between groups regarding affect were found. This was consistently found for global positive and negative affect as well as the specific emotion anxiety. Though contradictory to previous research with comparable design, this is in line with the constantly found significant correlations of affective clarity to affect in correlational studies.

With regard to state clarity, we found the expected associations to trait clarity and affect. The finding that the participants' state clarity hardly changed in the course of the two experiments, whereas the participants indicated significant changes in affect with every data point, was surprising and needs further exploration. It is in contrast to the result of Lischetzke et al. (2005), who found that state clarity significantly decreased after an induction and significantly increased again after the recovery period. This might have two reasons.

On the one hand, in the study of Lischetzke et al. (2005) mixed affect was induced, whereas unambiguous affect was induced in the present studies. As Lischetzke et al. point out, it should be particularly difficult to become clear about the own affect, when the situation induces both positive and negative affective stimuli. Correspondingly, they found that their measure of emotional clarity was positively related to an index of mixed affect. In this sense, significant changes in state clarity might be easier to find if the induced affect is rather mixed than unambiguous.

On the other hand, Lischetzke et al. (2005) measured state clarity indirectly by employing the persons' response latencies to state affect items. As described above, self-reports are often made without effectively recalling relevant behavior or experience (Robinson & Neigbors, 2006). That suggests that persons who perceive themselves as generally being very clear about their feelings, would probably agree to the statement "I know exactly how I am feeling." and yet might have problems to actually rate their affective state. An indirect measure of emotional

clarity is not biased by such global self-evaluations and therefore should be more sensitive to changes in actual state affective clarity. Future studies investigating the role of affective clarity therefore should profit from the utilization of an indirect measure in addition to self-report measures.

Additional Goal: Developing Measures of Emotional Clarity

For the present research, several instruments were deployed to measure not only trait emotional clarity but also state emotional clarity by self-report and more indirect measures and an external criterion. Therefore, a self-report scale of state clarity and an indirect measure of emotional clarity were developed and optimized; furthermore, certainty ratings and an emotion recognition test were adapted from previous research (Lischetzke et al., 2005; Otto et al., 2001). Moreover, a new self-report scale of trait emotional clarity was developed to cover a broader definition of the concept than the well-used subscale of the TMMS (Salovey et al., 1995).

The indirect measure of emotional clarity was implemented in studies 1 and 2. The participants were asked to label their affective state and to describe their feelings, sensations, thoughts and impulses as well as the source of their affective state. By this, we requested from the participants to explicitly apply the abilities they report to have according to the self-report measures. The idea was that persons who are clear about their affective experience should provide more accurate and detailed information regarding their affective experience than less clear ones. Moreover, the labeled affective state and the description of the affective experience and the described source of high clarity individuals should fit to each other. Accordingly, two independent judges rated the participants' answers with respect to how accurate and detailed and to how matching the descriptions were. This instrument has all advantages over self-report measures that were described above. Compared to the instrument by Lischetzke et al. (2005), it

assesses more aspects of clarity. Whereas the present indirect measure covers the ability to label and to describe the own affective experience and its source, the one by Lischetzke et al. only captures the ability to label one's own affective state - or rather to do that quickly. Moreover, the present approach in contrast to that of Lischetzke et al. does not depend on the availability of specialized software for the exact measurement of response latencies. On the other hand, assessing the response latencies is a completely objective measure, whereas the present method relies on the judgement of two raters. Moreover, the rating procedure is complex and time-consuming; the final interrater reliabilities were adequate but needed two rating sessions. In this sense, both approaches have their pros and are worth further studying. In particular, the present approach needs further research with regard to the instrument's properties and validity as well as to its ability to map changes, whereas that by Lischetzke et al. already proofed good psychometric properties (Lischetzke et al., 2005; Lischetzke et al., 2011).

Further research is also necessary on the psychometric properties and in particular the sensitivity to changes of the newly developed self-report measures of state and trait clarity, which were used in the studies 2, 3 and 4. Both measures were not able to map significant changes in affective clarity. This might be due to lack of meaningful changes, but it remains unclear whether the instruments are capable of mapping changes. Apart from that, the internal consistence of both instruments was good in all three studies. Both scales were correlated with each other and with various affect measures in the expected way. With regard to trait clarity, the associations to affect measures before and after the manipulations were consistent with the literature and previous empirical data. Moreover, the groups' means indicated that the two instruments adequately distinguished between trait and state experience.

Another instrument that was deployed in studies 1 and 2 to assess affective clarity on a state level was the degree of certainty with regard to the information provided in the indirect

measure. By this, we followed an idea of Lischetzke et al. (2005) that greater clarity about the own affective state should lead to greater certainty concerning the own affect ratings. Though more indirect than a questionnaire, Lischetzke et al. classified the measure as a self-report instrument. In fact, it does not rely on the ability to report on the own affective clarity but still requires self-insight and is probably prone to social desirability bias. In the present research, the measure indicated changes within the group *mindfulness* in study 1. In studies 1 and 2, it suggested validity by correlating significantly with the self-report measures of emotional clarity in a positive manner. Moreover, the measure is very easy to administer. However, one has to keep in mind that this instrument cannot be applied alone but always together with another measure and therefore is always given in the context of this other instrument. Thus, it is unclear how comparable different certainty measures like the one presented here and the one presented by Lischetzke et al. (2005; 2011) are. Together, this instrument is worth further studying as an alternative measure of affective clarity.

Finally, we measured the ability to recognize emotions in other peoples' faces as external criterion in studies 1 and 2. This approach based on the idea that people can identify emotions in others, because they unconsciously imitate other persons' emotional expressions, and that persons high in clarity should be better in correctly identifying the feeling that was induced by imitation (Frith, 2009; Otto et al., 2001). Consequently, Otto et al. found a small but significant correlation between emotional clarity and the performance in an emotion recognition test (r = .17, p = .05). However, in both present studies the performance in the emotion recognition test was unrelated to trait and state self-report measures of affective clarity. Hence, future studies should rely on measures of well-being, mental and physical health, social adjustment or affect, which are all positively related to affective clarity, as external criteria (e.g. Kotsou, Nelis, Gregoire, & Mikolajczak, 2011).

Limitations

Most participants were students, mainly psychology students. Therefore, it is possible that the results are not valid for students of other subjects or non-students. It rather seems that young students are not the most suitable sample to conduct research on emotional clarity with. In the first training study (study 1) the trainers received the impression that the students did not see a need to improve their emotional clarity; they obviously perceived no problems with their affective clarity in everyday life. Therefore, it might be promising to work with persons who see a benefit in dealing with emotional clarity because they daily rely on it, like for example teachers (Brackett & Katulak, 2007). This is of course particularly relevant for training studies.

Nevertheless, the idea that young students do not experience themselves as having deficits in affective clarity has implications also to the usefulness of self-report measures. As discussed above, they reflect a global self-evaluation that might not be congruent with the effective ability. In fact, Lischetzke et al. (2005; 2011) found only small to moderate convergence between self-reported affective clarity and indirectly measured clarity (rs = .15 - .25, ps > .10 and < .05). Therefore, it is important to investigate emotional clarity not only with self-report instruments but also with indirect measures. Insofar, another limit of the here presented research is that studies 3 and 4 exclusively are based on self-report scales.

Conclusion and Future Perspectives

In view of the important role of emotional clarity in affect regulation and its positive associations with eligible variables in the field of health and life satisfaction, the concept is worth a more comprehensive investigation than realized in most previous studies. The present research contributes to that by developing four training approaches to enhance emotional clarity (studies 1 and 2). Furthermore, it explores the role of emotional clarity in affect regulation in two

quasi-experimental studies with multiple data points that deploy not only measures of trait clarity but also of state clarity (studies 3 and 4). Finally, alternative measures of emotional clarity assessing trait and state experience via self-report and indirect instruments were developed.

The training studies give little support to the idea that relatively short training interventions can enhance emotional clarity. The approaches of study 1 to train the defining abilities of emotional clarity directly and to train mindfulness seem to be the most promising. Empirically, the group that participated in the mindfulness training showed a significant increase in emotional clarity on some of the measures. From a theoretical point of view mindfulness should virtually involve emotional clarity. However, one has to keep in mind that mindfulness is not easy to grasp and even more difficult to apply in everyday behavior and experience. Also the group that participated in the intervention that trains the abilities defining emotional clarity, which might be seen as a more technical approach, showed significant increases on some measures of emotional clarity. From a theoretical perspective, this approach should provide a basis for enhancing emotional clarity by offering factual and experiential knowledge about emotions and associated feelings, sensations and forms of expression. Based on this, it is probably essential that the probands deliberately practice to identify, label and describe their affective experience and its source in their individual daily routine. It is conceivable that such practice requires enhanced attention to one's own emotional experience and situational cues eliciting the affective experience. Without doing so, it should be difficult to become clear about it (Brown & Ryan, 2003). As this is what mindfulness means, future trainings studies should profit from a combination of both approaches.

As both approaches supposably require extensive and deliberate practice by the participants, it appears explainable that the trainings developed in study 2 had no effect on emotional clarity as they put focus on distress and its regulation rather than on emotional clarity.

If the participants did not explicitly know that they should improve their emotional clarity they hence would not be able to practice it deliberately. Apart from explicitly focusing emotional clarity, future trainings should also benefit from an extended training duration and the distribution of the training on at least two sessions. That would allow to further elaborate the training contents and to build on the practice and experience the participants gained in the meantime. Improvement of emotional clarity could be further fostered by diaries, which ask participants for emotional situations, use of strategies and insights on a daily basis. This way, the diaries would support deliberate practice. For evaluation of the trainings' effectiveness the diaries' data should be analyzed with time series analyses; furthermore, a follow up measurement should be realized. This could capture increases in emotional clarity that took place after the training interventions.

Future studies should take place outside the usual class schedule and work with volunteers who constantly depend on their emotional clarity. This should be especially the case for therapists and other persons working in social counselling. These persons should be able to consciously identify emotions elicited in them by clients while these talk about their concerns. This would allow them to make therapeutic use of the information that is transported by the emotions (Schwarz, 1990). Also teachers should be clear about emotions elicited by a student's attributes or behavior in order to be able to separate emotions from facts when evaluating a test or a presentation. Bracket & Katulak (2007) point out that teachers experience a wide range of emotions while teaching and interacting with students and that those having problems regulating their emotions tend to have students who experience more negative emotions. As emotional clarity is beneficial to effective affect regulation (e.g. Lischetzke et al., 2005), teachers should hence especially depend on emotional clarity.

PART 1: SYNOPSIS

Studies with persons who see a personal need for dealing with emotional clarity would have two major advances: First, they would be very motivated to take part in the training, and second, they would have situations available, in which they have problems with their emotional clarity. These situations could be used to apply the training strategies to concrete cases that have reference to the participants' daily life. This would foster the illustration of the strategies' application and would ease the transfer from the training situation to everyday life.

With regard to the role of emotional clarity within affect regulation, studies 3 and 4 confirmed previous research with regard to individual differences between persons high and low in trait emotional clarity (e.g. Fernández-Berrocal & Extremera, 2006; Lischetzke et al., 2005; Salovey et al., 1995). Persons with high trait clarity generally reported more positive affect and less negative affect and anxiety than persons with low trait clarity. Furthermore, the former demonstrated advantages in recovery from induced negative affect and anxiety compared to the latter. However, research on state emotional clarity is necessary to further investigate the role of emotional clarity from a process perspective. This would allow to explore in more detail how emotional clarity is associated with affect before and after affect induction and after a recovery period. State measures would also help to capture small changes affected by short training interventions.

In studies 2 to 4, a newly developed self-report measure of state emotional clarity was utilized. However, the probands' state emotional clarity hardly changed in all studies, although it was measured at two, three and even four measurement points. It is unlikely, that the state emotional clarity did not change over multiple data points that were partly realized on different days. This suggests that the self-report measure was not able to map changes in effective state emotional clarity and that the concept should not be measured exclusively by self-report. This idea is supported by general criticism on self-report instruments in respect to the finding that

these measures do not necessarily rely on relevant behavior or experience (e.g. Robinson & Neighbors, 2006). Therefore, future studies should include indirect and unbiased measures assessing the effective abilities defining clarity. The indirect measure presented in studies 1 and 2 might be an interesting option as it captures several aspects of emotional clarity. However, it requires further studying. Another option is the indirect measure of Lischetzke et al. (2005; 2011) that already proved predictive validity and sensitivity to changes. It covers only one aspect of emotional clarity, though.

Apart from that, it would be interesting to implement even more data points, especially in the recovery period, and to analyze them with time series analyses (e.g., Schmitz, 1989) in order to get a better picture of *how* both state emotional clarity and the affective state change. It would be especially interesting to utilize time-lagged correlations. From a theoretical point of view, emotional clarity should be a prerequisite for effective affect regulation and therefore should be present first (Lichetzke et al., 2005). Time-lagged correlations would allow to determine the time lag between two data points at which the association between emotional clarity and affect would be the greatest.

Research on emotional clarity should also benefit from exploring situations in that it is relatively easy to be clear about one's own affective state, and situations in that this is more difficult. Lischetzke et al. (2005) argued that it should be especially difficult to become clear about one's own affect in situations that induce "mixed affect", that is, a mixture of both positive and negative affect. Correspondingly, the indirectly measured emotional clarity decreased in their study after the induction of such mixed affect. More generally, the emotional clarity presumably increases with higher apparentness and clearness of the situational cues, which elicit the affective state. Correspondingly, it supposedly decreases with higher ambiguity and less

evidence of these cues. A therapy session, for example, does not necessarily induce mixed affect but contains a variety of cues that might not be apparent on first sight.

With regard to measures of emotional clarity, this research developed a variety of alternatives. To be able to cover a broader definition of emotional clarity than the well-used clarity subscale of the TMMS (Salovey et al., 1995) does, a new self-report scale of trait emotional clarity was created. Also a new self-report scale of *state* emotional clarity that assesses all aspects of this broader definition was developed. Furthermore, an indirect measure was designed that captures many aspects of emotional clarity. This is in contrast to the indirect instrument by Lischetzke et al., (2005; 2011), which only measures the ability to label one's own affective state. As discussed above, all new measures need further studying with respect to their validity and their sensitivity to changes. As self-report and indirect measures of the same construct are typically only weakly to moderately correlated (Lopes, Salovey, & Straus, 2003; Robinson & Neighbors, 2006), future studies that engage in the validation of measures of emotional clarity should especially analyze their ability to predict relevant outcomes (Lischetzke et al., 2005).

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Part 2: Originalia

Manuscript 1

Submitted to *Motivation and Emotion*

Enhancing Students' Emotional Clarity by Training: An Intervention Study

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The data will be published as part of an academic thesis.

Abstract

Emotional clarity, defined as the ability to label, describe, and distinguish among one's own emotions, has been consistently found to be beneficial to affect regulation, well-being, and psychological health (Lischetzke, Angelova, & Eid, 2011). Thus, it is surprising that no research has yet engaged in the enhancement of affective clarity. The present research aimed to fill this gap by developing trainings that foster emotional clarity. In two studies with 178 university students, four short trainings were evaluated and compared to a control group using various measures of emotional clarity. In Study 1, both experimental groups reported significant within-group changes on some of the measures. In Study 2, no significant changes were found. Altogether, the results give small support to the idea that emotional clarity can be enhanced by training. Further research is required to explore the optimal duration and focus of trainings and to optimize and validate measures of clarity.

Keywords: emotional clarity, training intervention

Introduction

Emotional clarity is defined as the ability to identify, describe, and distinguish among one's own emotions (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). Since Salovey et al. (1995) reported that persons high in emotional clarity are more likely to recover from induced negative mood than low clarity persons, growing interest has led to a number of studies that have consistently found emotional clarity to be beneficial to affect regulation, well-being, and psychological health (Lischtzke, Angelova, & Eid, 2011). Therefore, the concept seems worth further study.

However, most research has been based on correlational data only. No studies at all have been published yet with regard to the enhancement of emotional clarity. This is surprising in view of the concept's beneficial associations with variables that can be considered to be related to quality of life. There are training concepts aimed at the enhancement of emotional intelligence (EI), but they foster several EI components at once so that it is not possible to evaluate which training moduls are effective with regard to which EI components. None of these trainings contain moduls that are aimed explicitly at the enhancement of emotional clarity as one aspect of trait EI (Salovey et al., 1995; Salovey, Stroud, Woolery, & Epel, 2002). Moreover, with the exception of the studies by Lischetzke and colleagues (Lischetzke, Cuccodoro, Todeschini, & Eid, 2005; Lischetzke et al., 2011), all research on emotional clarity has been based on self-report scales of trait emotional clarity, mostly the subscale clarity by Salovey and colleagues. In this sense, almost all research has built on a quite global self-evaluation of what the participants think about the usual clarity of their affective experience (Robinson & Neighbors, 2006). In summary, very little is known about affective clarity apart from its associations with other concepts.

Therefore, the present experimental research aimed to further explore emotional clarity. The first goal was to fill the research gap with respect to the enhancement of emotional clarity. As the concept has consistently been shown to be beneficial to affect regulation, health, and well-being, the present study engaged in the development of training interventions that foster affective clarity. Consequently, a second goal was to evaluate the trainings with regard to their effectiveness and to question which intervention serves this goal best. An additional goal was to search for and develop direct and indirect measures of affective clarity as a state variable. State measures are more sensitive to changes than trait measures (Zuckerman, 1983) and therefore should be able to capture training effects better. Indirect measures should be applied to avoid dependence on self-insight (Robinson & Neighbors, 2006). Before describing the method utilized to answer the research questions, we want to give an overview about what is known about emotional clarity, its enhancement, and its measurement so far.

Emotional clarity is an important characteristic of meta-mood experience, which refers to reflective processes that go along with most affective states (Salovey et al., 1995). Mayer and Gaschke (1988) showed that individuals not only experience their affective states but also monitor, evaluate, and regulate them. Whereas Mayer and Gaschke (1988) focused on moment-by-moment changes in reflections about ongoing mood (state meta-moods), Salovey et al. (1995) concentrated on more stable attitudes (trait meta-mood). [3]

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[3] Kokkonen & Pulkkinen (2001) point out that Mayer and colleagues use the term "meta-experience of mood" (Mayer & Stevens, 1994) as well as "meta-experience of emotion" (Mayer & Salovey, 1995) and do not seem to distinguish sharply between the concepts of emotion and mood.

The ability to reflect upon and regulate one's emotions is an important aspect of emotional intelligence (Salovey et al., 2002). Because it is measured by self-report, Salovey and colleagues (2002) argue that it should be considered "beliefs about emotional intelligence" or perceived EI rather than emotional intelligence per se, which is measured by performance tests. With this, they are in line with Petrides and Furnham (2000, 2001), who proposed a consequent distinction between trait EI, which is measured by self-report and embedded within a personality framework, and ability EI, which is assessed with maximum-performance tests in the tradition of cognitive intelligence tests.

As mentioned above, emotional clarity is correlated with a variety of variables that are related to quality of life. Significant positive relations have been found, for example, with life satisfaction (Extremera & Fernández-Berrocal, 2005; Palmer, Donaldson, & Stough, 2002), well-being and an adaptive style of coping (Gohm & Clore, 2002), lower cortisol release during stress (Salovey, Stroud, Woolery, & Epel, 2002), and self-reported ability to repair negative affect (Lischetzke & Eid, 2003; Salovey et al., 1995; Salovey et al., 2002). Negative correlations have been reported for anxiety and depression (Extremera & Fernández-Berrocal, 2006) as well as distress (Salovey et al., 1995). Moreover, emotional clarity has been consistently linked to greater positive and less negative affect (e.g., Kokkonen & Pulkkinen, 2001; Mayer & Stevens, 1994; Ramos, Fernández-Berrocal, & Extremera, 2007).

Most authors postulate that these relations are mediated by affect regulation: Salovey and colleagues (1995) propose that individuals who are emotionally clear do not need to engage in prolonged rumination in order to figure out what they feel exactly and therefore can turn their attentional resources toward effective affect management. Similarly, Lischetzke and colleagues (2005) as well as Wilkowski and Robinson (2008), based on cybernatic models of affect regulation (e.g., Larsen, 2000), suggest that high emotional clarity permits the individual to

recognize an undesirable level or kind of affective state early and so to implement appropriate regulation strategies before too much time has passed. In line with these ideas, studies that measured affect before and after an affect induction and after a recovery phase have consistenly reported that individuals high in clarity indicate lower levels of negative affect after the recovery phase than those low in clarity when prior affect ratings were taken into account (Fernández-Berrocal & Extremera, 2006; Lischetzke et al., 2005; Salovey et al., 1995).

Affective clarity has also been linked to performance. Grässer (2003) studied the effect of clarity on tennis players' performance and found that low emotional clarity was correlated with a higher probability for performance variation in connection with inappropriate motivational states. Otto, Döring-Seipel, and Lantermann (2002) investigated the effects of emotional clarity on problem solving in a complex environment. Subjects with a high clarity disposition used more appropriate problem-solving strategies and showed better performance than subjects low in clarity. Thereby, clarity predicted performance independent of processing capacity as an indicator of cognitive intelligence.

Enhancement of Emotional Clarity

With regard to the enhancement of emotional clarity, no studies dealing with this topic have been published yet. There are training programs designed to improve emotional intelligence (e.g., Brackett & Katulak, 2007; Ciarrochi, Blackledge, Bilich, & Bayliss, 2007; Stohl, Dangerfield, Christensen, Justice, & Mottonen, 2007), and most of them include exercises designed to enhance abilities that have some overlap with emotional clarity (*perception of emotion* and *understanding of emotion* in Brackett & Katulak, 2007; *identifying emotions* and *understanding emotions* in Kornacki & Caruso., 2007; *emotional awareness* in Ciarrochi et al., 2007; *emotional self-awareness* in Stohl et al., 2007). However, none of these programs was

explicitly designed to enhance affective clarity and none was evaluated with regard to this specific component of EI. These programs rather train *sets* of abilities and thus contain many different exercises that aim at various components of emotional intelligence so that it remains unclear which of the training components are effective with respect to discrete components and which are not. It was therefore the aim of this study to develop a short training intervention that focuses exclusively on increasing participants' affective clarity.

Basically, one might distinguish a direct approach from indirect approaches to foster affective clarity. Our direct approach aims to enhance the concrete skills that define emotional clarity, that is, the ability to identify, describe, and distinguish among one's own emotions. For this purpose, knowledge about emotions should be taught to the participants (Ekman, 2003; Saarni, 2007). This knowledge should contain information about feelings, sensations, thoughts, and forms of expression that are associated with the emotions. Furthermore, the participants should not only learn theoretically about emotions but should also experience them so that practical learning is possible (Ekman, 2003). By describing their experiences with the terms that were learned theoretically, the participants should learn to describe what they are feeling and to label these feelings. Also, the ability to distinguish between emotions should be trained. The latter could be further fostered by working out the differences between specific emotions from a theoretical as well as a practical perspective. This is especially important for such emotions that are easily confounded.

As an indirect approach, mindfulness training appears a promising way to increase emotional clarity. Mindfulness is defined as conscious attention to and awareness of one's ongoing subjective experience. Most authors further emphasize a nonjudgmental, accepting attitude toward this experience (Brown & Ryan, 2003; Grossmann, Niemann, Schmidt, & Walach, 2004; Ortner, Kilner, & Zelazo, 2007). Enhanced attention and awareness can be spent

on one's own thoughts, emotions, and feelings as well as things in the environment, other persons, and tasks. For example, when drinking a glass of water, one can be highly attentive to the taste experience, the water running down one's throat, and the increasing fullness in one's stomach. This receptive awareness can be contrasted with consciousness that is restricted in some way, for example, by rumination, absorption in the past, anxieties about the future, or simply by behaving automatically. Thereby, mindfulness offers a pure record of what is taking place.

How do mindfulness and emotional clarity relate to each other? One could postulate that mindfulness quasi-implies affective clarity. If awareness of an individual's affective experience is enhanced (i.e., of affective states, the triggering situations, the accompanying feelings, sensations, and cognitions), then the person should be clear about what he or she is feeling and why. With a growing routine of paying attention to one's own affective experience, the ability to describe what is taking place should increase also. In line with this idea, Nielsen and Kaszniak (2006) suggest that years of meditation training[4]—which means years of training the attention to focus on one's own emotional states and their discrete components, how they appear, change, and disappear—should lead to an increased ability to discriminate emotional phenomena in everyday life. Correspondingly, Nielsen et al. (2006) reported that long-term meditators with more than 10 years of meditation practice report greater emotional clarity than controls. Among meditators, years of practice was positively correlated with clarity, although not significantly. However, a significant relation was found by Brown et al. (2003): In three studies with psychology students, mindfulness was significantly related to affective clarity (*r*s = .45 - .50).

[4] Here, meditation means a formal way of practicing mindfulness.

ENHANCING EMOTIONAL CLARITY BY TRAINING

Another promising approach with respect to the indirect enhancement of affective clarity is to foster one's ability to reflect on the self, one's own actions, and one's own experience. Self-reflection refers to self-focused attention that can be directed to one's thoughts, emotions, and actions as well as to the self (Phillips and Silvia, 2005; Silvia & Phillips, 2011). Thereby, research has shown contradictory results with regard to the benefit of analyzing one's own emotions (Ayduk & Kross, 2010). On the one hand, understanding one's own affective experiences after a distressing event fosters adaptive coping and is related to mental and physical health. On the other hand, the attempt to analyze one's own affective experience can lead to rumination that usually goes along with an increase and prolongation of negative affect.

To solve this paradox, Trapnell and Campbell (1999) proposed a distinction between a ruminative and a reflective type of self-focus and attained promising results. According to this idea, reflection refers to "reflections on the self motivated not by distress about the self but by epimistic curiosity, that is, pleasurable, intrinsic interest in abstract or philosophical thinking" (p. 292), whereas the ruminative style is defined as "recurrent thinking or ruminations of the self prompted by threats, losses, or injustices to the self" (p. 292) and "uncontrollable problem 'scanning' and analysis that is unproductively repetitive" (p. 295). We agree with Trapnell and Campbell that a reflective style, which is associated with improved affect as well as mental and physical health, should be explicitly distinguished from a ruminative style of self-attention that is unproductive and associated with increased and prolonged negative affect. In contrast to Trapnell and Campbell, we suggest that reflection can be motivated not only by epimistic curiosity but also by some kind of trigger such as a distressing event or the wish to develop and change. The important difference from rumination then is that the reflections are productive, goal-oriented, and solution-focused. By this, we follow the conception of self-reflection with

regard to how it is used in the context of coaching or brief solution-focused therapy (e.g., Grant, 2003).

How may self-reflection and emotional clarity relate to each other? One would assume that reflecting on one's own affective experience, especially when this is done regularly, should lead to increased emotional clarity. Also a good knowledge of the real self, which refers to how a person actually is, acts, thinks, and feels, as well as the ideal self, which refers to how a person wants to be, should enhance the clarity of what one is feeling and why. However, to our knowledge, only Greif (2008) has explicitly addressed the relation between self-reflection and emotional clarity. He suggested that coaching, as guidance for solution-focused self-reflection, should help to increase emotional clarity. He refers to Grant (2003) who found that participants' insight significantly increased from before to after a coaching program. Thereby, the insight scale (Grant, Franklin, & Langford, 2002) shows interesting overlap with the clarity scale (Salovey et al., 1995); four out of eight items of the insight scale deal with the respondents' affective experience and strongly resemble the items of the clarity scale. Accordingly, Grant et al. (2002) define insight as "the clarity of understanding of one's thoughts, feelings and behavior" (p. 821).

Some further support for the idea that solution-oriented self-reflection should foster emotional clarity comes from research on expressive writing. Writing about distressing or even traumatic experiences is benefical to affect, well-being, and health if the writing involves organizing, integrating, and analyzing the distressing experience in a solution-focused way, which resembles our idea of self-reflection (Esterling, L'Abate, Murray, & Pennebaker, 1999; Lyubomirski, Sousa, & Dickerhoof, 2006). Lyubomirski et al. (2006) point out that writing (or talking) about distressing experiences also helps individuals to label and in turn to understand their emotions, which are core components of emotional clarity. This is in line with Salovey and

Mayer (1990), who postulated that learning about emotions depends in part upon speaking clearly about them, which in turn depends on the ability to introspect and to form coherent propositions on the basis of introspection.

Measuring Emotional Clarity

As mentioned above, almost all studies on emotional clarity are based on self-report measures. Most of these studies deployed the clarity subscale of the TMMS or translated versions respectively (e.g., German version by Otto, Doering-Seipel, Grebe, & Lantermann, 2001; Spanish version by Fernández-Berrocal, Extremera, & Ramos, 2004), which capture quite a global evaluation of whether individuals believe they are usually clear about their affective experience.

Self-report measures have a number of disadvantages. They require self-insight and rely on the ability to (verbally) report the construct of interest (Robinson & Neighbors, 2006; Lucas & Baird, 2006). Moreover, self-report judgments are affected by a social desirability bias and are made without recalling any trait-relevant behavior or experience (Robinson & Neighbors, 2006). This suggests that persons who perceive themselves as generally being very clear about their feelings would probably agree with the statement "I am able to describe my present mood," and yet might have problems actually describing their affective state when requested to do so. For these reasons, indirect (or implicit) instruments of emotional clarity, which measure performance that is related to the respective variable, should help to provide a more objective and less biased picture of an individual's affective clarity. Furthermore, such a measure should be more sensitive to changes in momentary affective clarity because of its insusceptibility to biases. Again, Lischetzke and colleagues (2005, 2011) are the only ones to have developed and tested an indirect and objective instrument of emotional clarity by measuring the response latencies of

state affect ratings. Despite this instrument's good psychometric abilities and validity, our criticism is concerned with the fact that it captures only the ability to *label* one's own affective state and therefore assesses only one defining aspect of affective clarity.

The aim of the present paper was therefore to develop an indirect instrument that captures more aspects of emotional clarity. Our approach was to request the demonstration of specifically those abilities that define affective clarity, that is, to label their affective state and to describe the associated feelings, sensations, thoughts, and forms of expression as well as the source of their affective state. The idea was that persons who are clearer about their affective experience should provide more accurate and detailed information regarding their affective state, the associated feelings, sensations, and expressions as well as the source. Furthermore, the affective state and the feelings, sensations, and thoughts as well as the source of high clarity persons should fit with each other.

With only a few exceptions (Kokkonen & Pulkkinen, 2001; Lischetzke et al., 2005, 2011; Mayer & Gaschke, 1988; Mayer & Stevens, 1994), research has dealt with emotional clarity only as a trait variable. Nevertheless, applying state measures of clarity is particularly important to learn more about the role of clarity within affect regulation processes over time. For a short training intervention also, it is important to apply state measures of clarity because they are more sensitive to changes than trait measures and therefore should be able to indicate even small changes (Zuckerman, 1983).

This study therefore deployed different measures of state clarity. Apart from the indirect measure, which also measures clarity on a state level, a self-report questionnaire assessing the state experience was deployed. Furthermore, the participants' certainty about their affect information provided in the indirect measure was collected. By this, we followed an idea of Lischetzke et al. (2005, 2011), who assessed participants' certainty regarding their affect ratings.

This is based on the idea that the clearer persons are about their affective state, the more certain they should be about information they provide with respect to it. Although more indirect than a questionnaire, Lischetzke et al. (2005) classified the measure as a self-report instrument. In fact, it does not rely on the ability to report one's own affective clarity, but still requires self-insight and is probably prone to social desirability bias. Lischetzke et al. (2005, 2011) found a moderate relation between the degree of certainty and dispositional clarity measured via self-report (*r*s = .25 - .27, *p*s < .05).

Another approach was to measure the ability to recognize emotional expressions in other persons' faces. Research on empathy postulates that people can identify emotions in another person because they unconsciously imitate the other person's emotional expression (Frith, 2009). In this sense, persons high in clarity should be better in correctly identifying the feeling that was induced by imitation (Otto et al., 2001). Consequently, Lischetzke, Eid, Wittig, and Trierweiler (2001) found high correlations between self-reported clarity about one's own emotions and about the emotions of others. Otto et al. (2001) found a small but significant correlation between emotional clarity and performance on an emotion recognition test ($r = .17$, $p = .05$).

Present Research

We present two studies that develop four training interventions each aimed at the improvement of the participants' emotional clarity. In both studies, we evaluated the trainings' effectiveness on various measures of affective clarity or related variables to answer the following research questions: Do the participants of the experimental groups indicate greater clarity after the trainings than before? Do the experimental groups indicate greater increases in clarity than the control group? Does one experimental group indicate greater training effects than the other?

Do the experimental groups indicate different training effects on the diverse measures? Our hypotheses regarding these research questions are presented separately for each study.

Study 1

The aim of the first study was to develop a direct intervention called *clarity*, which trains the defining skills of emotional clarity, and an indirect intervention called *mindfulness,* which trains the participants to be mindful to enhance their emotional clarity. Both interventions were evaluated with regard to their effectiveness in fostering emotional clarity. We hypothesized that the individuals who took part in one of the experimental interventions would report increased emotional clarity after the training compared to before the training. By contrast, we expected the control group not to improve its clarity from the pretest to the posttest. We further postulated that the training effects on emotional clarity would be greater for the *clarity* group that received direct training compared to the *mindfulness* group that received indirect training. This was expected to apply especially to the indirect measure of clarity as well as to the emotion recognition test because the abilities assessed with these instruments were trained explicitly in the *clarity* training but not in the *mindfulness* intervention.

Method

Participants

Altogether, 119 students took part in a training intervention and completed the state measures of affective clarity and the emotion recognition test directly before and after the training. Of these, four persons were excluded from the analyses because they had too many

missing values or because they were univariate outliers.[5] The remaining 115 participants were all students attending courses in educational psychology. They were either psychology students or they studied other subjects with the aim of receiving a teacher certificate. Of these, 74% were female, which is a representive proportion regarding the partcipants' subjects of study. The mean age was 24.88 (*SD* = 6.96).

Participation in the study was a course requirement. For practical reasons, completely randomized assignment was not possible. The participants of three courses in educational psychology, designed especially for students who want to enter the teaching profession, formed the control group, whereas the participants of another course in educational psychology for students of psychology as a main subject were randomly assigned to the two intervention groups. Thirty-five subjects formed the intervention group *clarity*, 46 subjects the intervention group *mindfulness*, and 34 subjects the *control* group.

Only 74 of the 115 participants filled out the *trait* questionnaire that was given in the very first (pretest) and the very last (posstest) sessions of the course because some students missed one or both of these seminar sessions.. Of these 74 participants 86.5% were female. Their mean age was 24.22 (*SD* = 6.81). Twentysix participated in the *clarity* intervention, 25 subjects in the *mindfulness* intervention, and 23 subjects in the control intervention.

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[5] Persons were excluded from the analysis if they missed more than 10% of all items. That was true for two persons. Following Tabachnik and Fidell (2007), persons were defined as univariate outliers if they had a standardized score (*z* score) in excess of 3.29. We also checked for multivariate outliers but there were none.

Procedure

In this intervention study, a one-factorial quasi-experimental design was realized. All groups took a pretest with a trait measure at the beginning of the term. All groups received training that was given 1 to 4 weeks later (depending on the groups' class schedule). Directly before and after the intervention, all groups took part in a pretest and a posttest with state measures and tests (n = 115). At the end of the term, all groups again filled out the trait questionnaire (n = 74).

Interventions

Two experimental groups received interventions, which were designed to enhance the subjects' emotional clarity. The experimental group *clarity* explicitly exercised the skills defining clarity, that is, the ability to identify, describe, and distinguish among emotions. The experimental group *mindfulness* exercised mindfulness, that is, an enhanced awareness of their current experience with a nonjudgmental attitude. The control group trained its presentation skills. All interventions lasted for 1 hour.

In all trainings, we emphasized the transfer of the training contents to situations in everyday life. Therefore, the participants were directed to work out the main points themselves and had the opportunity to practice. Input by the trainers and activities of the participants alternated. Before inputs, the participants were asked for their prior knowledge. This was intended to facilitate the integration of new knowledge into existing knowledge and to further promote the participants' motivation and self-efficacy.

Apart from that, we made sure the participants felt comfortable in and after the training situations. Therefore, each exercise was followed by a short reflection in which the participants could speak about their experiences. In the *clarity* intervention, in which negative emotions were induced in some exercises, we utilized amusing games directly after these exercises and an

imaginary journey at the very end of the session to make sure the participants felt relaxed and positive again.

The beginning was the same in both experimental interventions. They started with a welcome by the trainers and a warm up with the aim of getting to know the others. After an introduction to the training goals and agenda, the trainers explained the concept of emotional clarity and its benefits.

In the *clarity* intervention, the participants then gathered knowledge about two selected specific emotions with regard to associated feelings, sensations, thoughts, and forms of expression. Furthermore, these specific emotions were induced onto the participants so that they deliberately experienced these emotions. The participants were then asked to describe their experiences in detail with regard to senstions, feelings, and expressions. Finally, the trainers elaborated upon the differences between the two specific emotions. The contents of the trainings as well as the utilized methods are displayed in Table 1.

Table 1

Contents and Methods of Clarity Intervention (Study 1)

Contents	Method
Feelings, sensations, thoughts, and forms of expressions associated with (a) anger and (b) anxiety	1) Group work (some groups worked on anger, some on anxiety), 2) Presentation to plenum, amendment, and categorization by trainers
(a) Experiencing anxiety, describing the experience in great detail	1) Induction of anxiety (autobiographical recollections methodology), 2) Description in writing, open format plus guiding questions
(b) Experiencing anger, describing the experience in great detail	1) Induction of anger (autobiographical recollections methodology), 2) Description in writing, open format plus guiding questions
Differences between anxiety and anger	Input by trainer

In the *mindfulness* intervention, the trainers first provided information about the concept and its effects. Then the participants practiced mindfulness with different exercises. We chose formal meditation practices such as a walking meditation and a sitting meditation as well as an informal mindfulness meditation as it can be practiced at all times in everyday life. The participants then brainstormed about how mindfulness could be integrated into their everyday lives and chose one activity that they would practice daily. Finally, the group elaborated on how mindfulness might enhance emotional clarity. The contents of the trainings as well as the utilized methods are displayed in Table 2.

Table 2

Contents and Methods of Mindfulness Intervention (Study 1)

Contents	Method
Concept and the effects of mindfulness	Input by trainers
(a) Examining an object mindfully (b) Walking mindfully (c) Watching thoughts mindfully (sitting meditation)	Individual exercises; trainers instructed repeatedly to watch feelings, sensations, and thoughts in a nonjudgmental attitude
Integration into everyday life	Brainstorming; choice of one activity
Relation to emotional clarity	Discussion

In the *control* intervention, the group talked about criteria that distinguishes good from poor presentations, discussed the structure of a presentation, and practiced how to design the various parts of a presentation so that they would be attractive. They further received guidelines for preparation and dealt with important aspects of performance.

Measures

Trait clarity. Emotional clarity as a disposition was measured by the subscale clarity of the widely used Trait Meta-Mood Scale (TMMS; Salovey et al., 1995). Here, the German version (Otto et al., 2001) was applied. The scale comprises nine items. Subjects have to indicate

on a 5-point Likert scale the extent to which they agree or disagree with the items. A sample item is: "I almost always know exactly how I am feeling." The clarity subscale demonstrated good reliability in this study with $\alpha = .86$.

State clarity. To measure emotional clarity on a state level, the items of the trait clarity scale were modified so that they asked for the person's present instead of usual experience. For economical reasons, three items that are very similar to other items but have lower factor loadings were left out. A sample item is "At the moment I am confused about how I feel" (reversed). The scale was internally consistent with $\alpha = .93$.

Emotion recognition ability (ERA). To measure the ability to recognize emotions in others, the participants were presented with 14 color photos showing seven young men and seven young women expressing each one of the emotions happiness, fear, disgust, surprise, anger, sadness, and contempt (Merten, 2003, 2005; Otto et al., 2001). Thereby, the emotions were displayed by one man and one woman each. For the posttest, a set parallel to the pretest was used. All pictures were presented in the same randomized order to all participants. The photos were presented for only 1/5 s each to facilitate the detection of interindividual differences (Matsumoto, LeRoux, Wilson-Cohn, Raroque, & Kooken, et al., 2000). The subjects were instructed to choose for each picture the corresponding emotion from a list containing all seven possible emotions (forced-choice format).

Accuracy of affect information. To measure emotional clarity indirectly, we induced a specific emotion by film (Gross & Levenson, 1995) and then asked the participants to rate their affective state, to describe what they are feeling, sensing, and expressing as well as the source of their affective state. The answers were rated by two independent raters. Therefore, judges first rated the accuracy, detailedness, and profoundness of the description of the feelings, sensations, and expressions. Second, this was done likewise for the description of the source. Third, raters

evaluated how the indicated affective state and the description of feelings, sensations, and expressions fit with each other. Fourth, they did likewise for the affective state and the source. All ratings were given on a scale ranging from 0 (*not accurate/fitting*) to 3 (*very accurate/great fit*).

After this first rating, the judges discussed all cases that showed a discrepancy between the two ratings greater than or equal to 2. After that, both judges rated these cases for a second time independently of each other. The final intraclass correlations indicated adequate interrater reliability for each rating category (αs = .60 - .74). Thus, we formed one average measure for each category out of the single measures of both judges. Then we calculated one mean value out of the four rating categories. This overall accuracy scale was internally consistent with α = .75.

Certainty regarding affect information. The participants were asked how certain they were that the information they provided with respect to their affective state, to their feelings, sensations, and expressions, and to the source was true. They were asked to rate their certainty on a scale ranging from 0 to 100. One mean value out of all certainty ratings was formed; the internal consistency was acceptable with α = .62.

Results

Correlations Between Measures

First, we investigated the convergent correlations between the measures of emotional clarity as well as the emotion recognition test. Expectedly, trait clarity was significantly correlated with state clarity (r = .20, p = .04). In contrast to the assumptions, the correlations with performance on the ER test and the accuracy of emotion descriptions were not significantly different from zero (ER test: r = .03, p > .10; accuracy: r = .02, p > .10); the correlation with the

person's certainty regarding the descriptions was small and only tended toward significance (r = .16, p = .09).

The correlations of state clarity with performance on the ER test as well as the accuracy of emotion descriptions were small and only tended toward significance (ERA: r = -.13, p = .08) or were not significant (accuracy: r = .10, p > .10). However, state clarity was significantly related to certainty regarding the emotion (r = .26, p = .00).

Intervention Effects

First, we used *t*-tests to determine whether there were significant training effects within groups. Second, we analyzed differences between groups. Therefore, we tested for pretest differences on all measures first. Significant differences between groups before the interventions were found on the self-report measures of trait and state clarity as well as on the emotion recognition test. Analyses of means showed that the conrol group and the *mindfulness* intervention group indicated similar values on state and trait clarity, whereas the *clarity* intervention group reported lower levels of clarity on both measures. On the emotion recognition test, the performances of all three groups differed from each other. Thus, there were meaningful differences between the groups but there were no systematic differences between the intervention groups on the one hand and control group on the other. We chose ANCOVAs with posttest values as dependent variables and pretest values as covariates to check for differences between groups while taking pretest differences into account.

Trait clarity. As evident from the means in Table 3, both intervention groups slightly increased their emotional clarity whereas the control group hardly changed. The *t*-tests showed that the *clarity* group increased their trait clarity significantly, $t(25) = 2.65$, $p = .01$, $\eta^2 = .22$, whereas the increase of the *mindfulness* group only tended toward significance, $t(24) = 1.65$, p =

.06, η^2 = .10. As expected, the control group did not change, $t(22) = 0.46$, $p > .10$. However, there were no significant differences between groups, $F(2, 70) = 0.72$, $p > .10$.

State clarity. Again, the means in Table 3 indicate very small changes of both intervention groups in the expected direction but not of the control group.

Table 3

Descriptive Statistics for Dependent Measures in Both Studies

Measure	Group	Study 1		Study 2	
		Mean (SD) pre	Mean (SD) post	Mean (SD) pre	Mean (SD) post
Trait clarity	Self-reflection	-	-	3.58 (.77)	3.76 (.86)
	Clarity	3.42 (.65)	3.79 (.67)	-	-
	Mindfulness	3.98 (.59)	4.15 (.63)	3.48 (.76)	3.60 (.60)
	Control	3.87 (.63)	3.91 (.54)	3.40 (.95)	3.56 (.79)
State clarity	Self-reflection	-	-	4.01 (.90)	4.01 (.79)
	Clarity	3.47 (.97)	3.70 (.74)	-	-
	Mindfulness	3.87 (.79)	4.10 (.66)	3.75 (.89)	3.83 (.72)
	Control	3.95 (.97)	4.02 (.93)	3.83 (1.00)	3.78 (.66)
ERA	Self-reflection	-	-	7.44 (1.26)	7.81 (1.38)
	Clarity	6.66 (1.64)	8.00 (1.48)	-	-
	Mindfulness	7.26 (1.72)	7.50 (1.68)	6.72 (2.16)	7.11 (1.41)
	Control	7.15 (2.05)	6.97 (1.59)	6.84 (1.14)	6.96 (1.34)
AI accuracy	Self-reflection	-	-	1.97 (.69)	2.05 (.71)
	Clarity	2.25 (.34)	2.29 (.52)	-	-
	Mindfulness	2.06 (.44)	2.14 (.66)	2.34 (.45)	2.49 (.35)
	Control	1.98 (.72)	2.11 (.71)	2.25 (.48)	2.19 (.56)
AI certainty	Self-reflection	-	-	12.01 (2.52)	12.68 (2.16)
	Clarity	12.61 (1.51)	12.70 (2.38)	-	-
	Mindfulness	12.39 (2.13)	13.07 (2.19)	11.61 (1.92)	12.28 (1.59)
	Control	13.04 (2.42)	13.32 (2.13)	10.97 (2.76)	12.12 (1.93)

The *t*-tests showed that the *mindfulness* group increased their state clarity significantly, $t(45) = 2.04$, $p = .02$, $\eta^2 = .08$, whereas the increase of the *clarity* group only tended toward significance, $t(34) = 1.46$, $p = .08$, $\eta^2 = .06$. Expectedly, the control group did not change, $t(33) = 0.43$, $p > .10$. Still, no significant differences between groups were found, $F(2, 111) = 1.21$, $p > .10$.

Emotion recognition test. Here, we used the number of correctly recognized pictures (expert rating). The first three pictures each were treated as exercise material and excluded from the analyses because the participants had problems with the shortness of the presentation at the beginning of the test. The *t*-tests showed that the *clarity* group increased its performance significantly, $t(34) = 4.34$, $p = .00$, $\eta^2 = .36$, whereas the *mindfulness* group hardly changed, $t(45) = 1.46$, $p > .10$. In accordance with the hypotheses, the control group also hardly improved, $t(33) = 0.42$, $p > .10$. The ANCOVA confirmed that the groups differed significantly in their performance, $F(2, 111) = 3.80$, $p = .03$, $\eta^2 = .06$. The different changes of the groups are displayed in Figure 1. Contrasts show that the *clarity* group significantly differed from the control group ($p = .01$), but not from the *mindfulness* group ($p > .10$).

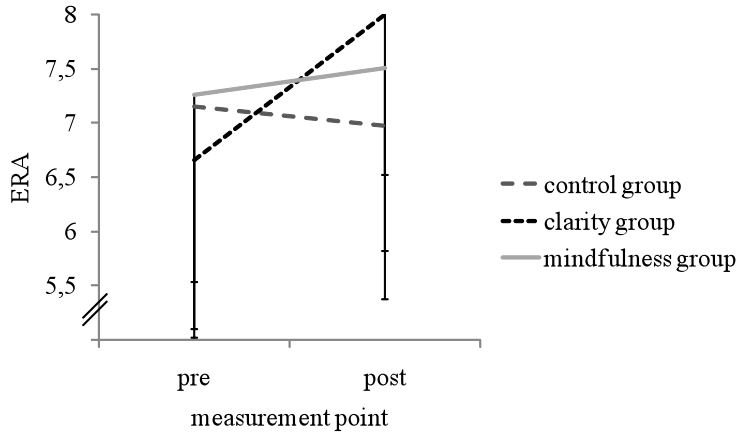

Figure 1. The level of Emotion Recognition Ability (ERA) at the two measurement points of the Clarity Group ($n = 26$), the Mindfulness Group ($n = 25$) and the Control Group ($n = 23$). Error bars represent standard deviation.

Accuracy of affect information. We found slight increases for all three groups. Consequently, all three *t*-tests did not reach significance, *clarity*: $t(34) = 0.37$, $p > .10$; *mindfulness*: $t(45) = 1.01$, $p > .10$; control: $t(33) = 1.33$, $p > .10$, and the groups did not differ significantly from each other, $F(2, 111) = 0.03$, $p > .10$.

Certainty regarding affect information. All groups indicated improved certainty with regard to their provided affect information. Whereas the increases of the *clarity* group and the control group were rather small and not significant, *clarity*: $t(34) = 0.26$, $p > .10$; control: $t(33) = 0.82$, $p > .10$, that of the *mindfulness* group was moderate and significant, $t(45) = 3.02$, $p = .00$, $\eta^2 = .17$. The groups did not differ significantly from each other, $F(2, 111) = 0.84$, $p > .10$.

Discussion

Our aim was to develop two interventions, a direct and an indirect one, that are able to foster emotional clarity. We expected that the participants of the experimental interventions would increase their emotional clarity, whereas the control group would not. We further hypothesized that the training effects would be greater for the direct intervention and that this would especially apply to the indirect measure of clarity as well as to the emotion recognition test.

With regard to our first expectation, we found significant changes in emotional clarity within both intervention groups and no changes within the control group. Thus, the results indicate that the two experimental interventions have effects on measures of affective clarity. However, the three groups did not differ in their levels of emotional clarity after the training when baseline clarity was taken into account. Only on the emotion recognition test were significant differences found between the *clarity* group and the control group. Therefore, the

effects of the experimental interventions compared to a control intervention are not meaningful. However, they are promising with regard to the short duration of the interventions.

Concerning the second research question, the two experimental groups showed significant changes within groups on different measures. As expected, we found a significant increase in emotion recognition ability within the *clarity* group but not within the *mindfulness* group. We further found significant changes within only one of the two experimental groups on all other measures. As the only exception and against our expectations, neither group increased its performance on the indirect measure. However, the differences between the two experimental groups were not significant and must not be overestimated.

Interestingly, the only significant difference between groups was found for the emotion recognition test. However, performance on the emotion recognition test was uncorrelated with self-report clarity. Based on Otto et al. (2001), we would have expected a weak to moderate correlation. In this sense, the result cannot be interpreted with respect to the question of whether emotional clarity was enhanced. Nevertheless, it was expected that the *clarity* intervention would foster emotion recognition abilities because components of this ability were implicitly trained by this intervention. That the ability to recognize emotions in other peoples' faces is possible to train in 1 hour was already demonstrated by Matsumoto and Hwang (2011). The trait variable emotional clarity is probably far less easy to foster (Salovey et al., 1995; Nielsen & Kaszniak, 2006).

The fact that no significant differences between the groups were found on measures of affective clarity might be due to the very short duration of the trainings. The interventions lasted 1 hour, so there was very little time to delve into the subject of emotions. It was obvious to the trainers that the participants were very sceptical in the beginning of the interventions and that they had problems dealing with their own emotions in the context of a course that was attended

by people whom they hardly knew. For this reason, we think that future interventions should take more time to help participants feel comfortable with each other and the trainers as well as with the intervention topic.

Another problem was that the participants did not seem to see the benefit of increasing their emotional clarity although it was explicitly pointed out. Here also, extending the duration of the training should help to illustrate more extensively the relevance of emotional clarity for everyday life. The transfer of the learned strategies into everyday life should further be promoted by dividing the training into two sessions. This way it would be possible for the participants to apply the acquired strategies to their daily routines, test them, come back to the training, and discuss their experiences, problems, and benefits.

Another criticism concerns the measures that were used in this study. The trait and state self-report measures of emotional clarity did not seem to capture differences between general and actual experience. Within all groups, the mean values for trait and state clarity were almost the same, although the measures were applied at different points in time. This is comprehensible because the state scale consists of six items that were taken from the trait scale and only changed in their time reference (general vs. actual experience). Interestingly, the convergent correlation between the two measures was rather small compared to those for trait and state instruments of other constructs (e.g., for the Big Five: *r*s = .39 - .77, Schutte, Malouff, Segrera, Wolf, & Rodgers, 2002; for anger expression: *r*s = .37 - .48, Porter, Stone, & Schwartz, 1999; for self-regulation: *r*s = .53 - .69, Hong, 1995). Apart from that insufficiency, the two measures did not cover all relevant aspects of emotional clarity. According to the definition of clarity, emotional clarity includes the ability to identify and label one's own emotions, to distinguish between them, to describe one's own affective experience, and to know the source of it (Gohm & Clore, 2000; Salovey et al., 1995; Taylor, Ryan, & Bagby, 1985). By contrast, the clarity subscale of

the TMMS (Salovey et al., 1995) covers only the abilities to identify and label one's own emotions; the abilities to describe and to understand one's own affective experience are not explicitly requested. Another criticism of the scale is that some of the items use specifications of frequency that can be problematic. One item, for example, asks for an affective experience that happens "sometimes," which might lead to agreement by persons of high as well as of low clarity (Lischetzke et al., 2001). Another item asks for an experience that "never" happens, which usually is done for scales assessing social desirability (e.g., Crowne & Marlow, 1960). For all these reasons, we decided to develop new self-report measures of emotional clarity for Study 2.

The indirect measure of clarity was uncorrelated with the self-report scales of trait and state clarity. Based on literature about convergent correlations between indirect and direct measures of the same construct, it was expected that the instruments would not be correlated or would be only weakly correlated with each other (Lopes, Salovey, & Straus, 2003; Robinson & Neighbors, 2006). However, it was unexpected that no significant changes within any of the groups would be found. This was especially surprising concerning the *clarity* intervention because some of the concrete skills that were requested by the instrument had been trained explicitly. We assume that one reason lay in the fact that many of the answers were very short and rather cryptic and sometimes hardly fit with the question. Therefore, it was impossible to distuinguish between persons who *could* not accurately describe their feelings and the source and those who simply *did* not because they were unmotivated. We addressed this issue in Study 2 by providing even more exact instructions and by stressing the request to respond as accurately and in as detailed a manner as possible.

The certainty measure captured a significant change within the *mindfulness* group and was moderately correlated with the trait and state self-report measures of affective clarity. By this, the instrument showed the expected convergent correlation (see Lischetzke et al., 2005).

Altogether, the fact that significant changes within groups were found with this short intervention duration of 1 hour was promising, but many optimizations were needed. In the following, we present Study 2, which implemented these optimizations.

Study 2

In this study, we aimed to develop two indirect approaches for enhancing emotional clarity. On the one hand, we trained the participants in mindfulness as was done in the first study; on the other hand, we coached the participants with regard to self-reflection. As in Study 1, the effectiveness of the trainings with respect to the enhancement of emotional clarity was evaluated.

To respond to the results of the first study, a number of changes were implemented. First, the interventions were now comprised of two sessions of 1.5 hours each. By this, it was possible to extend the training time compared to Study 1 and furthermore to provide the opportunity for participants to transfer the training contents to their everyday lives and then to come back to the training and discuss their experiences, problems, and benefits. This was further supported by explicitly asking the participants to actively practice mindfulness and self-reflection, respectively, and to record their experiences in a structured diary that they received for this purpose.

Second, we changed the focus of the trainings. Instead of directly aiming at emotional clarity, which had proven not to be very attractive in Study 1, we emphasized one important benefit of affective clarity for everyday life, that is, improved emotion regulation and reduced

negative affect and distress (Lischetzke et al., 2005; Salovey et al., 1995). By this, we wanted to illustrate application and personal gain and thus to enhance the participants' motivation to *deliberately* take part in the training.

Third, we realized some changes with regard to the instruments measuring clarity. On the one hand, we optimized the instructions of the indirect measure. We now requested the participants to label their current affective state via a free-response format instead of providing rating scales to avoid giving any restrictions or support to the participants. Moreover, the instructions now stressed even more clearly the request to answer as accurately and in as detailed a fashion as possible. To tell participants what we wanted to know as clearly as possible and to keep them from writing mindless answers, we also formulated guiding questions and told the participants to provide an accordant comment if they could not answer the question.

On the other hand, we developed new self-report measures for this study to meet the criticisms of the instruments deployed in Study 1. For the trait questionnaire, we combined items from the clarity subscale of the TMMS (Salovey et al., 1995) with items from other approved scales measuring emotional clarity (see Gohm & Clore, 2000; i.e., subscale Difficulty Identifying Feelings of the TAS; Taylor et al., 1985; subscale Labeling of the MAS; Swinkels & Giuliano, 1995; further, subscale Clarity of Feelings by Lischetzke & Eid, 2003) so that all postulated aspects of clarity were represented by at least one item. Moreover, all items were formulated so that they each asked for an experience that happens "often," "usually," or "almost always" to meet the criticsms of the items with problematic specifications of frequency.

The state questionnaire was developed independently of the trait questionnaire to foster the participants' distinction between statements on trait and state experiences. Therefore, we adapted the clarity subscale of the Meta-Mood Experience Scale (MMES) by Mayer and Gaschke (1988), which measures state meta-mood experience, by taking those items that showed

the highest and most distinct factor loadings and modifying them so that they were similar in style to the items of the trait questionnaire but asked for the person's present experience. We added two items from other scales (subscale Labeling of the MAS, Swinkels & Giuliano, 1995; subscale Clarity of the TMMS, Salovey et al., 1995) to be able to cover all postulated aspects of emotional clarity.

As in Study 1, we postulated that the experimental groups would increase their affective clarity from pretest to posttest, whereas the control group would not. With regard to the differential training effects, we assumed that mindfulness quasi-involves affective clarity and therefore does not require "extra work" or additional resources to figure out one's own affective state. By contrast, self-reflection is intentional and requires control by the self and hence resources (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998). In this sense, we expected the mindfulness group to have advantages over the self-reflection group.

Method

Participants

The study took place within the scope of a course attended by most first-year students; participation in the study was a course requirement. Altogether, 80 students took part in the study. Of these, 16 had to be excluded from the analyses because they missed a course meeting in which the first (n = 14) or the second (n = 2) training session took place. Along the lines of Study 1, another four persons were excluded because they were univariate or multivariate outliers[6]; one more person was excluded because of too many missing values. Thus, the data of 59 students were included in the analyses. All participants were first-year students of

[6] Following Tabachnik and Fidell (2007), persons were defined as multivariate outliers if their Mahalanobis' distance was significant at $p < .001$.

psychology. Of these, 76.3% were female, which is a representative proportion regarding the participants' study subject. The mean age was 23.34 (*SD* = 4.79). All participants were randomly assigned to three groups: two experimental and one control group. Thereby, 16 subjects formed the experimental group *self-reflection*, 18 subjects the experimental group *mindfulness*, and 25 subjects the control group.

Procedure

Again, a one-factorial quasi-experimental design was realized. All groups got an intervention of two sessions lasting 1.5 hours each. The two sessions took place on two consecutive weeks. All groups took part in a pretest at the beginning of the first training session and a posttest at the end of the second session.

Interventions

The two experimental groups received interventions, which were designed to enhance the subjects' emotional clarity. One experimental group exercised self-reflection, especially with regard to affect and distressing experiences. The other experimental group exercised mindfulness, that is, giving enhanced attention to one's current experience with a nonjudgmental attitude. The control group was trained to take helpful notes during lectures.

As in Study 1, the training conceptions emphasized the transfer of the training contents to situations in everyday life by utilizing methods of activation and providing the opportunity to practice. The transfer was further promoted by dividing the training into two sessions and explicitly encouraging the participants to practice in between. Again, each exercise was followed by a short reflection in which the participants could speak about their experiences to make sure that the participants felt comfortable in and after the training situations.

The beginning of the first session was the same for both experimental interventions. They started with a welcome by the trainers and the introduction of the goals and the agenda of the

training. This was followed by a warm up with the aim of getting to know the others. At the end of each first session, the participants were encouraged to implement the learned techniques in everyday life. They received diaries, in which they could record on a daily level the situations in which they had applied the techniques as well as their experiences in doing so. The second sessions each began with a welcome, the presentation of the goals and the agenda, as well as a short recapitulation of what had been learned in Session 1. It followed a discussion of how successful the participants had been in implementing the learned techniques in everyday life, whether they had profited from it, which problems had arisen, and how these could be overcome.

For the *mindfulness* intervention, we again chose formal as well as informal meditations for practicing mindfulness. As a formal meditation, we chose a body scan; as informal meditations, the participants were asked to examine objects as though they had never seen them before. We further encouraged the informal meditation practice in everyday life by discussing occasions to be mindful, obstacles that keep one from being mindful, and how these could be overcome. Another exercise addressed the issue by contrasting a mindful mindset with the usual attitude in distressing everyday situations. The intervention's contents and methods can be seen in Table 4.

In the *self-reflection* intervention, the participants worked out the definition of self-reflection and its differentiation from rumination, the use of wh-questions for solution-oriented self-reflection (when, where, what, who, why), benefits gained from self-reflection, and an example of successful self-reflection in a distressing situation. Furthermore, the participants trained systematic self-reflection by reflecting on a chosen object, on their real and ideal self, as well as on a distressing experience. All reflections were carried out in writing and supported by guiding questions to foster an outcome-oriented instead of a ruminative style of reflection. The intervention's contents and methods can be seen in Table 5.

Table 4

Contents and Methods of Mindfulness Intervention (Study 2)

Contents	Method
Session 1	
Concept and the effects of mindfulness	Input by trainers
Examining a chosen object mindfully	Individual exercise; instructions to act as though coming from another planet
Mindfulness and its benefits for stress reduction	Trainer-plenum-dialog
Examining a tangerine mindfully	Individual exercise; instructions to act as though coming from another planet
Integration into everyday life	Discussion in plenum about occasions, obstacles, and overcoming
Session 2	
Use in everyday life and benefit	Use in everyday life and benefit
Body Scan Meditation	Body Scan Meditation

Table 5

Contents and Methods of Self-reflection Intervention

Contents	Method
Session 1	
Reflecting on a chosen object	Individual exercise; open format and guiding questions
Reflecting on real and ideal self	1) Individual exercise; open format and guiding questions 2) Partner exercise; asking for spontaneous external view
Definition of self-reflection; benefits of self-reflection; example for a successful self-reflection; reflection by use of wh-questions; differentiation from rumination	1) Group work 2) Discussion of results in plenum
Session 2	
Benefits of self-reflection	Presentation of empirical data
Reflecting on a distressing experience	1) Induction of distress (anticipation of participation in a unknown task) 2) Individual reflection on experience (open format and guiding questions) 3) Discussion in plenum about how the reflection helped to reduce the distress

In the *control* intervention, the participants worked on effective strategies for taking helpful notes and practiced these strategies both in the training situation as well as in a university lecture. They compared these notes with notes they had taken quasi-naively at the beginning of the training and discussed advantages of and problems with the new strategies.

Measures

State clarity. As described above, we adapted seven items of the clarity subscale of the MMES (Mayer & Gaschke, 1988) and added two items from other scales (subscale Labeling of the MAS, Swinkels & Giuliano, 1995; subscale Clarity of the German version of the TMMS, Otto et al., 2001). The resulting nine items were randomized for presentation. A sample item is: "I am able to describe my present mood." Respondents were asked to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each statement. The scale was internally consistent with $\alpha = .93$. The wording of the items' English translations can be found in the Appendix.

Accuracy of affect information. We used the same approach as in Study 1 to assess the ability to accurately and fittingly describe one's own affective state. For this study, we implemented a few optimizations that were described above. The rating procedure was the same as in Study 1. Again, the intraclass correlations indicated adequate interrater reliability after the second rating for each rating category (αs = .58 - .77). We formed one average measure for each category out of the single measures of both judges. Then we calculated one mean value out of the four rating categories. The overall accuracy scale was internally consistent with $\alpha = .81$.

Certainty regarding affect information. The same procedure as in Study 1 was used. The scale formed out of all three certainty ratings proved reasonably reliable ($\alpha = .65$).

Emotion recognition ability (ERA). We applied the same procedure as in Study 1.

Trait clarity. As described above, we developed a trait scale by taking items of various approved scales measuring emotional clarity (Gohm & Clore, 2000). Some of the items were recoded so that half of the items were positively keyed and half were negatively keyed. All 12 items were randomized for presentation. A sample item is "Often, I can't tell how I feel" (reversed). Instructions informed respondents to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each statement (cf TMMS; Salovey et al, 1995). The scale showed internal consistency with $\alpha = .91$. The items' English translations can be found in the Appendix.

Results

Correlations Between Measures

First, we analyzed the convergent correlations between measures. Expectedly, trait clarity was significantly related to state clarity ($r = .40$, $p = .00$), accuracy of emotion descriptions ($r = .49$, $p = .00$), and certainty ratings of emotion descriptions ($r = .69$, $p = .00$). In contrast to the assumptions, the correlation with performance on the emotion recognition test was not significantly different from zero ($r = .05$, $p > .10$).

In line with the results for trait clarity, state clarity was significantly related to accuracy of emotion descriptions ($r = .39$, $p = .00$) and certainty ratings of emotion descriptions ($r = .49$, $p = .00$) but uncorrelated with ERA ($r = .05$, $p > .10$).

Intervention Effects

Along the lines of the first study, we first used *t*-tests to assess significant intervention effects within groups. We then tested for pretest differences between groups. The groups differed significantly on the indirect measure of clarity; the control group and the *mindfulness* group were rated as more accurate than the *clarity* group. Subsequently, we calculated ANCOVAs with the

posttest values as dependent variables and the pretest values as covariates to check for differences between groups.

State clarity. As evident from the means in Table 3, the means indicate that all groups hardly changed their state clarity. Accordingly, *t*-tests showed no significant differences between pretest and posttest for any group,[7] and we found no significant differences between groups, $F(2, 55) = 0.49$, $p > .10$.

Accuracy of affect information. We found slight increases in the experimental groups and a slight decrease in the control group. The groups tended to differ significantly from each other, $F(2, 55) = 2.90$, $p = .10$, $\eta^2 = .10$.

Certainty regarding affect information. All groups indicated moderate increases in their certainty regarding their provided affect information. The control group's increase was somewhat greater than those of the experimental groups and reached significance on the *t*-test, $t(24) = 2.46$, $p = .02$, $\eta^2 = .20$. However, the differences between groups were not significant, $F(2, 55) = 0.17$, $p > .10$.

Emotion recognition ability. Again, all groups increased in their performance on the emotion recognition test to a similar very small degree. Correspondingly, there were no significant differences between groups, $F(2, 55) = 1.47$, $p > .10$.

Trait clarity. All groups increased in their trait clarity to a similar and slight degree. Consequently, *t*-tests showed no significant differences between the pretest and posttest for any group and the ANCOVA indicated no significant differences between groups, $F(2, 55) = 0.21$, $p > .10$.

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[7] In the following, we report the *t*-tests only when the pre-post differences were significant.

Discussion

The aim of the present study was to develop two experimental interventions that foster emotional clarity. We expected that the two experimental groups would show significant changes on measures of emotional clarity, whereas the control group would not. We further assumed that the *mindfulness* group would have some advantages over the *self-reflection* group.

These hypotheses could not be confirmed. None of the groups demonstrated a significant change on any of the variables. Only the control group showed a significant increase in its performance on the emotion recognition test, which was unexpected. In correspondance with the lack of significant changes, no significant differences between groups were found. Only on the indirect measure of clarity did the experimental groups tend to differ significantly from the control group in the expected way.

Therefore, the results give no support to the idea that affective clarity can be enhanced by such training interventions such as those that were realized in this study. This is unexpected regarding the fact that in Study 1, some significant changes within groups were found. However, it is not possible to explicitly ascribe the results to the intervention concepts implemented in this study. The otpimizations realized from Study 1 to Study 2 are concerned not only with the interventions' contents, focus, and duration, but also with the utilized instruments.

With respect to the interventions, we think that it is unlikely that extending the training duration to 3 hours and splitting it into two sessions had negative effects. Concerning the intervention contents, it is possible that the *self-reflection* training did not have the expected effects on emotional clarity. However, it is not probable that the *mindfulness* intervention was completely ineffective in this study given that it effected significant changes within the experimental group in Study 1.

By contrast, we think it is possible that the interventions' focus on affect regulation and distress instead of on affective clarity might have impaired the interventions' effectiveness with regard to the actual goal of enhancing emotional clarity. This modification had been implemented to illustrate the application of emotional clarity and hence to improve the participants' motivation to actively take part in the training. However, it is possible that we lost sight of the interventions' aim. It is plausible that improving emotional clarity in such a short time is possible only if the participants explicitly work on it.

With regard to the instruments, the modifications of the indirect measure of affective clarity seem to have had the desired effect. Here, marginal differences between the control group and the experimental groups in the expected direction were found, whereas in the first study, no differences were indicated. Still, the difference between groups was marginal, and no changes within groups were detected. Further research with this measure is necessary to test its ability to map changes in the ability to accurately describe one's own affective state.

In contrast to Study 1, the indirect measure's convergent correlations with state and trait self-report clarity were rather strong in this study. Because the correlations between direct and indirect measures are usually only weak to modest, this was somewhat unexpected. A reason for this might lie in the fact that all three instruments now cover a broader definition of emotional clarity and therefore have greater overlap. However, the significant correlation provides a first indication that the indirect instrument captures emotional clarity. Still, it needs further validation with approved measures of affective clarity and by testing its ability to predict relevant outcomes.

In contrast to the indirect measure, the new self-report measures of trait and state clarity did not map any differences in emotional clarity between data points or between groups. It remains unclear whether there simply were no differences or whether the instruments could not

map them. However, both scales consist exclusively of items from validated scales of emotional clarity. It is therefore not probable that the instruments are less sensitive to differences than the original scales. Nevertheless, further research with these instruments is necessary to investigate their psychometric properties and their sensitivity to differences. What was improved is the instruments' ability to distinguish between trait and state experience. The groups' mean values concerning state and trait clarity are more distinct from each other now. The convergent correlation between the two measures was on an expected level in this study (Schutte et al., 2002; Hong, 1995; Porter et al., 1999).

The convergent correlations between certainty and self-report measures of emotional clarity were considerably higher than in the first study and than those reported by Lischetzke et al. (2005, 2011). Because the certainty rating refers to the provided answer of the indirect measure, this might be due to the high correlation between this indirect measure and the self-report measures. By contrast, the correlations between performance on the emotion recognition test and the self-report measures were not different from zero. This is in line with the results found in Study 1.

In sum, this study does not support the idea that emotional clarity is enhanceable by short training interventions. The main reason for this finding might be the interventions' focus on distress and regulation instead of affective clarity itself. However, the utilized instruments need further investigation with regard to their psychometric properties and sensitivity to differences between data points and groups.

General Discussion

The present research examined the questions of whether affective clarity can be enhanced through training interventions and which kind of intervention serves this goal best. An additional goal was to develop instruments measuring clarity.

Altogether, the two studies at hand give small support to the idea that emotional clarity is changeable through a short intervention. In Study 1, significant changes from pretest to posttest were reported within the experimental groups but not within the control group. However, no such changes within the experimental groups were indicated in Study 2; in both studies, no significant differences between groups were found. Only concerning the indirect measure of affective clarity were the control group and the two experimental groups marginally distinct from each other in Study 2.

With regard to the question of which intervention has the greatest effects on emotional clarity, the *clarity* intervention and the *mindfulness* intervention (as they were designed for the first study) were the most promising. Both experimental groups from Study 1 that took part in these trainings reported significant increases in affective clarity on some of the measures. Because no significant differences between the experimental groups were found, it is not possible to favor one of the interventions developed in Study 1. In Study 2, both intervention groups reported no significant increases on any variable. Thus, the interventions designed for Study 2 seem less applicable, although one has to keep in mind that this might be due to the interventions' focus on distress and its regulation.

Despite the fact that significant changes of the experimental groups in Study 1 could be found only on the within-subjects level, the results are promising given the trainings' very brief duration of 1 hour. Generally, affective clarity can certainly be learned and enhanced, but as a personality trait, not easily and rapidly (Salovey et al., 1995). The finding of Nielsen and

Kaszniak (2006) that *long-term* meditators reported significantly greater clarity than nonmeditators gives some support to this postulation. It is reasonable to assume that training programs can initiate learning processes with regard to emotional competence, but that the newly acquired skills have to be practiced daily to change stable attitudes. In fact, knowledge acquired in training interventions can require up to 6 months until it is employed in everyday life (e.g., Kirkpatrick, 1998).

Therefore, future studies should realize a follow-up evaluation to show increases in affective clarity that were initiated by the training and take place after it has ended. Furthermore, subsequent studies should profit from an extention of the training duration and its division into at least two training sessions. The advantage from this is that the initiated learning processes can take effect already between training sessions so that it is possible in the second training session to build on the knowledge and experience that was acquired in the meantime. In Study 2, this approach was realized but did not have the expected effect. However, this might be ascribed to the interventions' focus on distress and regulation instead of emotional clarity.

Further support of the learning processes initiated by the trainings could come from structured diaries (e.g., Perels, Otto, Landmann, Hertel, & Schmitz, 2007). In the second study, the participants received such diaries that asked for emotion-laden situations, use of strategies, and outcomes or conclusions for the period of the week between the two intervention sessions. Future studies should employ diaries not only during intervention time but also for several weeks afterwards to foster the transfer of learned strategies into the person's daily routine. The so-gained data should further be used for evaluation as it would allow for time series analyses (e.g., Perels et al., 2007) and would offer information not only about whether affective clarity has changed but also about *how* it changed. By this, it would be possible to explore the development of emotional clarity on a daily basis over a longer period of time.

Future studies should profit from the recruitment of voluntary participants instead of requiring participation from course members. Probably, the interventions would have better effects on participants who deliberately take time to participate in training sessions because they see a personal gain in improving their emotional clarity. Most students who participated in the present studies did not seem to see the need to improve their emotional clarity. Obviously, they felt no deficits with regard to affective clarity in their personal everyday lives. Therefore, it could be promising to address persons who are more interested in being emotionally clear, such as teachers (Brackett & Katulak, 2007).

Deployed Measures

In Study 1, the well-used clarity subscale of the TMMS (Salovey et al., 1995) and a scale to measure state clarity, which was deduced from the trait instrument, were deployed. They were able to capture significant changes in emotional clarity within groups but differentiated poorly between state and trait experience. They further did not cover all postulated aspects of emotional clarity. Therefore, we developed new self-report measures of state and trait clarity for Study 2. These better distinguished trait from state experience and were correlated in the expected manner with each other. However, they did not map any changes. As discussed above, this might be due to the focus of the trainings.

We further developed an indirect measure of emotional clarity that covers a broad definition of emotional clarity. That is an advantage over the indirect measure developed by Lischetzke et al. (2005, 2011) that captures only the ability to identify the present affective state. By contrast, the instrument by Lischetzke et al. is an objective measure of affective clarity, whereas the intrument presented here relies on the judgments of two raters. Our instrument was optimized from Study 1 to Study 2 and then showed marginal differences between groups. The

correlations of the optimized instrument with the self-report measures of affective clarity were significantly positive, which may serve as a first indicator of its validity. Still, it has not proved sensitivity to changes yet.

Another instrument that was deployed to assess affective clarity was the degree of certainty with regard to the information that one provided with respect to one's own affective state. This measure was able to map the changes within the *mindfulness* group in Study 1. In both studies, it was significantly positively correlated with the deployed self-report measures. It is a measure that is very easy to apply and therefore is worth further studying as an alternative instrument of affective clarity. One has to keep in mind that this instrument cannot be applied alone but must always be used in context with another measure. In that sense, it is always dependent on the context that it was linked to. Thus, the comparability of different certainty measures like the one presented here and the one presented by Lischetzke is not clear.

Finally, we measured the ability to recognize emotions in other people's faces as an external criterion and found that this ability was significantly enhanced in the first study by the *clarity* intervention. However, performance on the emotion recognition test was unrelated to self-report measures of affective clarity in both studies. Hence, this ability has not been verified as an external criterion of emotional clarity. Future studies should profit from including other external criteria as measures of well-being, mental and physical health, social adjustment, or affect, which are all positively related to affective clarity (e.g., Kotsou, Nelis, Grégoire, & Mikolajczak, 2011).

Conclusion

With regard to the important role of affective clarity within affect regulation and its positive associations with several variables in the field of health and life satisfaction as well as

performance, we think the concept is worth more comprehensive study than realized in most previous studies. The present research contributes to that by developing different approaches to how emotional clarity could be enhanced. Moreover, it presents alternative instruments for measuring emotional clarity not only as a trait variable and not only via self-report but also as a state variable and indirectly. With regard to the enhancement of emotional clarity, the conducted studies give small support to the idea that it is possible to foster affective clarity via short interventions. Thereby, the direct approach, that is, training the defining abilities of emotional clarity, and the indirect approach of training mindfulness seem to be the most promising. Future studies should extend the training duration to two sessions of at least 1.5 hours each and work with voluntary participants who depend on their ability to clearly perceive their affective state daily. The instruments that were developed for the present studies all need further study, in particular with regard to their abilities to map differences between groups and changes within groups. Neverthless, this research provides a variety of approaches for how emotional clarity could be measured apart from the established trait self-report scales.

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Appendix

Items of the Trait Clarity Scale (Study 2)

English translations
I almost always know exactly how I am feeling.
I often have trouble explaining my feelings. (r)
When I am upset, I usually know what I am feeling.
I am usually very clear about my feelings.
I often have trouble describing my feelings. (r)
I usually know why I am feeling like I do.
I usually know my feelings about a matter.
When I am upset, I don't know if I am sad, frightened, or angry. (r)
I often can't make sense of my feelings. (r)
Often, I am suddenly strained or in a bad mood apparently without reason. (r)
Often, I can't tell how I feel. (r)
Ususally, I have no problems labeling my feelings.

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Items of the State Clarity Scale (Study 2)

English translations
I know exactly how I'm feeling.
I am unable to describe how I'm feeling. (r)
I am very clear about my present emotion.
I have a hard time labeling my feelings. (r)
I know my feelings about this current situation.
I understand why I'm feeling the way I do.
At the moment I can't tell what my emotions are. (r)
I am able to describe my present mood.
I don't know why I'm feeling this way. (r)

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Manuscript 2

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How Does Emotional Clarity Relate to Emotional Reactivity and Recovery?

A Process Perspective on the Relevance of Emotional Clarity in Anxiety Regulation

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The data will be published as part of an academic thesis.

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EMOTIONAL CLARITY AND THE REGULATION OF ANXIETY

Abstract

This research investigated the role of emotional clarity within anxiety regulation. Therefore, its relation to state anxiety was analyzed in a quasi-experimental study with 52 students of a university in Germany. This was done before and after an anxiety induction via film as well as after a short recovery phase. We analyzed the relationship of anxiety not only to trait clarity but also to state clarity. Furthermore, we explored how trait and state clarity relate to each other. We found that persons high and low in trait clarity differed significantly in their level of anxiety at the beginning of the experiment and in their degree of recovery from the induced anxiety. However, they did not react differently to the induction itself. Accordingly, state clarity was negatively related to state anxiety at the beginning and the end of the experiment but not right after the anxiety induction. Surprisingly, the level of state clarity hardly changed in the course of the experiment. Its relation to trait clarity was expectedly positive. Taken together, this research provides a good approach toward a better understanding of the emotional experience and regulation of people with high and low trait clarity from a process perspective. Future experimental research should benefit from including measures for *state* clarity; moreover, we recommend utilizing several data points measured close together in time.

Keywords: emotional clarity, emotional reactivity, emotional recovery, affect regulation

How Does Emotional Clarity Relate to Emotional Reactivity and Recovery?

A Process Perspective on the Relevance of Emotional Clarity in Anxiety Regulation

Emotional clarity has been found to be associated with a range of outcomes that are related to health and well-being or more generally to quality of life (Austin, Saklofske, & Egan, 2005; Gohm & Clore, 2002). Significant positive relations have been found, for example, with life satisfaction (Extremera & Fernández-Berrocal, 2005; Palmer, Donaldson, & Stough, 2002), social functioning, vitality, mental and physical health (Extremera & Fernández-Berrocal, 2006), well-being, a functional style of coping, and an internal, stable, global attributional style for good events (Gohm & Clore, 2002). Negative correlations have been found, for example, with anxiety and depression (e.g., Extremera & Fernández-Berrocal, 2006; Ghorbani, Bing, Watson, Davison, & Mack, 2002). Thus, it seems worthwhile to further study the concept of emotional clarity.

Clarity of emotions is defined as the ability to "identify and distinguish specific emotions" (Gohm & Clore, 2000, p. 497). Whereas some people are usually quite confident about their feelings, experience certainty regarding their affective states, and are able to label and describe their feelings, others often tend to be confused about their affective states, do not know exactly what they feel, and have difficulty naming their feelings (Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Swinkels & Giuliano, 1995).

Emotional clarity is considered to be an important characteristic of meta-mood experience.[1] Individuals not only experience their feelings, but also evaluate and regulate them

[1] Kokkonen & Pulkkinen (2001) point out that Mayer and colleagues use the term "meta-experience of mood" (Mayer & Stevens, 1994) as well as "meta-experience of emotion" (Mayer & Salovey, 1995). Thus, like many researchers, they do not seem to make a sharp distinction between the concepts of emotion and mood.

(Mayer & Gaschke, 1988). Thus, "meta-mood" refers to "reflective processes that accompany most mood states" (Salovey et al., 1995, p. 127).

The ability to reflect upon and manage one's emotions is an important aspect of emotional intelligence (EI; Salovey, Stroud, Woolery, & Epel, 2002). Because the quality of meta-experience is measured by self-report, Salovey and colleagues (2002) argue that it "should not really be considered emotional intelligence per se, but rather beliefs about emotional intelligence" (p. 624). Consequently, the meta-experience of mood is considered to be "perceived emotional intelligence" (PEI) or trait EI and is explicitly distinguished from abilty EI, which is assessed with maximum-performance tests (Petrides & Furnham, 2000, 2001). Following this differentiation, meta-mood experience is commonly seen as trait EI, which is concerned with cross-situational consistencies in behavior and is embedded within a personality framework.

Whereas Mayer and Gaschke (1988) concentrated on moment-by-moment changes in reflections about ongoing mood (state meta-moods), Salovey and colleagues (1995) focused on more stable attitudes about moods (trait meta-moods). Both research groups found emotional clarity to be one of the meta-mood dimensions. However, most researchers have dealt with emotional clarity as a stable attitude. Only a few exceptions have engaged in state clarity (Kokkonen & Pulkkinen, 2001; Lischetzke Cuccodoro, Gauger, Todeschini, & Eid, 2005; Mayer & Gaschke, 1988; Mayer & Stevens, 1994). The relation between state and trait clarity[2] was studied only by Lischetzke and colleagues (2005). Thus, there is very little knowledge so far

[2] They employed the terms "momentary clarity" and "dispositional clarity" for state and trait clarity. In the following, we will use state clarity as synonymous with momentary clarity and trait clarity as synonymous with dispositional clarity.

about emotional clarity as a state variable and the relation between how clear people report being about their feelings and how clear they actually are.

A lot of correlational data have demonstrated a strong positive correlation between emotional clarity and positive affect as well as a strong negative relation between clarity and negative affect in general and between clarity and anxiety in particular (for data regarding state clarity, see Kokkonen & Pulkkinen, 2001; Lischetzke et al., 2005; Mayer & Stevens, 1994; for data regarding trait clarity and anxiety, see, e.g., Fernández-Berrocal, Alcaide, Extremera, & Pizarro, 2006; Ghorbani et al., 2002; Goldman, Kraemer & Salovey, 1996; Mennin, Heimberg, Turk, & Fresco, 2005; Salovey et al., 2002). However, most studies on the relations between clarity, affect, and regulation of affect are based on correlational data only. Very few studies have employed experimental settings with two or more data points (Lischetzke et al., 2005; Fernández-Berrocal & Extremera, 2006; Ramos, Fernández-Berrocal, & Extremera, 2007; Salovey et al., 1995; Salovey et al., 2002). The study by Lischetzke and collaborators (2005) is the only one with multiple points of measurement investigating not only trait clarity but also state clarity. Typically, these studies comprise three phases: At the beginning of the experiment (Time 1), emotional clarity and the affective state of the participants are measured. At Time 2, some kind of affect is induced or the participants are exposed to a stressor. Directly after that, the affective state is assessed again (reactivity). At Time 3, after some kind of rest period, the participants' affective state is collected again (recovery). In the following, we want to outline the results of these studies with regard to negative affect ordered by the three phases.[3]

[3] Because there has been only one study assessing emotional clarity as a state variable (Lischetzke et al., 2005), the term "emotional clarity" usually refers to dispositional clarity. Otherwise, it is called "momentary clarity."

Emotional Clarity and Previous Affective State (Time 1)

Fernández-Berrocal et al. (2006) as well as Salovey et al. (1995) found no effect of emotional clarity on affect at the beginning of their experiment. Lischetzke et al. (2005) reported a significant positive correlation between momentary clarity and joy but no significant relation of clarity to negative affect. The other studies cited above did not report any results concerning this phase of the experiment.

Emotional Clarity and Reactivity (Time 2)

At first glance, the findings regarding reactivity to affect induction seem contradictory. Whereas some researchers found a negative relation between clarity and negative affect after induction, others found a positive relationship. Some studies, on the other hand, reported that the two variables were unrelated.

At a second glance, it becomes clear that in some studies baseline affect was controlled, but in others, it was not. Taking this into account, a more consistent picture emerges: If baseline affect was controlled, the relation between clarity and negative affect was either positive or not significant. When baseline affect was not accounted for, the relation was negative. In the following, we reflect upon the results of previous research in detail.

Fernández-Berrocal and colleague (2006) found in the anger induction condition that high clarity participants indicated also *higher* levels of negative affect (NA) than low clarity participants after controlling for baseline affect. However, for the amusement and the sadness induction conditions, they found that the level of NA was *unrelated* to clarity when baseline affect was taken into account.

The result that clarity is related to higher levels of NA after controlling for baseline affect was also found by Salovey, et al. (2002) after the induction of stress. Salovey et al. (1995), on

the other hand, like Fernández-Berrocal and Extremera (2006), reported that clarity was not able to predict affect after an affect induction when baseline affect was taken into account for the amusement and sadness conditions.

By contrast, Ramos et al. (2007) reported that higher levels of clarity were associated with *lower* levels of depression and fatigue following a stressful film. Lischetzke et al. (2005) also found that high clarity participants were in a more positive and in a less negative affective state after a tragicomical film. However, these two studies did not control for baseline affect.

Emotional Clarity and Recovery (Time 3)

Most authors have postulated that the relation between emotional clarity and affect is mediated by affect regulation: Salovey et al. (1995) proposed that individuals who are emotionally clear do not need to engage in prolonged rumination in order to figure out what they feel exactly and therefore can turn their attentional resources toward effective affect management. Similarly, Lischetzke et al. (2005) as well as Wilkowski and Robinson (2008) based on cybernatic models of affect regulation (e.g., Larsen, 2000), suggest that high emotional clarity permits the individual to recognize an undesirable level or kind of affective state early and thus to quickly implement appropriate regulation strategies.

In line with theses ideas, Fernández-Berrocal and Extremera (2006) found that after a recovery phase, high clarity was associated with lower levels of NA in all conditions when affect measured at the beginning of the experiment was taken into account. Salovey et al. (1995) reported that recovery from NA was predicted by clarity when affect before and after the induction were taken into account. Highly clear individuals were more likely to rebound from the induced affect. Likewise, Lischetzke et al. (2005) found that higher momentary clarity right

after the induction was associated with lower levels of sadness and unpleasant affect after the recovery phase when affect before and after the induction were controlled.

The Present Research

In summary, very little is known thus far about the relation between emotional clarity and affect when affect is manipulated. The small number of experimental studies that have been conducted has demonstrated inconsistent results with regard to the time after an affect induction. Hence, the present study further explored the relation between clarity and affect in this phase. Furthermore, this study aimed to contribute to the picture of the role of *state* clarity within affect regulation. Though anxiety is an important variable in the clinical context as well as in learning, there have been no experimental studies that have reported results with regard to emotional clarity and the regulation of anxiety. Therefore, we chose anxiety as the dependent variable.

Specifically, our hypotheses were:

According to previous research with regard to clarity and negative affect before an induction, we hypothesized that participants high in trait clarity would not differ from those low in clarity in their level of anxiety at this phase of the experiment.

On the basis of the inconsistent results concerning clarity and affect after an induction, we expected that our participants high in dispositional clarity would report a similar *or* a higher level of anxiety compared to those low in clarity at this time when baseline affect was controlled.

In line with the theoretical ideas and the consistent empirical evidence for affect after a recovery phase, we postulate that participants high in trait clarity would report less anxiety than those low in clarity at this measurement point when affect at Time 2 was taken into account.

Based on the results of Lischetzke et al. (2005) regarding an indirect measure of state clarity, we expected this variable to be negatively related to anxiety at all three phases of the experiment.

Based on the literature dealing with convergent correlations between trait and state measures of the same construct (e.g., Schutte, Malouff, Segrera, Wolf, & Rodgers, 2003), we expected that participants high in dispositional clarity would report greater momentary clarity than participants low in dispositional clarity.

Method

Participants

Altogether, 52 students from the University of Trier, Germany, participated in this study. They were acquired via placards. All participants received goodies at the end of the experiment; the psychology students (78.8%) additionally obtained course credit. The mean age of participants was 21.88 years (*SD* = 2.39); 36 (69.2%) of the subjects were female.

Procedure

Data were collected in group sessions. First, participants rated their dispositonal clarity, their momentary level of anxiety, and their momentary clarity.[4] Second, they were exposed to a clip of the movie "The silence of the Lambs," which had proven to induce the specific emotion anxiety (fear) without eliciting another emotion to a similar degree (Hewig, Hagemann, Seifert, Gollwitzer, Naumann, & Bartussek, 2005).

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[4] In this and the third phase of the experiment, the participants also completed other measures, which are not reported here.

Right after the clip, the participants again rated their state clarity and their level of anxiety. Third, there was a 3-min phase of recovery. During this phase of recovery, all participants were asked to solve easy anagrams with four letters. This was done to create a low cognitive load condition, which left the participants with enough resources for affect regulation (Park, Glaser, & Knowles, 2008).[5] Right after the recovery phase, momentary clarity and level of anxiety were measured again.

Measures

Trait clarity. To measure trait clarity, we developed a 12-item questionnaire by taking items from various approved scales that measure emotional clarity. The items were taken from the clarity subscale of the German version of the Trait Meta-Mood Scale (TMMS; Salovey et al., 1995; German version by Otto, Döring-Seipel, Grebe, & Lantermann, 2001), the scale "Difficulty identifying feelings" of the Toronto Alexithymia Scale (TAS; Taylor, Ryan, & Bagby, 1985; German version by Bach, Bach, Zwaan, Serim, & Böhmer, 1996), and the scale "Labeling" of the Mood Awareness Scale (MAS; Swinkels & Giuliano, 1995). As Gohm and Clore (2000) pointed out, all these scales are good measures of clarity and map the same construct. Another item was taken from Lischetzke and Eid (2003).

The reason that we did not use the widely used subscale clarity of the TMMS by Salovey et al. (1995) was that in our opinion it does not cover all aspects of emotional clarity. Based on the scales and ideas provided by Salovey et al. (1995; TMMS), Taylor et al. (1985; TAS), Swinkels and Giuliano (1995; MAS), Lischetzke et al. (2003; 2005), as well as Gohm and Clore

[5] In the experiment, a high cognitive load condition (anagrams with 6 letters) was realized as well. However, only the results for the low-cognitive-load group are reported here.

(2000), we view emotional clarity as comprising the following aspects: *knowing how one feels even if one is upset*, *understanding how one feels and knowing the reasons for one's own feelings*, *being able to label and to describe one's own feelings*, *knowing one's feelings about a matter*. The subscale clarity of the TMMS explicitly covers only the aspects *knowing how one feels* and *knowing one's feelings about a matter*.

We chose the items so that all aspects of clarity were represented by at least one item. All items were translated (if necessary) and formulated so that they asked for experiences that happened "often" or "usually" or "almost always." Some of the items were recoded so that half of the items were positively keyed and half were negatively keyed. All 12 items were randomized for presentation. A sample item is "I almost always know exactly how I am feeling." Instructions asked respondents to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each statement (cf. TMMS; Salovey et al, 1995). On a pretest, the scale had proven to be reliable with $\alpha = .91$. In the present study, the scale again showed adequate internal consistency with $\alpha = .85$. The items in their English translations can be found in the Appendix.

State clarity. To measure state clarity, we adapted the subscale clarity of the Meta-Mood Experience Scale (MMES) by Mayer and Gaschke (1988) to meet our requirements. The MMES was developed to measure the meta-mood experience as a state variable. The subscale clarity covers a broader definition of clarity than the TMMS (Trait Meta-Mood Scale; Salovey et al., 1995). We took the seven items that showed the highest and most distinct factor loadings (> .50) and added two items from other scales (the subscale "Labeling" of the MAS; Swinkels & Giuliano,, 1995; the subscale clarity of the German version of the TMMS; Otto et al., 2001) to be able to cover all postulated aspects of emotional clarity (see above). However, the aspect *knowing how one feels even if one is upset* could not be realized. The resulting nine items were

translated (if necessary) and formulated so that they were similar in style to the items of the trait questionnaire. However, they asked for a person's present experience rather than the person's usual experience. Five of the items were positively keyed and four were negatively keyed. All nine items were randomized for presentation. A sample item is: "I know exactly how I'm feeling." Instructions again asked respondents to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each statement. On the pretest, the scale proved to be reliable with $\alpha = .94$. In the present study, the scale again was internally consistent with $\alpha = .87$. The items in their English translations can be found in the Appendix.

Anxiety. The momentary level of anxiety was measured with the subscale state anxiety of the German version of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970; German version: State-Trait-Angstinventar by Laux, Glanzmann, Schaffner, & Spielberger, 1981). The subscale state anxiety uses 20 items to measure how tense, nervous, and worried the participant is. A sample item is: "I am worried." Respondents had to indicate on a 4-point Likert scale the degree to which the statements matched their momentary feelings. The scale proved to be reliable with .89.

Results

Manipulation Check

The manipulation was successful: The level of state anxiety increased from $M = 39.21$ ($SD = 7.93$) at the beginning of the experiment to $M = 48.54$ ($SD = 10.24$) after the presentation of the clip (cf. Table 1). This increase was significant, $F(1, 51) = 40.42$, $p < .001$, $\eta^2 = .44$.

Table 1

Descriptive Statistics for State Clarity and Anxiety of the High versus Low Clarity Groups

	Trait Clarity			
	Low Clarity group		High Clarity group	
	M	*M*	*M*	*M*
Anxiety				
T1	43.37	7.67	34.72	5.43
T2	51.85	10.06	44.96	9.34
T3	45.48	9.18	36.08	6.00
State clarity				
T1	3.66	0.66	4.27	0.54
T2	3.84	0.69	4.19	0.70
T3	3.60	0.72	4.31	0.50

Note. Possible range of state clarity: 1 - 5. Possible range of anxiety: 20 - 80.

Trait Clarity and Anxiety before Affect Induction

For the following analyses, we formed two groups by median split: the High Clarity group consisted of 25 participants with a reported level of trait clarity above 3.92; the Low Clarity group covered 27 probands who indicated a level of dispositional clarity less than or equal to 3.92. An ANOVA indicated a significant difference between the two groups with respect to their level of anxiety at the beginning of the experiment, $F(1, 50) = 21.71$, $p < .001$, $\eta^2 = .30$. The Low Clarity group reported significantly more anxiety ($M = 43.37$, $SD = 7.67$) than the High Clarity group ($M = 34.72$, $SD = 5.42$).

Trait Clarity and Anxiety after Affect Induction

We found a significant difference between groups in anxiety after affect induction, $F(1, 50) = 6.52$, $p < .05$, $\eta^2 = .12$. The High Clarity group still reported less anxiety ($M = 44.96$, $SD = 9.35$) than the Low Clarity group ($M = 51.85$, $SD = 10.06$). We conducted an ANCOVA with the level of anxiety at T1 as the covariate to control for baseline anxiety. When the level of anxiety

at the beginning of the experiment was taken into account, there were no significant differences between groups, $F(1, 49) = 1.88$, $p > .10$.

Trait Clarity and Anxiety after the Recovery Phase

We found a significant difference between groups in anxiety after the rest period, $F(1, 50) = 18.77$, $p < .001$, $\eta^2 = .27$. The High Clarity group still reported less anxiety ($M = 36.08$, $SD = 6.00$) than the Low Clarity group ($M = 45.48$, $SD = 9.18$). This effect held when the level of anxiety before the regulation phase was controlled, $F(1, 49) = 11.09$, $p < .01$, $\eta^2 = .19$. As displayed in Figure 1, participants with high dispositional clarity reported a slightly greater decrease in anxiety during the recovering phase than those with low trait clarity.

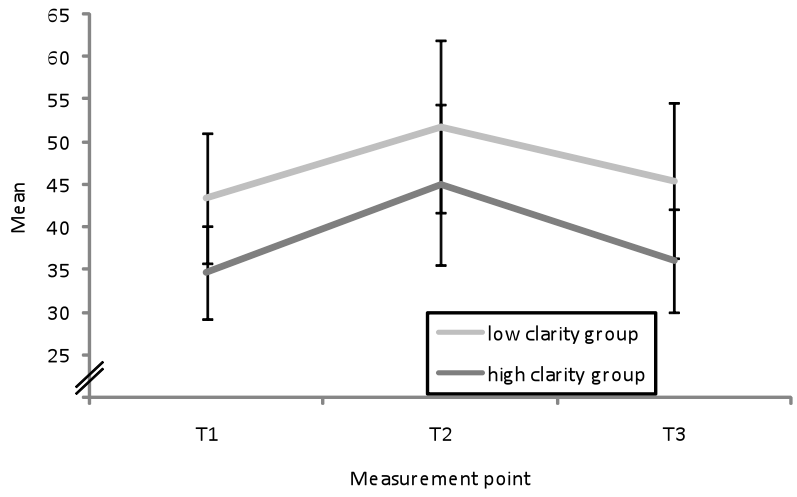

Figure 1. The level of anxiety at the three measurement points of the High versus Low Clarity groups. Error bars represent standard deviations.

State Clarity

The correlations between state clarity and anxiety varied from $r = -.44$ ($p < .01$) at the beginning of the experiment and $r = -.27$ ($p < .05$) after the affect induction to $r = -.53$ ($p < .01$) after the regulation phase. As displayed in Figures 2 and 3, the level of anxiety was affected by

the affect induction and returned to the baseline level at the end of the experiment, $F(2, 102) = 36.22$, $p < .001$, $\eta^2 = .42$, whereas state clarity was not influenced by the movie and hardly changed at all, $F(2, 102) = 0.30$, $p > .10$.

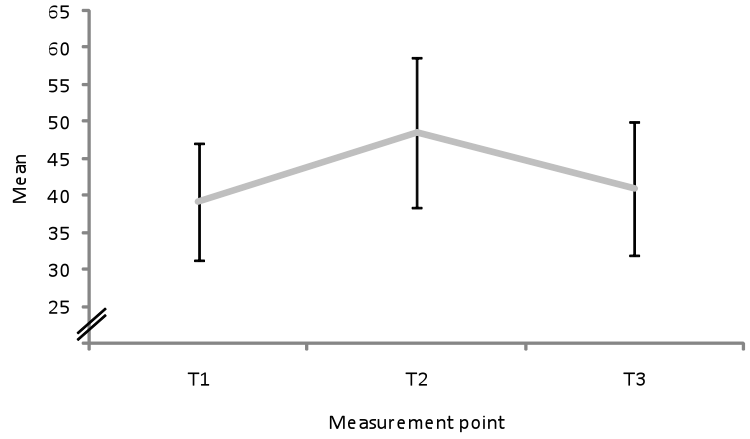

Figure 2. The level of anxiety at the three measurement points averaged for all participants. Error bars represent standard deviations.

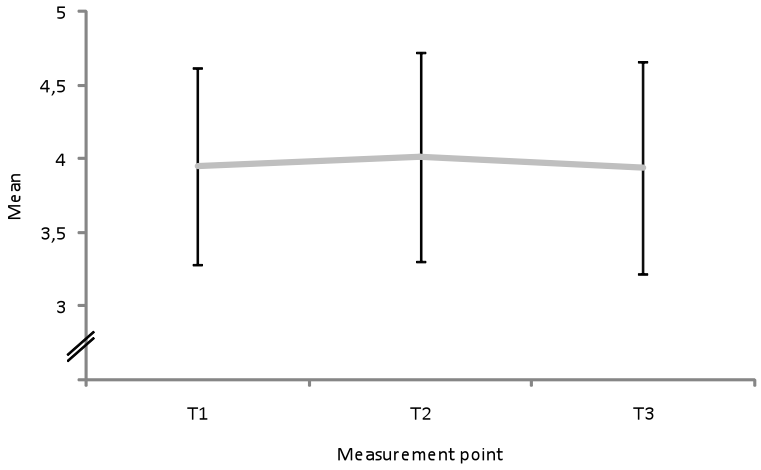

Figure 3. The level of state clarity at the three measurement points averaged for all participants. Error bars represent standard deviations.

As displayed in Figure 4, participants high in trait clarity reported more momentary clarity than those low in dispositional clarity at all three phases in the experiment. However,

ANOVAs demonstrated that only the differences at the beginning and the end of the experiment were significant, $F(1, 50) = 12.96$, $p < .01$, $\eta^2 = .21$, and $F(1, 50) = 17.02$, $p < .001$, $\eta^2 = .25$, respectively. Accordingly, the level of trait clarity was significantly correlated with momentary clarity at the beginning and the end of the experiment but not right after the affect induction ($r_1 = .56$, $p_1 < .01$; $r_2 = .26$, $p_2 > .10$; $r_3 = .54$, $p_3 < .01$).[6]

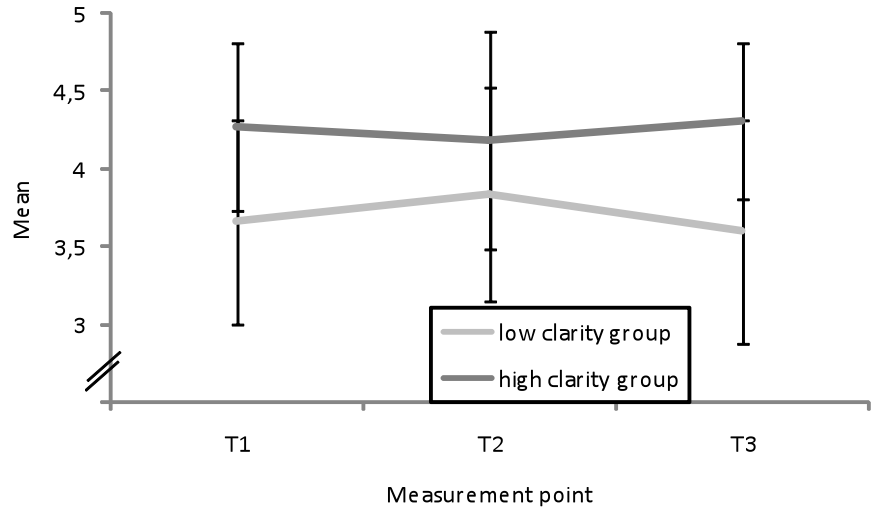

Figure 4. The level of state clarity at the three measurement points of the High versus Low Clarity groups. Error bars represent standard deviations.

Discussion

The present research examined three main questions: (a) How does dispositional clarity relate to the level of anxiety at the beginning of an experiment, right after the induction of anxiety, and after a short recovery phase? (b) How does state clarity covary with anxiety over the

[6] For the correlational analyses, we took the original ratings of dispositional clarity. There was no classification of participants to the High Clarity or Low Clarity groups.

course of the experiment? (c) What is the relation between trait and state clarity? We will discuss our findings one after the other.

Trait Clarity and Anxiety

Trait clarity and previous affective state. Only two previous studies have reported results concerning the relation of clarity and affect at the beginning of an experiment. In contrast to our finding that participants with high clarity reported significantly less anxiety, those studies found no effect of clarity on affective state in this phase of the experiment. However, as cited above, many correlational studies have found a negative relation between dispositional clarity and negative affect in general as well as anxiety in particular. In this sense, it is plausible that persons high and low in trait clarity already differ in their level of anxiety when arriving at the laboratory. In line with this idea, the High Clarity group reported significantly less anxiety at *all* phases of the experiment than the Low Clarity group.

Trait clarity and reactivity. We found that the participants high in dispositional clarity did not report significantly more anxiety after the induction than those low in clarity when the level of anxiety at the beginning of the experiment was controlled. As can be seen in Figure 1, this is due to the fact that both groups reacted in a similar way to the video clip. This is in line with the results of Fernández-Berrocal et al. (2006) for the amusement and sadness condition and the finding of Salovey et al. (2002). However, other studies found a significant positive relation between clarity and negative affect after affect induction. We can only speculate about why this is. It might be due to different dependent measures that have been used or different affect variables that have been induced. However, the only factor that was manipulated in the study of Fernández-Berrocal and Extremera (2006) was the kind of affect that was induced. Still, they found inconsistent results. The studies and conditions that were associated with a significant

relation between clarity and negative affect had induced anger (Fernández-Berrocal et al., 2006) or stress when participants were faced with a performance test (Salovey et al., 2002). On the other hand, the studies that found no significant relation had induced amusement or sadness (Fernández-Berrocal et al., 2006), distress (Salovey et al., 1995), or anxiety (the present study). Potentially, there are qualitative differences between anger and stress on the one hand and anxiety, sadness, amusement, and distress on the other. With regard to anger, for example, Wilkowski and Robinson (2008) pointed out that individuals are especially interested in regulating anger compared to other negative affective states. Furthermore, anger often arises gradually and therefore is very prone to antecedent-focused affect regulation strategies. Therefore, it is possible that the benefit from being clear arises in particular in the presence of anger. Future research has to show whether a consistent picture will arise.

Trait clarity and recovery. We found that participants high in clarity were significantly less anxious than participants low in clarity after the recovery phase. This effect held when the prior anxiety rating (after the induction) was taken into account. Thus, during the short recovery phase of 3 min, the High Clarity group recovered to a greater degree from the induced anxiety than the Low Clarity group. This had been found consistently in previous research and is in line with the idea that emotional clarity promotes effective affect regulation because emotionally clear individuals do not need to engage in prolonged thinking about what they are feeling but can implement appropriate regulation strategies quickly (Lischetzke et al., 2005; Salovey et al., 1995; Wilkowski & Robinson, 2008).

State Clarity

Surprisingly, the level of state clarity hardly changed in the course of the experiment. Our result is contradictory to that of Lischetzke et al. (2005) who found a highly significant quadratic

trend indicating that momentary clarity decreased from before to after the film and increased again after the recovery phase. One reason for the inconsistent results could be that Lischetzke et al. (2005) used an indirect measure of state clarity, whereas we used self-reports. Lischetzke et al. (2005) point out that it is possible that self-report ratings are affected by a social desirability bias (Paulhus & John, 1998) or are not able to capture all aspects of emotional clarity that are relevant in the experimental situation (Robinson & Neighbors, 2006).

One might also assume that the kind of induced affect was responsible for the different results. In the present research, one specific emotion was elicited, whereas Lischetzke et al. (2005) showed a tragicomical film, which induced mixed affect. They point out that clarity should decrease with an increase in the affective complexity of a situation. Accordingly, they found a strong relationship between momentary clarity and an index of mixed affect, indicating that participants who experienced more mixed affect were less clear than those who experienced more mixed affect. Hence, it is plausible that in our study the level of state clarity did not decrease after the anxiety induction because the situation was unambiguous and well-defined.

However, it is surprising that momentary clarity hardly changed at all during the complete experiment with three points of measurement. It is therefore also possible that the measure of state clarity that was used here is insensitive to change. Future studies with at least two data points can test the ability of the measure to map changes in the level of state clarity.

In line with the idea that the situation right after the induction was unambiguous and certain, the High and the Low Clarity groups differed significantly in their level of momentary clarity at the beginning and the end of the experiment but not after the presentation of the film. Whereas it should be rather difficult to become clear about one's own feelings when the situation is affectively complex and therefore ambiguous (Lischetzke et al., 2005), it should be quite easy to be clear about one's own emotional experience in a well-defined, unambiguous situation.

Thus, we would expect the benefit of usually being clear to become more relevant in ambiguous situations. It is possible that the situation after the anxiety-inducing film was so well-defined that the persons low in dispositional clarity were as clear about their feelings as the ones high in trait clarity. Future studies measuring *state* clarity can show whether further evidence for this idea can be found.

The correlations between state and trait clarity varied from -.27 right after the induction to -.44 and -.53 at the beginning and the end of the experiment. The correlations at the beginning and the end of the experiment are in line with research that showed that convergent correlations between trait and state measures of the same construct are moderate to strong (e.g., for the Big Five: *r*s = .39 - .77, Schutte et al., 2003; for anger expression: *r*s = .37 - .48, Porter, Stone, & Schwartz, 1999; for self-regulation: *r*s = .53 - .69, Hong, 1995). The results indicate that the two measures tap common variance in self-report clarity and that there is some correspondence between how clear people report being about their feelings and how clear they actually are. On the other hand, enough discrepancy is left to suggest that the two types of measures are not interchangeable and that there is a great deal of variance in the measure of momentary clarity that is not explained by the trait measure. This is especially true for the relatively small correlation right after the film.

As expected, state clarity and anxiety were correlated negatively at all three phases of the experiment. Thus, the clearer the participants currently were, the less anxious they were. This is in line with previous research, which found a significant negative relation between (trait) clarity and anxiety as well as momentary clarity and negative affect. So far, no study has investigated the relation of state clarity and anxiety. Thus, this research provides the first evidence for this expected relation.

The correlation of anxiety and momentary clarity was strong at the beginning of the experiment and after the recovery phase but less strong right after the induction. This is due to the fact that the level of anxiety increased after the induction and decreased after the recovery phase, whereas the level of clarity hardly changed at all. Thus, the level of anxiety—right after the induction in particular—is only partly related to state clarity. This is in line with the result that participants high and low in dispositional clarity did not react differently to the induction of anxiety. The reactivity to affect induction therefore seems to depend on variables other than emotional clarity. Promotion comes from Gohm (2003) who found that emotional reactivity after an induction was not a simple function of emotional clarity but depended on clarity, attention, and intensity. Therefore, future reserach should include additional appropriate measures.

Limitations and Future Research

The present study has several limitations. First, the participants were almost exclusively female and most were psychology students. Thus, it is possible that the results are not valid for males, students of other subjects, or nonstudents. Second, we used only self-report measures. As we discussed above, they are prone to social desirability bias and tap only aspects that are accessible by self-insight (Lischetzke et al., 2005; Paulhus & John, 1998; Robinson & Neighbors, 2006). Therefore, future studies could include indirect measures of clarity (see Lischetzke et al., 2005, for an interesting approach for indirectly measuring momentary clarity) to get a better picture of participants' emotional experience and regulation. Third, this study induced only one specific emotion to explore the differences in emotional experience and recovery between people with high and low clarity. Previous research has found inconsistent results in reactivity to affect induction for different affect variables; these inconsistencies have not yet been accounted for (cf. Fernández-Berrocal & Extremera, 2006). Therefore, future

studies should realize multiple conditions with various specific affective states as well as mixed affect in the same study to be able to explore the differences between the conditions. Finally, this research provides a good approach to a better understanding of the emotional experience and regulation of people with high and low clarity from a process perspective. Still, a lot of questions remain to be answered. Future research could benefit from measuring state clarity and affect more frequently to get a better picture of the variables' variation and covariation. From a theoretical point of view, individuals should be (momentarily) clear about their feelings before they can regulate effectively. With several longitudinal data points measured close together in time, it could be possible to find support for this idea.

Conclusion

The present research confirms the relation between greater emotional clarity (trait clarity as well as state clarity) and reduced anxiety. Persons high and low in dispositional clarity did not differ in their reactivity to affect induction, but did differ in their level of anxiety before induction as well as in their recovery from the induced affect. Not surprisingly, the level of trait clarity was strongly related to the level of state clarity. Persons with high dispositional clarity reported significantly greater momentary clarity than those with low dispositional clarity at the beginning and the end of the experiment. Surprisingly, state clarity hardly changed in the course of the experiment.

Taken together, this research provides a good approach to a better understanding of the emotional experience and regulation of people with high and low clarity from a process perspective. Still, a lot of questions remain to be answered. Future research should benefit from including sensitive measures of *state* clarity and measuring clarity as well as affect with several

data points measured close in time to get a better picture of the variables' variation and covariation.

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Appendix

Items of the Trait Clarity Scale (English translations)

Trait Clarity Scale
I almost always know exactly how I am feeling.
I often have trouble explaining my feelings. (r)
When I am upset, I usually know what I am feeling.
I am usually very clear about my feelings.
I often have trouble describing my feelings. (r)
I usually know why I am feeling like I do.
I usually know my feelings about a matter.
When I am upset, I don't know if I am sad, frightened, or angry. (r)
I often can't make sense of my feelings. (r)
Often, I am suddenly strained or in a bad mood apparently without reason. (r)
Often, I can't tell how I feel. (r)
Usually, I have no problems labeling my feelings.

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Items of the State Clarity Scale (English translations)

State Clarity Scale
I know exactly how I'm feeling.
I am unable to describe how I'm feeling. (r)
I am very clear about my present emotions.
I have a hard time labeling my feelings. (r)
I know my feelings about this current situation.
I understand why I'm feeling the way I do.
At the moment, I can't tell what my emotions are. (r)
I am able to describe my present mood.
I don't know why I'm feeling this way. (r)

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Manuscript 3

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Emotional Clarity in Affect Regulation: Interindividual Differences in Emotional Reactivity, Recovery, and Habituation

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The data will be published as part of a doctoral dissertation.

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EMOTIONAL CLARITY AND THE REGULATION OF AFFECT

Abstract

Objective: The present study explores the role of trait and state emotional clarity in affect regulation. Method: Altogether, 206 German subjects of averaged 26.67 years (*SD* = 6.41), thereof 66.5 % female, were classified as persons of high and low trait affective clarity. They completed scales of state emotional clarity and positive and negative affective state before and after the induction and re-induction of negative affect by an ostensible intelligence test with mostly unsolvable items. Results: Participants with high trait clarity significantly differed from those with low trait clarity in their levels of positive and negative affect at the beginning of the experiment and in their degree of recovery from induced negative affect. The groups did not react differently to the induction and the re-induction. As expected, greater state clarity was related to less negative and more positive affect; its correlation with trait clarity was strongly positive. Unexpectedly, the participants' level of state clarity hardly changed in the course of the experiment. Conclusions: Future studies should profit from including state emotional clarity to investigate its role in affect regulation from a process perspective. Changes in state affective clarity might not be measured via self-report; future studies should consider indirect measures.

Keywords: emotional clarity, emotional reactivity, emotional recovery, affect regulation, habituation

Emotional Clarity in Affect Regulation: Interindividual Differences in Emotional Reactivity, Recovery, and Habituation

The clarity of emotions refers to the ability to identify, label, describe, and distinguish among one's own emotions (Gohm & Clore, 2000; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995; Swinkels & Giuliano, 1995). Because the concept has consistently been found to correlate with variables in the fields of health, well-being, and quality of life (Austin, Saklofske, & Egan, 2005; Gohm & Clore, 2002), it received growing interest with regard to its role in affect regulation.

Emotional clarity is considered an important characteristic of meta-mood experience, that is, evaluative and regulative processes that accompany affective experience (Mayer & Gaschke, 1988; Salovey et al., 1995). Like Salovey and colleagues (1995), most researchers have concentrated on trait meta-moods. Only a few studies have examined state meta-moods, including state affective clarity (Kokkonen & Pulkkinen, 2001; Lischetzke, Cuccodoro, Gauger, Todeschini, & Eid, 2005; Mayer & Gaschke, 1988; Mayer & Stevens, 1994). How state and trait clarity relate to each other was studied only by Lischetzke and colleagues (2005).[1] In this respect, very little is known about emotional clarity as a state variable and its relation to trait clarity. Nevertheless, applying state measures of clarity is particularly important for learning more about the role of emotional clarity in affect regulation processes over time.

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[11] They employed the terms *momentary clarity* and *dispositional clarity* for state and trait clarity. In the following, we will use state clarity as synonymous with momentary clarity and trait clarity as synonymous with dispositional clarity.

Research has consistently demonstrated a moderate to strong relation between emotional clarity and affect (for data regarding state clarity, see Kokkonen & Pulkkinen, 2001; Lischetzke et al., 2005; Mayer & Stevens, 1994; for data regarding trait clarity, see e.g., Ramos, Fernández-Berrocal, & Extremera, 2007; Salovey, Stroud, Woolery, & Epel, 2002; Thompson, Waltz, Croyle, & Pepper, 2007). However, most studies have restricted their analyses to correlations. Only a few studies have implemented experimental settings and realized multiple time points to investigate the role of affective clarity in affect regulation more closely (Lischetzke et al., 2005; Fernández-Berrocal & Extremera, 2006; Ramos et al., 2007; Salovey et al., 1995; Salovey et al., 2002). The few experimental studies typically collected data at the beginning of the experiment (Time 1), after some kind of affect induction (Time 2), and finally after a recovery period (Time 3). Only Salovey and colleagues (2002) and Ramos and collaborators (2007) investigated the relation between emotional clarity and affect at a fourth data point, that is, after having re-exposed their participants to the same or a comparable affect induction (Time 4). In the following, we want to outline the results of these studies with regard to positive and negative affect ordered by the experimental phases.[1]

Emotional Clarity and Previous Affective State (Time 1)

The results for this phase of the experiment have been inconsistent. At the beginning of the experiment, Fernández-Berrocal et al. (2006) and Salovey et al. (1995) found no relation between emotional clarity and affect. By contrast, we found in an earlier study (van

[1] Because there is only one study that assessed emotional clarity as a state variable (Lischetzke et al., 2005) the term *emotional clarity* usually refers to dispositional clarity. Deviations are indicated.

de Loo, Haas, Preckel, & Schmitz, 2011) that high clarity persons were less anxious than low clarity ones when they arrived at the laboratory. Lischetzke et al. (2005) found a significant positive correlation between momentary clarity and positive affect but no relation with negative affect.

Emotional Clarity and Reactivity (Time 2)

From a theoretical perspective, both a negative and a positive relation between emotional clarity and reactivity to affect induction are conceivable. A positive relation could result from an increased sensitivity to emotion-laden stimuli as suggested by Petrides and Furnham (2003). This idea was supported by their result that high emotionally intelligent probands were not only faster at identifying emotional expressions but also reacted to a greater degree to affect induction when compared to low EI individuals. The idea can probably be transferred to the EI component emotional clarity.

A negative relation on the other hand is also possible. Wilkowski and Robinson (2008) based on Larsen (2000) suggest that emotionally clear persons should be able to detect undesirable affective states or even their precursors at a very low level and therefore to initiate *antecedent*-focused affect regulation strategies. Low clarity persons, by contrast, are seen to have a less sophisticated insight into their affective states and therefore should realize that affect regulation strategies are on duty somewhat later when the negative affect has already developed. In line with this idea, Wilkowski et al. (2008) found that high clarity persons were completely unaffected by antisocial affect priming, whereas participants with low clarity exhibited a pronounced priming effect.

Finally, it is conceivable that the proposed mechanisms interact with each other and that, depending on the experimental procedure, affect induction results sometimes in greater,

sometimes in lower, and sometimes in comparable reactivity of the high clarity probands compared to the ones with low clarity.

The empirical data present the following picture concerning negative affect: If baseline affect was controlled, the relation between emotional clarity and negative affect after some kind of affect induction was either positive (Fernández-Berrocal & Extremera, 2006, anger condition; Salovey et al., 2002) or nonsignificant (Fernández-Berrocal & Extremera, 2006, sadness and amusement conditions; Salovey et al., 1995; van de Loo et al., 2011). Some studies did not control for baseline affect; in those cases, the relation between clarity and negative affect was negative (Ramos et al., 2007; Lischetzke et al., 2005).

With regard to positive affect, both studies investigating this variable reported consistent results: Greater clarity was associated with more positive affect after induction, no matter whether baseline affect was controlled (Fernández-Berrocal et al., 2006, all conditions) or not (Lischetzke et al., 2005).

Emotional Clarity and Recovery (Time 3)

From a theoretical point of view, emotional clarity should lay the foundation for effective regulation of affect (Lischetzke et al., 2005; Salovey et al., 1995; Wilkowski & Robinson, 2008) by permitting individuals to recognize an undesirable level or kind of affective state early and therefore to quickly turn their attentional resources toward effective affect management. In line with these ideas, previous research has consistently shown that emotional clarity is associated with less negative and more positive affect after a recovery period when baseline affect or baseline and prior affect are taken into account (NA: Fernández-Berrocal et al., 2006; all conditions: Lischetzke et al., 2005; Salovey et al., 1995; PA: Fernández-Berrocal et al., 2006; sadness condition: Lischetzke et al., 2005). Only

Fernández-Berrocal et al. (2006) reported similar levels of PA for the anger and amusement conditions for high as well as for low clarity participants when prior PA was controlled.

Emotional Clarity and Habituation (Time 4)

When individuals face the same (or similar) stressful information for a second time, their response to it is usually decreased (habituation). From the completion perspective (Lepore, Ragan, & Jones, 2000), the response to the repeated stressor should be less the more individuals have integrated the first experience into their cognitive schemata. Accordingly, Lepore et al. (2000) found that their participants' decline in emotional response to re-exposure compared to the first exposure was fully mediated by intrusive thoughts. Thereby, intrusions are considered to be indicators of the discrepancy that remains between the cognitive schemata an individual starts with and the stressful information that the individual faces (Horowitz, 1997).

Salovey and colleagues (1995) reported that their high clarity participants experienced a significant decline in ruminative thought during the recovery phase whereas the low clarity probands showed a near zero slope. Following the above considerations, high clarity persons therefore should respond to a lesser degree to a repeated stressor than persons with low clarity.

However, research dealing with emotional clarity and habituation has not yet provided empirical proof for this idea. Ramos and colleagues (2007), who re-exposed their subjects to the same stressful film of a rape 48 hours after the first exposure, found that only Repair[1] but not emotional clarity was associated with the change in emotional responses (Exposition 2 –

[1] Repair is one of the three subscales of the Trait Meta-Mood Scale (Salovey et al., 1995).

Exposition 1). Likewise, Salovey and colleagues (2002), who exposed their participants to similar challenges (visio-spatial puzzles, serial subtraction, a videotaped speech task) on three consecutive days, found no significant correlation between habituation and emotional clarity. One should keep in mind though, that they did not measure affect but rather measured the total cortisol secreted during the complete experimental session (Day 1 – Day 2 – Day 3).

Present Research

In summary, very little is known yet about the relation between emotional clarity and affect when affect is manipulated. The small number of experimental studies has demonstrated inconsistent results with regard to the beginning of an experiment and the time after an affect induction. Hence, the present study further explores the relation between clarity and affect in these phases. So far, there is only one study dealing with emotional clarity and its relation to habituation to stressors. Here, we wanted to explore whether we could find empirical support for the idea that emotional clarity should promote adaptation to a stressor. Furthermore, this study aimed to contribute to the picture of the role of *state* clarity in affect regulation.

Specifically, our hypotheses were:

According to the results of van de Loo et al. (2011) and Lischetzke et al. (2005), we postulated that before the affect induction, the participants high in trait clarity would report higher levels of positive as well as lower levels of negative affect compared to those low in clarity.

In accordance with the results of Fernández-Berrocal et al. (2006), Salovey et al. (1995), and van de Loo et al. (2011), we expected that after affect induction, the participants

with high clarity would report a similar level of negative affect and a higher level of positive affect than those low in clarity when baseline affect was controlled.

As previous research consistently found, we hypothesized that after the recovery phase, participants high in dispositional clarity would report lower levels of negative affect but higher levels of positive affect than those low in clarity when affect at Time 2 was accounted for.

Following the theoretical perspective, we postulated that after re-induction, the high clarity participants would report a lower level of reactivity (affect at Time 4 – affect at Time 3) than those low in trait clarity when the reactivity to the first induction (affect at Time 2 – affect at Time 1) was taken into account.

Based on the results of Lischetzke et al. (2005) regarding an indirect measure of state clarity and the results of our own earlier study (van de Loo et al., 2011), we expected state emotional clarity to be negatively related to negative affect and positively related to positive affect in all three phases of the experiment.

Finally, in accordance with the results of van de Loo et al. (2011), we hypothesized that greater dispositional clarity would be positively related to greater momentary clarity at the beginning of both experimental sessions (Time 1 and Time 3).

Method

Participants

Participants were acquired via placards and various mailing lists at a university in a midsize town in Germany. Altogether, 219 subjects finished both parts of this web-based study. Thirteen of them were excluded because their processing time suggested that they did

not work conscientiously.[1] Thus, 206 persons remained for the analyses. The mean age was 26.67 years (*SD* = 6.41); 66.5% were female. The psychology students were given course credit.

Procedure

Each participant completed the questionnaires and tests in two individual sessions at their place of choice at the computer. The sessions took place on two consecutive days at approximately the same time of day. Every participant received a link via email that started the investigation.

In the first session, participants first rated their dispositonal clarity, their momentary clarity, as well as their negative and positive affective states.[2] Second, they were asked to complete a test that was allegedly given to measure cognitive intelligence. In fact, most of the problems were unsolvable. Right after the induction, the participants again rated their negative and positive affective states as well as their momentary clarity.

On the second day, the procedure was almost exactly the same. Once more, their actual level of momentary clarity as well as negative and positive affect was collected. Afterwards, the participants were given a test parallel to the one the day before. After the ostensible intelligence test, their momentary levels of positive and negative affect as well as emotional clarity were measured a fourth time.

Induction of negative affect. After they had responded to the first set of questionnaires, the participants were informed that they would next be given an intelligence

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[1] These probands needed less than 10 min or more than 1 h to finish one experimental session.

[2] The participants also completed other measures, which are not reported here.

test. In the first session, the subjects received a test sheet with sequences of symbols; in the second one, with sequences of digits. They were requested to indicate the digit or symbol that did not fit into the sequence. Instructions further informed participants that the items would be presented at different levels of difficulty, in a randomized order, and with a time limit for each. In sum, they were given 4 min to deal with the complete test sheet.

In fact, most of the items were unsolvable. Test material was taken from Langens (2006; Study 2), who generated it by manipulating items from a common German intelligence inventory (Horn, 1962) so that they were unsolvable. Langens (2006) pointed out that subjects usually recognized whether they identified the right solution or whether they simply guessed. Dealing with this unsolvable test should therefore induce failure and hence result in negative affect. Concordantly, his participants reported in debriefings that they had failed when trying to complete the ostensible intelligence test items.

Measures

Trait clarity. We developed a self-report measure of trait clarity by taking items of various approved scales measuring emotional clarity (Gohm & Clore, 2000; scale Clarity of the Trait Meta-Mood Scale; Salovey et al., 1995; German version by Otto, Döring-Seipel, Grebe, & Lantermann, 2001; subscale Difficulty Identifying Feelings of the Toronto Alexithymia Scale; TAS; Taylor, Ryan, & Bagby, 1985; German version by Bach, Bach, Zwaan, Serim, & Böhmer, 1996; subscale Labeling of the Mood Awareness Scale; MAS; Swinkels & Giuliano, 1995; scale Clarity of Feelings; Lischetzke & Eid, 2003). The 12 items were modified if necessary so that they all asked for the person's usual experience. Some of the items were recoded so that half of the items were positively keyed and half were negatively keyed. Instructions informed respondents to indicate on a 5-point Likert scale the

extent to which they agreed or disagreed with each statement (cp. TMMS; Salovey et al., 1995). A sample item is "I almost always know exactly how I am feeling." The scale was internally consistent with $\alpha = .90$. The items' English translations can be found in the Appendix.

State clarity. To measure state clarity, from the subscale Clarity of the Meta-Mood Experience Scale (MMES) by Mayer and Gaschke (1988), which captures affective clarity as a state variable, we took the seven items that showed the highest and most distinct factor loadings ($\geq .50$) and added two items from other scales (the subscale Labeling of the MAS by Swinkels & Giuliano, 1995; the subscale Clarity of the German version of the TMMS by Otto et al., 2001). The items were modified if necessary so that they were similar in style to those of the trait questionnaire but asked for the person's current experience instead of their usual experience. Five of the items were positively keyed and four were negatively keyed. In line with the trait scale, instructions informed respondents to indicate on a 5-point Likert scale the extent to which they agreed or disagreed with each statement. A sample item is: "I know exactly how I'm feeling." The scale was internally consistent with $\alpha = .93$. The items' English translations can be found in the Appendix.

Positive and negative affect. We used the German version of the Positive and Negative Affective Schedule (PANAS; Watson, Clark, & Tellegen, 1988; German version: Krohne, Egloff, Kohlmann, & Tausch, 1996) to measure participants' positive and negative affective states. The PANAS presents 20 affective states (in adjective form) to the respondents who have to indicate on a 5-point scale from "not at all" to "extremely" the extent to which they feel the respective affect at the present moment. Ten items measure positive affect (e.g., active, enthusiastic, strong); the other 10 adjectives refer to negative

affect (e.g., afraid, distressed, nervous). The scales PA and NA demonstrated adequate reliability for this sample (α = .88 and .86, respectively).

Results

First, the manipulation was tested with regard to its effects on positive and negative affect. Subsequently, we formed two groups by median split: the High Clarity group consisted of 102 participants with a reported level of trait clarity above 3.84; the Low Clarity group consisted of 104 probands who indicated a level of dispositional clarity equal to or less than 3.84. We conducted covariance analyses to test for differences between these groups at each phase of the experiment. In each phase, prior affect ratings were included as covariates to control for their influence.

Manipulation Check

Both manipulations were successful. After the first induction of stress at Day 1, PA decreased significantly from M = 2.58 (SD = 0.76) before the manipulation to M = 2.31 (SD = 0.74) after the manipulation, $F(1, 205) = 56.98$, $p < .001$, $\eta^2 = .22$. NA increased from M = 1.43 (SD = 0.52) to M = 1.74 (SD = 0.68), $F(1, 205) = 42.19$, $p < .001$, $\eta^2 = .17$. The effect of the second stress induction (Day 2) on PA was somewhat smaller but still significant. PA decreased from M = 2.47 (SD = 0.79) before to M = 2.25 (SD = 0.81) after the induction, $F(1, 205) = 52.87$, $p < .001$, $\eta^2 = .21$. NA increased from M = 1.42 (SD = 0.56) to M = 1.53 (SD = 0.60), $F(1, 205) = 12.93$, $p < .001$, $\eta^2 = .06$.

Trait Clarity and Affect before Induction

ANOVAs indicated a highly significant difference between the two groups with respect to their affective states at the beginning of the experiment, $F(1, 204) = 10.24$, $p < .01$,

η^2 = .05, for PA, and $F(1, 204) = 14.52$, $p < .001$, η^2 = .07, for NA. As displayed in Table 1, the High Clarity group reported significantly more positive and less negative affect than the Low Clarity group.

Table 1

Means and Standard Deviations for Affect and State Clarity Measures

Time point	Scale	High Clarity group	Low Clarity group
		Mean (*SD*)	Mean (*SD*)
Time 1	PA	2.75 (.72)	2.42 (.75)
	NA	1.30 (.38)	1.56 (.60)
	State clarity	4.70 (.40)	3.78 (.79)
Time 2	PA	2.47 (.75)	2.14 (.70)
	NA	1.69 (.70)	1.78 (.65)
	State clarity	4.60 (.44)	3.82 (.76)
Time 3	PA	2.62 (.79)	2.33 (.77)
	NA	1.32 (.47)	1.53 (.63)
	State clarity	4.59 (.50)	3.85 (.72)
Time 4	PA	2.39 (.85)	2.12 (.75)
	NA	1.45 (.55)	1.61 (.65)
	State clarity	4.54 (.55)	3.96 (.66)

Note. PA = Positive affect; NA = Negative affect; Possible range of all scales: 1-5.

Trait Clarity and Affect after Induction

When the baseline level at the beginning of the experiment was taken into account, there were no significant differences between groups with regard to positive or negative affect, $F(1, 203) = 1.74$, $p > .10$, and $F(1, 203) = 0.28$, $p > .10$, respectively.

Trait Clarity and Affect after the Recovery Phase

When affect before the recovery phase was controlled, there were no significant differences between high and low clarity subjects with regard to positive affect, $F(1, 203) = 0.87$, $p > .10$. By contrast, the High Clarity group reported significantly less negative affect than the Low Clarity group when prior NA ratings were controlled, $F(1, 203) = 6.32$, $p < .05$, $\eta^2 = .03$. As displayed in Figure 1, participants with high dispositional clarity reported a slightly greater decrease in negative affect during the recovery phase than those with low dispositional clarity.

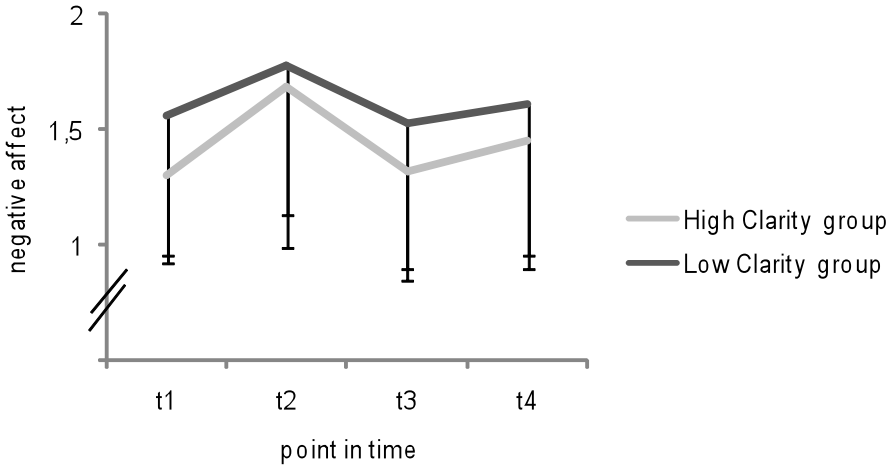

Figure 1. Levels of negative affect at the four measurement points for the High versus Low Clarity groups. Error bars represent standard deviations.

Trait Clarity and Habituation

We found no significant differences between groups in their reactivity (affect at Time 4 – affect at Time 3) to the repeated induction with regard to positive or negative affect when the reactivity to the first induction was taken into account (affect at Time 2 – affect at Time 1), $F(1, 203) = 0.03$, $p > .10$, and $F(1, 203) = 0.03$, $p > .10$, respectively.

State Clarity

The correlations between momentary clarity and positive affect were significant and positive at all four measurement points; they ranged from .28 (T2) and .33 (T3 and T4) to .40 (T1). The relation between state clarity and negative affect was expectedly negative at all time points. However, only the correlations at time points 1 and 2 reached significance. Whereas the correlation at the beginning of the experiment was moderate with r = -.38, the correlation right after the first induction was small with r = -.15.

As displayed in Figure 2, participants high in trait clarity reported significantly more momentary clarity than those low in trait clarity at all four time points in the experiment (all ps < .001, η^2s ranging from .19 at T1 to .35 at T4). Accordingly, the level of dispositional clarity was highly positively correlated with momentary clarity at all measurement points (r_1 = .71, r_2 = .65, r_3 = .57, r_4 = .50, all ps < .01).[1]

However, the two groups' momentary clarity developed differently in the course of the experiment: Whereas the High Clarity group's momentary clarity decreased slightly at each subsequent measurement point in the course of the experiment, the Low Clarity group's state clarity slightly but steadily increased. A repeated-measures ANOVA indicated that this differential development (interaction of group and time) was significant, $F(3, 612) = 6.21$, p < .001, η^2 = .03.

[1] For the correlational analyses, we used the original ratings of dispositional clarity. There was no classification of participants to the High or Low Clarity groups.

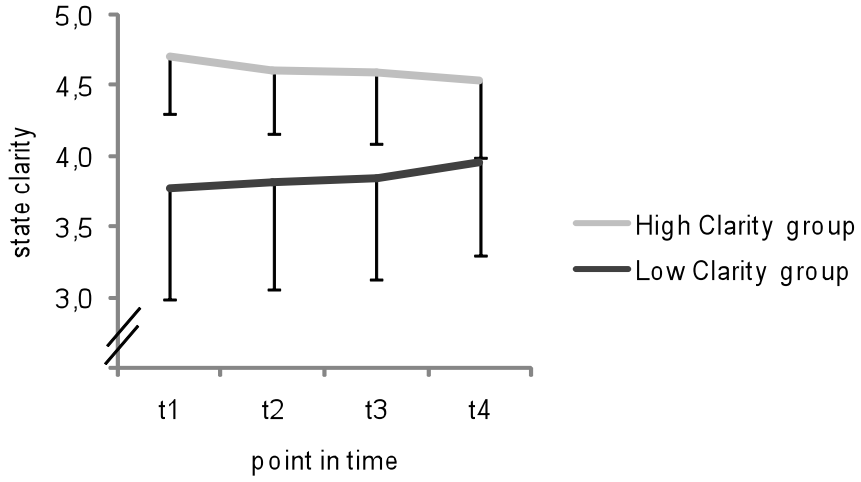

Figure 2. Levels of state clarity at the four measurement points for the High versus Low Clarity groups. Error bars represent standard deviations.

Discussion

The present research examined three main questions: (a) How does dispositional clarity relate to positive and negative affect at the beginning of the experiment, right after the induction of affect, after a recovery phase, and after re-induction? (b) How does state clarity covary with affect in the course of the experiment? (c) What is the relation between trait and state clarity? We will discuss our findings one after the other.

Trait Clarity and Affect

Trait clarity and previous affective state. In line with our finding from a previous study (van de Loo et al., 2011), the High Clarity group reported significantly less negative affect than the Low Clarity group at the beginning of the experiment. Because a lot of correlational studies have documented that greater emotional clarity is associated with less negative affect, we think it makes sense that this relation would also be found at the beginning of an experiment.

In line with the results for negative affect, the High Clarity group differed significantly from the Low Clarity group with regard to positive affect at the beginning of the experiment. This agrees with the finding of Lischetzke and colleagues (2005) that greater momentary clarity was associated with more joy at this phase of the experiment.

Trait clarity and reactivity. We found no significant differences between the High and Low Clarity groups with regard to positive or negative affect after the induction when baseline affect was controlled. The two groups reacted in a similar way to the induction.

With regard to positive affect, our result is in conflict with that of Fernández-Berrocal and Extremera (2006), who found that greater clarity was associated with more positive affect after induction when baseline affect was controlled. This result was found in all of their experimental conditions, that is, after the induction of amusement, of sadness, and of anger.

With regard to negative affect, our results are in line with Fernández-Berrocal and colleague (2006) for the amusement and sadness conditions, the findings of Salovey and collaborators (2002), as well as our own results from a former study (van de Loo et al., 2011). However, there are also results demonstrating a significant positive relation between clarity and negative affect after affect induction (Fernández-Berrocal & Extremera, 2006, anger condition). Thus, an interesting question for future research would be to investigate the conditions under which this relation is found and when it is not. The study by Fernández-Berrocal and Extremera (2006) can serve as an interesting starting point. They found a significant relation for the anger condition but not for the amusement and sadness conditions, although in all conditions, affect was induced by film and changes in affect were assessed with the same dependent measure.

Trait clarity and recovery. We found that participants with high clarity were in a significantly less negative affective state than low clarity participants after the recovery phase

when NA after the induction was taken into account. This has been found consistently in previous research and is in line with the idea that emotional clarity promotes effective affect regulation (Lischetzke et al., 2005; Salovey et al., 1995; Wilkowski & Robinson, 2008).

With regard to positive affect, there were no siginifcant differences between the groups when controlling for affect that occurred directly after the induction. This is in line with the findings of Fernández-Berrocal and Extremera (2006) for the anger and amusement conditions. On the other hand, our finding contradicts their results for the sadness condition as well as the results of Lischetzke and colleagues (2005). Again, we think that future research has to show how different kinds of induced affect and different methods are relevant to these inconsistencies.

However, one has to keep in mind that in the present study, the recovery phase was one day long in contrast to a few minutes in comparable studies. It is therefore possible that we captured the affective state at the beginning of a second experimental session rather than the state after the recovery phase.

Trait clarity and habituation. Our high clarity and low clarity participants did not react differently to the second induction when the reactivity to the first one was taken into account. Like Ramos and colleagues (2007) as well as Salovey and collaborators (2002), the present study therefore found no hints that a relation between emotional clarity and habituation to affect induction exists, although the theoretical considerations suggest that it would. A possible explanation is the relatively long time between the two experimental sessions in all relevant studies. In the study by Salovey and collaborators (2002) as well as in the present paper, one day lay between the first and second manipulations; in the study by Ramos and colleagues (2007), the second exposition even took place 48 hours after the first one. Probably, this was enough time for the low clarity persons to reach a comparable level of

integration to that of the high clarity individuals. Therefore, it would be interesting to realize a relatively short time between exposition and re-exposition in future studies, hence making it more likely to find interindividual differences. We consider a distance of 15 – 30 min to be the most promising because this is the period in which Salovey and colleagues (1995) found significant differences in the decline of ruminative thought between persons with high and low clarity. Moreover, future studies should include ruminative thought as a dependent variable to get the full picture of what is happening between the first and second exposures. It would also be interesting to include the subscale Repair (TMMS; Salovey et al., 1995) in future research because Ramos and colleagues (2007) found Repair instead of emotional clarity to be the relevant variable in the context of habituation to a stressor.

State Clarity

Expectedly, we found a significant positive relation between momentary and dispositional clarity at all four measurement points. The correlations ranged from .71 at the beginning of experimental day one to .50 at the end of experimental session two. Thereby, they are in line with other convergent correlations between trait and state measures of the same concept (e.g., for the Big Five, *r*s = .39 - .77: Schutte, Malouff, Segrera, Wolf, & Rodgers, 2003; for anger expression, *r*s = .37 - .48: Porter, Stone, & Schwartz, 1999; for self-regulation, *r*s = .53 - .69: Hong, 1995). Thus, the instruments catch common variance in self-report clarity but cover unique variance as well.

In accordance with the correlations, the Low Clarity group reported significantly less momentary clarity than the High Clarity group at all four measurement points. Interestingly, we found that the two groups developed differently in the course of the experiment. Whereas the persons with high clarity reported slightly decreased state clarity with every measurement,

the low clarity subjects indicated a slight but steady increase in state clarity from the beginning until the end of the experiment. However, the change in state clarity within groups was very small and so was the effect size. Therefore, this result should not be overestimated. Moreover, a ceiling effect was evident. At all measurement points, the means of the High Clarity group were less than one standard deviation away from the maximum value of the scale. Finally, it is possible that regression to the mean is at hand. For future studies, the measure of state clarity should be revised and aimed at better capturing the variability between as well as within participants.

Momentary clarity was correlated in the expected way with positive as well as negative affect. Whereas the relation between state clarity and positive affect was significantly positive at all measurement points, independent of any experimental manipulation, the negative relation of state clarity and negative affect was significant only at data points 1 and 2. However, this variability in correlations should not be overestimated with regard to the fact that the state emotional clarity hardly changed in the course of the experiment.

Limitations and Future Research

The present study has a number of limitations. First, most of the participants were students, mainly psychology students. Thus, it is possible that the results are not valid for students of other subjects or non-students. Second, we exclusively used self-report measures. As these are prone to social desirability bias and dependent upon the participant's self-insight (Lischetzke et al., 2005; Robinson & Neighbors, 2006), future studies could profit from including indirect measures of clarity (see Lischetzke et al., 2005, for an interesting approach). Third, we measured only a few dependent variables. Subsequent studies could

benefit from including additional measures as discussed above. Fourth, this research realized four points of measurement. Although we consider this approach very promising, even more data points would have been eligible, especially between the first and second experimental day.

Conclusion

The present study contributes to a better understanding of emotional clarity and its role in affect regulation from a process perspective by realizing a quasi-experimental design with four data points including measures of trait as well as state clarity. In line with previous research, it confirms the positive association of affective clarity with positive affect and the negative association of affective clarity with negative affect. Furthermore, it confirms that persons with high dispositional clarity compared to those with low clarity report less negative affect after a recovery phase when prior affect is controlled, indicating that high clarity individuals have advantages when recovering from induced affect. No support was found for greater reactivity or greater habituation for high trait clarity persons. Expectedly, persons high and low in trait clarity differed significantly in their level of state clarity. The relation between state and trait clarity was significant and positive. However, an unexpected result was that high as well as low trait clarity persons hardly changed their level of state clarity in the course of the experiment. Thus, future studies should consider alternative instruments to assess state clarity (see e.g., Lischetzke et al., 2005, for an indirect approach). Additionally, it seems promising to realize even more data points to measure state affect and state clarity in shorter intervals than was done in this study to get a better picture of what is happening after the induction and during the recovery phase. Such studies could further profit from the utilization of time series analyses (e.g., Schmitz, 1989).

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Appendix

Items of the Trait Clarity Scale

English translations
I almost always know exactly how I am feeling.
I often have trouble explaining my feelings. (r)
When I am upset, I usually know what I am feeling.
I am usually very clear about my feelings.
I often have trouble describing my feelings. (r)
I usually know why I feel like I do.
I usually know my feelings about a matter.
When I am upset, I don't know if I am sad, frightened, or angry. (r)
I often can't make sense of my feelings. (r)
Often, I am suddenly strained or in a bad mood apparently without reason. (r)
Often, I can't tell how I feel. (r)
Ususally, I have no problems labeling my feelings.

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Items of the State Clarity Scale

English translations
I know exactly how I'm feeling.
I am unable to describe how I'm feeling. (r)
I am very clear about my present emotions.
I have a hard time labeling my feelings. (r)
I know my feelings about this current situation.
I understand why I'm feeling the way I do.
At the moment, I can't tell what my emotions are. (r)
I am able to describe my present mood.
I don't know why I'm feeling this way. (r)

Note. Response categories: 1 = strongly disagree, 2 = somewhat disagree, 3 = neither nor, 4 = somewhat agree, 5 = strongly agree. (r) = Items are reverse scored.

Appendix A: Instruments

Appendix

Appendix A: Self-developed instruments

A1. Self-report Measure of State Emotional Clarity, deployed in Study 1

A2. Indirect Measure of Emotional Clarity and Certainty Measure, deployed in Study 1

A3. Self-report Measure of Trait Emotional Clarity, deployed in Studies 2-4

A4. Self-report Measure of State Emotional Clarity, deployed in Studies 2-4

A5. Indirect Measure of Emotional Clarity and Certainty Measure, deployed in Study 2

Appendix B: Agenda of Training Interventions

B1. Study 1: Agenda of Clarity Intervention

B2. Study 1: Agenda of Mindfulness Intervention

B3. Study 2: Agenda of Mindfulness Intervention

B4. Study 2: Agenda of Self-Regulation Intervention

Appendix A: Instruments

A1. Self-report Measure of State Emotional Clarity, deployed in Study 1

Liebe/r Teilnehmer/in,

Hier finden Sie einige Reihe von Aussagen zu Meinungen und Erlebensweisen. Bitte lesen Sie jede Aussage durch und geben Sie an, ob Sie ihr widersprechen oder zustimmen. Es gibt keine falschen Antworten; überlegen Sie bitte deshalb nicht lange, sondern kreuzen Sie diejenige Antwortalternative an, die den Grad ihrer Zustimmung am besten ausdrückt.

	Starker Widerspruch	Etwas Widerspruch	Weder noch	Etwas Zustimmung	Starke Zustimmung
Im Moment kann ich gar nicht sagen, was meine Gefühle sind.	☐	☐	☐	☐	☐
Im Moment bin ich im Unklaren darüber, wie ich mich fühle.	☐	☐	☐	☐	☐
Im Moment kann ich mir keinen Reim auf meine Gefühle machen.	☐	☐	☐	☐	☐
Ich bin mir im Moment über meine Gefühle sehr im Klaren.	☐	☐	☐	☐	☐
Ich kenne meine Gefühle gegenüber der vorliegenden Situation.	☐	☐	☐	☐	☐
Ich weiß im Moment genau, wie ich mich fühle.	☐	☐	☐	☐	☐

Appendix A: Instruments

A2. Indirect Measure of Emotional Clarity and Certainty Measure, deployed in Study 1

Indirect measure of emotional clarity: self-developed

Certainty measure: based on Otto et al., 2001; Lischetzke, Cuccodoro, Gauger, Todeschini, & Eid, 2005

Liebe/r Teilnehmer/in,

Beantworten Sie die folgenden Fragen zu Ihrem aktuellen Befinden so, dass es Ihnen am besten entspricht. Es gibt keine richtigen oder falschen Antworten.

1. Wie fühlen Sie sich jetzt?

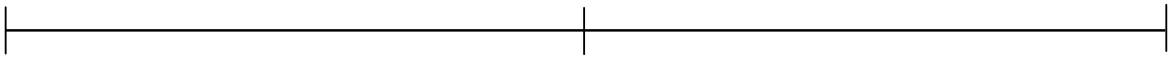
Beschreiben Sie bitte Ihren Gefühlszustand mit Hilfe der vorgegebenen Wörter. Jedes Wort steht für einen Bereich von Gefühlen. Es schließt also ähnliche Gefühle ein, für die man auch ein anderes Wort verwenden könnte.

Kreuzen Sie nun an (☒), wie intensiv Sie jedes Gefühl erleben! Je stärker das Gefühl ist, desto weiter rechts machen Sie das Kreuz.

		Nicht vorhanden	Sehr schwach	Eher schwach	Mittel	Eher stark	Sehr stark
1.	Freude	☐	☐	☐	☐	☐	☐
2.	Angst	☐	☐	☐	☐	☐	☐
3.	Ekel/Abscheu	☐	☐	☐	☐	☐	☐
4.	Überraschung	☐	☐	☐	☐	☐	☐
5.	Wut/Ärger	☐	☐	☐	☐	☐	☐
6.	Trauer/Traurigkeit	☐	☐	☐	☐	☐	☐
7.	Verachtung	☐	☐	☐	☐	☐	☐
8.	Sonstiges Gefühl: _____	☐	☐	☐	☐	☐	☐

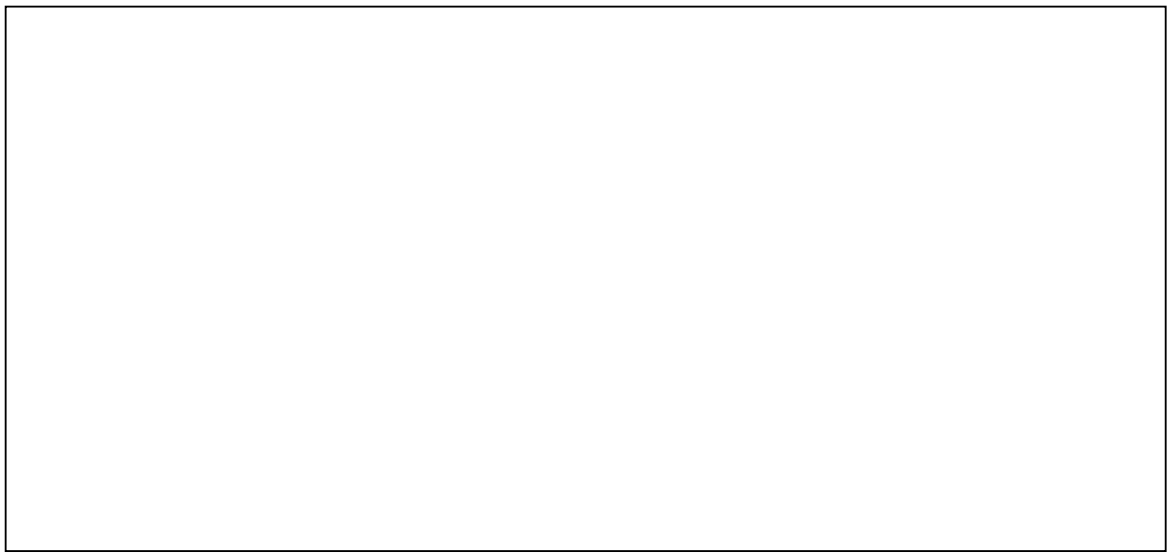
2. Wie sicher sind Sie sich auf einer Skala von 0 – 100, dass Ihre Angaben Ihrer aktuellen Gefühlslage tatsächlich entsprechen? Bitte kreuzen Sie an:

Unsicher Sicher



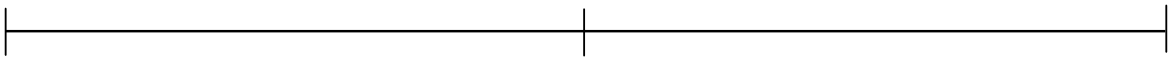
0 **50** **100**

3. Beschreiben Sie nun Ihre aktuelle Gefühlslage. Beschreiben Sie stichpunktartig, aber so detailliert und genau wie möglich, wie Sie sich fühlen und welche Auswirkungen das auf Sie (z.B. Ihr inneres Erleben, Ihren Körper und Ihre Gedanken) hat.



4. Wie sicher sind Sie sich auf einer Skala von 0 – 100, dass Sie Ihre Gefühlslage treffend beschrieben haben? Bitte kreuzen Sie an:

Unsicher Sicher



0 **50** **100**

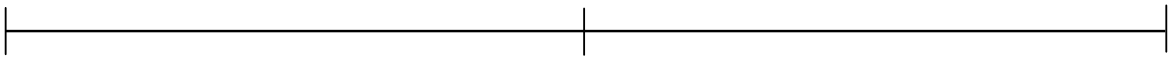
5. Wissen Sie, warum Sie sich so fühlen? Kennen Sie den Auslöser für Ihr Befinden? Bitte kreuzen Sie an:

- ☐ ja
- ☐ nein
- ☐ weiß nicht

6. Warum fühlen Sie sich so? Auf welchen Auslöser führen Sie Ihre Gefühlslage zurück?

7. Wie sicher sind Sie sich auf einer Skala von 0 – 100, dass die von Ihnen beschriebene Ursache tatsächlich der Grund für Ihre aktuelle Gefühlslage ist? Bitte kreuzen Sie an:

Unsicher Sicher



0 **50** **100**

A3. Self-report Measure of Trait Emotional Clarity, deployed in Studies 2-4

Liebe/r Teilnehmer/in,

Im folgenden finden Sie eine Reihe von Aussagen zu Meinungen und Erlebensweisen. Bitte lesen Sie jede Aussage durch und geben Sie an, ob Sie ihr widersprechen oder zustimmen. Es gibt keine „falschen" und „richtigen" Antworten; überlegen Sie bitte deshalb nicht lange, sondern kreuzen Sie spontan diejenige Antwortalternative an, die den Grad ihrer Zustimmung am besten ausdrückt.

	Starker Widerspruch	Etwas Widerspruch	Weder noch	Etwas Zustimmung	Starke Zustimmung
Ich weiß fast immer genau, wie ich mich fühle.	☐	☐	☐	☐	☐
Ich habe häufig Schwierigkeiten meine Gefühle zu verstehen.	☐	☐	☐	☐	☐
Auch wenn ich sehr aufgeregt bin, weiß ich meistens genau, was ich fühle.	☐	☐	☐	☐	☐
Ich bin mir gewöhnlich über meine Gefühle sehr im klaren.	☐	☐	☐	☐	☐
Ich habe häufig Schwierigkeiten meine Gefühle zu beschreiben.	☐	☐	☐	☐	☐
Ich weiß in der Regel, was der Grund für meine Gefühle ist.	☐	☐	☐	☐	☐
Ich kenne gewöhnlich meine Gefühle gegenüber einem Sachverhalt.	☐	☐	☐	☐	☐
Wenn mich etwas aus der Fassung gebracht hat, weiß ich oft nicht, ob ich traurig, ängstlich oder wütend bin.	☐	☐	☐	☐	☐
Ich kann mir oft keinen Reim auf meine Gefühle machen.	☐	☐	☐	☐	☐
Ich bin häufig scheinbar grundlos plötzlich angespannt oder schlecht gelaunt.	☐	☐	☐	☐	☐
Ich kann oft nicht sagen, wie ich mich fühle.	☐	☐	☐	☐	☐
Ich habe in der Regel keine Schwierigkeiten meine Gefühlen zu benennen.	☐	☐	☐	☐	☐

A4. Self-report Measure of State Emotional Clarity, deployed in Studies 2-4

Liebe/r Teilnehmer/in,

Hier finden Sie einige Reihe von Aussagen zu Meinungen und Erlebensweisen. Bitte lesen Sie jede Aussage durch und geben Sie an, ob Sie ihr widersprechen oder zustimmen. Es gibt keine „falschen" oder „richtigen" Antworten; überlegen Sie bitte deshalb nicht lange, sondern kreuzen Sie spontan diejenige Antwortalternative an, die den Grad ihrer Zustimmung am besten ausdrückt.

	Starker Widerspruch	Etwas Widerspruch	Weder noch	Etwas Zustimmung	Starke Zustimmung
Ich weiß genau, wie ich mich im Moment fühle.	☐	☐	☐	☐	☐
Ich kann nicht beschreiben, wie ich mich gerade fühle.	☐	☐	☐	☐	☐
Ich bin mir über meine aktuellen Gefühle sehr im Klaren.	☐	☐	☐	☐	☐
Es fällt mir schwer, meine aktuellen Gefühle zu benennen.	☐	☐	☐	☐	☐
Ich kenne meine Gefühle gegenüber der aktuellen Situation.	☐	☐	☐	☐	☐
Ich verstehe, warum ich mich fühle, wie ich es in diesem Moment tue.	☐	☐	☐	☐	☐
Im Moment kann ich nicht sagen, was meine Gefühle sind.	☐	☐	☐	☐	☐
Ich kann meine aktuellen Gefühle beschreiben.	☐	☐	☐	☐	☐
Ich weiß nicht, warum ich mich im Moment so fühle.	☐	☐	☐	☐	☐

A5. Indirect Measure of Emotional Clarity and Certainty Measure, deployed in Study 2

Indirect measure of emotional clarity: self-developed, optimized version compared to study 1

Certainty measure: unchanged version compared to study 1

Liebe/r Teilnehmer/in,

Beantworten Sie die folgenden Fragen zu Ihrem aktuellen Befinden so, dass es Ihnen am besten entspricht. Es gibt keine „richtigen" oder „falschen" Antworten.

1. **Wie fühlen Sie sich im Moment? Bitte <u>benennen</u> Sie Ihr Gefühl.**
   Falls Sie nicht sagen können, was Sie fühlen, schreiben Sie bitte einen entsprechenden Kommentar in das Textfeld.

2. **Wie sicher sind Sie sich** auf einer Skala von 0 – 100, dass Ihre Angaben Ihren aktuellen Gefühlen tatsächlich entsprechen? Bitte kreuzen Sie an:

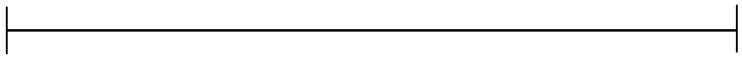
   Unsicher — Sicher

   0 — **100**

3. **<u>Beschreiben</u> Sie nun bitte, was Sie im Moment fühlen.** Beschreiben Sie stichpunktartig, aber so *detailliert und genau* wie möglich, wie Sie sich fühlen. **Welche (körperlichen) Empfindungen haben Sie, welche Gedanken gehen Ihnen durch den Kopf, welche Impulse, etwas zu sagen oder zu tun, verspüren Sie, …?**
   Worin drückt sich das Gefühl, das Sie oben benannt haben, aus?
   Falls Sie nicht sagen können, was Sie fühlen, schreiben Sie bitte einen entsprechenden Kommentar in das Textfeld.

4. Wie sicher sind Sie sich auf einer Skala von 0 – 100, dass Sie Ihre aktuellen Gefühle treffend beschrieben haben? Bitte kreuzen Sie an:

Unsicher Sicher

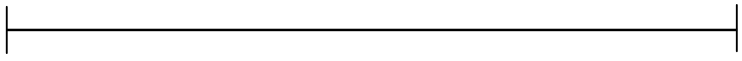


0 **100**

5. <u>Warum</u> fühlen Sie sich so? Worauf führen Sie Ihre Gefühlslage zurück? Bitte beschreiben Sie den Grund so *präzise und detailliert* wie möglich. **Wodurch wurde das Gefühl ausgelöst? Welche Ihrer Einstellungen und inneren Überzeugungen, welche Ihrer Erinnerungen und welche Ansichten über sich selbst wurden vielleicht durch irgendeinen Auslöser angesprochen? Welchen wurde vielleicht widersprochen? Was war dieser Auslöser?**
Falls Sie nicht sagen können, was der Grund für Ihre aktuellen Gefühle ist, schreiben Sie bitte einen entsprechenden Kommentar in das Textfeld.

6. Wie sicher sind Sie sich auf einer Skala von 0 – 100, dass die von Ihnen beschriebene Ursache tatsächlich der Grund für Ihre aktuelle Gefühlslage ist? Bitte kreuzen Sie an:

Unsicher Sicher



0 **100**

Appendix B: Agenda of Training Interventions

Table B1.

Study 1: Agenda of Clarity Intervention

duration	sequence	a/p[1]	purpose	arrangement	method	implementation	material
4´	welcoming, warm up	a	introduction, get to know each other	plenum	exercise	The trainers welcome the participants. The trainers and participants call their names and a feeling that starts with the same initial.	-
2´	goals, agenda	p	overview	plenum	presentation	The trainers introduce the participants to the training goals and agenda.	fc[2] "learning targets" fc "agenda"
7´	concept and benefit of emotional clarity	p	get to know the concept of emotional clarity and its benefit	plenum	presentation	The trainer explains the concept and the benefit of emotional clarity.	slides
10´	exercise: get to know two specific emotions	a	activate present knowledge about (two specific) emotions	team work (à 5)	exercise	Half of the groups answer the following questions for the emotion "anger", half for "anxiety": What occurs to you if you think about anxiety/anger? Which feelings and forms of expression do you associate with this emotion?	instructions, blank flip charts

[1] a = participants active, p = participants passive
[2] fc = flip chart

Appendix B: Agenda of Training Interventions

Continuation of Table B1

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
7´	presentation of results	a	get to know the results of the other groups	plenum	presentation	The groups present their results to the rest of the participants. The participants correct and complete the presented list if necessary. They also categorize the results into feelings, sensations, forms of expression, thoughts and impulses.	flip charts with results
8´	exercise: experience and describe anxiety	a	experience a specific emotion, describe the feelings, sensations and forms of expression that were associated with it	individual work	exercise	Participants are asked to memorize and re-experience a situation in which they had felt anxiety and to write down the situation shortly[3]. Then they are instructed to describe in writing in the most detailed way what they experienced when feeling anxiety. They can write whatever comes to their mind but are also given guiding questions. These questions ask for the categories which had been introduced in the first exercise.	worksheets

Continuation of Table B1

[3] Method: Autobiographical recollections methodology (Otto, 2000)

Appendix B: Agenda of Training Interventions

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
4′	reflection on exercise	a	reflection of experience	plenum	flashlight	The trainer asks the participants for the experience they made with the exercise and how they feel now.	-
3′	amusing game	a	relaxing break	plenum	game	The trainers play with the participants a clap game.	-
8′	exercise: Experience and describe anger	a	experience a specific emotion, describe the feelings, sensations and forms of expression that were associated with it	individual work	exercise	Same procedure as in exercise 2 (experience and describe anxiety)	worksheets
3′	differences between anger and anxiety	p	learn to distinguish between anger and anxiety	plenum	presentation	The trainer stresses the most important differences between anxiety and anger.	fc “differences ”
3′	homework	p	transfer to everyday life	plenum	presentation	For homework the participants are asked to pay attention to their emotions, especially to anger and anxiety. If they realise a feeling, they are asked to pause for a moment and to examine their feelings, sensations and expressions.	-
1′	conclusion	p		plenum		The trainers thank the participants.	

Appendix B: Agenda of Training Interventions

Table B 2.

Study 1: Agenda of Mindfulness Intervention

dura-tion	sequence	a/p[4]	purpose	arrange-ment	method	implementation	material
1´	welcoming	p		plenum		The trainers welcome the participants.	
3´	warm up	a	get to know each other	plenum	exercise	Every participant gets a "feel pillow" and is asked to find out what's in there. Then all participants introduce themselves and tell the others what's in their pillow.	Small pillows filled with rice, various seeds etc., called "feel sacks"
3´	goals, agenda	p	introduction, overview	plenum	presentation	The trainers introduce the goals and the agenda of the training to the participants.	fc[5] "goals" fc "agenda"
13´	concept and benefit of emotional clarity and mindfulness	p	get to know the concepts and benefits of emotional clarity and mindfulness	plenum	presentation	The trainer explains the concept and the benefit of emotional clarity. Then they present that mindfulness can foster clarity and describe the idea and the benefit of mindfulness.	slides
4´	mindfulness-exercise	a	practice mindfulness, experience the difference between automatic and mindful behaviour	plenum/indivi-dual work	exercise	The participants are instructed to examine their feel pillow again in a now mindful way and with all senses.	"feel pillows"

[4] a = participants active, p = participants passive
[5] fc = flip chart

Appendix B: Agenda of Training Interventions

Continuation of Table B2

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
5´	reflection of exercise	a	reflection of experience	plenum	flashlight	The trainer asks the participants for the experience they made with the exercise and how they feel now.	-
4´	mindfulness-exercise	a	practice mindfulness	plenum/indivi-dual work	exercise	The participants are instructed to walk in a mindful way.	-
5´	reflection of exercise	a	reflection of experience	plenum	flashlight	The trainer asks the participants for the experience they made with the exercise and how they feel now.	-
4´	mindfulness-exercise	a	practice mindfulness	plenum/indivi-dual work	exercise	The participants are instructed to watch their thoughts like they were passing by on a conveyor belt. If a thought was especially interesting they were asked to take it from the belt and investigate it in a mindful way (What feelings, other thoughts, sensations,… are associated with it?) and put it back after that.	-
5´	reflection of exercise	a	reflection of experience	plenum	flashlight	The trainer asks the participants for the experiences they made with the exercise and how they feel now.	-

Appendix B: Agenda of Training Interventions

Continuation of Table B2

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
7´	homework	a	transfer to everyday life	plenum	discussion	For homework the participants are asked to practice mindfulness in their everyday life. The trainer discusses with them how and when they could integrate mindfulness. Participants were explicitly encouraged to choose at least one activity that they would do mindfully every day.	slide
5´	contribution of mindfulness to clarity	a	get to know the connection of mindfulness and clarity	plenum	discussion	The trainer asks the participants what they think how mindfulness can contribute to greater emotional clarity. The trainer adds or corrects ideas if necessary.	slides
1´	conclusion	p		plenum		The trainers thank the participants.	

Appendix B: Agenda of Training Interventions

Table B3.

Study 2: Agenda of Mindfulness Intervention

dura-tion	sequence	a/p[6]	purpose	arrange-ment	method	implementation	material
1st training session							
7´	welcoming, goals, agenda	p	introduction, overview,	plenum	presentation	The trainers welcome the participants and introduce the training goals and the agenda to them.	fc[7] "goals" fc „agenda"
15´	warm up	a	get to know each other	plenum	exercise	The participants choose one of various objects each. Then they introduce themselves and explain why they chose this specific object.	various objects of everyday life
10´	concept of mindfulness	p, (a)	get to know the basics of mindfulness	plenum	presentation (partly interactive)	The trainer asks the participants what they already know about mindfulness and what experience they made with it. Then the trainer explains the concept of and the benefit from mindfulness.	slides
10´	mindfulness-exercise	a	practice mindfulness	individual work	exercise	Participants are asked to examine their object from the warm up as if they came from another planet and did never see something like this. They are instructed to examine the object mindfully and with all senses without valuating it.	object from the warm up, instructions

[6] a = participants active, p = participants passive
[7] fc = flip chart

Appendix B: Agenda of Training Interventions

Continuation of Table B3

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
5´	reflection on exercise	a	reflection of experience	plenum	flashlight	The trainer asks the participants about their experience in this exercise and how they feel.	-
10´	break						
10´	mindfulness as strategy to avoid and reduce distress	a/p	get to know the benefit of mindfulness with regard to distress	plenum	interactive presentation	The trainer and the participants discuss about why and how mindfulness helps with distress.	slides
10´	mindfulness-exercise	a	practice mindfulness	plenum	exercise	Every participant gets a tangerine. The trainer instructs the participants to examine it mindfully.	tangerines
10´	homework	a/p	transfer to everyday life	plenum	interactive presentation	For homework the participants are asked to practice mindfulness in everyday life. They are instructed to write down daily in a structured diary when and for how long they've been mindful and which experience they made by being mindful. Before the diary is introduced to the participants the trainer discusses with them how and when they could integrate mindfulness, which obstacles they could meet and how those could be overcome.	instructions, structured diary

Appendix B: Agenda of Training Interventions

Continuation of Table B3

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
3´	conclusion	p		plenum		The trainers thank the participants.	
2nd training session (one week later)							
3´	welcoming, goals, agenda, recapitulation	p	introduction, overview	plenum	presentation	The trainers welcome the participants and introduce them to the training goals and agenda. They give a short recapitulation of what was learned last week.	fc “goals” fc “agenda”
15´	reflection of homework	a	reflection of experience with mindfulness	plenum	discussion	The participants discuss which experience they made with mindfulness in their everyday life. Could they use it? Did they profit from it? What is maybe different now?	-
20´	case study mindfulness	a	using mindfulness in a everyday situation	Team work (á 4)	case study	Participants are asked to think about everyday situations – how they think and (re)act usually and – how mindfulness could help to change the usual feeling and acting.	worksheet
10´	discussion of case study	a	discussion of results	plenum	discussion	Participants present their results and discuss about them.	-
5´	break						
20´	bodyscan	a	practicing mindfulness in a formal way	plenum/indivi-dual work	formal mindfulness meditation	After a presentation of the function of the bodyscan a trainer instructs the participants to attend to selected parts of the body one after the other.	-

Appendix B: Agenda of Training Interventions

Continuation of Table B3

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
10´	reflection of the bodyscan	a	exchange of experience	plenum	discussion	Participants discuss how they felt during the bodyscan.	-
12´	conclusion reflection of training intervention	p/a	feedback for trainers	plenum	discussion	The trainers thank the participants. Participants are asked for their feedback on the training intervention.	-

Appendix B: Agenda of Training Interventions

Table B 4.

Study 2: Agenda of Self-reflection Intervention

dura-tion	sequence	a/p[8]	purpose	arrange-ment	method	implementation	material
1st training session							
3´	welcoming, goals, agenda	p	introduction, overview	plenum	presentation	The trainers welcome the participants and introduce the goals and the agenda of the training to them.	fc[9] "goals" fc "agenda"
10´	warm up	a	get to know each other	plenum	exercise	The participants choose one of various emotion cards each. Then they introduce themselves and why they chose this specific card.	emotion cards
10´	sr[10]-exercise	a	practice self-reflection	individual work	exercise	The participants are instructed to reflect on their emotion card. Which thoughts and feelings are associated with the card? What has it got to do with the self, with past experiences or future concerns?	emotion cards from previous exercise, worksheet
5´	reflection on exercise	a	reflection	plenum	flashlight	The trainer asks the participants for the experience they made with the exercise and how they feel now.	-

[8] a = participants active, p = participants passive
[9] fc = flip chart
[10] sr = self-reflection

Appendix B: Agenda of Training Interventions

Continuation of Table B4

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
15´	clarity of self-concept	a	clarity of own ideal and real self-concept	partner work	exercise	Firstly, participants are instructed to reflect on their real and ideal self-concept for themselves. Then they ask their partners for their spontaneous external view of them.	worksheet
5´	break						
20´	definition, techniques and benefit of sr, discrimination from rumination	a	knowing concept, techniques and benefit of solution-focused self-reflection	team work (à 4)	exercise	Participants get an information sheet on self-reflection and rumination. Every group has to answer one question and write down their results on a FC. Group 1: What is self-reflection? Group 2: How does self-reflection works? Group 3: What is rumination? Group 4: What's the use of wh-questions?[11] Group 5: How does self-reflection help in stressful situations?	instructions, plain fcs
15´	presentation of results	a	exchange of gained knowledge	plenum	presentation	All groups present their results to the plenum. The results are discussed by the plenum. The trainers correct statements if necessary.	fcs of the groups

[11] wh-questions: when, where, what, who, why

Appendix B: Agenda of Training Interventions

Continuation of Table B4

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
5´	homework	p	transfer to everyday life	plenum	presentation	For homework the participants are asked to choose every day one emotional situation and to reflect on it. They are instructed to write down the situation in a structured diary and to reflect with the guiding questions on this situation.	structured diary, instructions
2´	conclusion	p		plenum		The trainers thank the participants.	
2nd training session (one week later)							
3´	welcoming, goals, agenda, recapitulation	p	introduction, overview	plenum	presentation	The trainers welcome the participants and introduce to them the training goals and the agenda. They give a short recapitulation of what was learned last week.	fc “goals” fc “agenda”
15´	reflection of homework	a	reflection of experience	plenum,	discussion	The participants discuss the experience they made with self-reflection in their everyday life. Could they use it? Did they profit from it? What is maybe different now?	
10´	benefit of self-reflection	p	benefit of self-reflection	plenum	presentation	The trainer introduces some empirical results how self-reflection helps.	slides

Appendix B: Agenda of Training Interventions

Continuation of Table B4

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
10´	break						
15´	sr-exercise	a	practice sr after a distressing event	plenum/indivi-dual work	exercise	1) Induction of distress: Participants form a circle and close their eyes. They are told that the trainer is going to choose one of them for a following exercise by tabbing on their shoulder. 2) Participants are asked now to reflect on their affective experience and the underlying motives. 3) The participants get the information that the announced exercise is not going to take place and that the announcement rather aimed at the inducement of distress.	worksheet
10´	reflection of exercise	a	exchange of experience	plenum	discussion	Participants discuss about their experience in this exercise. How did self-reflection helped in this special situation?	-

Appendix B: Agenda of Training Interventions

Continuation of Table B4

dura-tion	sequence	a/p	purpose	arrange-ment	method	implementation	material
10´	collection of stress reduction strategies	a	get to know techniques for stress reduction	plenum	exercise	Participants are asked to write stress reduction strategies that they can use before self-reflection on moderation cards.[12] Cards are collected at the moderation board.	instructions, plain moderation cards
12´	conclusion, reflection of training intervention	p/a	feedback for trainers	plenum	discussion	The trainers thank the participants. Participants are asked for their feedback on the training intervention.	-

[12] According to the PSI-Theorie, it is necessary to inhibit strong positive and negative affect before self-reflection in an extensive and holistic way is possible (Greif, 2008; Kuhl, 2001).

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Eigenständigkeitserklärung

Hiermit erkläre ich, dass ich gemäß § 9, Abs. 1 der Promotionsordnung der Technischen Universität Darmstadt vom 12. Januar 1990 (in der Fassung der VII. Änderung vom 28. September 2010) die Dissertationsschrift zum Thema *„Emotional Clarity – Measurement, Training and its Role in Affect Regulation“* nach bestem Wissen und Gewissen selbstständig verfasst habe und keine anderen als die angegebenen Quellen und Hilfsmittel verwendet habe.

Darmstadt, 19. Dezember, 2011

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