EFFECTS OF DEPRESSION AND CULTURE ON RECOGNIZING FACIAL EXPRESSIONS: A CROSS-CULTURAL STUDY ON GERMAN AND SYRIAN SUBJECTS

Dissertation

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Zusammenfassung

Die Zielsetzung dieser Arbeit besteht zum einen in der Erforschung der Auswirkungen von Depression auf die Erkennung von emotionalen Gesichtsausdrücken, zum anderen in der Untersuchung der Einflüsse kultureller Differenzen zwischen Deutschen und Syrern auf die Erkennung von emotionalen Gesichtsausdrücken. Darüber hinaus soll der modellierende Einfluss von weiteren Variablen wie Geschlecht, Emotionsregulation, aktuelle Stimmung sowie soziale Unterstützung empirisch untersucht werden.

Um die oben erwähnten Ziele dieser Arbeit zu erreichen, wurden zwei Computerprogramme eingesetzt: Das erste Programm war das Amsterdam Dynamic Facial Expression Set (ADFES), welches 40 Videos beinhaltet, die mit fünf Gesichtsmodellen aufgenommen wurden. Diese fünf Modelle wurden aufgeschlüsselt nach Kultur (drei mediterrane und zwei nordeuropäische Darsteller) und Geschlecht (drei weibliche und zwei männliche Darsteller), um die Wechselwirkungen zwischen kulturellem Hintergrund der Probanden und kulturellem Hintergrund der Modelle auf der einen Seite sowie die Wechselwirkungen zwischen Geschlecht der Probanden und Geschlecht der Darsteller auf der anderen Seite empirisch zu untersuchen. Jedes Gesichtsmodell zeigt acht Gesichtsausdrücke. Dazu gehören die sechs ‚Basisemotionen' (Freude, Überraschung, Trauer, Wut, Ekel, Furcht) sowie Verachtung und ein neutraler Gesrichtsausdruck.
Das zweite Programm, „face in the crowd task" (FCT), beinhaltet 252 Gruppen von weiblichen und männlichen Gesichtern. Jede Gruppe umfasst sechs Gesichter, die entweder alle einen neutralen Gesichtsausdruck zeigen oder fünf neutrale Ausdrücke und einen emotionalen Ausdruck (Freude, Trauer oder Wut).

Um eine Depression zu diagnostizieren und die Konfundierung zwischen Depressionen und anderen komorbiden Störungen zu vermeiden, wurde das Mini International Neuropsychiatric Interview (M.I.N.I.) angewendet. Darüber hinaus wurde das Beck-Depressions-Inventar (BDI) als Selbstbewertungsfragebogen angewendet, um das aktuelle Ausmaß einer möglichen Depression zu erfassen.

Um ein besseres Verständnis von den Auswirkungen interner (Emotionsregulation, aktueller Stimmungszustand) und externer Variablen (soziale Unterstützung) auf die Erkennung der Gesichtsausdrücken zu erlangen, wurden die folgenden drei Fragebögen angewandt: Aktuelle Stimmungsskala (ASTS), Emotion Regulation Questionnaire (ERQ) und Fragebogen zur Sozialen Unterstützung (F-SozU).

Die Daten wurden von insgesamt *N*=136 Probanden gesammelt. Die Gruppe bestand aus 74 Deutschen (44 Frauen und 30 Männer) und 62 Syrern (30 Frauen und 32 Männer).
Für weitere Analysen wurde die Gesamtstichprobe in eine Kontrollgruppe (*N*=68 Teilnehmer mit minimalen oder milden Depression) und eine Experimentalgruppe (*N*=68 Probanden mit mittelschwerer oder schwerer Depression) unterteilt.

Es zeigte sich, dass die Teilnehmer mit mittelschwerer oder schwerer Depression Schwierigkeiten bei der allgemeinen emotionalen Verarbeitung der dynamischen und statischen Gesichtsausdrücke hatten (siehe auch Yoon et al. 2016; Demenescu et al., 2010), insbesondere bei der Verarbeitung von traurigen und fröhlichen Gesichtsausdrücken (siehe auch Surguladze et al., 2004; Mikhailova et al., 1996; Rubinow & Post, 1992). Die Betrachtung des Interaktionseffektes zwischen Depression und positiver Emotionsregulationsstrategie (kognitive Neubewertung) auf die Erkennung von Gesichtsausdrücken zeigte, dass die Teilnehmer in der Kontrollgruppe mit einer hohen kognitiven Neubewertung statische fröhliche Gesichter besser erkannten als die Teilnehmer in der Experimentalgruppe mit einer hohen kognitiven Neubewertung.

Im Hinblick auf die kulturellen Unterschiede zwischen Deutschen und Syrern bei der Erkennung von Emotionen im Gesicht zeigten die Deutschen bessere Leistungen bei der Erkennung von fröhlichen statischen Gesichtsausdrücken und angeekelten dynamischen Gesichtsausdrücken; sie zeigten höhere emotionale Sensibilität nach dem Erkennen der dynamischen Ausdrücke außer ‚Neutral' als Syrer. Deutsche schienen auch etwas schneller bei der Entdeckung von statischen Gesichtsausdrücken, während Syrer etwas schneller bei der Erkennung dieser Ausdrücke waren; die syrischen Teilnehmer erkannten besser überraschte dynamische Gesichter und neigten dazu, die emotionale Intensität für die dynamischen Ausdrücke höher als die Deutschen zu bewerten. Deutsche und Syrer erkannten die meisten

der nordeuropäischen dynamischen Gesichtsausdrücke besser als die mediterranen Gesichtsausdrücke.

Ein Vergleich der Reaktionen auf drei Gesichtsausdrücke (Freude, Wut und Trauer) in den beiden Testparadigmen FC und ADFES zeigte, dass fröhliche Ausdrücke für beide Kulturen am einfachsten (siehe auch Calvo et al., 2014) und wütende Ausdrücke am schwierigsten zu identifizieren waren.

Die Betrachtung des Interaktionseffektes zwischen Depression und Kultur auf die Erkennung von Gesichtsausdrücken zeigte, dass die deutsche Experimentalgruppe statische traurige Gesichter besser entdecken konnte als die syrische Experimentalgruppe. Sie neigte auch dazu, diese besser zu erkennen; hingegen neigte die syrische Kontrollgruppe dazu, statische traurige Gesichter besser zu erkennen als die deutsche Kontrollgruppe.

Die Ergebnisse dieser Studie belegen auch die positive Rolle der sozialen Unterstützung, der kognitiven Neubewertung, und der aktuellen positiven Stimmung bei der Verbesserung der Erkennung von Gesichtsausdrücken (siehe Gul & Khan 2014; Pacheco-Unguetti et al., 2014; McRae et al., 2012; Marroquín, 2011). Darüber hinaus zeigt die Studie die Rolle des Geschlechts in der Erkennung von Gesichtsausdrücken, und belegt, dass Gesichtsausdrücke bei Frauen besser erkannt werden als bei Männern. Insbesondere statische Gesichtsausdrücke bei Frauen werden besser erkannt.

Die Ergebnisse dieser Studie bieten eine Basis für zukünftige Forschung, die darauf abzielt, den Einfluss psychologischer und kultureller Faktoren auf die Erkennung von Gesichtsausdrücken zu verstehen. Darüber hinaus, bietet diese Studie wichtige Implikationen für die kognitive Verhaltenstherapie bei Depressionen, die Trainingsprogramme zur Verbesserung der Erkennung von Gesichtsausdrücken einbauen könnte, um deren Einfluss auf depressive Symptome und sozialen Interaktionen empirisch zu prüfen.

Die Erkennung von emotionalen Gesichtsausdrücken ist von zentraler Bedeutung für Empathie und adäquate soziale Interaktion. Ein besseres Verständnis des Einflusses kultureller und klinisch-psychologischer Faktoren auf die Erkennung von emotionalen

Gesichtsausdrücken bei Menschen von der gleichen bzw. von einer fremden Kultur kann mithin dabei helfen, spezifische Interventionsmaßnahmen zu entwickeln, um Defizite in der sozialen Interaktion zu beheben.

Abstract

The main purpose of this thesis is to investigate the effect of depression on recognition accuracy of facial expressions and to gain an in-depth understanding of the role of cultural differences between Germans and Syrians in facial expression recognition.
The study also aims to explore the effect of other factors such as gender, emotion regulation, current mood state, or social support in expression recognition.
Given the importance of facial expression detection in facial information processing, the current study discusses the impact of depression and culture as well as the above-mentioned factors on facial expression detection.

For these aims, two computer applications were used. The first one was the Amsterdam Dynamic Facial Expression Set (ADFES), which includes 40 videos with standardized emotion expressions displayed by five facial models which are disaggregated by culture (3 Mediterranean, 2 North-European) and gender (3 women and 2 men). This makes it possible, to investigate the interactions between participants' cultures and stimuli' cultures on the one hand and the interactions between participants' genders and stimuli' genders on the other. Each facial model displays 8 emotional states, namely the six 'basic' emotions (joy, surprise, sadness, anger, disgust, and fear), and, in addition, contempt and a neutral expression.
The second application was a face in the crowd task (FCT), which consisted of 252 sets of male and female faces, each of which included 6 faces. Each set contained either 6 faces with neutral expressions or 5 faces with neutral expressions and one face displaying an emotion (happiness, sadness, or anger).

In order to test for and diagnose depression and to avoid the confounding between depression and other comorbid disorders, the Mini International Neuropsychiatric Interview (M.I.N.I.) was used. In addition, the Beck Depression Inventory (BDI), self-report questionnaire, was used to measure the current level of depression.

To gain an understanding of the effects of internal variables (such as emotion regulation, current mood state) and external variables (such as social support) in facial expression recognition, three self-report questionnaires were applied: the Current Mood State scale

(Aktuelle Stimmungsskala, ASTS), the Emotion Regulation Questionnaire (ERQ), and the social support questionnaire (F-SozU).

Data were collected from 136 participants (the analytical sample), 74 Germans (44 women and 30 men) and 62 Syrians (30 women and 32 men); 68 participants with minimal or mild depressive depression (control group) and 68 participants with moderate or severe depression (experimental group).

After analyzing the data, the results revealed that participants with moderate or severe depression had difficulties in general emotional processing of dynamic and static facial expressions (see also Yoon et al., 2016; Demenescu et al., 2010), and particularly in processing sad and happy faces (see also Surguladze et al., 2004; Mikhailova et al., 1996; Rubinow & Post, 1992). The interaction effects between depression and positive emotion regulation strategie (i.e., expressive suppression) on recognition accuracy of facial expressions showed that amongst participants with high cognitive reappraisal, the control group recognized static happy faces better than the experimental group.

With regard to the cultural differences between Germans and Syrians in recognizing facial emotions, Germans showed better performance in recognizing dynamic disgusted faces and static happy faces; they showed higher emotional sensitivity after recognizing dynamic expressions (except neutral) than Syrians. Germans also seemed to be a little faster in detection of static faces. Syrians recognized dynamic surprised faces better; they tended to show slightly higher assessment of emotional intensity for dynamic expressions than Germans and seemed to be a little faster in recognizing static faces. Germans and Syrians recognized most of the North European dynamic faces better than Mediterranean faces.

A comparison of Germans and Syrians responses to three facial expressions (joy, anger, and sadness) in the face in the crowd task and in the ADFES showed that happy expressions seemed the easiest to identify for the two cultures (see also Calvo et al., 2014), and angry expressions seemed the hardest.

Abstract

Investigating the interaction effect of depression and culture on recognizing facial emotions showed that in the experimental group Germans compared to Syrians performed better in detecting static sad faces and also tended to recognize them with higher accuracy, although in the control group Syrians compared to Germans tended to recognize static sad faces better.

The findings of this study emphasize the positive role of social support, cognitive reappraisal strategy, and current positive mood in improving face recognition accuracy (see also Gul and Khan, 2014; Pacheco-Unguetti et al., 2014; McRae et al., 2012; Marroquín, 2011). Moreover, they highlight the role of the gender variable in facial expression recognition, and show that facial expressions are easier to recognize in female than in male faces. This applies especially to static female faces.

Based on these results the current study provides further support for future research aimed to understand the psychological and cultural factors influencing the recognition of facial expressions. Moreover, this study provides important implications for cognitive behavioral therapy of depression, which could include training programs for improving recognition of facial expressions and evaluate the effects of such interventions on social interaction and depressive symptoms.

Since facial expression recognition is of central importance for empathy and social interaction, a better understanding of the influence of cultural and clinical psychological factors on facial expression recognition by people from the same or foreign culture can help to develop specific intervention measures to mitigate impairments or deficits in social interaction.

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List of Abbreviations

ADFES	Amsterdam Dynamic Facial Expression Set
AFR	Automatic Face Recognition
ANCOVA	Analysis of Covariance
ASTS	Current Mood State Scale (Aktuelle Stimmungsskala)
AUs	Action Units
BDI	Beck Depression Inventory
CBM	Cognitive-Bias Modification
CN VII	Seventh Cranial Nerve
CONLERN	Face Identity - Learning Mechanism
CONSPEC	Conspecific Recognition Mechanism
DAT	Dopamine Active Transporter
DRD4	Dopamine Receptors D 4
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
ERQ	Emotion Regulation Questionnaire
FACS	Facial Action Coding System
FCT	Face in the Crowd Task
FFA	Fusiformface Area
fMRI	Functional Magnetic Resonance Imaging
F-SozU	Social Support Questionnaire (Fragebogen zur sozialen Unterstützung)
GNB	Guanine Nucleotide-Binding
HTT	Hydroxytryptamintransporter

IC	Insular Cortex
KDEF	Karolinska Directed Emotional Faces
MANOVA	Multivariate Analysis of Variance
M.I.N.I.	Mini-International Neuropsychiatric Interview
MNS	Mirror Neuron System
MT	Medial Temporal Cortex
MTHFR	Methylenetetrahydrofolate reductase
SCID	Structured Clinical Interview for DSM IV
SLC6A3	Solute Carrier Family 6 (Neurotransmitter Transporter), Member 3
SSRI	Selective Serotonin Reuptake Inhibitors
STG	Superior Temporal Gyrus
STS	Superior Temporal Sulcus
TOM	Theory of Mind
T-test	T-test for Independent Samples
WHO	World Health Organization
WMH-CIDI	World Mental Health Composite International Diagnostic Interview

INTRODUCTION

The facial expressions of emotion are crucial in all human relations and influence every aspect of our interpersonal communications. They support the communicative process with the necessary information to achieve emotional understanding. Fridlund (1994) wrote that "The face is like a switch on a railroad track. It affects the trajectory of the social interaction the way the switch would affect the path of the train".

Recognition of facial expressions allows us to know more about what others are thinking or feeling, and causes changes in our emotions, behaviors and relations. The six basic facial expressions (happiness, surprise, fear, disgust, anger, and sadness) feed our cognitive processes with basic information about others' emotional states, and constitute a starting point to predicting when certain feelings, e.g., danger, pain, shame, desire, embarrassment, or love will occur. Also biased or diminished attention to specific facial expressions plays an important role in emotional reactions, especially in depressed patients. Negatively biased or diminished attention leads to difficulties in understanding and recognition of facial emotions, which in turn can contribute to the development and maintenance of depression. Recurrent depressive episodes may also be involved in impairment of attention or increasing its negative biases (Miskowiak et al., 2015; Chen et al., 2014; Douglas & Porter, 2010).

This study aims to explore the interactions between depression and the recognition of facial expressions, as well as the influence of culture on emotion recognition.

Four groups of participants from two different cultures (Germans and Syrians) with different levels of depression (minimal and mild vs. moderate and severe) were investigated using two computer paradigms to measure their recognition of dynamic and static facial expressions.

This is the first research that highlights the cultural differences of facial expression recognition between Germans and Syrians with varying levels of depression, in addition to probing the modulating effects of internal variables (such as gender, emotion regulation, current mood state) and external variables (such as social support), which allowed us to understand the impact of these variables on emotion recognition.

The study also addresses neurophysiological aspects related to depression and facial expressions and discusses the importance of cognitive-bias modification in depression using facial expression paradigms.

I hope that this study will be helpful for psychologists interested in studying cultural differences in the recognition of facial expressions, and will provide more support for future researches related to the difficulties of facial expression recognition in depressed patients.

CHAPTER I: THEORETICAL BACKGROUND AND LITERATURE REVIEW

1.1. RECOGNITION OF FACIAL EXPRESSIONS

In order to better understand the factors influencing facial expression recognition, this chapter provides a detailed overview of the cognitive, neurophysiological, and social aspects related to visual perception of facial expressions. Therefore I will first discuss the neuromuscular components of facial expressions, as well as the facial areas and facial movements. Then I will survey the cognitive emotional development of facial expression recognition and the neuroanatomical brain regions (cortical and subcortical routes) that are responsible for observed face processing; in addition to discussing the relevant role of mirror neurons and the theory of mind in response to others' emotional reactions. In conclusion, I will address the possible deficits and the gender differences involved in facial expression recognition.

1.1.1. THE BASIC FACIAL EXPRESSIONS OF EMOTION

The basic facial expressions (happiness, surprise, sadness, anger, fear, and disgust) (Ekman & Rosenberg, 2005; Ekman, 1992; Ekman et al. 1987) are based on the facial neuromuscular system that plays an adaptive functional role in nonverbal interactions, in addition to being a reliable source of information about the other emotional expressions, moods, motivations and intentions (see VanSwearingen & Brach, 1996). The intensity of spontaneous facial muscle movements indicates the intensity of an emotional state (Kostić, 2003), e.g., an intensely angry face reflects a negative emotional state and concentration on the antagonist's behaviors and informs them that their unacceptable behaviors are being monitored (Parkinson, 2005). Kostić (2003) found that accurate assessment of the emotional intensity of anger, surprise and disgust help people to be ready to respond and protect themselves or others. Hence, the accurate interpretation of the basic emotional expressions paves the primary way for individuals to develop the social concepts between each other (Smith et al., 2005).

1.1.2. THE NEUROPHYSIOLOGICAL ASPECTS OF FACIAL EMOTIONAL EXPRESSIONS

The facial expression system is dependent on movements of the facial musculature, which is mostly innervated by the seventh cranial nerve (CN VII) (Matsumoto & Ekman, 2008). CN VII emanates from the brainstem between the dorsal pons and the medulla, where it splits into two branches (Moore et al., 2009), the facial nerve proper (motor root) and the nervus intermedius (sensory root). Figure 1.1 shows the locations of facial motor and sensory roots.

- The motor root includes axons of branchial motor neurons whose cell bodies are located in the facial nucleus in the precentral and postcentral gyri of the frontal motor cortex. Each motor nucleus contains subnuclei that in turn support specific facial muscles (Gupta et al., 2013; Patestas & Gartner, 2006). Walker et al. (1990) reported that nuclear or infranuclear lesions lead to effects on the muscular system in specific facial regions e.g., open eye, nasolabial fold flattening and mouth drooping on the side homolateral to the lesion; while supranuclear lesions cause. nasolabial fold flattening and mouth drooping on the side opposite the lesion. One of the most common impairments of the facial musculature is Bell's palsy, which results from inflammation of the facial nerve, and thus pressure on the nerve part that supplies the mimetic muscles on one side of the face. About 30% of Bell's palsy patients may suffer from continuous acute facial paralysis and pain (Kennedy, 2010).

  The motor root innervates the mimetic facial musculature, which consists of "the frontalis, orbicularis oculi, orbicularis oris, buccinator, platysma muscles, risorius, corrugator supercilii, depressor supercilii, depressor anguli oris, zygomaticus major, zygomaticus minor, levator labii superioris, levator labii superioris alaeque nasi, depressor labii inferioris, levator anguli oris, mentalis, the posterior belly of the digastric, nasalis muscle, stylohyoid and stapedius muscle (in middle ear)" (Prendergast, 2013; Muscolino, 2011). Figure 1.2 shows the locations of mimetic facial muscles.
- The nervus intermedius (sensory root) includes the axons of sensory, special sensory and parasympathetic neurons whose cell bodies are situated in the superior salivatory nucleus (Patestas & Gartner, 2006). The nervus intermedius is responsible for supporting the taste, the lacrimal gland, the salivary glands, sublingual glands, minor salivary glands, and some cutaneous sensory impulses from the ear (Gupta et al., 2013; Walker, 1990).

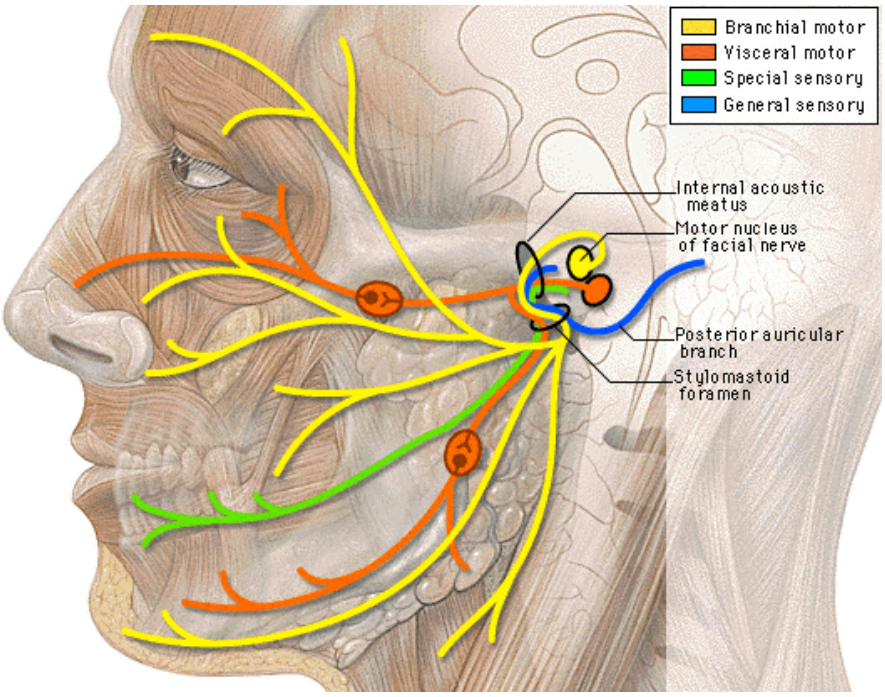

Figure 1.1. Motor and sensory roots (Exeter Surgical Society, 2012)

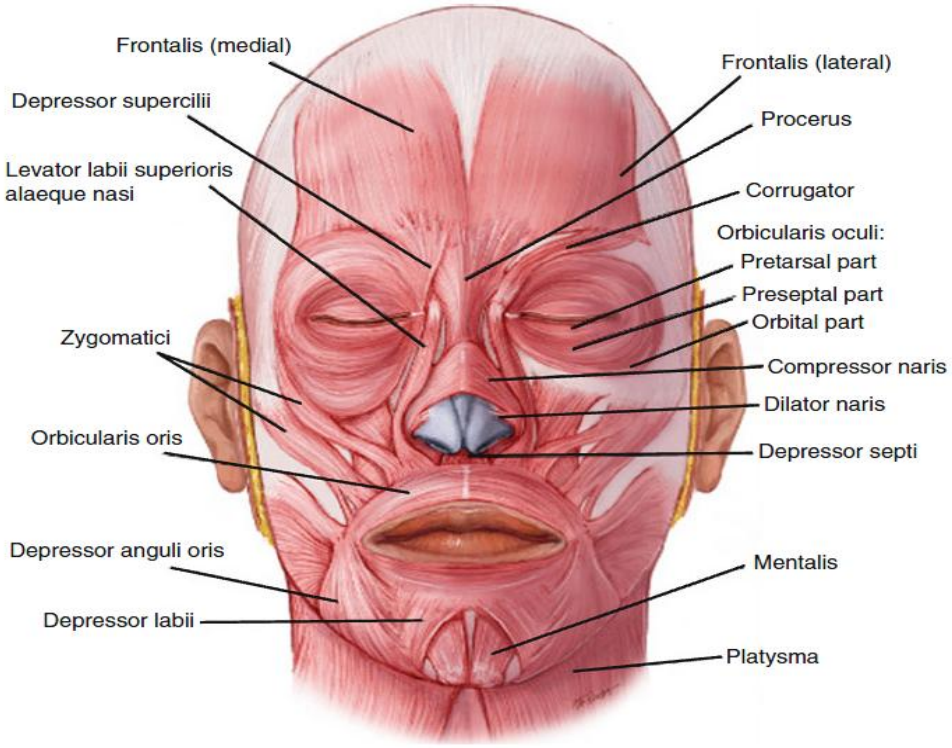

Figure 1.2. The mimetic facial muscles (Prendergast, 2013)

1.1.3. FACIAL AREAS AND RECOGNITION OF FACIAL EMOTIONS

The top and bottom face areas work together to transmit holistic information about our current feelings, therefore discrepancies between the two areas stimulate emotional and cognitive conflict in processing of extracted facial information, which may hinder accurate identification of the current emotional state (Clayson & Larson, 2013; Prazak, 2012). Likewise the eyes area may transmit certain emotions (e.g., angry, sad, and fearful) better than the mouth area, which in turn is also specialized more clearly to express some other emotions (e.g., happy); thus people pay attention to face features that are most expressive for each emotion (Scheller et al., 2012; Eisenbarth & Alpers, 2011). The eye and mouth are considered in many studies as the most significant sources for emotional expression in interpersonal communications (Blais et al., 2012; Washburn, 2012). However, movements of eye and surrounding muscles (e.g., orbicularis oculi muscles) are more difficult to control than the movements of mouth muscles (e.g., zygomaticus major muscles), therefore the eye expressions seem more credible than the mouth expressions. Thus, for example, the extracted information from the eyes area (especially crow's-feet wrinkles) also help us to distinguish between real and fake smile, despite the primary importance of mouth information to the recognition of happiness (Yoon et al., 2016; Mai et al., 2011; Yuki et al., 2007). Additionally, cultural factors may support variation in prevalence of attention to facial areas. Mai 2011 and Yuki 2007 found that Japanese and Chinese paid more attention to eyes expressions than Americans, which tended more to focus on mouth expressions. On the other hand, learning and experience also contribute to the development of strategies of extracting visual information from the various facial areas (e.g., see de Heering & Rossion, 2008).

A number of studies also showed differences between the two sides of the face. The left face side is controlled by the right hemisphere and it is more specialized to express the negative emotions, whilst the right face side is controlled by the left hemisphere and is more expressive for positive emotions. Other studies, however, have suggested that the right hemisphere is specialized to processing all emotions (Kohler et al., 2004; Best et al., 1994; Best, 1985).

1.1.4. FACIAL MOVEMENTS AND RECOGNITION OF FACIAL EMOTIONS

The facial muscles signal our mental and affective states and control the facial expressions. The movements of the facial muscles and the spatial-temporal interactions between them are very important to understanding the real meaning of these expressions. Ekman and Friesen (1976, 1978) developed the Facial Action Coding System (FACS) to get an integrated evaluation of all movements of facial muscles used in emotional expression (Kring & Sloan 2007; Ekman & Rosenberg, 2005) that depended on observing and coding of single and combined "action units" (AUs) of a face (Ekman, 2016). With FACS, Ekman and Friesen produced static stimuli (photographs) of basic facial expressions (Alves, 2013). But there is a low ecological validity of static compared to dynamic facial paradigms (Wingenbach et al., 2016), since it is also important to process the temporal variations of facial motion, which are relevant for development of nonverbal expressiveness and necessary to emotion recognition in everyday interactions (Alves, 2013). In addition, the dynamic enriches emotional expression and strengthens the possibility of precise determination of its intensity, as it provides a clear contrast between neutral and negative or positive expressions, and thus improves the ability for facial expression recognition (Biele & Grabowska, 2006). Ehrlich et al. (2000) also found better identification of basic emotions from dynamic rather than from static facial expressions. Neuroimaging studies have shown that dynamic face stimuli in comparison with static stimuli elicit high activity in brain regions involved in social cognition (Arsalidou et al., 2011). Other studies also indicated that the brain regions responsible for processing facial expressions (e.g., amygdala, posterior superior temporal sulcus, and insula) respond better to dynamic than to static emotional expressions (Roy et al., 2009; LaBar et al., 2003).

Facial movements support the understanding of verbal messages and the tenor of social interactions. Eye movements (the direction of gaze), for instance, indicate whether a statement is serious or ironic. This is where expression, gaze-direction and speech movements work together in meaningful temporal sequences. Equally, facial movements sometimes reflect aspects of a speaker identity, such as a characteristic smile or a sorrowful gaze, or facial gestures (Roark et al., 2003).

O'Toole et al. (2002) pointed out that the face includes two types of information, facial movements and structural facial features:

1) Facial movements, in turn, include information about:

- Social communication signals (facial expression, eye gaze-direction, and speech-related lip movements);
- Personal dynamic facial signals.

Both sets of information are sent first to the medial temporal cortex (MT) for general motion processing and second to the superior temporal sulcus (STS), where the information is classified into two types:

- information about social signals, which are sent to extender systems responsible for additional social processing;
- information about personal dynamic facial signals, where processing of these information contributes to recognition of familiar faces.

On the other hand, information on (motionless) structures is sent from the MT to the fusiform face area (FFA).

2) Structural facial features are processed in the FFA, which effectively participates in recognizing a person's identity (whether familiar face or unfamiliar face) (see also Dahl et al., 2016). Figure 1.3 explains how the two types of facial information are processed.

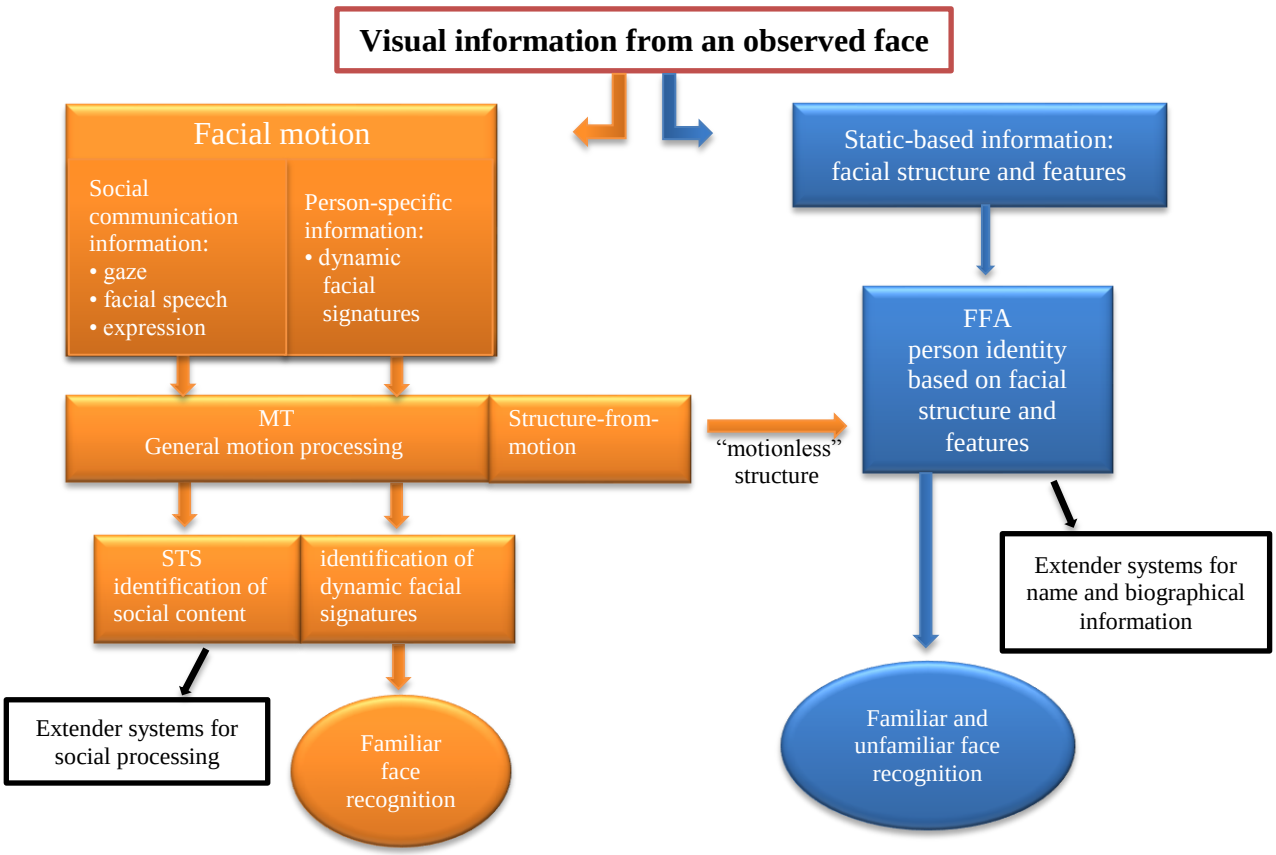

Figure 1.3. Recognition scheme of moving faces (modified according to O'Toole et al., 2002)

1.1.5. EMOTIONAL REGULATION STRATEGIES AND FACIAL EXPRESSIONS

Emotion regulation refers to cognitive behavioral strategies, which we use to influence our self-conscious emotions (in terms of both intensity and duration) through controlling of cognitive processes and body muscles, especially the facial ones. Facial expressions look like a reflection of the internal regulation levels of thoughts and behavior and external interpersonal regulation strategies (Gross, 2002; Kaiser & Wehrle, 2001). These self-strategies are crucial to the individuals' adjustment to different social contexts and various everyday events. Ineffective emotion regulation also plays a relevant role in psychological dysfunction, e.g., in the development and maintenance of depressive disorders (Moore et al., 2008).

Cognitive reappraisal and expressive suppression can be considered as the most important strategies used for emotion regulation. Cognitive reappraisal is an adaptive strategy that consists in a reinterpretation of an emotional stimulus and thus a rethinking of the emotional response. As a result, subsequent negative emotions are reduced. Cognitive reappraisal plays a role in the reduction of subjective distress, anger and depressive symptoms. Expressive suppression (the ability to conceal emotions) is involved in controlling and altering negative emotions during the response to negative affective stimuli, thus increasing the detrimental consequences such as psychological distress and depressive symptoms (McRae et al., 2011; Szasz et al., 2011; Moore et al., 2008; Kaiser & Wehrle, 2001). Kunz et al., 2011; Goldin et al., 2008; and Blair, 2003 also found a positive correlation between the suppression of facial expressions and activation in the prefrontal cortex in healthy participants, in addition to the relevant role of basal ganglia in processing and conveying the information from observed faces and producing and controlling the motor components of the emotional reactions (e.g., facial expressions) (see also Del-Ben & Graeff, 2010; Burrows, 2008)

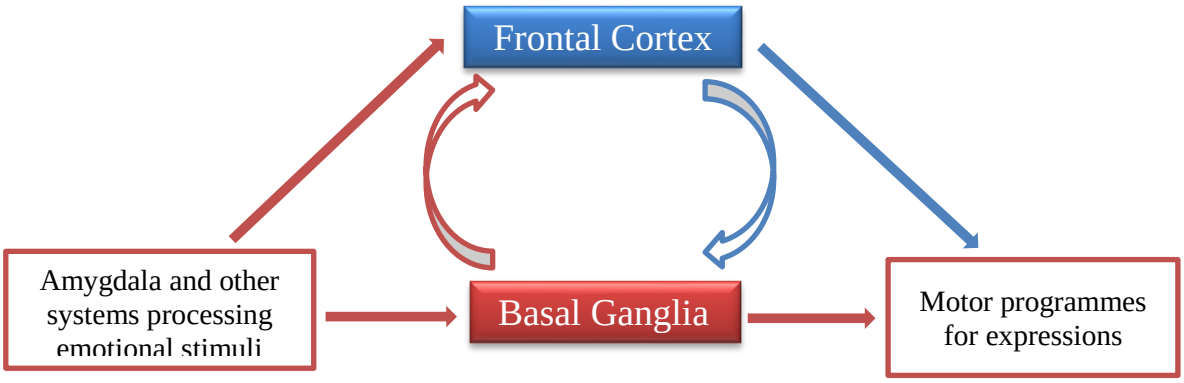

Figure 1.4. Brain regions involved in production of emotional expressions (modified according to Blair, 2003)

1.1.6. THE COGNITIVE AND EMOTIONAL DEVELOPMENT OF FACIAL EXPRESSION RECOGNITION

Recognition of emotional facial expressions is the harmonious collaborative work between the brain regions involved in the visual analysis of faces in the occipitotemporal cortex (fugiform gyrus and superior temporal sulcus) and the other regions involved in emotional processing (amygdala, insula, orbitofrontal cortex, and right somatosensory cortex) (Leppänen et al., 2004; Adolphs, 2001).

Morton and Johnson (1991) have referred to two cognitive processes to recognize faces:

1. The CONSPEC mechanism: CONSPEC is an innate mechanism that allows the recognition of face-like and conspecific stimuli. This subcortical visuomotor mechanism effectively provides the newborn with information concerning the basic structure of a face, e.g., two eyes that lie above the nose which itself lies above the mouth (Burrows, 2008; Troje, 2006). The infant younger than 2 months old tracks face-like things. It can do so due to the subcortical brain areas that respond preferentially to movement and stimuli in the surrounding environment (Nelson, 2001). He or she can recognize the features of his/her mother's face from visual facial cues alone (specifically from the external contour), and also stores the information about her identity. The baby looks at his/her mother's face longer than at strangers' faces, even when the olfactory stimuli have been hidden by video presentation or a masking scent, or when the mother's face is presented in an unfamiliar context (e.g., as a photograph; static face, without acoustical or olfactory cues). The 2-months-old infant can recognize his mother's face from internal features, with a bias to fixate the eyes (Mondloch et al., 2009).
2. The CONLERN mechanism: relies on receiving of specific visual inputs to learn about the observed face identity (Troje, 2006). This cortical mechanism is activated by experience with faces and allows recognizing facial personal identity and emotional expressions (Burrows, 2008). Babies after 2 to 3 months of age show clear progress in face recognition (Nelson, 2001). By 5 months of age, they realize the distance between the two eyes and also between the eyes and mouth (Mondloch et al., 2009). At 6 months of age, babies discriminate between two different identities (i.e., human and nonhuman faces), and at 9 months, they are able to discriminate between two human face identities (Pascalis et al., 2002). Processing of facial expressions is possible under 10 years of age, but full skill seems not to be acquired before the age of 10 (Durand et al., 2007).

Children between 3 to 5 years of age can identify facial expressions with an accuracy rate of about 75%. Additionally, happy faces are the easiest to discriminate (Walden & Field, 1982; see also Picardo, et al., 2016), whilst negative emotions are frequently confused with one another, because discrimination between them develops slowly. In addition, happiness can be easily identified from the mouth area, whereas sadness, anger, and fear require integrating information from the collaborative work of upper and lower facial areas (Székely, 2012; Vicari et al., 2000). Bruce et al., 2000 reported that 6-year-old children achieved high accuracy when pointing to which of two faces was happy, sad, surprised, or angry but they did not reach a good accuracy level until 10 years old when they selected which of two faces expressed the same emotion as a third face (see also Durand et al., 2007). The period between 5 and 10 years of age seems to be crucial in the continuing development of facial expression recognition skills. Also, accuracy of discrimination between facial expressions is continuously improved into early adolescence. Additionally, neuroimaging studies (fMRI) showed clear developmental differences between children, adolescents, and adults in the pattern of brain activation (orbitofrontal cortex, amygdala, and anterior cingulate cortex) when processing the same observed facial expression, and especially neutral and fear expressions (Gao & Maurer, 2008; Monk et al., 2003; Thomas et al., 2001b).

Some researchers have suggested that the development of face recognition depends on increasing expertise with faces that enhances a perceptual narrowing mechanism. This mechanism is involved in development of a face prototype (average of many individual faces). Adults discriminate preferentially and easily this composite face (averaged prototype) among many other individual faces (Nelson, 2001; Langlois & Roggman, 1990).

1.1.7. THE NEUROANATOMICAL ASPECTS OF FACIAL EXPRESSION RECOGNITION

At the end of the retinal pathway in the brain, visual information from an observed face takes two new functional ways, a subcortical route and a cortical route, which work together in parallel in the interpretation of emotional facial information.

1) The subcortical route processes the emotional signals and facial information faster but with uncompleted judgments. It transmits these subconscious signals and effectively contributes to early detection of threat (Williams et al., 2004). This route contains the superior colliculus, the pulvinar nucleus of the thalamus, and the amygdala.

- The superior colliculus (SC) processes the general visual stimuli.
- The pulvinar nucleus of the thalamus (PN) processes the temporal aspects of visual stimuli, such as movement associated with dynamic facial expressions. The pulvinar connects with other subcortical parts and also throughout the entire cortex (Cecere et al., 2013; Burrows, 2008; Ward et al., 2007, 2005).
- The amygdala, located inside the medial temporal lobes of the brain (Onitsuka, 2011). It processes the information received from the superior colliculus and the pulvinar nucleus and identifies any information on fear and anger. Thus, it is an important functional structure in recognizing threat-related stimuli (e.g., fearful or angry faces) (Lindner et al. 2016; Cecere et al., 2013; Burrows, 2008; Monk et al., 2008; Morris et al., 1996; Adolphs et al., 1995, 1994). Williams, et al. 2004 found in their neuroimaging study that there is increase in right amygdala activity for observed fearful faces in comparison with happy faces.

2) The cortical route processes the visual facial information slower than subcortical route but more accurately (Williams et al., 2004). It receives this information directly from both the retinal pathway and the subcortical route. This route includes, the superior temporal gyrus, the fusiform face area, the orbitotemporal cortex and the basal ganglia.

   - The superior temporal gyrus (STG) processes the information from dynamic configuration such as lip movements, eye gaze changes, or head orientation.
   - The fusiform face area (FFA) is an important processing module that reacts 2 to 3 times stronger to faces than to other objects (e.g., houses, flowers, birds) (McKone et al., 2012). This area also processes the information from individual static facial properties (Burrows, 2008).

   Both are very relevant to extract information from observed facial expression, match them with emotional memory information and thus identify personal identity. The insular cortex and the prefrontal cortex are also involved in this function.

   - The orbitotemporal cortex is involved early in processing structural individual features of expression.

- The basal ganglia contribute to producing the motor aspects of the emotional reactions while observing faces. They are crucial in identifying disgusted and happy expressions (Del-Ben & Graeff, 2010; Burrows, 2008).

The two routes work together as an integrated system; moreover the subcortical route is involved in establishing the cortical route, it may also influence and modulate the cortical processing of faces (Johnson, 2005).

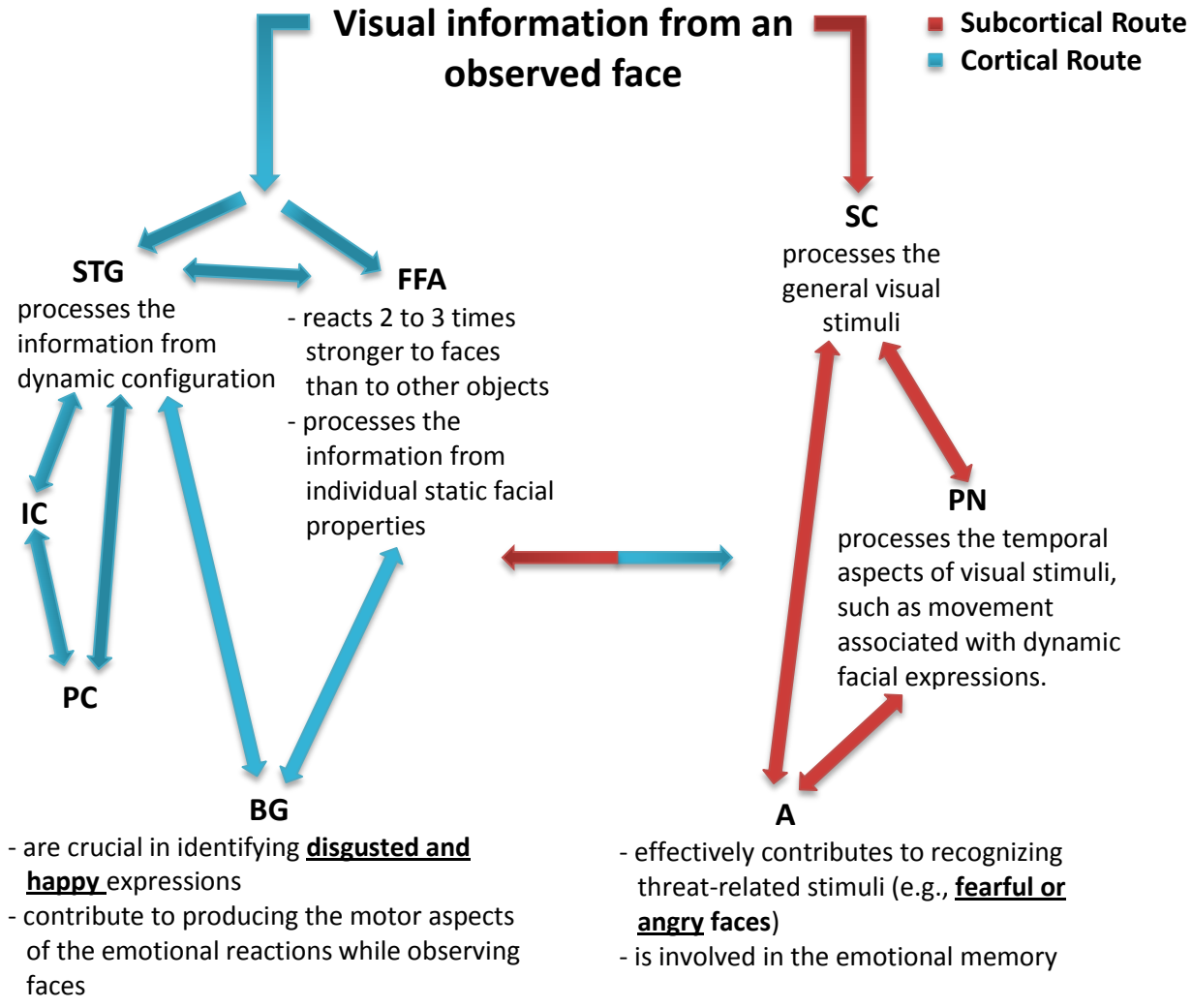

Figure 1.5. **Subcortical route** (SC – superior colliculus; PN – pulvinar nucleus; A – amygdala) **Cortical route** (STG – superior temporal gyrus; FFA – fusiform face area; IC – insular cortex; PC – prefrontal cortex; BG – basal ganglia) (modified according to Burrows, 2008).

1.1.8. FACE RECOGNITION MEMORY

There are many psychological studies which confirm that people have a very good ability to remember and recognize previously learned human faces compared with other types of subjects (e.g., names, numbers, buildings, or roads) (see Lambert, 2009). Continuous training in distinguishing the subtle facial differences improves this ability.

Superior temporal sulcus (STS), lateral fusiform and amygdala are considered as distinct neural systems, which participate in representation and storage of visual information from observed faces. These neural systems are reactivated during facial presentation. Likewise, the hippocampus plays an important role in encoding new facial information in the short term. When remembering facial features (eyes, mouth, or nose), the right intraparietal sulcus and right inferior frontal gyrus are reactivated (Ishai et al., 2002; Haxby et al., 1996).

Several factors affect face recognition memory such as brain lesions, threat stimuli, verbal stimuli, familiar faces, types of emotional expression, mood changes, or mental disorders (e.g., depression, social anxiety). These effects can lead to memory biases and thus can be reflected on the recognition accuracy of facial expression and on the emotional responses toward observed faces.

1.1.9. CONTRIBUTION OF THE MIRROR NEURON SYSTEM (MNS) IN FACIAL EXPRESSION RECOGNITION

The mirror neuron system consists of a special class of neurons that have been discovered in the premotor cortex (F5) and inferior parietal lobule (IPL), which are reciprocally connected and activated in response to other people's reactions. (Rizzolatti et al., 2006; van der Gaag et al., 2007; Ferrari et al. 2009; Kilner et al., 2009;) This system could plays a role in the learning process by observation and simulation or by embodied representations that are considered an important source to understand other people's emotions and actions (see Rizzolatti & Craighero, 2004). The mirror neurons effectively contribute in the evaluation and reproduction of other people's facial expressions, thus supporting the individual with information about others' mental and emotional states that are necessary to achieve empathic interactions (Schulte-Rüther et al., 2007).

Therefore decreased activity of mirror neurons might either indicate impairment in the ability to understand others' expressions, or avoiding the automatic representation of observed expressions which involve threat or danger.

1.1.10. THEORY OF MIND (TOM) AND FACIAL EXPRESSION RECOGNITION

The predictability of others' cognitive emotional reactions supports and facilitates our communicative reactions, and reflects the levels of mental emotional understanding between us. This ability requires the availability of some important factors:

- Perception of matching and difference between the social cues, such as gaze cues, facial expressions, and vocal cues.

  The matching or mismatching between speaker gaze cues, facial expressions, and vocal cues in any interpersonal communication allow an individual to infer the speaker's mental emotional states, e.g., the matching between speaker gaze and vocal signals help to clarify the ambiguity of verbal meaning where irony is used (Byom & Mutlu, 2013; Williams et al., 2009).
- Using prior general knowledge to interpret new communicative signals, e.g., prior knowledge about conditions and purposes of a new interaction (Byom & Mutlu, 2013).
- Simulation is a primitive strategy of emotion recognition, which relies upon the imaginary or realistic reproducing the same emotional expression of the observed target. (see Goldmana & Sripadab, 2005).

The inaccurate recognition of facial expressions paves the way to misunderstanding others' intentions and behaviors, which in turn enhances negative feelings (e.g., rejection, avoidance, isolation) and is associated in the long term with the development of some mental disorders (e.g., anxiety, depression) characterized by impaired emotional processing (Ibanez et al., 2012; Itier and Batty, 2009).

1.1.11. DEFICITS IN FACIAL EXPRESSION RECOGNITION

A deficit in recognizing emotions in early childhood can lead to significant impairments in psychological and social functions later in life (Székely, 2012).

This emotional deficit is caused by the dysfunctions within neural systems responsible for face processing and moreover the regions underlying higher-order cognitive functions, including the ability to understand others' mental states (theory of mind). Deficits in facial expression recognition have been discovered in developmental disorders, e.g., autism and Asperger's syndrome, neurologic pathologies, e.g., frontotemporal dementia and Parkinson's disease and in psychiatric disorders, e.g., depression and schizophrenia (Bediou et al., 2005; Phillips, 2004; Castelli, 2002; Schultz et al. 2000). There may be a relationship between the emotion recognition deficit and the damage in mesial temporal regions, which are involved in fear recognition. There is also a especially relationship between the deficit in recognition of negative emotions and amygdala lesions (Kohler et al., 2004; Adolphs, 1999).

Brain lesions have helped researchers to know more about the regions that are relevant to emotion processing, e.g., amygdala damage has been shown to reduce recognition of negative emotions (such as fear, anger, disgust), while damage to the insula, caudate nucleus, orbitofrontal cortex and anterior cingulate cortex led to a decrease in emotional processing (Ridouta et al., 2007; Kohler et al., 2004). Kohler 2004 also reported that disorders of the right hemispheric and limbic system influence our emotion recognition.

Adolphs et al. 1996 showed that the cortical surface regions in the right inferior parietal cortex and right mesial anterior infracalcarine cortex were involved in reduction of emotion recognition.

Dysfunction in the medial occipitotemporal cortex of the brain leads to the inability to recognize and identify familiar faces (i.e., prosopagnosia) (Takamura, 1996). Patients with prosopagnosia are able to acknowledge the external contour of faces or salient features (e.g., hairline or eye brows), but are unable to identify facial internal features, and thus they depend on other aspects (e.g., voice, accessories) to determine a person's identity (Behrmann & Avidan, 2005). Grütera et al. (2009) and Behrmann and Avidan (2005) referred to three types of prosopagnosia:

- Congenital prosopagnosia manifests from birth but without any presence of brain lesions. There is also a hereditary type of congenital prosopagnosia, which has recently been described. This type depends on specific symptoms (such as a low level of

confidence with face recognition, impaired discrimination between strange and familiar faces, and an ambiguous feeling of facial familiarity).

- Developmental prosopagnosia occurs in patients who suffered from persistent brain damage during early childhood or before birth.

1.1.12. COMPUTATIONAL FACE RECOGNITION SYSTEMS

A number of computer technologies used for face recognition can be compared to human abilities, e.g., Automatic Face Recognition (AFR), which compares a photograph of a person to a photo from a test database, and calculates a similarity score between the two photos (Adler & Schuckers, 2007). The recognition process of faces is divided by a computer algorithm system into three stages: detection, measurement, and categorization (see Tsao & Livingstone, 2008; Ekman & Rosenberg, 2005).

- Detecting the face presence in scene: The facial internal features seem like a T-shaped structure (eyes, nose, mouth) inside an oval external contour. Face detection is caused by 3 types of computer algorithms:
  - filtering the rectangular light or dark areas (Viola & Jones, 2004);
  - qualitative contrast levels between facial parts (Sinha, 2002);
  - detecting the number of face parts (Ullman et al., 2002).
- Measuring and identifying the face characteristics to differentiate one face from another. There are two ways to measure the detected faces:
  - The feature-based algorithm: important facial points (e.g., eyes, mouth, and nose) are distinguished and employed to compute several facial ratios (e.g., inter-eye distance, width of mouth, and length of nose). Sinha et al., 2006 reported that only face parts processing may be, in some cases, sufficient to recognize faces.
  - The holistic algorithm: The whole face, without exclusion of certain parts, is compared with a number of templates from memory.
- Categorization and sorting of faces according to their identity, gender, age, and expression depending on the facial measurement information (Tsao & Livingstone, 2008).

In the last ten years, high-resolution 3-D face scanning technologies and the advanced digital cameras have helped to improve the quality of computerized face recognition systems (Adler & Schuckers, 2007) and to overcome the difficulties that are caused by diversity in lighting conditions and facial expressions (Belhumeur, 2006).

1.1.13. THE ROLE OF SOCIAL SUPPORT IN FACIAL EXPRESSION RECOGNITION

The relationship between facial expressions and social support can be considered as a mutual relationship. Facial expressions are influenced by social context; vice versa, facial muscle movements are designed for interactional purposes. Equally, facial expressions support the display of social motives (see Davies et al., 2016; Parkinson, 2005; Fridlund, 1994). In addition to this, the adaptive functions of facial expressions can also be considered as social functions (Marsh & Ambady, 2007); thus, the evolution of facial expressions and their adaptive functions serves in turn the evolution of social intelligence (Schmidt & Cohn, 2001).

Social support – in addition to its importance to prevention of depression – improves the ability to process facial information, and to understand others' facial emotions (Marroquín, 2011; Lulé et al., 2011). This allows to accelerate the behavior modification process according to the social context, improves social adjustment (Blair, 2003), and helps to develop social communication skills (Haxby et al., 2002).

1.1.14. GENDER DIFFERENCES IN FACIAL EXPRESSION RECOGNITION

Some studies have compared the performance of men and women in recognition of facial expressions. Most of them found that women performed better than men in facial expression recognition (see Rennels & Cummings 2013; Donges et al. 2012; Del-Ben & Graeff, 2010; Herlitz & Rehnman 2008). The superior performance of women in recognizing emotional facial expressions may be due to the mother's primary role and main responsibility to baby care: mothers respond more and faster to the baby's nonverbal cues such as smiles, cries, and other negative emotions (Hampson et al., 2006; Babchuk et al., 1985). An fMRI-study has shown that in the female brain more mirror neurons are activated than in the male brain during emotional facial interactions (especially in the right inferior frontal cortex and right

superior temporal sulcus), and that may also explains the rapid spread of emotional contagion in females. Some researchers have attributed these gender differences to the variations between men and women in the brain region's functions and the cognitive emotional processing strategies (Rennels & Cummings 2013; Schulte-Rüther et al., 2008). Other studies showed that the parents' selective attention to children's emotional expressions is very relevant to the enhancement of some expressions and reduction of others, e.g., fathers paid more attention to girls' submissive emotions (such as sadness and anxiety) than they did to boys at the age of 4 years, whereas with boys, they focused more on disharmonious emotions (such as anger and laughing) than with girls at the age of 6 years. Mothers, on the other hand, paid more attention to toddler boys' anger and ignored toddler girls' anger (Chaplin 2005; Radke-Yarrow & Kochanska, 1990).

1.2. DEPRESSION

Depression is a heavy burden on community and can affect humans of all ages. People with depression suffer from an inability to shake off negative feelings (e.g., sadness, worthlessness, excessive guilt, overburdening, and helplessness) that negatively influence the communication process, daily routines, the ability to work or study as usual, or be interested in things that were previously pleasurable, and in addition impair the ability to make decisions (Meyer & Hautzinger, 2004).

This chapter provides a brief description of the major depressive disorder diagnosis, and explains the biological and physiological factors responsible for depression, as well the relevant role of emotion regulation, social and cultural aspects, and gender differences in development of the symptoms. I will also discuss here the relationship between depression and recognition of facial expressions and theory of mind, in addition to the importance of using facial expression paradigms in the cognitive behavioral therapy for patients with depression.

1.2.1. DEPRESSIVE SYMPTOMS FROM DSM-IV-TR TO DSM-5

The depressive disorders in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) include 3 categories (major depressive disorder (MDD), dysthymic disorder, depressive disorder not otherwise specified). DSM-5 additionally lists disruptive mood dysregulation disorder and premenstrual dysphoric disorder. 'Dysthymia' is replaced with 'persistent depressive disorder'. This new name covers both chronic major depressive disorder and the previous dysthymic disorder, since it has proven impossible to find scientifically meaningful differences between them.

There are no changes in DSM-5 in any of the core criteria of major depression (see APA, 2013), which comprehend the presence of five or more of the following symptoms during the same two week period and nearly every day:

- at least one of two main symptoms, depressed mood and/or loss of interest or pleasure in most activities;
- significant unintentional weight loss or gain;

- insomnia or hypersomnia;
- psychomotor agitation or retardation;
- fatigue or loss of energy;
- feelings of worthlessness or excessive guilt;
- diminished ability to think or concentrate, or indecisiveness;
- recurrent thoughts of suicide, with or without specific plan.

These symptoms lead to noticeable problems in important functional areas of life (e.g., social interaction, work, study, etc.), they are not caused by physiological or medical effects. In addition, the depressive symptoms are not due to schizophrenia or other psychotic disorders; the major depressive episode should also occur without any history of manic or hypomanic episode.

DSM-5 includes additionally a set of instructions related to clinical intervention to discriminate between normal grief and a major depressive episode, and thus provide the appropriate preventive treatment (APA, 2013; 2000).

1.2.2. THE BIOLOGICAL AND PHYSIOLOGICAL ETIOLOGY OF DEPRESSION

Biological (e.g., genetic, neurochemical) factors contribute to the development of depressive symptoms. Family-genetic research showed that effects of genes may be one third to two thirds of responsibility for MDD. The imbalance in the chemical transmitters and their receptors - used functionally to transmit information between neurons via synapses - also increases significantly the susceptibility to depression. The interactions between these genetic, neurochemical factors and other factors such as early environmental stressors, cognitive distortions, and certain premorbid personality traits (e.g., neuroticism or anxiety) increase the risk of genetic predisposition of MDD, There are 5 genetic types, which can be considered as the most important genes implicated in MDD (Lebowitz et al., 2013; National Institute of Mental Health, 2013; Hettema, 2010):

- Methylenetetrahydrofolate reductase (MTHFR): This gene encodes MTHFR enzyme, which is very important for the regulation of the normal metabolism of intracellular folate by irreversibly converting 5,10-methylenetetrahydrofolate to 5-methylenetetrahydrofolate. MTHFR gene mutation can cause deficiency of the

enzyme, thus 5-methylenetetrahydrofolate and folate levels reductase deficiency and consequent elevation of plasma homocysteine (Hcy) concentrations which are associated with increased chances of vulnerability to depression (Almeida et al., 2005) and may be associated with impairment of cognitive performance (Budge et al., 2002; Stewart et al., 2002).

- Solute Carrier Family 6 (Neurotransmitter Transporter), Member 3 (SLC6A3): This gene encodes a dopamine active transporter (DAT) that is a main regulator of dopaminergic neurotransmission; it facilitates reuptake process of dopamine from the synaptic cleft into adjacent cells (Agurs-Collins & Fuemmeler, 2011; López-León et al., 2007). Dopamine participates in the regulation and modification of motor output, endocrine function, and cognitive processes (e.g., attention, memory; and learning) by changing the neuronal and functional structure in the brain over the long-term. (Rondou et al., 2010). Thus the dopaminergic system is correlated with motivation, reward recognition, regulation of mood, problem solving and learning behaviors. SLC6A3 gene mutation can cause imbalance in the DAT and dopamine reuptake process. Here, acute shortage of DAT activity is clearly associated with hyperactivity, whilst increased activity of DAT leads to depressive mood (Laasonen-Balk, 1999; Schultz, 1998). DAT is also a target for several type of medications used as antidepressiva (López-León et al., 2007).

- DRD4: This gene encodes dopamine receptors type 4 (D4), which are located in the prefrontal cortex and amygdala regions. They are relevant to attention, cognition and emotion processing and involved in the emergence of major psychoses and MDD (Opmeer et al., 2010; Ray et al., 2009; Serretti et al., 1999). An increase of D4 in the amygdala is associated with high levels of MDD vulnerability (Xiang et al., 2008).

- Guanine nucleotide-binding 3(GNB3): This gene includes in exon 10 the T allele of a functional polymorphism (C825T), and encodes the beta subunit of G proteins, which participate in the transduction of signals from the cell surface to inside the cell. The increasing T allele of C825T polymorphism is associated with high level of signal transduction in the cells and with increased severity of depressive symptoms and

improvement in the response to antidepressant treatment (Klenke et al., 2011; Kang et al., 2008; Lee et al., 2004).

- Solute carrier family 6 (neurotransmitter transporter, serotonin)- member 4 (SLC6A4): This gene encodes a membrane protein 5-hydroxytryptamintransporter (5-HTT) that regulates the reuptake process of neurotransmitter serotonin 5-HT from synaptic spaces and transports it into presynaptic neurons. 5-HTT controls the magnitude and duration of the 5-HT action. 5-HT is considered as one of the most important neurotransmitters involved in cognitive processes, as well as anxiety, impulsivity, appetite, sleep, thermoregulation, reward, mood, negative biases in emotional perception and psychosis. The increased 5-HTT leads to increased reuptake of 5-HT, and thus reduced 5-HT levels, which increases the vulnerability to depression (Lindholm Carlström et al., 2012; Devlin et al., 2010; Cowen, 2008). 5-HTT is the target of antidepressant medications (Selective Serotonin Re-uptake Inhibitors, SSRI), which correct an imbalance in the serotonergic system by inhibition of 5-HT reuptake (Cowen, 2008; Lacasse & Leo, 2005).

The changes in brain areas such as the hippocampus, amygdala, and prefrontal cortex during depressive episodes also enhance the development of symptoms:

- Hippocampus: plays a role in memory, sleep, appetite, and libido, and is considered as highly sensitive to stress, negative mood and increased cortisol levels, which may cause neuronal damages in the hippocampus. Some MRI studies have shown a reduced volume of hippocampus during depression (8% on the left side and 10% on the right side), and abnormalities in density and water contents, which in turn affect the performance of hippocampal functions (Swaab et al., 2005; Videbech & Ravnkilde, 2004; Jacobs, 2004; Shelinea et al., 2002).
- Amygdala: a crucial structure to remember and evaluate emotional events (e.g., facial emotions). Neuroimaging studies have shown hyperactivity of amygdala in depressed patients; and decreased amygdala volume, which is consistent with decreased hippocampus volume as previously mentioned. Studies have also found that antidepressant treatment (e.g., with lithium or divalproex) contributes to increasing

neurons and glia, and thus increased volume of amygdala and hippocampus (Yang et al., 2010; Savitz et al., 2010; Hamilton et al., 2008).

- Prefrontal cortex (PFC): is involved in many cognitive emotional and social functions (working memory, attention, learning, decision making, empathy, anxiety, guilt, and embarrassment, recognition of facial expressions of emotion), in addition to directing behaviors and other processes by interconnecting and controlling many brain regions, such as temporal auditory cortices, thalamic reticular nucleus, and amygdala (Teffer & Semendeferi, 2012; Meyers et al., 2012; Koenigs, 2012; Barbas & Zikopoulos, 2007). Neuroimaging studies of prefrontal cortex in depressed patients have shown impaired blood flow, metabolism and reduced grey matter that in turn leads to reduced prefrontal cortex activation (Padberg & George, 2009; Wagner et al., 2008; Merriam et al., 1999; George et al., 1994).

1.2.3. DEPRESSION AND FACIAL EXPRESSION RECOGNITION

The interpretation of emotional facial information influences our emotional reactions and social interactions. Low or biased processing of emotional facial information leads to impaired recognition of facial expressions, which contributes to deficits in feeling other people's emotions. This emotional and social dysfunction has a central role in the development and maintenance of depression, and increases the risk for relapses of depressive episodes (Miskowiak et al., 2015; Chen et al., 2014, Douglas & Porter, 2010; LeMoult et al., 2009). Facial expressions signal our affective states, thus the ability to interpret and recognize facial expressions supports the ability to understand the different emotional states, which in turn is crucial to success of emotional activity and social interactions. Individuals generally pay less attention to mood-incongruent facial expressions or emotional stimuli, and this causes difficulty in recognizing emotions in interpersonal relations. Patients with depression showed a significant impairment in the recognition of facial expressions (Schmid & Mast, 2010; Csukly et al., 2009). The low or biased processing of facial expressions in depression plays a relevant role in many interpersonal difficulties, including feelings of social rejection and isolation, interpersonal communication avoidance and restriction of nonverbal expressiveness (Stuhrmann et al., 2011; Suslow & Dannlowski, 2005). Cohn et al. (2009) used a manual facial action coding system (FACS) and Active Appearance Modeling (AAM)

to analyse automated facial images in a clinical sample to detect depression from facial actions. The findings showed that depression is detected clearly and can be identified automatically.

Stuhrmann et al. (2011) pointed out that most of the neurological brain regions (cortical and subcortical routes) that are responsible for facial expression recognition have been involved in the etiology of major depression. Some studies correlate depression with a dysfunction in the right hemisphere that is responsible for many emotional functions (Flynn & Rudolph, 2010; Bruder et al., 2005; Lenti et al., 2000). Flynn and Rudolph (2010) found that participants with high vulnerability to depression showed reduced bias to the facial expressions in the left visual hemifield, which indicates to low right hemisphere activity.

In an fMRI study in depressed patients, Derntl et al. (2011) observed low amygdala activity during processing of happy facial expressions. The patients avoided happy faces. This avoidance reinforces social withdrawal, feelings of social isolation, and thus maintenance of depressive symptoms. In another fMRI study, depressed patients showed a significant improvement in happy face processing after successful antidepressant treatment (Fu et al., 2007). Schmid and Mast (2010) reported that depressed patients might show decrease in identification and recognition both of positive and negative emotions instead of specific pattern of emotions.

1.2.4. AMYGDALA RESPONSE TO FACIAL EXPRESSIONS OF EMOTION IN DEPRESSION

In addition to the abnormal amygdala activity in depression, the amygdala is relevant to the emotional encoding in memory and the perception of facial emotion. (see Chepenik et al., 2007). Gotlib & Hamilton (2008) and Abercrombie et al. (1998) reported that depression severity is positively correlated with amygdala activity, which in turn is especially positively correlated with negative emotional stimuli. The amygdala responds to aversive or appetitive stimulus such as facial expression of fear, anger or happiness, and particularly to threat-related ambiguous stimulus, i.e., one which does not include clear information about the threat source (e.g., fear expression). It uses the available information and emotional signals to guide behavior and to enhance survival (Hooker et al., 2006; Whalen, 2001). Stimulation of the amygdala led to withdrawal, avoiding or aggressive reaction, including physiological

vigilance, increased level of stress, increased blood pressure, and feelings of anxiety (see Thomas et al., 2001a; Thomas et al., 2001b).

1.2.5. DEPRESSION AND EMOTION

Emotions are quick adaptive responses that involve changes in feeling, behavioral, and physiological aspects; they occur as spontaneous reactions to meaningful stimuli. In contrast to that, moods can be considered as slow feeling responses that involve changes in feeling and cognitive states (Gallagher, 2012; Rottenberg, 2005). Emotions also play a very important role as adaptive systems: when people ignore emotional stimuli or feedback information from others, they will not be able to respond appropriately (Thompson et al., 2013; Schwartz & Clore, 2007). Rottenberg (2005) reported that emotional responding difficulties by patients with major depression not only extend to positive emotional stimuli but also to negative stimuli. Many other studies also showed a general decrease in emotion recognition in depression, in addition to the negative impact of depression on concentration, speed, attention, emotion regulation, memory, and mood (Chepenik et al., 2007; Bouhuys et al., 1997; APA, 1994), which in turn negatively influence the emotional response in general.

1.2.6. IMPAIRED THEORY OF MIND (TOM) IN DEPRESSION.

The predictability of others' behaviors and recognition of facial emotions rely on the same brain regions that are responsible for cognitive and affective processes such as the dorsolateral prefrontal cortex, the ventromedial prefrontal cortex, the anterior cingulate cortex, the amygdala, the ventral striatum, temporoparietal junction, and temporal poles (see Cusi et al., 2012). Patients with MDD suffer from negative biases of attention toward life events, as well as from impaired predictability of others' cognitive emotional reactions within the contextual circumstances and reduction of social information-processing skills, in addition to problematic perception of observable facial cues (e.g., gaze cues, facial expressions, vocal cues) during interpersonal communications. Negative strategies of emotion regulation such as rumination contribute to increasing self-focused processes (e.g., dysfunctional thoughts, schemas or depressed mood), and reducing the concentration on others' current

circumstances, even in the same social context (Cusi et al., 2012; Zobel, 2010; Nolen-Hoeksema, 1991).

The difficulties of understanding others' intentions and wrong conclusions about their behaviors lead to a clear decline in social relationships, rejection by others, and feelings of alienation and isolation, which in turn promote the development of depressive symptoms, in addition to the risk of relapse to new depressive episode. Therefore, it is important to practice reading facial expressions during the therapeutic process of depression, in order to improve the ability of social interaction, and thus alleviating the depressive symptoms (Wolkenstein et al., 2011; Inoue et al., 2006; 2004).

1.2.7. EMOTIONAL REGULATION STRATEGIES AND DEPRESSION

Major depression is also characterized by difficulties in using positive emotion regulation strategies such as cognitive reappraisal (see chapter 1.1.5) and acceptance (welcoming of thoughts and emotions, without evaluation).

Depressed patients use negative strategies such as expressive suppression (see chapter 1.1.5) and rumination (continuously rethinking of event's aspects but with the same emotional response to it). Thus the repeated use of emotion suppression or rumination and in return the reduction of reappraisal or acceptance lead to a maintenance of depressed mood, activation of negative memories, repetitive negative perception of life events, and development of maladaptive compensatory behaviors (D'Avanzato, 2013; Braams et al., 2012; Ehring et al., 2010; Joormann & Gotlib, 2010; Aldao & Nolen-Hoeksema, 2010; Campbell-Sills, 2006). The emotion regulation deficiency is considered to be a contributing factor in depressive episode recurrence (Ehring et al., 2008), whereas the virtual training of emotion regulation using positive strategies (such as writing about stressful life experiences, verbalizing thoughts and feelings, and cognitively reappraising the meaning of stressful situations) reduces avoidance behaviors and improves problem-solving skills and emotional cognitive adaptability, which in turn reduce the susceptibility to depressive episodes and enhance the efficacy of cognitive behavioral therapy for depression (Berking et al., 2013; Van Loey et al., 2014; Rusk et al., 2011; Martin & Dahlen, 2005; Horn & Hautzinger, 2003).

1.2.8. Effects of Social Support in Depression

Social isolation and reduction or absence of social support positively correlate with the development of depressive symptoms (Martínez-Hernáez et al., 2016). Social support can contribute to improvement of physical activity, motivation, self-acceptance, communication skills, and to reduction of grief, feelings of guilt, social deprivation, and effects of stress, thus reducing the severity of depressive symptoms or at least delaying their development (Suttajit et al., 2010; Holt-Lunstad et al., 2008). Provision of an adequate social atmosphere may also enhances self-care behaviors and supports medication adherence in depressed patients, particularly when depression is accompanied with physical illness (e.g., diabetes, or heart disease) (Osborn & Egede, 2012).

Acute depressive symptoms or continued instability in these symptoms lead in turn to social withdrawal and social support erosion (Taylor et al., 2015), especially the support provided by friends. Familial support (parents, sons, couple, or siblings) is more unconditional and stable than friends' support, and that may be due to the increased sense of the responsibility towards depressed family member; thus social contact and empathy within the family remain more stable than with friends (see Stice et al., 2011; 2004; Ekman, 2010).

Psychological therapeutic interventions for depressed patients aim to improve the patient's communication skills (including trainings to express feelings, needs and wishes more clearly), and to enhance the patient's social support networks, and to gain new social contexts (e.g., at school, university, or work), in order to provide the required social support, particularly in times of crisis, and thus work as much as possible towards reducing the severity of depression symptoms (Hautzinger 2013; Chung et al., 2011).

1.2.9. Gender differences in depression

Rates of depression are higher among women than among men in most countries of the world. Several variables contribute to a higher incidence of depressive symptoms among women compared to man, such as (1) social and economic factors (higher rates of poverty, sexual harassment, domestic violence, differences in social roles, or strict social restrictions) (Goodwin & Gotlib, 2004), and (2) hormonal fluctuations, which worsen the symptoms of premenstrual dysphoric disorder (PMDD) (as one of the depressive disorders), such as sudden sadness, hopelessness, marked irritability, tension, self-deprecating thoughts, decreased

interest in usual activities, easy fatigability, poor concentration, marked change in appetite, physical symptoms (APA, 2013; Altemus, 2006). Ryba and Hopko, 2012 reported that gender differences in depression may result from the differences in certain behavioral habits and their potential consequences. For example; men engage more in hobbies and physical kinesthetic or recreational activities, whilst women spend more time engaged in social, spiritual, or hygiene activities and care for their physical appearance. In addition, the continued expectation of getting an environmental reward in women compared to men leads over time to increased feelings of frustration and low self-esteem. In addition, the tendency to ruminate about stressful events is higher in women than in men (Nolen-Hoeksema, 1990).

The differences between men and women may not only be in the etiology of depression, but also in some of the clinical symptoms. Depressed women show more symptoms such as increased appetite, crying, loss of interest, thoughts of death, suicide attempts and particularly somatic symptoms. Men conversely show sometimes only cognitive or affective symptoms without somatic complaints, but in some cases, these symptoms are also associated with somatic complaints (Delisle et al., 2012; Romans et al., 2007; Silverstein, 2002).

1.2.10. COGNITIVE-BIAS MODIFICATION (CBM) IN DEPRESSION USING FACIAL EXPRESSION PARADIGMS

In addition to technological systems to assist in the diagnosis of depression through the analysis of facial expressions (e.g., Multisense system, see Rizzo & Morency, 2011), a new computer-paradigm technique, Cognitive-Bias Modification (CBM), has been developed to strengthen positive mood and positive biases instead of just reducing negative biases. The technique is based on strengthening the detection and recognition of positive emotion over negative emotion in an ambiguous facial expression (e.g., a mixture of happiness and sadness) (Adams et al., 2013). This therapeutic technique consisted of three phases:

- baseline phase: The patient judges an ambiguous facial expression (whether it is sad or happy). The balance point between the two emotions in this expression will be calculated. The correct judgment shall be below or above the balance point (i.e., sad or happy); otherwise the judgment shall be incorrect.
- training phase: includes 6 parts of the training. Here, feedback is provided to the patient (i.e., whether his answer was correct or incorrect). This feedback is also based on the balance point.

The two expressions nearest the balance point that have been judged by the patient as sad expressions are assessed as happy expressions during the feedback. 15 expressions are judged twice in each one of the 6 parts of the training (i.e., 15 × 2 × 6 =180 judgements).

- test phase: the level of training success and the modification of emotional perception are determined (Adams et al., 2013; Penton-Voak, 2012).

1.3. CULTURAL INFLUENCES ON FACIAL EXPRESSION RECOGNITION AND DEPRESSION

The ability to recognize facial emotions is crucial to improving adaptive performance and mental health, as well as to maintaining social bonds in the surrounding environment. This ability may be affected by cultural diversity; therefore, cultural congruence between the observer and the face that is monitored may contribute to increasing the accuracy of emotion recognition. Culture (including "language, thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups", see U.S. Department of Health and Human Services Office of Minority Health, 2000) is considered as a contributing factor in the formation of personal identity and thus in interpreting events. It could be argued that intercultural adjustment is also an individual factor and may require a longer time in some people than others.

1.3.1. CULTURAL DIFFERENCES IN FACIAL EXPRESSION RECOGNITION

Facial expressions are a universal language of emotion but there are some distinctions and biases across cultures in understanding them, which can influence effective communications and cultural integration. In other words, negative or positive basic facial emotions (happiness, surprise, fear, anger, disgust, and sadness) are recognized by all human beings, but to varying degrees. The cultural differences in the interpretation of facial expressions may be due either to the cultural differences in processing and decoding the facial information or to the differences in the stimuli or task types (Dailey et al., 2010). Jack et al., 2009 focused on the eye movements analyses and decoding of facial expression signals. Their results showed that "East Asian compared to Western Caucasian participants use a culture-specific decoding strategy that is inadequate to reliably distinguish universal facial expressions of fear and disgust". The cultural effects on automatic neural response were measured in another study in Asian and European samples by fMRI. In Asian participants, a higher activity of the amygdala compared to European participants was found. This was accompanied by reduced accuracy of emotion recognition in particular for anger and disgust in Caucasian faces (Derntl

et al., 2012). Another fMRI study found that Japanese and Caucasians showed increased amygdala activity to fear expressed by persons belonging to the same cultural group (Chiao et al., 2008). Dailey et al., 2010 found that Japanese participants were more accurate in recognizing surprised faces, whereas American participants were more accurate in recognizing angry, sad, and fearful faces. The Japanese showed particular difficulties in recognizing fearful expressions. Jack et al. (2012) pointed out that East Asian culture gives importance to other emotional expressions such as pride, shame, and guilt, in addition to the six basic emotions.

1.3.2. CULTURAL DIFFERENCES IN DEPRESSION

There are many cultural variables which contribute to mood changes and thus improvement or development of depressive symptoms (e.g., customs, traditions, values, and beliefs, educational opportunities, health service, child development, unemployment, violence, or poverty). Lu et al., 2010 reported that "People's depression is not simply the result of unfortunate experiences or hormonal imbalances, but is also the outcome of culture". Furthermore, differences in diagnosis in other cultures lead to differences in the therapeutic methods that are used.

Lack of prevention measures and a smaller willingness to seek help can also influence evolution of symptoms. In these aspects, some cultures (e.g., Middle Eastern, Asian, African, South American, or even some minorities in Europe or America) still labor under the stigma associated with mental illness.

On the other hand, the social acceptance, promoting intercultural communication and improving awareness about depression and its prevention methods can help to prevent or at least reduce the severity of depressive symptoms (Ahmed & Bhugra, 2007; Fogel & Ford, 2005).

Cultural differences may also appear in the expression of depressive symptoms. Thus, Asian populations tend to show more somatic symptoms (e.g., continued fatigue, boredom, reduced activity) than European populations, which tend to show other psychological depressive

symptoms (Ryder & Chentsova-Dutton, 2012). Somatization as a main symptom of depression in the Asian cultures may be a result of the strict ethical rules in Asion societies, which emphasize patience and propriety, as well as the suppression of negative emotions, or the inability to express them, because they may be considered an admission of weakness. Thus, individuals express their psychological problem by socially acceptable bodily illness (Yoo, 2001), through which they can safely seek professional health care. Strict social control in general, in addition to parental psychological control especially and emphasis on family dependence and obedience may increase feelings of anxiety and guilt and inhibit autonomy. Exaggerated perceptions of parents towards their children's performance also increase children's feelings of frustration, failure and low self-esteem (Soenens et al., 2012; Wu et al., 2002).

On the other hand, in European or North-American cultures the disintegration of communities and families, or staying away from the family context for long periods and replacing normal social interactions with communications using social media may enhance feelings of loneliness and social isolation in both children and parents. Clinicians therefore, need to pay more attention to the fact that illness in Asian cultures (compared to European or North American culture) is attributed more to external factors (e.g., problems in social or family relations), which reduces the patient's responsibility for his illness (Lu et al., 2010). In general, in order to make appropriate decisions about prevention, diagnosis and treatment methods of mental disorders and in particular depression, clinicians need to be sensitive to cultural differences, especially with relation to the roles of families and individuals in the prevention and expression of disorder and the associated help-seeking behaviors (Walsh & Cross, 2013).

1.4. HYPOTHESES

We have seen in the first section (1.1) a detailed overview about the cognitive, neurophysiological and social aspects related to the recognition of basic facial expressions.
It was also highlighted how facial expressions can be affected by emotion regulation strategies and social support. Moreover, several studies investigating the effects of dynamic facial movements and gender differences on recognizing facial emotional expressions have been discussed.

As stated in section 1.2, the ability to correctly recognize facial expressions and thus infer different emotional states of others enhances emotional awareness and improves the quality of our social interactions, which in turn contributes to prevention of depression. Previous studies have indicated that patients with depression showed a significant impairment in recognizing facial emotional expressions (see Schmid & Mast, 2010; Csukly et al., 2009). In section 1.3, it was shown that the ability to recognize facial emotions is also affected by culture. This may be due to cultural differences in processing and decoding of facial expressions, as well as to the socialization experiences and familiarity with faces from different cultures (see Dailey et al., 2010).
Based on the studies mentioned in the theoretical background, in this section, the main and sub-hypothesis of this dissertation will be discussed. This is the first research project highlighting the cultural differences of facial expression recognition between Germans and Syrians having varying levels of depression. Moreover, probing the modulating effects of internal variables (such as gender, emotion regulation, current mood state) and external variables (such as social support) allows us to understand the impact of these variables on emotion recognition.

1.4.1. THE MAIN HYPOTHESES

1. Participants with moderate to severe depression recognize facial expressions less accurately than participants with minimal to mild depression.
2. Cultural differences between Germans and Syrians influence the ability to recognize facial expressions.

3. Interaction between depression and culture influences the ability to recognize facial expressions.

1.4.2. THE SUB-HYPOTHESES

The ability to recognize facial expressions is influenced by the interactions between

1. the participants culture (Germans vs. Syrians) and stimuli culture (North European vs. Mediterranean);
2. the participants gender and stimuli gender;
3. depression and emotional regulation;
4. culture and emotional regulation;
5. depression and current mood state;
6. culture and current mood state;
7. depression and social support;
8. culture and social support.

CHAPTER II: METHOD

2.1. PARTICIPANTS

Data were collected from 136 participants (the analytical sample), 74 women and 62 men. The mean age of the participants was 27.19 (*SD* = 6.28). 74 participants were Germans and 62 Syrians. In order to investigate participants with moderate or severe depressive scores in Germany and in Syria, participants were recruited from clinics or outpatient departments for psychiatry and psychotherpay. The control group (participants with minimal or mild depression) were recruited by advertisements in several public locations (such as in libraries, mensas, cafeterias, etc). The mean depressive score of the experimental group was 29.51(*SD* = 9.14), whereas the mean depressive score of the control group was 9.38 (*SD* = 5.69).

Participants in the experimental group meeting the DSM-V criteria for major depressive disorder were assessed by the Mini-International Neuropsychiatric Interview (M.I.N.I.) and Beck Depression Inventory (BDI). The exclusion criteria were psychosis, bipolar disorder, or substance dependence (other than nicotine and caffeine), in addition to severe head injury, visual impairment, or inability to use a computer.

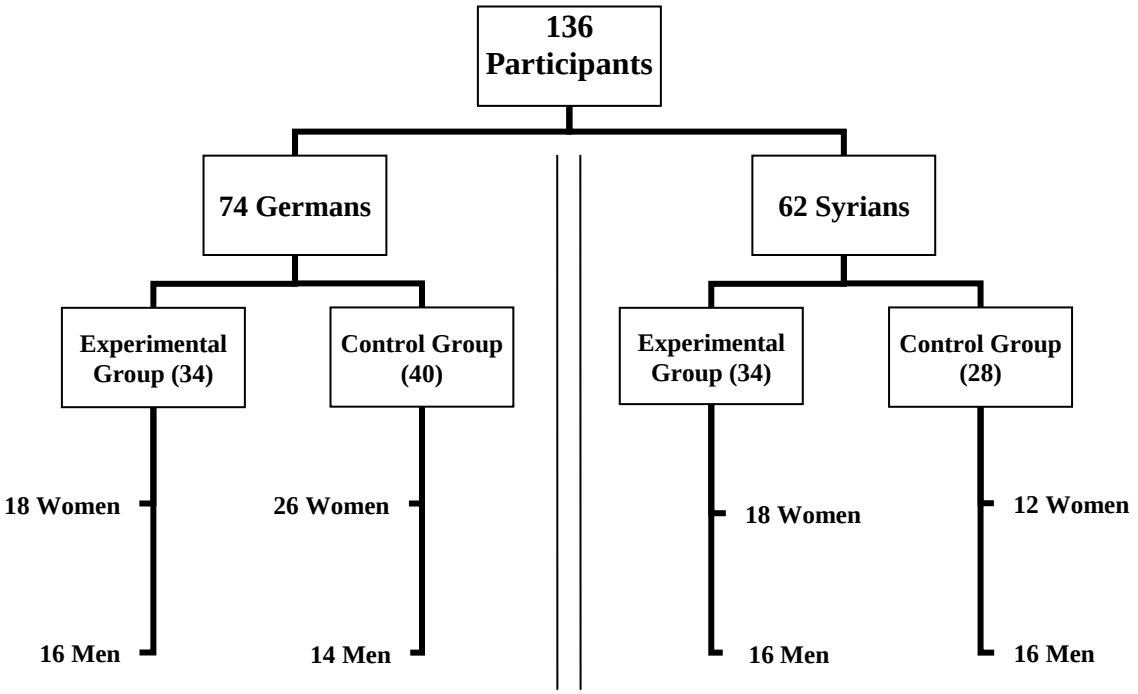

Figure 2.1. Sample distribution scheme

Concerning possible differences between Germans and Syrians in both sexes. a Pearson Chi-Square test of independence showed no significant differences between them. In other words, culture and gender were independent of each other ($x^2 = 1.667$, $p = 0.197$, *phi* = 0.111; see Fig. 2.2.).

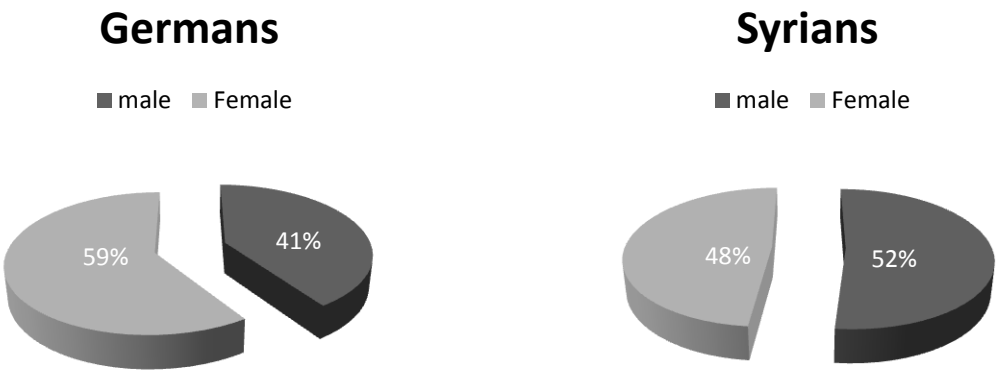

Figure 2.2. Distribution of Gender in the investigated German (*N*= 74) and Syrian (*N*= 62) sample. No significant difference concerning gender was found.

Independent *t* tests showed that the two groups did not differ significantly in age ($t = 0.290$, $p = 0.773$), nor in depression ($t = 1.844$, $p = 0.067$). Despite the fact that most participants in the two cultural groups were undergraduate or graduate students (85 % Germans vs. 66 % Syrians had between 12.5 to 19.5 educational years), there were significant differences between the two groups in educational years ($t = -2{,}857$, $p < 0.01$).

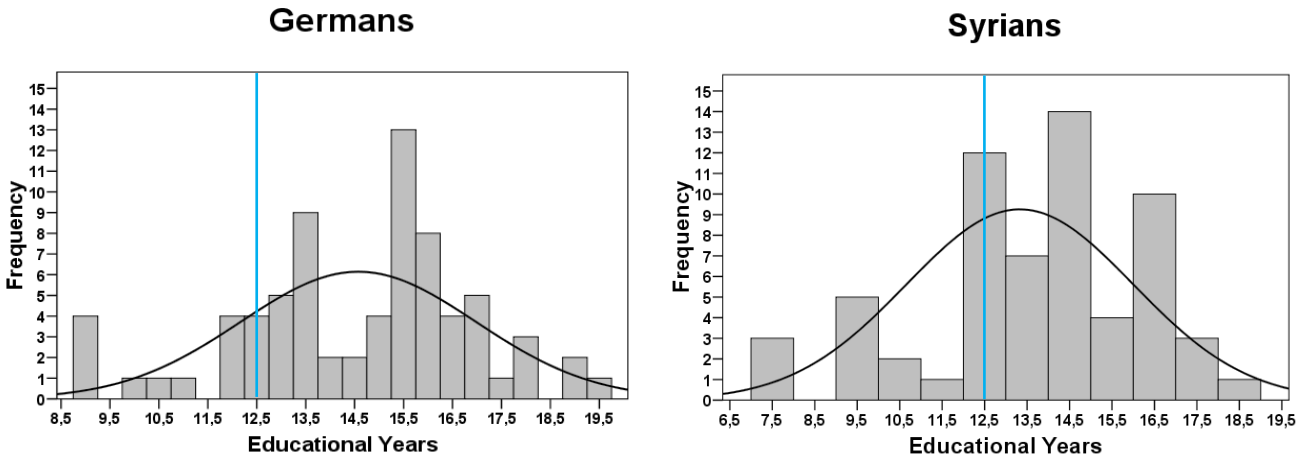

Figure 2.3. Distribution of educational years in the investigated German and Syrian sample. Independent t-test revealed that Germans had significantly more educational years than Syrians.

Since the control group consisted of participants with minimal or mild depressive symptoms, the whole sample was devided by the median (BDI *Mdn* = 18.5) to investigate the effects of depression on recognizing emotional expressions and interaction effects with sociocultural variables. For further analyses, the control group is defined as subjects with minimal or mild depression (BDI ≤ 18) and the experimental group is defined as subjects with moderate or severe depression (BDI > 18).

The agreement between BDI-II and M.I.N.I. results was highly significant (*Kappa* = 0.824, $p < 0.001$).

To investigate if the experimental group differed concerning gender, age, and educational years compared with the control group, further statistical analyses were computed.

Pearson Chi-Square test showed no significant differences between the two groups in gender (x^2 = 0.119, p = 0.731, *phi* = - 0.030).

Independent *t* tests also showed no significant differences between the two groups in age (t = -0.449, p = 0.654). However, they differed significantly in their educational scores (t = 2,598, p = 0.01); Fig. 2.4 illustrates that the control group had more educational years than the experimental group (85 % of the control group vs. 67 % of the experimental group had between 12.5 to 19.5 educational years).

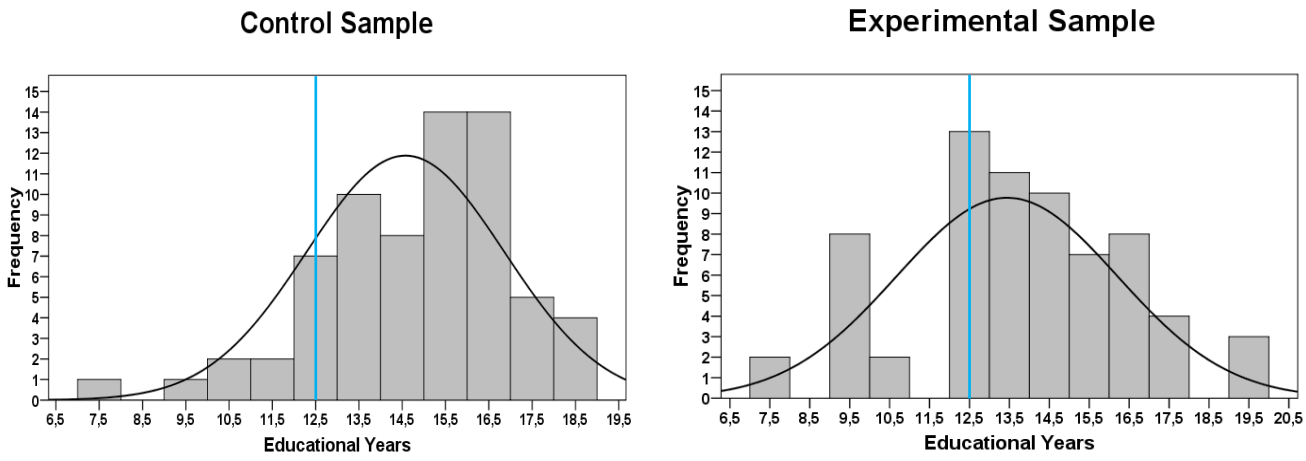

Figure 2.4. Distribution of educational years in the investigated control and experimental sample. Independent t-test revealed that the control group had significantly more educational years than the experimental group.

Statistical analyses concerning gender variable suggested that no significant differences between men and women in both cultures (x^2 = 1.667, p = 0.197, *phi* = 0.111; see also Fig. 2.2.), and no significant differences between them in age (t = 0.208, p = 0.836), and also in depression (t = -0.762, p = 0.447), but there were significant differences between the two sexes in educational years (t = -2,929, p < 0.01). According to that, women studied longer than men (84 % of women vs. 68 % of men had between 12.5 to 19.5 educational years).

Based on the foregoing demographic results, the effect of educational years has to be controlled as a confounding variable in the subsequent statistical analyses.

2.2. PROCEDURE

Advertisements for the study (flyers and posters) were in German and Arabic. They included a description about the general study purpose, subjects age limits and required time limits for participation, subjects acceptance criteria, and contact information. Participants received €20 as an incentive for their participation.

The interview lasted about 2 hours, and included two stages. The first stage was the experimental study that involved 2 paradigms (the Amsterdam Dynamic Facial Expression Set ADFES and the face in the crowd task FCT).

Each one of them was presented in random order on a laptop with a 39,6 cm (15,6") HD LED Display (1280x800 pixels, 32 Bit). The second stage was designed to get the demographic data (including gender, age, nationality, education background, health problems, chronic diseases) and to diagnose the different levels of depression, current mood, emotional regulation, and social support by using a set of psychological tests (M.I.N.I., BDI, ASTS, ERQ and F-SozU K-14).

The study was conducted in a quiet room. Participants were instructed to strive for accurate answers, and to complete the tests.

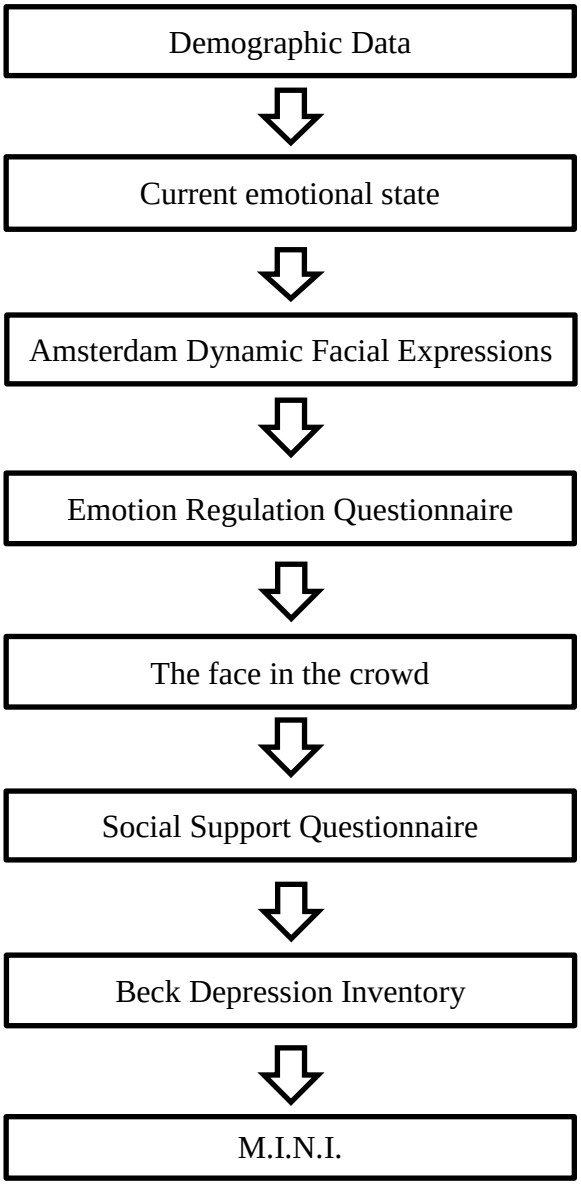

Figure 2.5. Study procedures

2.3. INSTRUMENTS

2.3.1. COMPUTER - PARADIGMS TO MEASURE THE RECOGNITION OF FACIAL EMOTIONAL EXPRESSIONS:

2.3.1.1. THE AMSTERDAM DYNAMIC FACIAL EXPRESSION SET (ADFES)

This paradigm produced by the Department of Social Psychology of the University of Amsterdam measures the ability to recognize emotions in facial expressions. The ADFES consists of dynamic expressions, and includes 22 face-models (10 female, 12 male; 10 Mediterranean, 12 North European) utilizing the same facial action units (AUs). It features displays of nine emotions: the six 'basic' emotions (anger, disgust, fear, joy, sadness, and surprise), as well as contempt, pride and embarrassment (Wingenbach et al., 2016; Van der Schalk et al., 2011). Van der Schalk et al. confirmed through the study of ADFES - validation, that the ADFES achieved excellent scores of facial expression recognition for all emotions.

In this study, I used the six basic emotional expressions, the neutral expression and contempt, and 5 models (3 female and 2 male; 3 Mediterranean, 2 North-European).

Participants were instructed to determine the appropriate word for each facial expression and to rate the intensity of each one on a scale from 0 (very little) to 10 (very intense) using a continuous scroll bar; Moreover, participants are asked to rate how much the facial expression affected them emotionally on a scale from 0 (very little) to 10 (very much). Figure 2.6. provides an example of the ADFES.

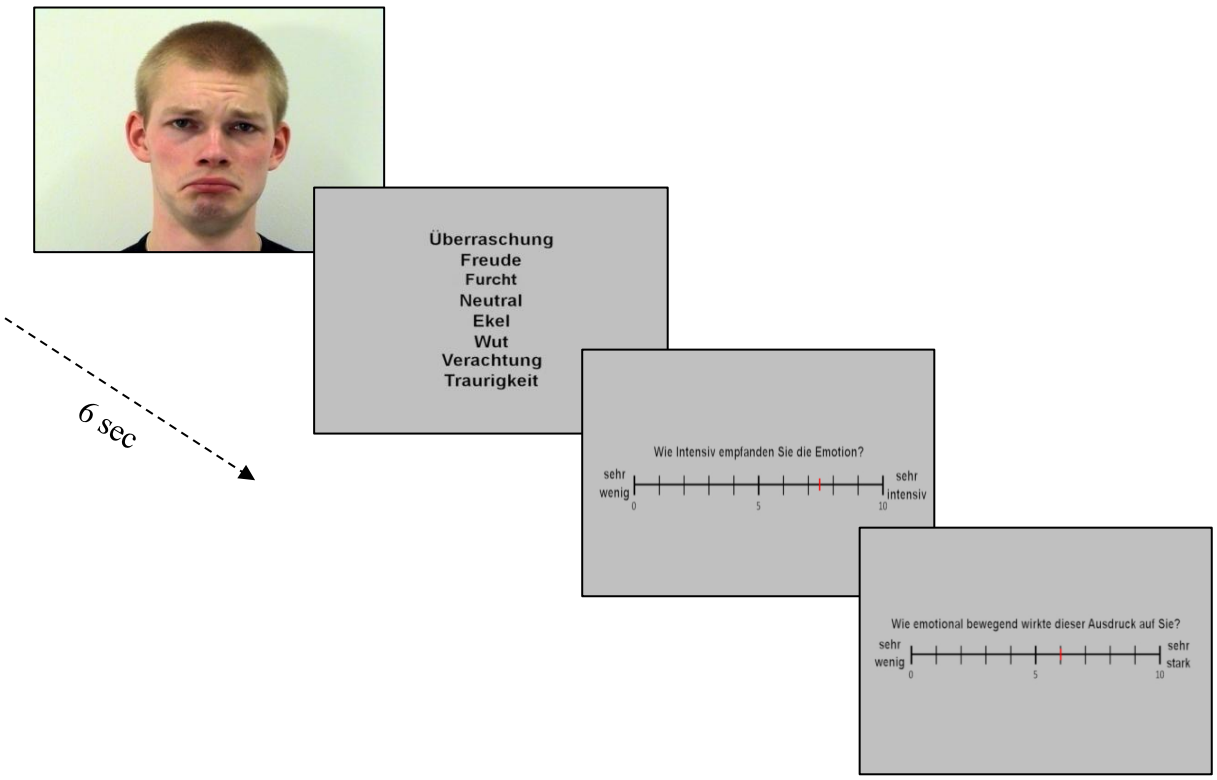

Figure 2.6. Example of the Amsterdam Dynamic Facial Expression Set (ADFES)

2.3.1.2. THE FACE IN THE CROWD TASK (FCT)

The FCT consists of 252 sets of faces, each one includes 6 faces that either all of them are neutral, or 5 of them have neutral expressions and just one has another expression (happiness, sadness or anger). The facial models were taken from the Karolinska Directed Emotional Faces Database (KDEF), created by Lundqvist, Flykt, and Öhman (1998). The subject determines during a maximum execution time of 4 seconds if the 6 faces comprise one with a discrepant emotional expression (clicking on the right rear button of joypad) or not (clicking on the left rear button of joypad), and then designates it as happy face (clicking on blue button), angry face (yellow button), or sad face (green button), or confirms that there is no discrepant expression within a crowd of neutral expressions (red button). The slides and the faces were presented in a random order, and each subject's response or reaction time was measured and recorded in the paradigm's database. Figure 2.7. provides an example of the face in the crowd task.

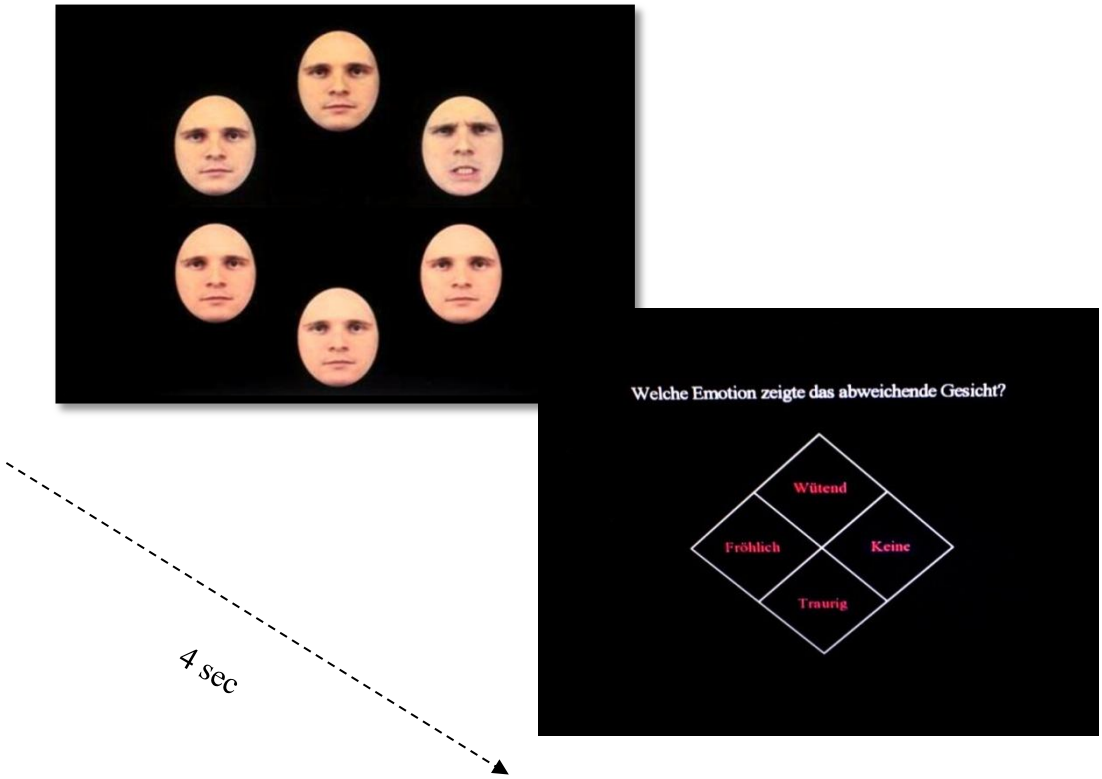

Figure 2.7. Example of the face in the crowd task

Left rear button

Right rear button: if the 6 faces comprise one with a discrepant emotional expression

Figure 2.8. Logitech F310 Gamepad

2.3.2. QUESTIONNAIRES

2.3.2.1. BECK DEPRESSION INVENTORY (BDI)

BDI is a self-report questionnaire created by Aaron Temkin Beck to measure the current level of depression. The BDI has undergone two revisions. In the latest version, known as the BDI-II and consisting of 21 items, each item is designed to test the severity of a specific symptom, and is rated from 0 to 3 according to the degree of severity (see Hautzinger et al., 2006). The BDI II takes 5 to 10 minutes to complete and consists of the following cut-off scores:

0–13: minimal depression

14–19: mild depression

20–28: moderate depression

29–63: severe depression (Beck AT et al., 1996).

According to the Kühner et al., 2007, the internal consistency of BDI-II (German version) was high ($\alpha \geq 0.84$) and retest reliability was ($r \geq 0.75$). Similarly, cronbach's α of the Arabic version was 0.83 (see Fazel et al., 2005).

2.3.2.2. THE MINI-INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW (M.I.N.I.)

The M.I.N.I. is a short diagnostic structured interview (administration time 15-20 minutes), developed in 1990 by psychiatrists and clinicians in the United States and France to assess the diagnoses of psychiatric patients according to DSM-III-R/IV and ICD-10.

The M.I.N.I. is divided into disorders modules. Each module starts with one or two screening questions (except for psychotic disorders module). If participants answer "no", the diagnosis is excluded.

According to previous studies (Sheehan et al., 1998; Ackenheil et al.,1999; Ghanem et al., 2002), the M.I.N.I. had a high agreement with other structured instruments such as the World Mental Health Composite International Diagnostic Interview (WMH-CIDI) (WHO, 1997) and Structured Clinical Interview-patient version (SKID-P) (Spitzer et al., 1990) and high validity and reliability.

2.3.2.3. CURRENT MOOD STATE SCALE (ASTS: AKTUELLE STIMMUNGSSKALA)

ASTS is the German short version of the Profile of Mood States (POMS). It is a self-report questionnaire consisting of 19 emotional words divided into three dimensions:

- Positive mood: Includes 6 items (5, 7, 11, 13, 15, 19)
- Negative mood: Can also be divided into:
  - Sadness: 3 Items (3, 4, 6).
  - Hopelessness: 3 Items (8, 12, 16)
  - Tiredness: 4 Items (2, 9, 14, 18)
- Anger: 3 Items (1, 10, 17)

This test was developed in 1990 in Germany by Bullinger, Heinisch, Ludwig and Geier. Participants rate each item on a 7-point Likert scale from 1 (not at all) to 7 (very strong). Dalbert (1992) reported that the internal consistency of ASTS was between (α = .83 - .94).

2.3.2.4. THE SOCIAL SUPPORT QUESTIONNAIRE (F-SOZU K-14)

The F-SozU K-14 (Fragebogen zur sozialen Unterstützung: Die Kurzform mit 14 Items) is a self-report questionnaire and is considered as a short version of (F-SozU S-54). This test consists of 14 items that measure three dimensions of social support (see table 2.3.1.).

Table 2.3 1. The dimensions of F-SozU K-14 in compare to F-SozU S-54

Questionnaire's dimensions	F-SozU K-14	F-SozU S-54
Emotional support (8 Items)	2, 4, 6, 8, 10, 11, 12, 13	2, 44, 12, 15, 20, 26, 27, 53
Practical support (3 Items)	1, 5, 9	1, 6, 19
Social integration (3 Items)	3, 7, 14	-30 and -34, -17, 43

Participants rate each item on a 5-point Likert scale from 1(not true at all) to 5 (completely true). Fydrich et al.' study (2009) showed that F-SozU K-14 had a very acceptable reliability (internal consistency α = 0.94).

2.3.2.5. THE EMOTION REGULATION QUESTIONNAIRE (ERQ)

The ERQ is a short self-report questionnaire created by Gross and John (2003) to measure two aspects of emotion regulation:

- Cognitive reappraisal: includes 6 items (1, 3, 5, 7, 8, 10) assessing the ability to modify or change the emotions on experiences
- Expressive suppression: 4 items (2, 4, 6, 9) assessing the ability to avoid or prevent the expression of emotions (Hunsley and Mash, 2008).

Participants rate each item on a 7-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree). Witlink et al. 2011 reported that the internal consistency of ERQ was acceptable for cognitive reappraisal (α = 0.82) and expressive suppression (α = 0.76).

2.4. STATISTICAL METHODS

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 20.
The descriptive statistics including frequencies, percentages, mean, median, standard deviation, and standard error were performed for dependent and independent variables.
To investigate the differences between two groups (e.g., experimental vs. control; or Germans vs. Syrians) with respect to demographic data (gender, age and educational years), the Chi-Square test of independence x^2 and Student's *t* test were calculated. In addition to using Pearson coefficient to measure the correlation between some variables.
Since the German participants had significantly more educational years than the Syrian participants, the effect of the factor EDUCATIOANL YEARS had to be controlled in the analyses as a covariate. The same thing applies for depression (because of the control sample had longer educational years than the experimental sample) and for gender (Women had longer educational years than men). E.g., for probing the effects of $DEPRESSION_{(low/high)}$ and $CULTURE_{(Germans/Syrians)}$ as between subject factors a multivariate analysis of covariance (MANCOVA) was computed, because EDUCATIONAL YEARS had to be controlled as a confounding variable. In case that the interaction was significant post-hoc *t*-tests with a Bonferroni-Holm correction were performed. The Bonferroni-Holm corrections for the *p* value were arranged as follows ($\boldsymbol{p_1}$ = smallest $p \times 4$; $\boldsymbol{p_2} = p \times 3$; $\boldsymbol{p_3} = p \times 2$; $\boldsymbol{p_4}$ = biggest *p*).
In another example, in order to test the effect of $nationality_{(Germans/Syrians)}$ as between-subject factor and the ethnicity of stimuli $_{(European/\ Medteranian)}$ as within-subject factor, a repeated-measures analysis of covariate (RM-ANCOVA) was computed.
All tests were conducted at the 5% level of statistical significance.
The agreement between BDI-II and M.I.N.I. results was examined using Cohen's Kappa analysis.

CHAPTER III: RESULTS

3.1. THE AMSTERDAM DYNAMIC FACIAL EXPRESSION SET (ADFES)

As already described in chapter 2, the ADFES consists of dynamic rather than static expressions and includes North-European and Mediterranean models. This chapter discusses the effects of depression, culture, the interaction between them, and the interactions with other factors such as (gender, emotional regulation, current mood state, social support) on each of the recognition accuracy of facial expressions (section 3.1.1.), the assessment of emotional intensity (section 3.1.2.), and the assessment of emotional effect of the observed faces (section 3.1.3.) concerning the following eight expressions: fear, disgust, sadness, happiness, anger, surprise, contempt and neutral.

3.1.1. OVERVIEW OF THE MULTIFACTORIAL EFFECTS ON THE RECOGNITION ACCURACY OF ADFES

Recognition accuracy of facial emotions can be affected by many factors including culture, depression, gender, emotional regulation, current mood state and social support. This section will address the role of these factors and their interactions in emotion recognition of dynamic faces. Of course, we will pay more attention to depression and culture, in view of their central importance in this thesis.

3.1.1.1. Effects of depression on recognition accuracy of facial expressions

To investigate the effects of depression on recognition accuracy of dynamic facial expressions a multivariate analysis of covariance (MANCOVA) was computed with $\text{DEPRESSION}_{(\text{low/high})}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions together (in general) and also particularly for every single expression as dependent variables.

The MANCOVA revealed a clear **tendency toward significant main effect** of depression on recognition accuracy of facial expressions in general, where the experimental sample had lower hit rates in recognition of facial expressions than the control sample ($F_{1,133}$=3.819, p=.053, η^2=.028). Concerning the specific expressions, the experimental sample showed lower hit rates for each single one of the eight expressions than the control sample (see figure 3.1.1.), although the differences of hit rates between the two samples were not statistically significant (see Table 3.1.1.).

Table 3.1.1. The main effects of depression on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	3.819	.053	1.133	.028
Hit rates of Fear	.243	.623	1.133	.002
Hit rates of Neutral	.032	.857	1.133	.000
Hit rates of Disgust	.557	.457	1.133	.004
Hit rates of Sadness	.233	.630	1.133	.002
Hit rates of Happiness	3.054	.083	1.133	.022
Hit rates of Anger	.520	.472	1.133	.004
Hit rates of Surprise	.515	.474	1.133	.004
Hit rates of Contempt	2.960	.088	1.133	.022

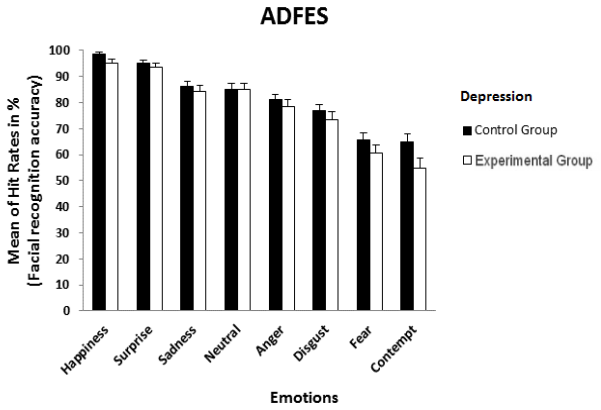

Figure 3.1.1: The main effects of depression on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM).

3.1.1.2. Effects of culture on recognition accuracy of facial expressions

To investigate the influence of cultural context on recognition accuracy of ADFES a multivariate analysis of covariance (MANCOVA) was computed with $CULTURE_{(Germans/Syrians)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions together (in general) and also particularly for every single expression as dependent variables.

Findings of the analysis showed no significant main effect of culture on recognition accuracy of facial expressions in general ($F_{1,133}$=1.858, p=.175, η^2=.014).

Concerning the specific expressions, no significant effect of culture was found on the

recognition accuracy of fearful, sad, happy, and neutral expressions (see Table 3.1.2.). However, Germans had **significantly** lower hit rates in recognition of surprise ($F_{1,133}$= 8.124, p< .01, η^2=0.058), and anger ($F_{1,133}$= 4.753, p< .05, η^2=.035) and **significantly** higher hit rates in recognition of disgust ($F_{1,133}$= 10.670, p= .001, η^2=.074) than Syrians.

Table 3.1.2. The main effects of culture on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	1.858	.175	1.133	.014
Hit rates of Fear	.576	.449	1.133	.004
Hit rates of Neutral	.719	.398	1.133	.005
Hit rates of Disgust	10.670	.001	1.133	.074
Hit rates of Sadness	.121	.728	1.133	.001
Hit rates of Happy	.001	.981	1.133	.000
Hit rates of Anger	4.753	.031	1.133	.035
Hit rates of Surprise	8.124	.005	1.133	.058
Hit rates of Contempt	3.397	.068	1.133	.025

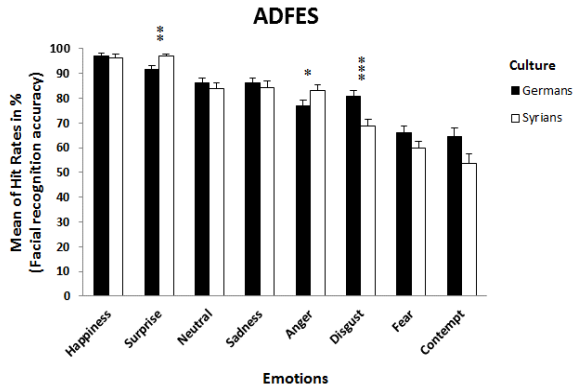

Figure 3.1.2. The main effects of culture on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05, **P< .01, ***P=.001

3.1.1.3. Interaction effects of depression and culture on recognition accuracy of facial expressions

In an attempt to discover the interaction effects of depression and culture on facial expression recognition, MANCOVA was computed here with two between-subject factors ($DEPRESSION_{(low/high)}$ and $CULTURE_{(Germans/Syrians)}$) and EDUCATIONAL YEARS as usual as covariate factor, in addition to HIT RATES of the facial expressions together (in general) and also particularly for every single expression as dependent variables. Results indicated no significant effect of the interaction between depression and culture on the recognition accuracy of facial expressions in general, and also for every single expression independently (see Table 3.1.3.).

Table 3.1.3. The interaction effects of depression and culture on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.093	.761	1.131	.001
Hit rates of Fear	.029	.864	1.131	.000
Hit rates of Neutral	.028	.868	1.131	.000
Hit rates of Disgust	3.046	.083	1.131	.023
Hit rates of Sadness	.020	.886	1.131	.000
Hit rates of Happy	1.412	.237	1.131	.011
Hit rates of Anger	1.255	.265	1.131	0.009
Hit rates of Surprise	.079	.779	1.131	0.001
Hit rates of Contempt	.669	.415	1.131	0.005

3.1.1.4. Interaction effects of subjects' culture and stimuli' culture on recognition accuracy of facial expressions

The emotional recognition may vary due to differences across cultures as noted in section (3.1.1.2.). These cultural differences may not have been created only by cultural environment of observer, but also by the stimuli' culture of ADFES.

For more information about the effects of subjects' culture and stimuli' culture on recognizing the emotional expressions a repeated-measures analysis of covariate (RM-ANCOVA) was computed with ETHNICITY OF STIMULI (North-European/Medteranian) as within-subject factor, NATIONALITY (Syrians/ Germans) as between-subject factor and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions together (in general) and also particularly for every single expression as dependent variables.

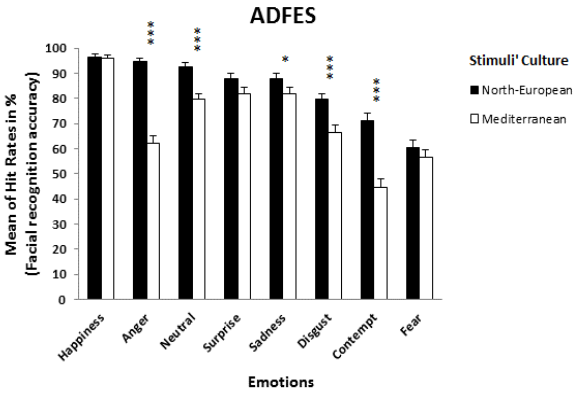

Figure 3.1.3. The main effects of stimuli' culture on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P<.05, ***P<.001

According to section 3.1.1.2., no significant main effect for NATIONALITY$_{(Germans/Syrians)}$ was found on the recognition accuracy of facial expressions in general. RM-ANOVA revealed **a significant main effect** for ETHNICITY OF STIMULI $_{(North\text{-}European/Mediterranean)}$ ($F_{1,135}$= 155.903, p< .001, η^2= .536), where the participants generally recognized North-European faces **significantly** better than the Mediterranean faces (see Fig. 3.1.3. & 3.1.4.).

RM-ANCOVA showed **a significant effect of the interaction between** nationality and ethnicity of stimuli on the recognition accuracy of facial expressions in general ($F_{1,133}$= 11.791, p= .001, η^2= .081).

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed that Germans recognized the expressions in general in North-European faces **significantly** better than Syrians (t= 3.468, p= .001; P_{bon_holm}< 0.01), but there was no significant difference between Germans and Syrians in recognizing the expressions in general in Mediterranean faces (see Fig. 3.1.4.).

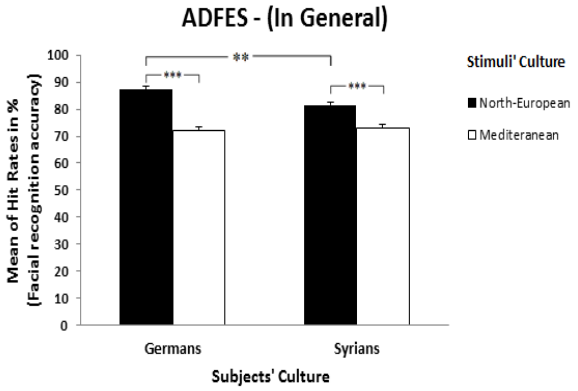

Figure 3.1.4. The interaction effects between subjects' culture and stimuli' culture on recognition accuracy of the dynamic facial expressions in general. Error bars denote standard error of the mean (SEM). **P<.01, ***P<.001

As previously mentioned in section 3.1.1.2, **a significant main effect** for NATIONALITY$_{(Germans/Syrians)}$ was found on the recognition accuracy of disgust. RM-ANOVA revealed **a significant main effect** for ETHNICITY OF DISGUST-STIMULI $_{(North\text{-}European/Mediterranean)}$ ($F_{1,135}$= 14,477, p<.001, η^2= .097), where the participants recognized disgust in North-European faces **significantly** better than in the Mediterranean faces (see Fig. 3.1.3.).

RM-ANCOVA indicated **a significant effect of the interaction between** nationality and ethnicity of stimuli on the recognition accuracy of disgust ($F_{1,133}$= 5.947, p< .05, η^2= .043).

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed Germans recognized disgust in Mediterranean faces **significantly** better than Syrians (t= 4.048, p<.001; P_{bon_holm}<.001). But there was no significant difference between Germans and Syrians in recognizing disgust in North-European faces (t=1.338, p=0.183).

Post hoc analysis for dependent samples with a Bonferroni-Holm correction showed that Syrians recognized disgust in North-European faces **significantly** better than in Mediterranean faces (t= 4.353, p< .001; P_{bon_holm}<.001). But there was no significant difference between Germans in recognizing disgust in North-European and Mediterranean faces (t= 1.319, p=0.191) (see Fig. 3.1.5.).

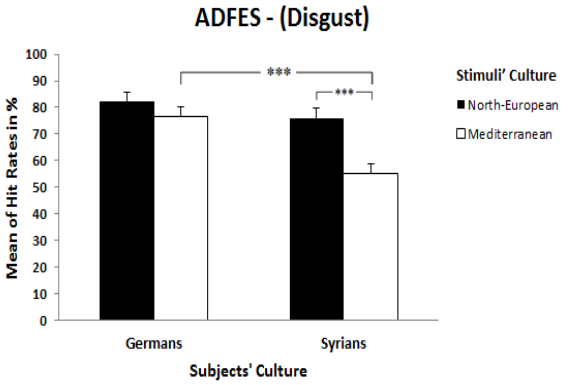

Figure 3.1.5. The interaction effects between subjects' culture and stimuli' culture on recognition accuracy of the dynamic disgusted faces. Error bars denote standard error of the mean (SEM). ***P<.001

No significant main effect for NATIONALITY$_{(Germans/Syrians)}$ (see Table 3.1.2), however, RM-ANOVA showed **a significant main effect** for ETHNICITY OF SADNESS-STIMULI $_{(North-European/Mediterranean)}$ ($F_{1,135}$=5.760, P<.05, η^2=.041), where the participants recognized sadness in North-European faces **significantly** better than in the Mediterranean faces (see Fig. 3.1.3.).

RM-ANCOVA revealed **a significant effect of the interaction between** nationality and ethnicity of stimuli on the recognition accuracy of sadness ($F_{1,133}$= 9.362, p< .01, η^2= 0.066). Post hoc analysis for dependent samples with a Bonferroni-Holm correction showed that Germans recognized sadness in North-European faces **significantly** better than in Mediterranean faces (t= 3,532, p=.001; P_{bon_holm}<.01) (see Fig. 3.1.6.).

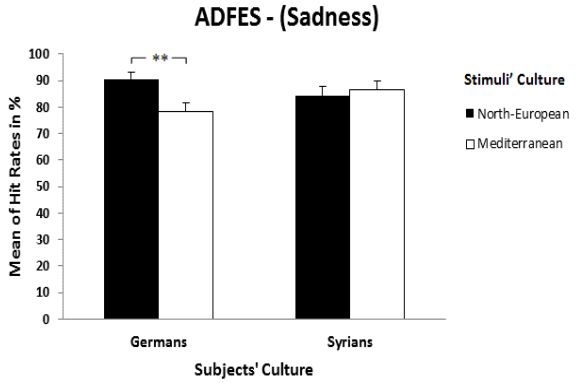

Figure 3.1.6. The interaction effects between subjects' culture and stimuli' culture on recognition accuracy of the dynamic sad faces. Error bars denote standard error of the mean (SEM). **P< .01

A significant main effect for NATIONALITY$_{(Germans/Syrians)}$ (see section 3.1.1.2.) and **a significant main effect** for ETHNICITY OF ANGER-STIMULI $_{(North-European/Mediterranean)}$ ($F_{1,135}$= 92,768, p< .01, η^2= .407) and also **a significant effect of the interaction** between the two factors was found on the recognition accuracy of anger ($F_{1,133}$= 16.486, p< .001, η^2= .110).

The participants recognized anger in North-European faces **significantly** better than in the Mediterranean faces (see Fig. 3.1.3.& 3.1.7.).

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed Germans recognized Anger in North-European faces **significantly** better than Syrians (t= 2,050, p<.05; P_{bon_holm}<.05), and Syrians recognized Anger in mediterranean faces **significantly** better than Germans (t= 3.262, p=.001; P_{bon_holm}<.01).

Post hoc analysis for dependent samples with a Bonferroni-Holm correction showed that Germans and Syrians recognized anger in North-European faces **significantly** better than in Mediterranean faces (Germans: t= 10,757, p<.001; P_{bon_holm}<.001; Syrians: t= 3,678, p<.001; P_{bon_holm}<.01).

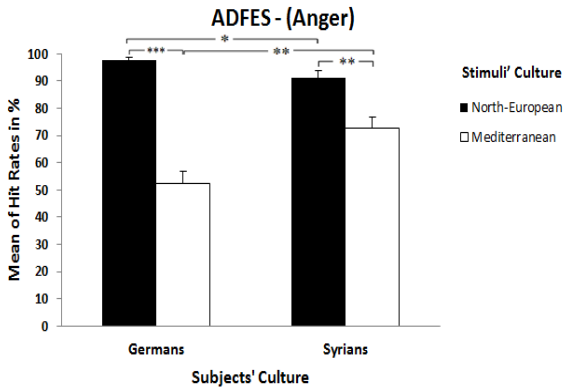

Figure 3.1.7. The interaction effects between subjects' culture and stimuli' culture on recognition accuracy of the dynamic angry faces. Error bars denote standard error of the mean (SEM). *P<.05, **P<.01, ***P<.001

A significant main effect for NATIONALITY$_{(Germans/Syrians)}$ (see section 3.1.1.2.), but no significant main effect for ETHNICITY OF SURPRISE-STIMULI $_{(North\text{-}European/Mediterranean)}$ ($F_{1,135}$= .570, p= .452, η^2= .004) and also no significant effect of the interaction between the two factors was found on the recognition accuracy of surprise ($F_{1,133}$= .553, p= .458, η^2= .004).

A significant main effect for ETHNICITY OF NEUTRAL and CONTEMPT - STIMULI $_{(North\text{-}European/Mediterranean)}$ (Neutral: $F_{1,135}$= 24.323, p< .01, η^2=.153; Contempt:$F_{1,135}$= 53.669, p< .01, η^2= .284), but no significant main effect for NATIONALITY$_{(Germans/Syrians)}$ (see section 3.1.1.2.), and also no significant effect of the interaction between the two factors was found on the recognition accuracy of neutral ($F_{1,133}$= 2.906, p= .091, η^2= .021) and contempt ($F_{1,133}$= .321, p= .572, η^2= 0.002).

The participants recognized neutral and contempt in North-European faces **significantly** better than in the Mediterranean faces (see Fig. 3.1.3.).

Concerning the happy and fearful faces no significant main effect for NATIONALITY$_{(Germans/Syrians)}$ or ETHNICITY OF HAPPY and FEAR-STIMULI $_{(North-European/Mediterranean)}$ and also no significant effect of the interaction between the two factors was found on the recognition accuracy of these expressions.

3.1.1.5. Interaction effects of subjects' gender and stimuli' gender on recognition accuracy of facial expressions

Men and women might differ in the visual scanning ability of facial expressions; Many previous studies has implied that the recognition accuracy of facial expressions may depend also on the sexual differences (see section 1.1.14.).

The current study tried to explore the effects of subjects' gender and stimuli' gender on recognizing the emotional expressions; based on that, a repeated-measures analysis of covariate was computed with GENDER OF STIMULI $_{(male/female)}$ as within-subject factor, SUBJECTS' GENDER $_{(male/female)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions together (in general) and also particularly for every single expression as dependent variables. Based on MANCOVA no significant main effect for SUBJECTS' GENDER $_{(male/female)}$ (see table 3.1.4 and figure 3.1.8.) was found and RM-ANCOVA revealed also no significant effect of the interaction with simuli' gender on the recognition accuracy of facial expressions in general, and for every single expression separately (see table 3.1.6.).

Table 3.1.4. The main effects of subjects' gender on recognition accuracy of the dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.409	.524	1.133	.003
Hit rates of Fear	1.157	.284	1.133	.009
Hit rates of Neutral	.454	.502	1.133	.003
Hit rates of Disgust	.046	.831	1.133	.000
Hit rates of Sadness	.849	.358	1.133	.006
Hit rates of Happy	.161	.689	1.133	.001
Hit rates of Anger	.835	.362	1.133	.006
Hit rates of Surprise	.000	.990	1.133	.000
Hit rates of Contempt	2.952	.088	1.133	.022

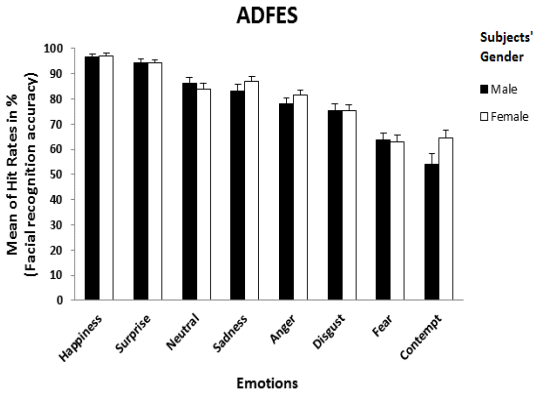

Figure 3.1.8. The main effects of subjects' gender on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM).

However, RM-ANOVA showed a **significant main effect** of STIMULI' GENDER on the recognition accuracy of facial expressions in general, and particularly for fear, neutral, disgust, sadness, and surprise (see table 3.1.5. and figure 3.1.9.). The participants generally recognized the expressions in female faces **significantly** better than in male faces. Concerning the specific expressions, participants recognized fear, neutral, disgust, and surprise in female faces **significantly** better than in male faces, but they recognized only sadness in male faces **significantly** better than in female faces.

Table 3.1.5.The main effects of simuli' gender on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	30.500	.000	1.135	.184
Hit rates of Fear	51.955	.000	1.135	.278
Hit rates of Neutral	24.323	.000	1.135	.153
Hit rates of Disgust	23.640	.000	1.135	.149
Hit rates of Sadness	33.639	.000	1.135	.199
Hit rates of Happy	.000	1.000	1.135	.000
Hit rates of Anger	.730	.394	1.135	.005
Hit rates of Surprise	10.859	.001	1.135	.074
Hit rates of Contempt	3.221	.075	1.135	.023

Table 3.1.6. The interaction effects between subjects' gender and stimuli' gender on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.888	.348	1.133	.007
Hit rates of Fear	.925	.338	1.133	.007
Hit rates of Neutral	.057	.811	1.133	.000
Hit rates of Disgust	1.238	.268	1.133	.009
Hit rates of Sadness	.651	.421	1.133	.005
Hit rates of Happy	.054	.816	1.133	.000
Hit rates of Anger	.256	.614	1.133	.002
Hit rates of Surprise	2.069	.153	1.133	.015
Hit rates of Contempt	.000	.987	1.133	.000

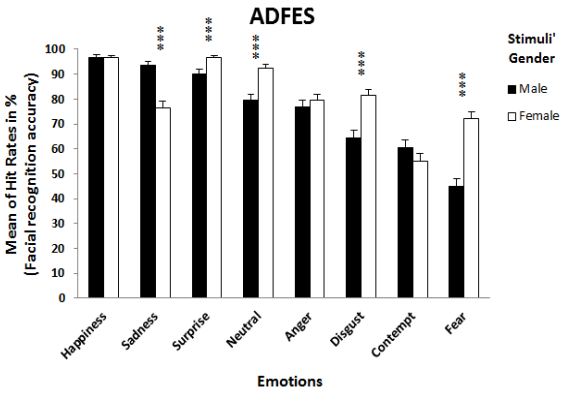

Figure 3.1.9. The main effects of stimuli' gender on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM). ***P≤.001

3.1.1.6. Interaction effects of depression and emotion regulation on recognition accuracy of facial expressions

The study examined here whether the emotion regulation strategies (i.e., cognitive reappraisal and expressive suppression) could influence the recognition of dynamic facial expressions in the control and experimental groups. The preliminary findings showed that depression was **significantly** and negatively correlated with the cognitive reappraisal strategie across the whole sample (r= -.327, p<.001).

- Interaction effects of depression and cognitive reappraisal on recognition accuracy of the dynamic facial expressions:

A multivariate analysis of covariance (MANCOVA) with DEPRESSION$_{(low/high)}$ and COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and also particularly for every single expression as dependent variables revealed that no significant effect of the interaction between depression and cognitive reappraisal on the recognition accuracy of facial expressions in general, and the same thing for every single expression independently (see Table 3.1.7.).

MANOVA indicated no significant mean effect of cognitive reappraisal on the recognition accuracy of facial expressions (see figure 3.1.10.).

Table 3.1.7. The interaction effects of depression and cognitive reappraisal on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	1.436	.233	1.131	.011
Hit rates of Fear	1.346	.248	1.131	.010
Hit rates of Neutral	.153	.696	1.131	.001
Hit rates of Disgust	.009	.926	1.131	.000
Hit rates of Sadness	.674	.413	1.131	.005
Hit rates of Happy	.153	.696	1.131	.001
Hit rates of Anger	1.317	.253	1.131	.010
Hit rates of Surprise	3.612	.060	1.131	.027
Hit rates of Contempt	.144	.705	1.131	.001

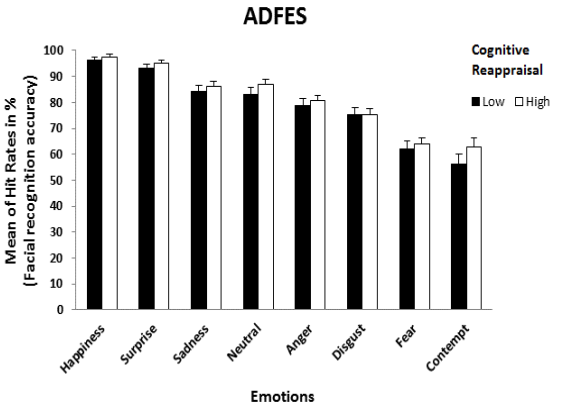

Figure 3.1.10. The main effects of cognitive reappraisal on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM).

- Interaction effects of depression and expressive suppression on recognition accuracy of the dynamic facial expressions:

A multivariate analysis of covariance (MANCOVA) with DEPRESSION$_{(low/high)}$ and EXPRESSIVE SUPPRESSION$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that no significant effect of the interaction between depression and expressive suppression on the recognition accuracy of facial expressions in general, and for every single expression independently (see Table 3.1.8.).

MANOVA also revealed no significant mean effect of expressive suppression on the recognition accuracy of facial expressions (see figure 3.1.11.).

Table 3.1.8. The interaction effects of depression and expressive suppression on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.066	.798	1.131	.001
Hit rates of Fear	.127	.723	1.131	.001
Hit rates of Neutral	.859	.356	1.131	.007
Hit rates of Disgust	.038	.846	1.131	.000
Hit rates of Sadness	3.016	.085	1.131	.023
Hit rates of Happy	.198	.657	1.131	.002
Hit rates of Anger	1.057	.306	1.131	.008
Hit rates of Surprise	1.209	.274	1.131	.009
Hit rates of Contempt	1.089	.299	1.131	.008

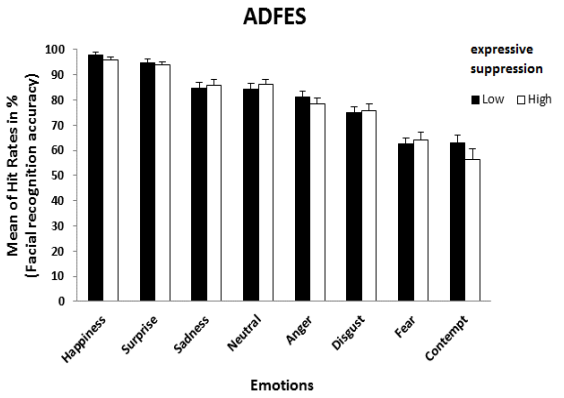

Figure 3.1.11. The main effects of expressive suppression on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM).

Thus, the above mentioned results showed that the effect of emotional regulation on recognizing the dynamic expressions in the control and experimental groups was not significant.

3.1.1.7. Interaction effects of culture and emotion regulation on recognition accuracy of facial expressions

Cultural differences between societies could influence the self- regulatory efforts of emotional response; for example, the controlling of emotional expression may associated with social consequences and laws, that are specific to each culture.

The findings of the current study suggested that no significant differences between Germans and Syrians in each of the two emotion regulation strategies (reappraisal: t=.404, p=.687; and

suppression: t=.355, p=.724), but in spite of that the study investigated the interaction effects between these regulatory strategies and culture on recognition accuracy of facial expressions.

- Interaction effects of culture and cognitive reappraisal on recognition accuracy of the dynamic facial expressions:

A multivariate analysis of covariance (MANCOVA) with CULTURE$_{(Germans/Syrians)}$ and COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that no significant effect of the interaction between culture and cognitive reappraisal on the recognition accuracy of facial expressions in general, and the same thing for every single expression independently (see Table 3.1.9.).

Table 3.1.9. The interaction effects of culture and cognitive reappraisal on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.048	.826	1.131	.000
Hit rates of Fear	.148	.701	1.131	.001
Hit rates of Neutral	2.714	.102	1.131	.020
Hit rates of Disgust	.527	.469	1.131	.004
Hit rates of Sadness	.001	.975	1.131	.000
Hit rates of Happy	.051	.822	1.131	.000
Hit rates of Anger	1.068	.303	1.131	.008
Hit rates of Surprise	.992	.321	1.131	.008
Hit rates of Contempt	.001	.980	1.131	.000

- Interaction effects of culture and expressive suppression on recognition accuracy of the dynamic facial expressions:

A multivariate analysis of covariance (MANCOVA) with CULTURE$_{(Germans/Syrians)}$ and EXPRESSIVE SUPPRESSION$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that no significant effect of the interaction between culture and expressive suppression on the recognition accuracy of facial expressions in general, and for every single expression independently (see Table 3.1.10.).

Table 3.1.10. The interaction effects of culture and expressive suppression on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.000	0.998	1.131	.000
Hit rates of Fear	.090	.765	1.131	.001
Hit rates of Neutral	.297	.587	1.131	.002
Hit rates of Disgust	1.127	.290	1.131	.009
Hit rates of Sadness	1.116	.293	1.131	.008
Hit rates of Happy	1.025	.313	1.131	.008
Hit rates of Anger	.284	.595	1.131	.002
Hit rates of Surprise	.003	.957	1.131	.000
Hit rates of Contempt	.035	.852	1.131	.000

The findings presented in Tables 3.1.9. and 3.1.10. proved us that there was no significant effect of the interaction between culture and emotion regulation on recognition accuracy of the dynamic facial expressions.

3.1.1.8. Interaction effects of depression and current mood state on recognition accuracy of facial expressions

In order to obtain more information on the influence of participants' current mood on recognizing the dynamic facial expressions, the study examined the main effect of negative or positive current mood state, and its interactions with depression.

- Interaction effects of depression and current negative mood on recognizing the dynamic facial expressions:

A multivariate analysis of covariance (MANCOVA) with $DEPRESSION_{(low/high)}$ and $NEGATIVE\ MOOD\ STATE_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that no significant effect of the interaction between depression and current negative mood on the recognition accuracy of facial expressions in general, and for every single expression independently (see Table 3.1.11.).

Table 3.1.11. The interaction effects of depression and current negative mood on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.108	.743	1.131	.001
Hit rates of Fear	.099	.754	1.131	.001
Hit rates of Neutral	.402	.527	1.131	.003
Hit rates of Disgust	.535	.466	1.131	.004
Hit rates of Sadness	.862	.355	1.131	.007
Hit rates of Happy	.026	.872	1.131	.000
Hit rates of Anger	.002	.967	1.131	.000
Hit rates of Surprise	.000	.985	1.131	.000
Hit rates of Contempt	.016	.900	1.131	.000

MANOVA also showed no significant mean effect of current negative mood on the recognition accuracy of facial expressions (see figure 3.1.12.).

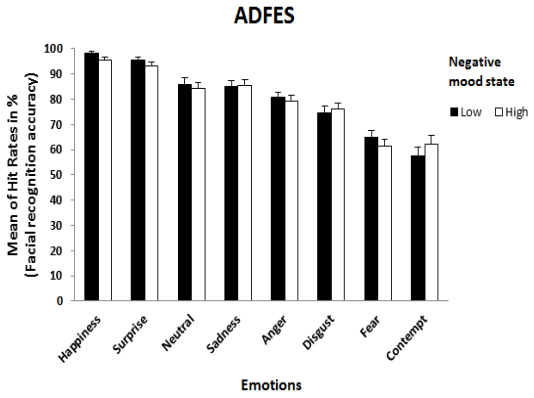

Figure 3.1.12. The main effects of current negative mood on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM).

- Interaction effects of depression and current positive mood on recognizing the dynamic facial expressions:

  A multivariate analysis of covariance (MANCOVA) with $DEPRESSION_{(low/high)}$ and $POSITIVE\ MOOD\ STATE_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed **a significant effect of the interaction** between depression and current positive mood on the recognition accuracy of facial expressions in general($F_{1,131}$= 4.668, p<.05, η^2=.034), and especially for contempt ($F_{1,131}$= 4.500, p<.05, η^2=.033) and neutral ($F_{1,131}$= 3.872, p=.05, η^2=.029).

  Post hoc analysis for independent samples with a Bonferroni-Holm correction showed that the participants with high positive mood state in the control group recognized the emotions in general better than the others in the experimental group (t=2.854, p<.01; P_{bon_holm}<.05). These differences were especially clear for contemptuous expressions (t=2.933,p<.01; P_{bon_holm}<.05).

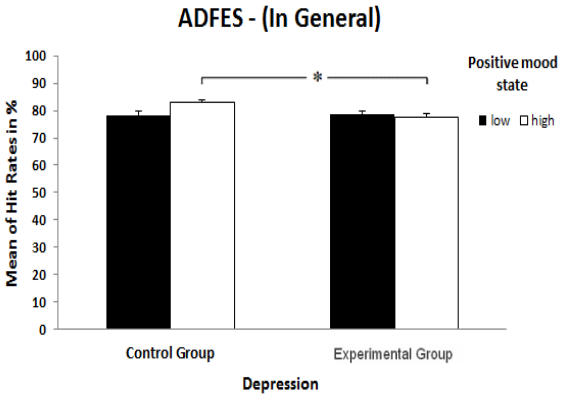

Figure 3.1.13. The interaction effects of depression and positive mood state on recognition accuracy of the dynamic facial expressions in general. Error bars denote standard error of the mean (SEM). *P<.05

Figures 3.1.13. and 3.1.14. also schowed that control group participants who reported high positive mood state had a tendency to recognize the facial expressions in general better than the low positive mood participants (t=2.261, p<.05; P_{bon_holm}>.05). These differences were especially for neutral expressions (t= 2.543, p<.05; P_{bon_holm}>.05). (see Fig. 3.2.14. and 3.2.15.).

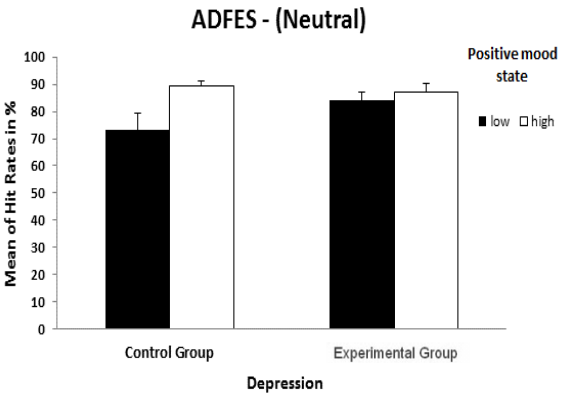

Figure 3.1.14. The interaction effects of depression and positive mood state on recognition accuracy of the dynamic neutral faces. Error bars denote standard error of the mean (SEM).

The experimental group participants who had low positive mood state showed a tendency to recognize the contempt-expressions better than the high positive mood participants in the same group (t= 1.937, p=.057; P_{bon_holm}>.05). (see Fig. 3.1.15.).

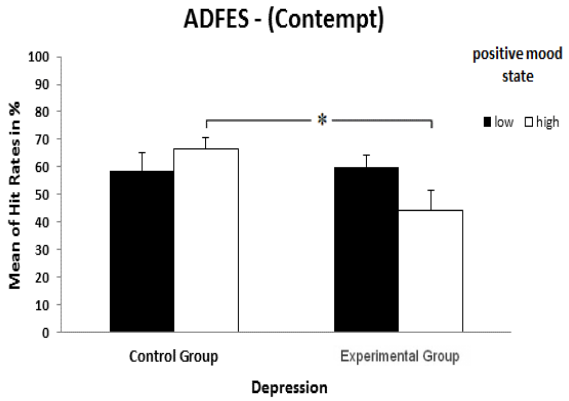

Figure 3.1.15. The interaction effects of depression and positive mood state on recognition accuracy of the dynamic contemptuous faces. Error bars denote standard error of the mean (SEM). *P<.05

Table 3.1.12. The interaction effects of depression and current positive mood on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	4.668	.033	1.131	.034
Hit rates of Fear	.490	.485	1.131	.004
Hit rates of Neutral	3.872	.051	1.131	.029
Hit rates of Disgust	3.430	.066	1.131	.026
Hit rates of Sadness	.045	.833	1.131	.000
Hit rates of Happy	.961	.329	1.131	.007
Hit rates of Anger	.082	.775	1.131	.001
Hit rates of Surprise	.155	.694	1.131	.001
Hit rates of Contempt	4.500	.036	1.131	.033

According to MANOVA, **a significant mean effect** of current positive mood on the facial accuracy of neutral ($F_{1,134}$= 6.006, p<.05, η^2=.043), where participants with high positive mood state recognized neutral expressions **significantly** better than participants with low positive mood state (see Fig. 3.1.16.).

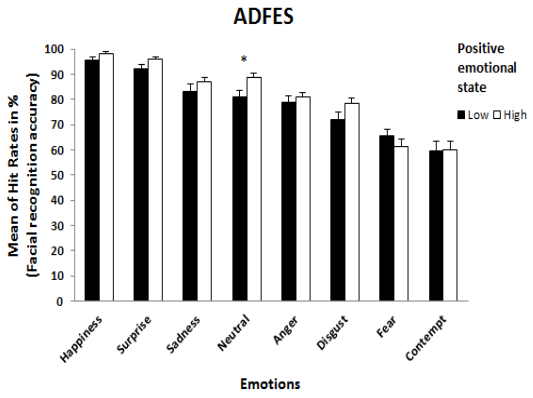

Figure 3.1.16. The mean effects of current positive mood on recognition accuracy of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P<.05

3.1.1.9. Interaction effects of culture and current mood state on recognition accuracy of facial expressions

MANCOVA was also calculated in an attempt to discover whether there was interactive role of culture and current mood state in recognizing the dynamic facial expressions.

- Interaction effects of culture and current negative mood on recognizing the dynamic facial expressions:

A multivariate analysis of covariance with $CULTURE_{(Germans/Syrians)}$ and CURRENT $NEGATIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that **a significant effect of the interaction** between culture and current negative mood on the recognition accuracy of disgust ($F_{1,131}$=7.688, p<.01, η^2=.055), and anger ($F_{1,131}$=5.178, p<.05, η^2=.038) (see Table 3.2.13.).

Table 3.1.13. The interaction effects of culture and current negative mood on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.036	.849	1.131	.000
Hit rates of Fear	.111	.739	1.131	.001
Hit rates of Neutral	.005	.944	1.131	.000
Hit rates of Disgust	7.688	.006	1.131	.055
Hit rates of Sadness	.256	.613	1.131	.002
Hit rates of Happy	2.293	.132	1.131	.017
Hit rates of Anger	5.178	.024	1.131	.038
Hit rates of Surprise	.537	.465	1.131	.004
Hit rates of Contempt	.163	.687	1.131	.001

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed that Germans with low negative mood state recognized disgust better than Syrians in the same group (t=-4.883, p<.001; P_{bon_holm}<.001) who in turn recognized anger better than germans (t=3.126, p<.01; P_{bon_holm}<.05) (see Figure 3.1.17. and 3.1.18.).

Syrians who reported high negative mood state showed a tendency to recognize disgusted faces better than syrians with low negative mood state (t= 2.154, p<.05; P_{bon_holm}>.05).

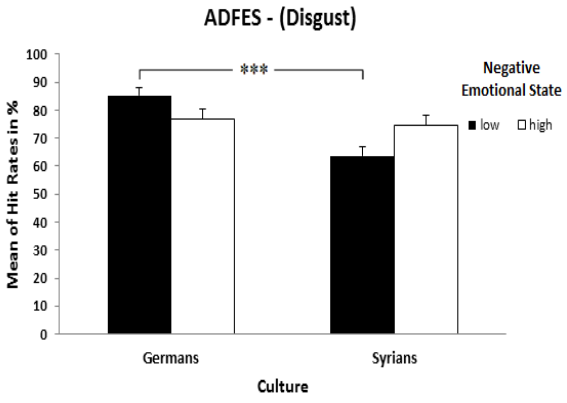

Figure 3.1.17. The interaction effects of culture and negative mood state on recognition accuracy of the dynamic disgusted faces. Error bars denote standard error of the mean (SEM). ***P<.001

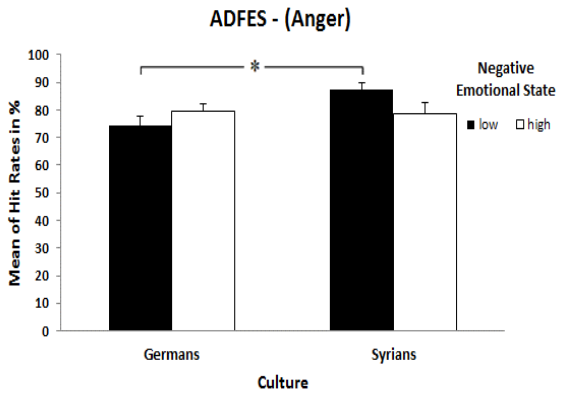

Figure 3.1.18. The interaction effects of culture and negative mood state on recognition accuracy of the dynamic angry faces. Error bars denote standard error of the mean (SEM). *P< .05

- Interaction effects of culture and current positive mood on recognizing the dynamic facial expressions:

A multivariate analysis of covariance with $CULTURE_{(Germans/Syrians)}$ and CURRENT $POSITIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed **a significant effect of the interaction** between culture and current positive mood on recognition accuracy of happiness ($F_{1,131}$= 6.715, p=0.01, η^2=.049).

According to post hoc analysis with a Bonferroni-Holm correction, Syrians who reported high positive mood state showed a tendency to recognize happy faces better than Syrians with low positive mood state (t=2,154, p<.05; P_{bon_holm}>.05). However, there was no significant differences between the two German groups (see Figure 3.1.19.).

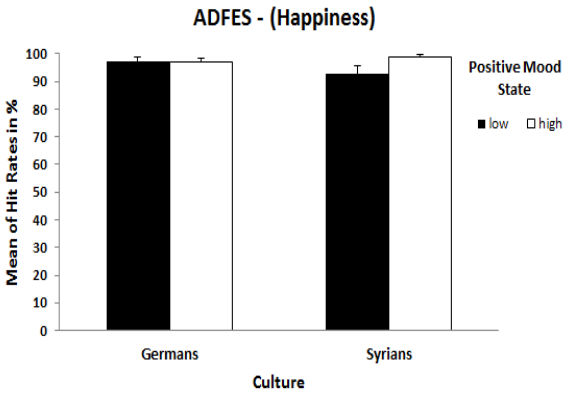

Figure 3.1.19. The interaction effects of culture and positive mood state on recognition accuracy of the dynamic happy faces. Error bars denote standard error of the mean (SEM).

Table 3.1.14.The interaction effects of culture and current positive mood on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.003	.954	1.131	.000
Hit rates of Fear	.000	.988	1.131	.000
Hit rates of Neutral	1.806	.181	1.131	.014
Hit rates of Disgust	2.170	.143	1.131	.016
Hit rates of Sadness	.025	.876	1.131	.000
Hit rates of Happy	6.715	.011	1.131	.049
Hit rates of Anger	.012	.913	1.131	.000
Hit rates of Surprise	.123	.727	1.131	.001
Hit rates of Contempt	.488	.486	1.131	.004

3.1.1.10. Interaction effects of depression and social support on recognition accuracy of facial expressions

The study examined here whether the interaction between depression and social support could influence the recognition of dynamic expressions, considering that increasing social support is associated with reduced risk of depression (Pearson's correlation coefficient between social support and depression: r= -.413, p<.001).

A multivariate analysis of covariance (MANCOVA) with DEPRESSION$_{(low/high)}$ and SOCIAL SUPPORT $_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that no significant effect of the interaction between social support and depression was found on the recognition accuracy of facial expressions in general; it was the same thing for every single expression independently (see Table 3.1.15.).

Table 3.1.15. The interaction effects of depression and social support on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.140	.709	1.131	.001
Hit rates of Fear	.074	.785	1.131	.001
Hit rates of Neutral	.872	.352	1.131	.007
Hit rates of Disgust	2.391	.124	1.131	.018
Hit rates of Sadness	.021	.886	1.131	.000
Hit rates of Happy	.039	.844	1.131	.000
Hit rates of Anger	.747	.389	1.131	.006
Hit rates of Surprise	.005	.944	1.131	.000
Hit rates of Contempt	1.445	.231	1.131	.011

However, MANOVA showed **a significant mean effect** of social support on the recognition accuracy of facial expressions in general ($F_{1,134}$= 10.685, p=.001, η^2=.074), and especially for neutral ($F_{1,134}$=4.438, p<.05, η^2=.032) and contempt ($F_{1,134}$= 4.230, p<.05, η^2=.031). The

participants who had high social support recognized the facial expressions in general **significantly** better than the participants with low social support. They also especially recognized the neutral and contemptuous expressions (see Fig. 3.1.20.).

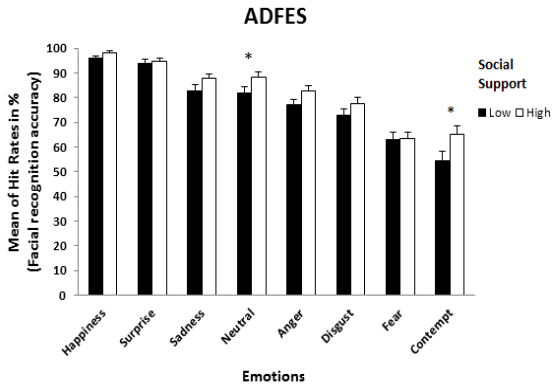

Figure 3.1.20. The main effects of social support on recognition accuracy of the dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05

3.1.1.11. Interaction effects of culture and social support on recognition accuracy of facial expressions

Cultural differences in social support were statistically significant between Germans and Syrians. Results have confirmed that Germans received more social support than Syrians (t=3,512, p=.001). Therefore it was necessary to identify the impact of sociocultural interaction on recognizing the dynamic expressions.

A multivariate analysis of covariance (MANCOVA) with $\text{CULTURE}_{(\text{Germans/Syrians})}$ and $\text{SOCIAL SUPPORT}_{(\text{low/high})}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and HIT RATES of the facial expressions in general, and particularly for every single expression as dependent variables revealed that **a significant effect of the interaction between** culture and social support on the recognition accuracy of happiness ($F_{1,131}$= 4.747, p<.05, η^2=.035) (see Table 3.1.16.).

According to post hoc analysis for independent samples with a Bonferroni-Holm correction, Syrians who had high social support recognized happy faces better than syrians with low

social support (t=2.928, p<.01; P_{bon_holm}<.05) and showed a tendency to recognize happy faces better than Germans with high social support (t=2.464, p<.05; P_{bon_holm}>.05), however there was no significant differences between the two German groups (with low and high social support) (t=.651, p=.517) (see Fig. 3.1.21.).

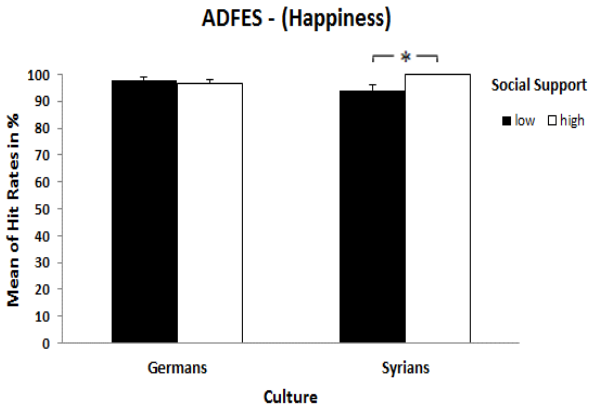

Figure 3.1.21. The interaction effects of culture and social support on recognition accuracy of the dynamic happy faces. Error bars denote standard error of the mean (SEM). *P<.05

In addition to the foregoing results in section 3.1.1.11., if the social support was considered as covariate factor in MANCOVA, **the significant main effect** of the cultural differences on recognition accuracy of facial expressions remains as it was (see section 3.1.1.2.); and furthermore the effectiveness of these cultural differences seems more significant for angry faces ($F_{1,132}$= 7.858, p<.01, η^2= .056).

Table 3.1.16. The interaction effects of culture and social support on recognition accuracy of the dynamic facial expressions

Variable	*F*	*p*	*df*	η^2
Hit rates in general	.001	.973	1.131	.000
Hit rates of Fear	.037	.847	1.131	.000
Hit rates of Neutral	.286	.593	1.131	.002
Hit rates of Disgust	1.870	.174	1.131	.014
Hit rates of Sadness	.479	.490	1.131	.004
Hit rates of Happy	4.747	.031	1.131	.035
Hit rates of Anger	.352	.554	1.131	.003
Hit rates of Surprise	.003	.958	1.131	.000
Hit rates of Contempt	.433	.512	1.131	.003

3.1.2. THE MULTIFACTORIAL EFFECTS ON ASSESSING THE EMOTIONAL INTENSITY OF ADFES

This section provides a detailed overview about the impact of the previous factors mentioned in section (3.1.1.) on assessment of emotional intensity of dynamic faces.

Participants rated the intensity of each expression on a scale from 0 (too little) to 10 (very intense) using a continuous scroll bar.

3.1.2.1. Effects of depression on assessing the emotional intensity

To study the effect of depression on assessing the emotional intensity of dynamic faces, a univariate analysis of covariance (ANCOVA) was computed with DEPRESSION$_{(low/high)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE INTENSITY for every single expression as dependent variable.

The ANCOVA revealed no significant main effects of depression on assessing the emotional intensity for dynamic faces (see Table 3.1.17.). Although the experimental sample compared to the control sample showed higher assessment of emotional intensity for fearful, disgusted, happy, angry, surprised, and contemptuous expressions, but not for neutral and sadness (see figure 3.1.22.).

Table 3.1.17. The main effects of depression on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	2.177	.142	1.133	.016
Intensity of Neutral	3.418	.067	1.133	.025
Intensity of Disgust	.949	.332	1.131	.007
Intensity of Sadness	.320	.572	1.133	.002
Intensity of Happiness	.601	.440	1.133	.004
Intensity of Anger	2.988	.086	1.133	.022
Intensity of Surprise	1.187	.278	1.133	.009
Intensity of Contempt	.876	.351	1.122	.007

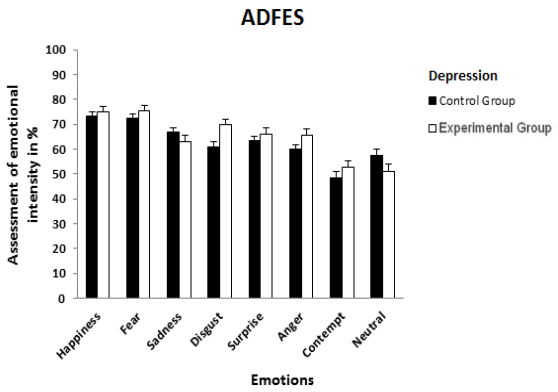

Figure 3.1.22. The main effects of depression on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

3.1.2.2. Effects of culture on assessing the emotional intensity

To determine the effect of culture on assessing the emotional intensity of dynamic faces a univariate analysis of covariance (ANCOVA) was computed with CULTURE$_{(Germans/Syrians)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE INTENSITY for every single expression as dependent variable.

Findings showed no significant effects of culture on assessing the emotional intensity for fearful, sad, happy, angry and neutral expressions (see Table 3.1.18.), even though Germans had lower assessment of emotional intensity for the eight emotions and **significantly** for surprise ($F_{1,133}$= 4.460, p<.05, η^2=.032), disgust ($F_{1,131}$= 8.032, p<.01, η^2=.058) and contempt ($F_{1,122}$= 4.130, p<.05, η^2=.033) than Syrians (see figure 3.1.23.).

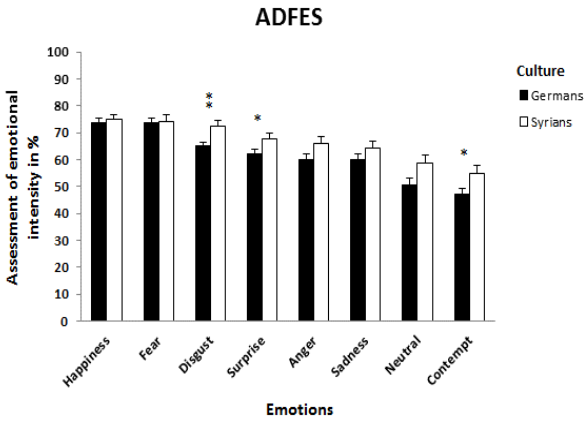

Figure 3.1.23. The main effects of culture on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P<.05, **P<.01.

Table 3.1.18. The main effects of culture on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.390	.533	1.133	.003
Intensity of Neutral	3.660	.058	1.133	.027
Intensity of Disgust	8.032	.005	1.131	.058
Intensity of Sadness	1.523	.219	1.133	.011
Intensity of Happiness	.250	.618	1.133	.002
Intensity of Anger	3.234	.074	1.133	.024
Intensity of Surprise	4.460	.037	1.133	.032
Intensity of Contempt	4.130	.044	1.122	.033

3.1.2.3. Interaction effects of depression and culture on assessing the emotional intensity

ANCOVA was computed here with two between-subject factors ($DEPRESSION_{(low/high)}$ and $CULTURE_{(Germans/Syrians)}$) and THE EDUCATIONAL YEARS as usual as covariate factor, in addition to ASSESSING THE INTENSITY for every single expression as dependent variable. Results indicated just **a significant effect of the interaction** between depression and culture on assessing the emotional intensity for fearful expressions ($F_{1,131}$= 5.183, p<.05, η^2=.038).

According to post hoc analysis for independent samples with a Bonferroni-Holm correction, Syrians in the control group showed a tendency to lower assessment than Syrians in the experimental group (t=2,042, p<.05; P_{bon_holm}>.05), while there were no significant differences between Germans in the control and experimental samples (see Figure 3.1.24.).

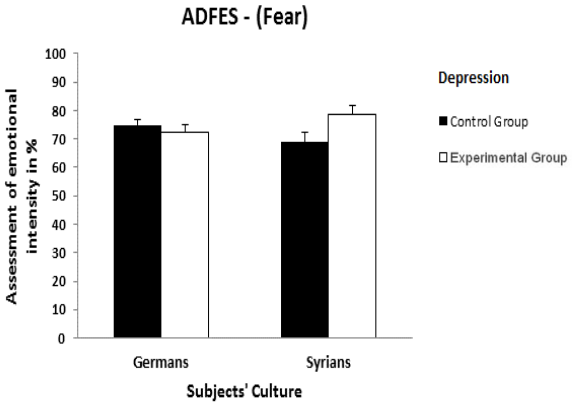

Figure 3.1.24. The interaction effects of depression and culture on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

Table 3.1.19. The interaction effects of depression and culture on assessing the emotional intensity of dynamic facial expressions.

Variable	F	p	df	η^2
Intensity of Fear	5.183	.024	1.131	.038
Intensity of Neutral	.175	.677	1.131	.001
Intensity of Disgust	.372	.543	1.129	.003
Intensity of Sadness	.672	.414	1.131	.005
Intensity of Happiness	.150	.700	1.131	.001
Intensity of Anger	.423	.516	1.131	.003
Intensity of Surprise	.774	.381	1.131	.006
Intensity of Contempt	.524	.471	1.120	.004

3.1.2.4. Interaction effects of subjects' culture and stimuli' culture on assessing the emotional intensity

In order to understand the impact of nationality and ethnicity of stimuli on assessing the emotional intensity, **a repeated-measures analysis of covariate (RM-ANCOVA)** was computed with ETHNICITY OF STIMULI (North-European/Medteranian) as within-subject factor, NATIONALITY (Syrians/ Germans) as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY for every single expression as dependent variable.

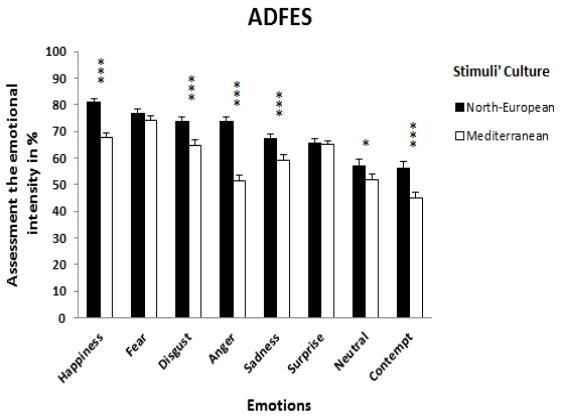

Figure 3.1.25. The main effects of stimuli' culture on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05, ***P<.001.

According to section 3.1.2.2., no significant main effect for NATIONALITY(Germans/Syrians) was found on assessing the emotional intensity of fear. RM-ANOVA also revealed no significant main effect for ETHNICITY OF STIMULI (North-European/Mediterranean) ($F_{1,98}$= 3.205, p=.076, η^2=.032) (see Figure 3.1.25). But RM-ANCOVA indicated a **significant effect of the interaction between** the two factors on assessing the fear-intensity ($F_{1,96}$= 6.976, p=.01, η^2=.068), where Syrians showed **significantly** higher assessment for fear-intensity in North-European faces than in Mediterranean faces (t=2.812, p<.01; P_{bon_holm}<.05) (Figure 3.1.26.).

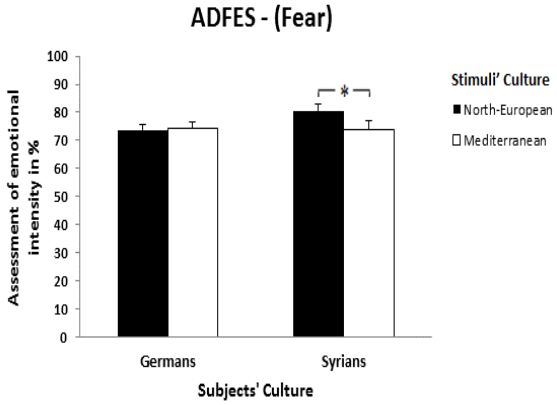

Figure 3.1.26. The interaction effects between subjects' culture and stimuli' culture on assessing the emotional intensity of dynamic fearful faces. Error bars denote standard error of the mean (SEM). *P<.05

According to section 3.1.2.2., **a significant main effect** for NATIONALITY(Germans/Syrians) was found on assessing the disgust- and contempt-intensities. Results of RM-ANOVA also indicated **a significant main effect** of ETHNICITY OF STIMULI (North-European/Mediterranean) (Disgust:$F_{1,116}$= 26.794, p<.001, η^2=.185; Contempt: $F_{1,79}$= 22.222, p<.001, η^2=.220), where the participants had **significantly** higher assessment for disgust- and contempt-intensities in North-European faces than in Mediterranean faces (see Figure 3.1.25.). However, RM-

ANCOVA showed no significant effect of the interaction between nationality and ethnicity of stimuli on the assessment of disgust- and contempt-intensities (Disgust:$F_{1,116}$= 2.268, p<.135, η^2=.019; Contempt: $F_{1,77}$= 2.134, p=.147, η^2=.027).

According to section 3.1.2.2., **a significant main effect** for NATIONALITY$_{(Germans/Syrians)}$ on assessing the surprise-intensity. RM-ANOVA showed no significant main effect for ETHNICITY OF STIMULI $_{(North\text{-}European/Mediterranean)}$ ($F_{1,134}$=.151, p=.698, η^2=.001), and RM-ANCOVA also showed no significant effect of the interaction between nationality and ethnicity of stimuli on assessing the surprise-intensity ($F_{1,132}$= 2.134, p=.146, η^2=.016).

Concerning the other expressions (Neutral, Happiness, Sadness, and Anger), section 3.1.2.2. indicated no significant main effect of NATIONALITY$_{(Germans/Syrians)}$ and ANCOVA showed no significant effect of the interaction with ethnicity of stimuli on assessing the emotional intensity for the four expressions.

However, RM-ANOVA reported a **significant main effect** of ETHNICITY OF STIMULI $_{(North\text{-}European/Mediterranean)}$ on assessing the emotional intensity for these expressions (see table 3.1.20.).

Table 3.1.20. The main effects of stimuli' culture on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	3.205	.076	1.98	.032
Intensity of Neutral	5.295	.023	1.126	.040
Intensity of Disgust	26.794	.000	1.118	.185
Intensity of Sadness	24.729	.000	1.128	.162
Intensity of Happiness	73.765	.000	1.134	.355
Intensity of Anger	118.656	.000	1.114	.510
Intensity of Surprise	.151	.698	1.134	.001
Intensity of Contempt	22.222	.000	1.79	.220

3.1.2.5. Interaction effects of depression and emotion regulation on assessing the emotional intensity

- Interaction effects of depression and cognitive reappraisal on assessing the emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction between depression and cognitive reappraisal on assessment of emotional intensity for the eight expressions (see Table 3.1.21.).

Table 3.1.21. The interaction effects of depression and cognitive reappraisal on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.005	.945	1.131	.000
Intensity of Neutral	.134	.715	1.131	.001
Intensity of Disgust	.284	.595	1.129	.002
Intensity of Sadness	.076	.784	1.131	.001
Intensity of Happiness	.655	.420	1.131	.005
Intensity of Anger	.009	.925	1.131	.000
Intensity of Surprise	.113	.737	1.131	.001
Intensity of Contempt	.086	.770	1.120	.001

ANOVA reported no significant mean effects of cognitive reappraisal on assessing the emotional intensity for neutral, fear, disgust, anger and surprise, however there were significant mean effects for sadness, happiness and contempt (see table 3.1.22. and Figure 3.1.27.), where participants with high cognitive reappraisal had **significantly** higher assessment of emotional intensity for sadness, happiness and contempt than the participants with low cognitive reappraisal.

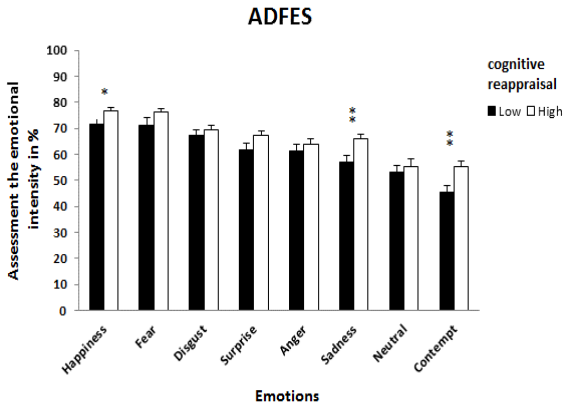

Figure 3.1.27. The main effects of cognitive reappraisal on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM).* P=.05, **P< .01.

Table 3.1.22. The main effects of cognitive reappraisal on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	2.843	.094	1.134	.021
Intensity of Neutral	.358	.551	1.134	.003
Intensity of Disgust	.547	.461	1.134	.004
Intensity of Sadness	7.292	.008	1.134	.052
Intensity of Happiness	3.829	.052	1.134	.028
Intensity of Anger	.630	.429	1.134	.005
Intensity of Surprise	3.141	.079	1.134	.023
Intensity of Contempt	7.554	.007	1.123	.058

- Interaction effects of depression and expressive suppression on assessing the emotional intensity for dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and EXPRESSIVE SUPPRESSION$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction between depression and expressive suppression on assessing the emotional intensity for the eight expressions (see Table 3.1.23.).

Table 3.1.23. The interaction effects of depression and expressive suppression on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	1.365	.245	1.131	.010
Intensity of Neutral	.366	.546	1.131	.003
Intensity of Disgust	2.187	.142	1.129	.017
Intensity of Sadness	1.916	.169	1.131	.014
Intensity of Happiness	.010	.921	1.131	.000
Intensity of Anger	.002	.969	1.131	.000
Intensity of Surprise	.039	.845	1.131	.000
Intensity of Contempt	1.656	.201	1.120	.014

ANOVA showed just **a significant mean effect** of expressive suppression on assessing the emotional intensity for sadness ($F_{1,131}$= 6.478, p<.05, η^2=.046). Participants with low expressive suppression, had **significantly** higher assessment of emotional intensity for sadness than the participants with high expressive suppression.

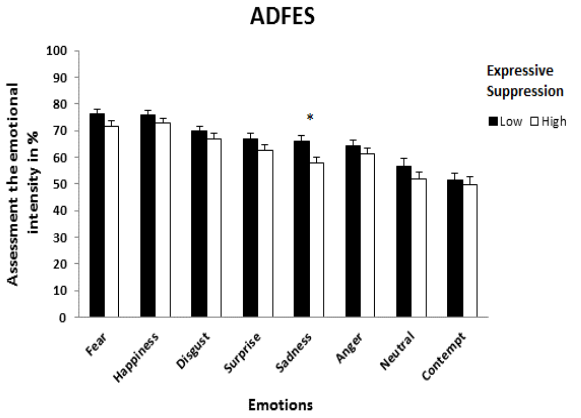

Figure 3.1.28. The main effects of expressive suppression on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM).* P<.05.

3.1.2.6. Interaction effects of culture and emotion regulation on assessing the emotional intensity

- Interaction effects of culture and cognitive reappraisal on assessing the emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with CULTURE$_{(Germans/Syrians)}$ and

COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed **a significant effect of the interaction** between culture and cognitive reappraisal on assessing the emotional intensity for happiness, anger, surprise, and contempt (see tables 3.1.24.).

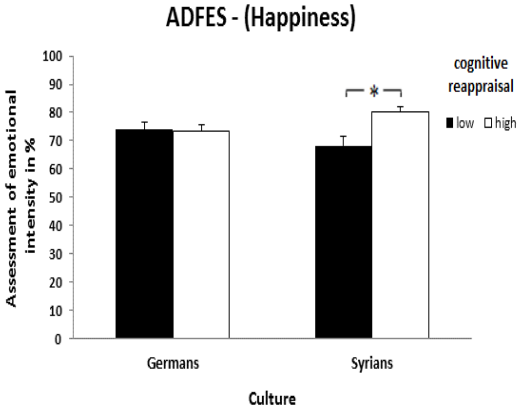

Figure 3.1.29. The interaction effects between culture and cognitive reappraisal on assessing the emotional intensity of dynamic happy faces. Error bars denote standard error of the mean (SEM). *P< .05

Table 3.1.24. The interaction effects of culture and cognitive reappraisal on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	1.852	.176	1.131	.014
Intensity of Neutral	1.522	.220	1.131	.011
Intensity of Disgust	1.637	.203	1.129	.013
Intensity of Sadness	1.512	.221	1.131	.011
Intensity of Happiness	5.826	.017	1.131	.043
Intensity of Anger	4.606	.034	1.131	.034
Intensity of Surprise	4.277	.041	1.131	.032
Intensity of Contempt	5.504	.021	1.120	.044

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed that Syrians with high cognitive reappraisal, had **significantly** higher assessment of emotional intensity for happiness (t=3.073, p<.01; P_{bon_holm}<.05), surprise (t=2.711, p=.01; P_{bon_holm}<.05), and contempt (t= 3.729, p<.001; P_{bon_holm}<.01), than Syrians with low cognitive reappraisal. They had also higher assessment of emotional intensity for Anger (t= 3.049, p<.01; P_{bon_holm}<.05), surprise (t= 3.350, p=.001;

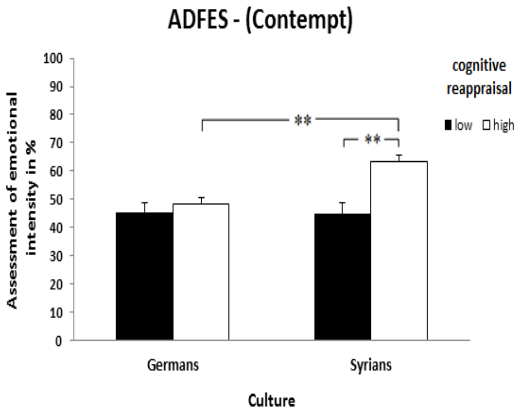

Figure 3.1.30. The interaction effects between culture and cognitive reappraisal on assessing the emotional intensity of dynamic contemptuous faces. Error bars denote standard error of the mean (SEM). **P<.01

P_{bon_holm}<.01) and contempt (t= 3.332, p=.001; P_{bon_holm}<.01) than Germans with high cognitive reappraisal.

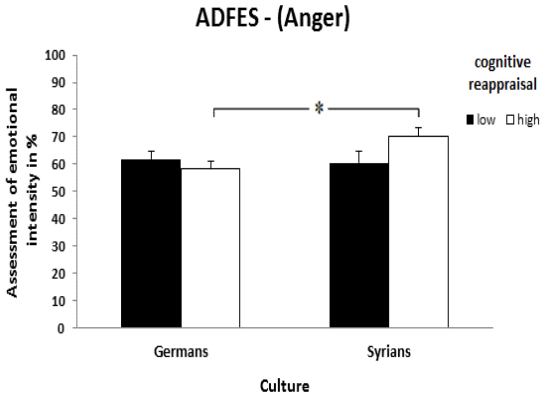

Figure 3.1.31. The interaction effects between culture and cognitive reappraisal on assessing the emotional intensity of dynamic angry faces. Error bars denote standard error of the mean (SEM). *P<.05

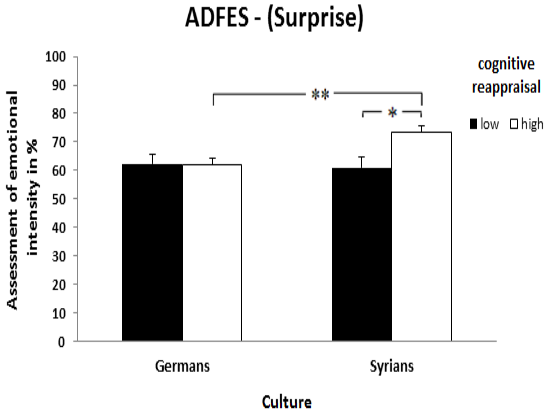

Figure 3.1.32. The interaction effects between culture and cognitive reappraisal on assessing the emotional intensity of dynamic surprised faces. Error bars denote standard error of the mean (SEM). **P≤ .01, ***P≤ .001

Concerning the neutral, fearful, sad, and disgusted expressions, no significant effect of the interaction between culture and cognitive reappraisal was found on assessment of emotional intensity in these expressions (see tables 3.1.24.).

- Interaction effects of culture and expressive suppression on assessment of emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with CULTURE$_{(Germans/Syrians)}$ and EXPRESSIVE SUPPRESSION$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction between depression and expressive suppression on assessing the emotional intensity for the eight expressions (see Table 3.1.25.).

Table 3.1.25. The interaction effects of culture and expressive suppression on assessing the emotional intensity of the dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.760	.385	1.131	.006
Intensity of Neutral	2.160	.144	1.131	.016
Intensity of Disgust	.852	.358	1.129	.007
Intensity of Sadness	.068	.794	1.131	.001
Intensity of Happiness	.353	.554	1.131	.003
Intensity of Anger	.783	.378	1.131	.006
Intensity of Surprise	1.322	.252	1.131	.010
Intensity of Contempt	1.578	.211	1.120	.013

3.1.2.7. Interaction effects of depression and current mood state on assessing the emotional intensity

- Interaction effects of depression and current negative mood on assessing the emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and CURRENT NEGATIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed **a significant effect of the interaction** between depression and current negative mood on assessing the emotional intensity for surprised faces ($F_{1,131}$= 4.002, p<.05, η^2=.030), where the experimental group participants with low current negative mood, had **significantly** higher assessment of emotional intensity for surprise than the control group participants (t= 2.899, p<.01; P_{bon_holm}<.05).

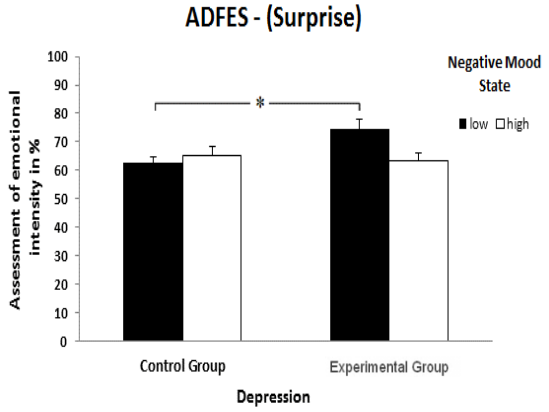

Figure 3.1.33. The interaction effects between depression and current negative mood on assessing the emotional intensity of dynamic surprised faces. Error bars denote standard error of the mean (SEM). *P< .05.

ANOVA showed **a significant mean effect** of current negative mood on assessing the emotional intensity for the neutral faces ($F_{1,134}$=4.945, p<.05, η^2=.036), where the participants with low current negative mood had **significantly** higher assessment of emotional intensity for neutral than the participants with high current negative mood (see figure 3.1.34.).

Table 3.1.26. The interaction effects of depression and current negative mood on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	2.265	.135	1.131	.017
Intensity of Neutral	.140	.709	1.131	.001
Intensity of Disgust	2.814	.096	1.129	.021
Intensity of Sadness	.635	.427	1.131	.005
Intensity of Happiness	1.961	.164	1.131	.015
Intensity of Anger	2.004	.159	1.131	.015
Intensity of Surprise	4.002	.048	1.131	.030
Intensity of Contempt	3.376	.069	1.120	.027

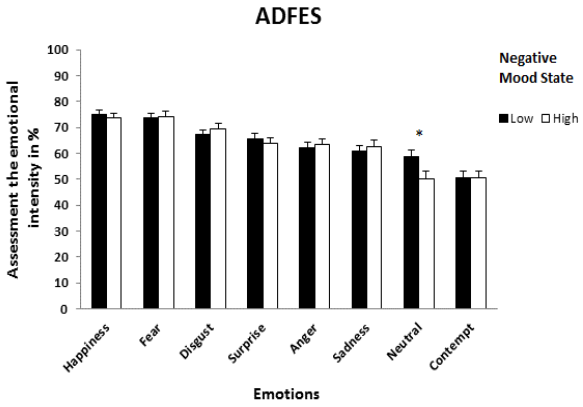

Figure 3.1.34. The main effects of negative mood state on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05.

- Interaction effects of depression and current positive mood on assessment of emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and CURRENT POSITIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction with depression was found on assessing the emotional intensity of the eight expressions. (see table 3.1.27.).

According to ANOVA, **a significant main effect** of current positive mood was found on assessing the emotional intensity for neutral faces ($F_{1,134}$= 6.909, p< 0.05, η^2=0.049), where the participants with high current positive mood had **significantly** higher assessment of emotional intensity for neutral faces than the participants with low current positive mood (see figure 3.1.35.).

Table 3.1.27. The interaction effects of depression and current positive mood on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.826	.365	1.131	.006
Intensity of Neutral	.346	.557	1.131	.003
Intensity of Disgust	.459	.499	1.129	.004
Intensity of Sadness	.158	.692	1.131	.001
Intensity of Happiness	.029	.865	1.131	.000
Intensity of Anger	.061	.805	1.131	.000
Intensity of Surprise	2.657	.106	1.131	.020
Intensity of Contempt	1.027	.313	1.120	.008

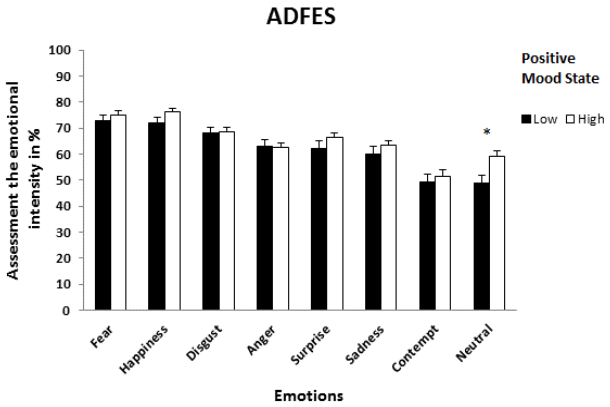

Figure 3.1.35. The main effects of positive mood state on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P<.05.

3.1.2.8. Interaction effects of culture and current mood state on assessing the emotional intensity

- Interaction effects of culture and current negative mood on assessing the emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $CURRENT\ NEGATIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction

between culture and current negative mood on assessing the intensity of the eight expressions (see table 3.1.28.).

Table 3.1.28. The interaction effects of culture and current negative mood on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	1.256	.264	1.131	.009
Intensity of Neutral	1.788	.183	1.131	.013
Intensity of Disgust	.236	.628	1.129	.002
Intensity of Sadness	.072	.788	1.131	.001
Intensity of Happiness	.232	.631	1.131	.002
Intensity of Anger	.082	.776	1.131	.001
Intensity of Surprise	.885	.349	1.131	.007
Intensity of Contempt	.183	.669	1.120	.002

- Interaction effects of culture and current positive mood on assessing the emotional intensity for the dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $\text{CULTURE}_{(\text{Germans/Syrians})}$ and $\text{CURRENT POSITIVE MOOD}_{(\text{low/high})}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction between culture and current positive mood on assessing the intensity of the eight expressions (see table 3.1.29.).

Table 3.1.29. The interaction effects of culture and current positive mood on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.219	.641	1.131	.002
Intensity of Neutral	.004	.950	1.131	.000
Intensity of Disgust	.070	.791	1.129	.001
Intensity of Sadness	.063	.802	1.131	.000
Intensity of Happiness	.973	.326	1.131	.007
Intensity of Anger	.620	.433	1.131	.005
Intensity of Surprise	.692	.407	1.131	.005
Intensity of Contempt	1.997	.160	1.120	.016

3.1.2.9. Interaction effects of depression and social support on assessing the emotional intensity

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and SOCIAL SUPPORT$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed **a significant effect of the interaction** between depression and social support on assessing the emotional intensity for surprise ($F_{1,131}$= 3.892, p=.05, η^2=.029), where the experimental group participants with high social support had **significantly** higher assessment of emotional intensity for surprise than the control group participants with high social support (t=2.939, p<.01; P_{bon_holm}<.05).

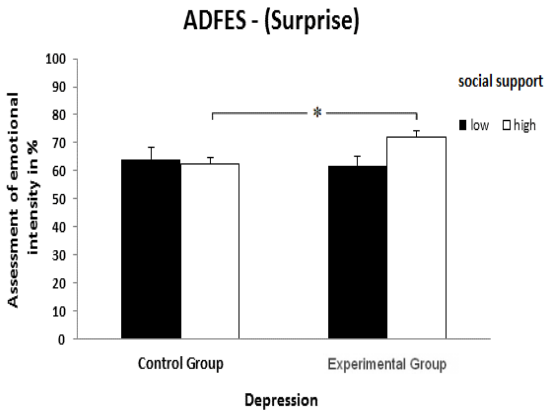

Figure 3.1.36. The interaction effects between depression and social support on assessing the emotional intensity of dynamic surprised faces. Error bars denote standard error of the mean (SEM). * P<.05

Table 3.1.30. The interaction effects of depression and social support on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	.243	.623	1.131	.002
Intensity of Neutral	.035	.851	1.131	.000
Intensity of Disgust	.116	.734	1.129	.001
Intensity of Sadness	.268	.606	1.131	.002
Intensity of Happiness	.552	.459	1.131	.004
Intensity of Anger	1.259	.264	1.131	.010
Intensity of Surprise	3.892	.051	1.131	.029
Intensity of Contempt	2.089	.151	1.120	.017

ANOVA indicated that no significant main effect of social support on assessing the emotional intensity of the eight expressions (see figure 3.1.37.).

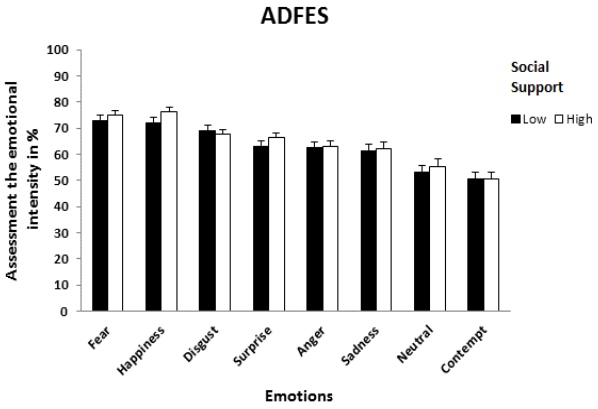

Figure 3.1.37. The main effects of social support on assessing the emotional intensity of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

3.1.2.10. Interaction effects of culture and social support on assessing the emotional intensity

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $SOCIAL\ SUPPORT_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSMENT OF EMOTIONAL INTENSITY of every single expression as dependent variable revealed no significant effect of the interaction between culture and social support on assessing the emotional intensity of the eight expressions (see table 3.1.31).

Table 3.1.31. The interaction effects of culture and social support on assessing the emotional intensity of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Intensity of Fear	3,925	,050	1.131	,029
Intensity of Neutral	1,121	,292	1.131	,008
Intensity of Disgust	2,007	,159	1.129	,015
Intensity of Sadness	2,596	,110	1.131	,019
Intensity of Happiness	,402	,527	1.131	,003
Intensity of Anger	1,508	,222	1.131	,011
Intensity of Surprise	,769	,382	1.131	,006
Intensity of Contempt	,526	,470	1.120	,004

3.1.3. THE MULTIFACTORIAL EFFECTS ON ASSESSING THE EMOTIONAL EFFECT OF ADFES

This section contains a detailed informations about impact of the previous factors mentioned in section (3.1.1.) on assessing the emotional effect of the dynamic face.

Participants rated the emotional effect of each observed expression on a scale from 0 (too little) to 10 (very much).using a continuous scroll bar.

3.1.3.1. Effects of depression on assessing the emotional effect

In order to measure the impact of depression on assessing the emotional effect of dynamic faces, a univariate analysis of covariance (ANCOVA) was computed with $DEPRESSION_{(low/high)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT for every single expression as dependent variable.

The ANCOVA revealed no significant main effect of depression on assessing the emotional effect of dynamic faces (see Table 3.1.32.).

Table 3.1.32. The main effects of depression on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	1.395	.240	1.133	.010
Emotional effect of Neutral	.535	.466	1.133	.004
Emotional effect of Disgust	1.069	.303	1.131	.008
Emotional effect of Sadness	.507	.478	1.133	.004
Emotional effect of Happiness	.035	.851	1.133	.000
Emotional effect of Anger	.346	.557	1.133	.003
Emotional effect of Surprise	.888	.348	1.132	.007
Emotional effect of Contempt	2.401	.124	1.121	.019

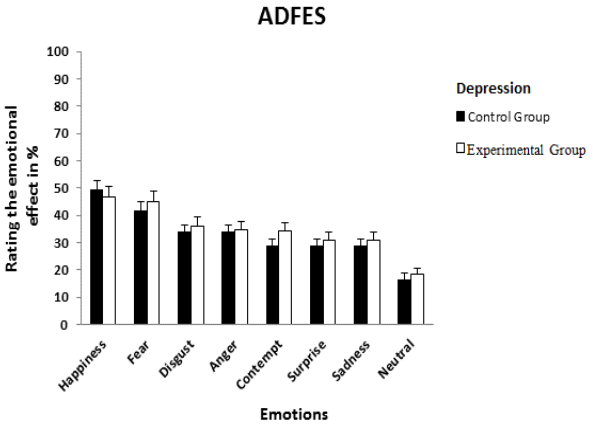

Figure 3.1.38: The main effects of depression on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

3.1.3.2. Effects of culture on assessing the emotional effect

To investigate the effect of culture on assessing the emotional effect of dynamic faces, a univariate analysis of covariance (ANCOVA) was computed with $CULTURE_{(Germans/Syrians)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT for every single expression as dependent variable.

Findings of the analysis showed no significant main effect of culture was found on assessing the emotional effect of neutral expressions ($F_{1,133}$= 2.006, p=.159, η^2=.015). However, Germans compared to Syrians had **significantly** higher assessing levels for fear, disguset, sadness, happiness, anger, surprise, and contempt (see Table 3.1.33.).

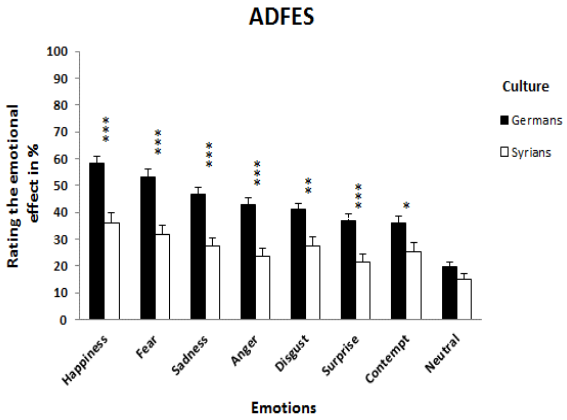

Figure 3.1.39. The main effects of culture on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM). * P<.05, ** P<.01, ***P< .001

Table 3.1.33. The main effects of culture on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	20.358	.000	1.133	.133
Emotional effect of Neutral	2.006	.159	1.133	.015
Emotional effect of Disgust	7.834	.006	1.131	.056
Emotional effect of Sadness	19.772	.000	1.133	.129
Emotional effect of Happiness	21.567	.000	1.133	.140
Emotional effect of Anger	21.520	.000	1.133	.139
Emotional effect of Surprise	14.854	.000	1.133	.100
Emotional effect of Contempt	6.297	.013	1.122	.049

3.1.3.3. Interaction effects of depression and culture on assessing the emotional effect

ANCOVA was computed here with two between-subject factors ($DEPRESSION_{(low/high)}$ and $CULTURE_{(Germans/Syrians)}$) and THE EDUCATIONAL YEARS as usual as covariate factor, in addition to ASSESSING THE EMOTIONAL EFFECT for every single expression as

dependent variable. The finding indicated **a significant effect of the interaction between** depression and culture on assessing the emotional effect of sad expressions ($F_{1,131}$= 4.817, p<.05, η^2=.035). Where Syrians compared to Germans in the control group had lower assessing of emotional effect of sadness (t=5.530, p<.001; P_{bon_holm}<.001), but there was no significant differences between Syrians and Germans in the experimental group.

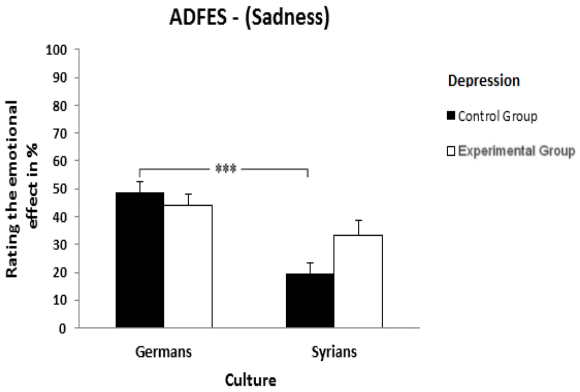

Figure 3.1.40. The interaction effects between culture and depression on assessing the emotional effect of dynamic sad faces. Error bars denote standard error of the mean (SEM). ***P<.001

Table 3.1.34.The interaction effects of culture and depression on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	3.689	.057	1.131	.027
Emotional effect of Neutral	1.670	.199	1.131	.013
Emotional effect of Disgust	1.918	.168	1.129	.015
Emotional effect of Sadness	4.817	.030	1.131	.035
Emotional effect of Happiness	1.257	.264	1.131	.010
Emotional effect of Anger	1.240	.267	1.131	.009
Emotional effect of surprise	2.058	.154	1.131	.015
Emotional effect of Contempt	.639	.426	1.120	.005

3.1.3.4. Interaction effects of subjects' culture and stimuli' culture on assessing the emotional effect

In order to discover the effects of subjects' nationality and ethnicity of stimuli on assessing the emotional effect, **a repeated-measures analysis of covariate (RM-ANCOVA)** was computed with ETHNICITY OF STIMULI$_{(North\text{-}European/Medteranian)}$ as within-subject factor, NATIONALITY $_{(Syrians/\ Germans)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT for every single expressions as dependent variable. According to section 3.1.3.2., **a significant main effect** of NATIONALITY$_{(Germans/Syrians)}$ was found on assessing the emotional effect for fear, disgust, sadness, happiness, anger, surprise, and contempt.

RM-ANOVA indicated **a significant main effect** of STIMULI' CULTURE on assessing the emotional effect for neutral, disgust, sadness, happiness, anger, and contempt, where the participants had **significantly** higher assessing of emotional effect for disgust, sadness, happiness, anger, and contempt in North-European faces than in Mediterranean faces. But, on the contrary, for neutral faces (see Figure 3.1.41., and Table 3.1.35.).

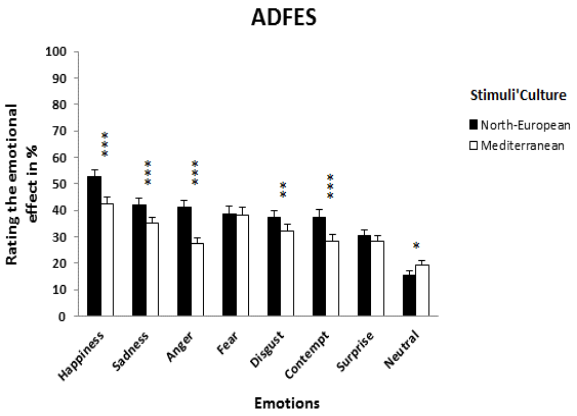

Figure 3.1. 41. The main effects of stimuli' culture on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM). * P<.05, ** P<.01, ***P<.001

Table 3.1.35. The main effects of stimuli'culture on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.057	.811	1. 98	.001
Emotional effect of Neutral	6.038	.015	1.127	.045
Emotional effect of Disgust	6.990	.009	1.116	.056
Emotional effect of Sadness	16.601	.000	1.128	.115
Emotional effect of Happiness	40.023	.000	1.134	.230
Emotional effect of Anger	41.063	.000	1.114	.265
Emotional effect of Surprise	2.237	.137	1.134	.016
Emotional effect of Contempt	14.727	.000	1.79	.157

The RM-ANCOVA revealed no significant effect of the interaction between subjects'culture and stimuli'culture on assessing the emotional effect for the eight dynamic expressions (see Table 3.1.36).

Table 3.1.36. The interaction effects of subjects'culture and stimuli'culture on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.561	.456	1.96	.006
Emotional effect of Neutral	.214	.645	1.125	.002
Emotional effect of Disgust	.383	.537	1.116	.003
Emotional effect of Sadness	.043	.837	1.126	.000
Emotional effect of Happiness	.882	.350	1.132	.007
Emotional effect of Anger	2.346	.128	1.112	.021
Emotional effect of Surprise	.053	.818	1.132	.000
Emotional effect of Contempt	.345	.559	1.77	.004

3.1.3.5. Interaction effects of depression and emotion regulation on assessing the emotional effect

- Interaction effects of depression and cognitive reappraisal on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between depression and cognitive reappraisal on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.37).

Table 3.1.37. The interaction effects of depression and cognitive reappraisal on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	1.272	.261	1.131	.010
Emotional effect of Neutral	.246	.620	1.131	.002
Emotional effect of Disgust	1.624	.205	1.129	.012
Emotional effect of Sadness	.931	.336	1.131	.007
Emotional effect of Happiness	2.162	.144	1.131	.016
Emotional effect of Anger	2.210	.140	1.131	.017
Emotional effect of Surprise	.288	.593	1.131	.002
Emotional effect of Contempt	1.393	.240	1.120	.011

ANOVA showed significant mean effects of cognitive reappraisal on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.38.). Where the participants with high cognitive reappraisal had **significantly** higher assessing of emotional effect of the eight dynamic expressions than the participants with low cognitive reappraisal (see figures 3.1.42.).

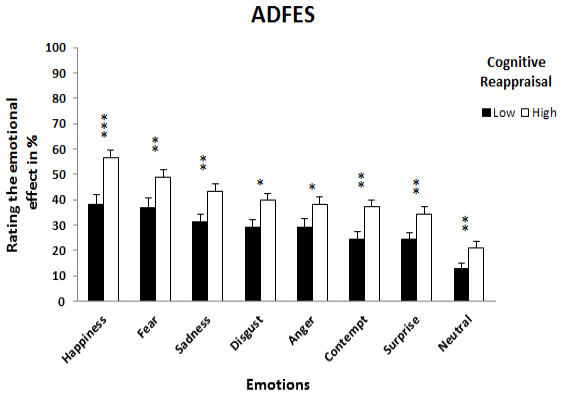

Figure 3.1.42. The main effects of cognitive reappraisal on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05, **P≤ .01, *** P< .001.

Table 3.1.38. The main effects of cognitive reappraisal on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	6.626	.011	1.134	.047
Emotional effect of Neutral	6.638	.011	1.134	.047
Emotional effect of Disgust	6.295	.013	1.132	.046
Emotional effect of Sadness	7.723	.006	1.134	.054
Emotional effect of Happiness	15.699	.000	1.134	.105
Emotional effect of Anger	4.657	.033	1.134	.034
Emotional effect of Surprise	6.728	.011	1.131	.048
Emotional effect of Contempt	9.966	.002	1.120	.075

- Interaction effects of depression and expressive suppression on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $DEPRESSION_{(low/high)}$ and $EXPRESSIVE\ SUPPRESSION_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between depression and expressive suppression on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.39.).

Table 3.1.39. The interaction effects of depression and expressive suppression on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.292	.590	1.131	.002
Emotional effect of Neutral	.059	.808	1.131	.000
Emotional effect of Disgust	.273	.602	1.129	.002
Emotional effect of Sadness	.089	.766	1.131	.001
Emotional effect of Happiness	.036	.850	1.131	.000
Emotional effect of Anger	.178	.674	1.131	.001
Emotional effect of Surprise	.212	.646	1.131	.002
Emotional effect of Contempt	.199	.656	1.120	.002

ANOVA reported no significant mean effects of expressive suppression on assessing the emotional effect of the eight dynamic expressions (see figure 3.1.43.).

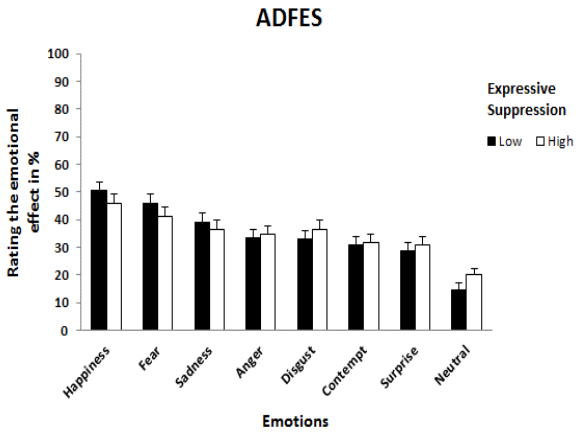

Figure 3.1.43. The main effects of expressive suppression on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

3.1.3.6. Interaction effects of culture and emotion regulation on assessing the emotional effect

- Interaction effects of culture and cognitive reappraisal on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $COGNITIVE\ REAPPRAISAL_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed no significant effect of the interaction between culture and cognitive reappraisal on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.40.).

Table 3.1.40. The interaction effects of depression and expressive suppression on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.089	.766	1.131	.001
Emotional effect of Neutral	2.201	.140	1.131	.017
Emotional effect of Disgust	.466	.496	1.129	.004
Emotional effect of Sadness	.469	.495	1.131	.004
Emotional effect of Happiness	1.477	.226	1.131	.011
Emotional effect of Anger	2.189	.141	1.131	.016
Emotional effect of Surprise	1.228	.270	1.131	.009
Emotional effect of Contempt	.903	.344	1.120	.007

- Interaction effects of culture and expressive suppression on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $EXPRESSIVE\ SUPPRESSION_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that **a significant effect of the interaction** between culture and expressive suppression on assessing the emotional effect of disgast (see Table 3.1.41.). Germans with low expressive suppression had **significantly** higher assessing of emotional effect of disgast than Syrians with low expressive suppression (t= -3.770, p<0.001; P_{bon_holm}<.001), in spite of that there were no differences between Germans and Syrians with high expressive suppression.

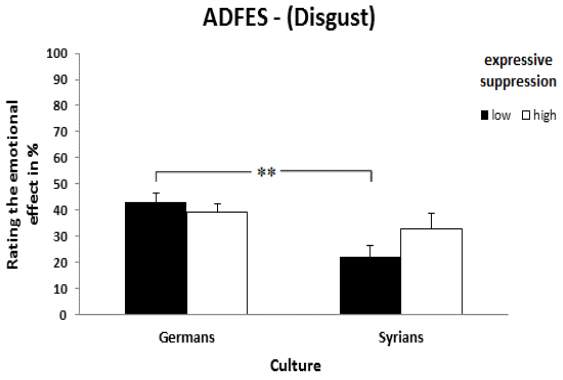

Figure 3.1.44: The Interaction effects between culture and expressive suppression on assessing the emotional effect of dynamic disgusted faces. Error bars denote standard error of the mean (SEM) *** P≤ .001.

Table 3.1.41. The interaction effects of culture and expressive suppression on assessing the emotional effect of dynamic facial expressions.

Variable	F	p	df	η^2
Emotional effect of Fear	1.296	.257	1.131	.010
Emotional effect of Neutral	.143	.706	1.131	.001
Emotional effect of Disgust	3.796	.054	1.129	.029
Emotional effect of Sadness	1.249	.266	1.131	.009
Emotional effect of Happiness	.009	.926	1.131	.000
Emotional effect of Anger	1.972	.163	1.131	.015
Emotional effect of Surprise	1.263	.263	1.131	.010
Emotional effect of Contempt	1.964	.164	1.120	.016

3.1.3.7. Interaction effects of depression and current mood state on assessing the emotional effect

- Interaction effects of depression and current negative mood on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and CURRENT NEGATIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction with depression was found on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.42.).

Table 3.1.42. The interaction effects of depression and current negative mood on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.285	.595	1.131	.002
Emotional effect of Neutral	2.227	.138	1.131	.017
Emotional effect of Disgust	3.731	.056	1.129	.028
Emotional effect of Sadness	.386	.535	1.131	.003
Emotional effect of Happiness	.911	.342	1.131	.007
Emotional effect of Anger	.332	.565	1.131	.003
Emotional effect of Surprise	.500	.481	1.131	.004
Emotional effect of Contempt	.109	.742	1.120	.001

ANOVA showed no significant mean effects of negative mood state on assessing the emotional effect of the eight dynamic expressions (see figure 3.1.45.).

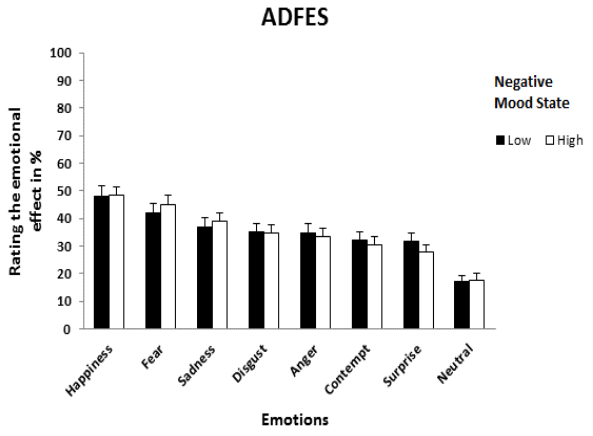

Figure 3.1.45. The main effects of current negative mood on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM).

- Interaction effects of depression and current positive mood on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and CURRENT POSITIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between depression and current positive mood on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.43).

Table 3.1.43. The interaction effects of depression and current positive mood on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.052	.820	1.131	.000
Emotional effect of Neutral	.234	.629	1.131	.002
Emotional effect of Disgust	.313	.577	1.129	.002
Emotional effect of Sadness	.880	.350	1.131	.007
Emotional effect of Happiness	.930	.337	1.131	.007
Emotional effect of Anger	3.114	.080	1.131	.023
Emotional effect of Surprise	.744	.390	1.131	.006
Emotional effect of Contempt	2.314	.131	1.120	.019

According to ANOVA, no significant mean effects of positive mood state on assessing the emotional effect of neutral, fear, disgust, anger, surprise, and contempt. However, **a significant mean effect** of positive mood state was found on assessing the emotional effect of sadness and happiness (see Table 3.1.44). The participants with high positive mood state had **significantly** higher assessing of emotional effect of sadness and happiness than the participants with low positive mood state (see figures 3.1.46).

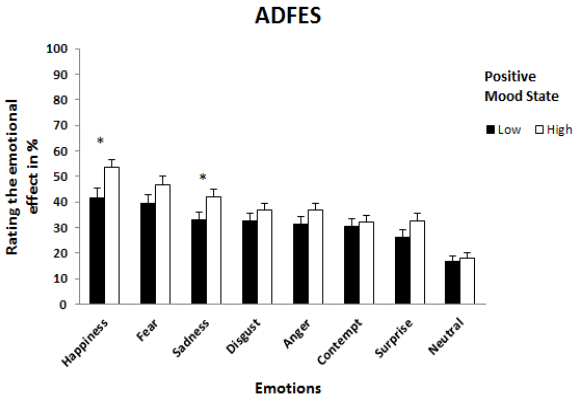

Figure 3.1.46: The main effects of current positive mood on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P<.05

Table 3.1.44. The main effects of positive mood state on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	2.356	.127	1.134	.017
Emotional effect of Neutral	.257	.613	1.134	.002
Emotional effect of Disgust	1.007	.317	1.132	.008
Emotional effect of Sadness	4.248	.041	1.134	.031
Emotional effect of Happiness	6.294	.013	1.134	.045
Emotional effect of Anger	1.764	.186	1.134	.013
Emotional effect of Surprise	2.591	.110	1.134	.019
Emotional effect of Contempt	.170	.680	1.123	.001

3.1.3.8. Interaction effects of culture and current mood state on assessing the emotional effect

- Interaction effects of culture and current negative mood on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with CULTURE$_{(Germans/Syrians)}$ and CURRENT NEGATIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that just **a significant effect of the interaction** between culture and current negative mood on assessing the emotional effect of fear ($F_{1,131}$= 4.149, p<.05, η^2=.031) and surprise ($F_{1,131}$= 3.762, p=.05, η^2=.028).

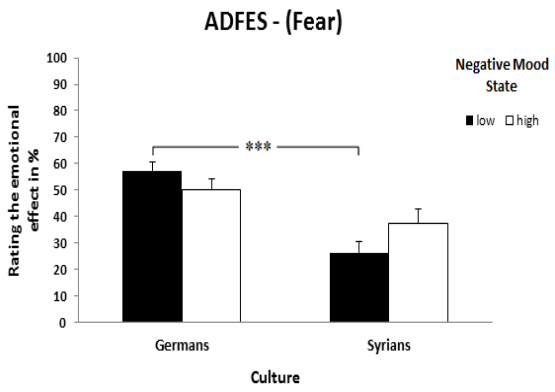

Figure 3.1.47: The interaction effects between culture and current negative mood on assessing the emotional effect of dynamic fearful faces. Error bars denote standard error of the mean (SEM). *** P<.001.

Post hoc analysis for independent samples with a Bonferroni-Holm correction showed that Germans with low negative mood state had **significantly** higher assessing of emotional effect of fear (t=5.244, p<.001; P_{bon_holm}<.001) and surprise (t=4.174, P<.001; P_{bon_holm}<.001) than

Syrians with low negative mood state. But there war no differences between Germans and Syrians with high negative mood state. Germans with low negative mood state also showed **significantly** higher assessing of emotional effect of surprise than Germans with high negative mood state (t= 2,518, p<.05; P_{bon_holm}<.05).

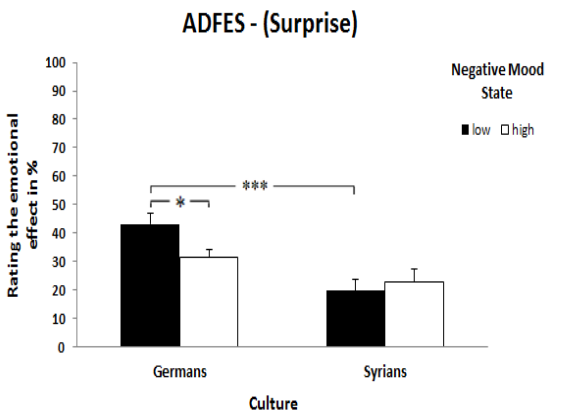

Figure 3.1. 48. The interaction effects between culture and current negative mood on assessing the emotional effect of dynamic surprised faces. Error bars denote standard error of the mean (SEM). * P<.05, *** P<.001

Table 3.1.45. The interaction effects of culture and current negative mood on assessing the emotional effect of dynamic facial expressions.

Variable	F	p	df	η^2
Emotional effect of Fear	4.149	.044	1.131	.031
Emotional effect of Neutral	2.702	.103	1.131	.020
Emotional effect of Disgust	.943	.333	1.129	.007
Emotional effect of Sadness	2.697	.103	1.131	.020
Emotional effect of Happiness	2.310	.131	1.131	.017
Emotional effect of Anger	1.325	.252	1.131	.010
Emotional effect of Surprise	3.762	.055	1.131	.028
Emotional effect of Contempt	.213	.646	1.120	.002

- Interaction effects of culture and current positive mood on assessing the emotional effect of dynamic facial expressions:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $CURRENT\ POSITIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between culture and current positive mood on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.46.).

Table 3.1.46. The interaction effects of culture and current positive mood on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.499	.481	1.131	.004
Emotional effect of Neutral	2.864	.093	1.131	.021
Emotional effect of Disgust	.288	.593	1.129	.002
Emotional effect of Sadness	.536	.466	1.131	.004
Emotional effect of Happiness	1.692	.196	1.131	.013
Emotional effect of Anger	.167	.684	1.131	.001
Emotional effect of Surprise	.575	.450	1.131	.004
Emotional effect of Contempt	1.443	.232	1.120	.012

3.1.3.9. Interaction effects of depression and social support on assessing the emotional effect

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and SOCIAL SUPPORT$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between depression and social support on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.47.).

Table 3.1.47. The interaction effects of depression and social support on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.172	.679	1.131	.001
Emotional effect of Neutral	.871	.352	1.131	.007
Emotional effect of Disgust	.107	.745	1.129	.001
Emotional effect of Sadness	.025	.876	1.131	.000
Emotional effect of Happiness	.539	.464	1.131	.004
Emotional effect of Anger	.275	.601	1.131	.002
Emotional effect of Surprise	.001	.973	1.131	.000
Emotional effect of Contempt	.132	.717	1.120	.001

ANOVA showed significant mean effects of social support on assessing the emotional effect of fear, sadness, happiness, and contempt (see Table 3.1.48.). The participants who reported high social support had **significantly** higher assessing of emotional effect of happiness, sadness , fear, and contempt than the participants with low social support.

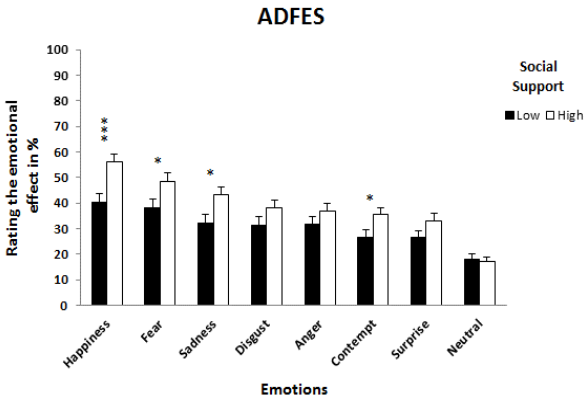

Figure 3.1.49: The main effects of social support on assessing the emotional effect of dynamic facial expressions. Error bars denote standard error of the mean (SEM). *P< .05, ***P=.001

Table 3.2.48. The main effects of social support on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	4.693	.032	1.134	.034
Emotional effect of Neutral	.082	.775	1.134	.001
Emotional effect of Disgust	2.382	.125	1.132	.018
Emotional effect of Sadness	6.113	.015	1.134	.044
Emotional effect of Happiness	11.480	.001	1.134	.079
Emotional effect of Anger	1.405	.238	1.134	.010
Emotional effect of Surprise	2.866	.093	1.134	.021
Emotional effect of Contempt	4.742	.031	1.123	.037

3.1.3.10. Interaction effects of culture and social support on assessing the emotional effect

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $SOCIAL\ SUPPORT_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and ASSESSING THE EMOTIONAL EFFECT of every single expression as dependent variable revealed that no significant effect of the interaction between culture and social support on assessing the emotional effect of the eight dynamic expressions (see Table 3.1.49.).

Table 3.1.49. The interaction effects of culture and social support on assessing the emotional effect of dynamic facial expressions.

Variable	*F*	*p*	*df*	η^2
Emotional effect of Fear	.778	.379	1.131	.006
Emotional effect of Neutral	.267	.606	1.131	.002
Emotional effect of Disgust	.200	.655	1.129	.002
Emotional effect of Sadness	1.049	.308	1.131	.008
Emotional effect of Happiness	.371	.544	1.131	.003
Emotional effect of Anger	.848	.359	1.131	.006
Emotional effect of Surprise	.456	.501	1.131	.003
Emotional effect of Contempt	.411	.523	1.120	.003

3.2. THE FACE IN THE CROWD TASK

As already described in chapter 2, FCT contains 252 sets of static faces. Each set consists of 6 faces; either all of them are neutral, or 5 of them have neutral expressions and just one has another expression (i.e., happiness, sadness or anger).

This chapter will cover the effects of depression, culture, the interaction between them, and the interactions with other factors (i.e., gender, emotional regulation, current mood state, social support) on detecting and recognizing the different emotional expression in a crowd of neutral faces, as well as on the participants' reaction time.

3.2.1. Effects of depression on recognizing different emotional expression

To measure the effects of depression on recognizing the different emotional expression in a crowd of 6 static faces including 5 homogeneous neutral faces, a Univariate Analysis of Covariance (ANCOVA) was computed with $DEPRESSION_{(low/high)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and the following variables as dependent variables:

- DETECTION RATES of the discrepant expression in general, and for every single expression (i.e., happiness, sadness or anger).
- RECOGNITION RATES of the discrepant expression in general, and for every single expression (i.e., happiness, sadness or anger).
- REACTION TIME FOR DETECTING the discrepant expression in general, and for every single expression.
- REACTION TIME FOR RECOGNIZING the discrepant expression in general, and for every single expression.

The ANCOVA revealed that:

A significant main effect of depression on general detection of discrepant expressions and especially the sad faces, where the experimental sample had **significantly** lower hit rates in

general detection of the different facial expression than the control sample ($F_{1,132}$=4.600, p<.05, η^2=.034). Concerning the specific expressions, the experimental sample showed lower hit rates in detection of anger and happiness, and **significantly** lower hit rates in detection of sadness than the control sample (see tabe 3.2.1. and figure 3.2.1.).

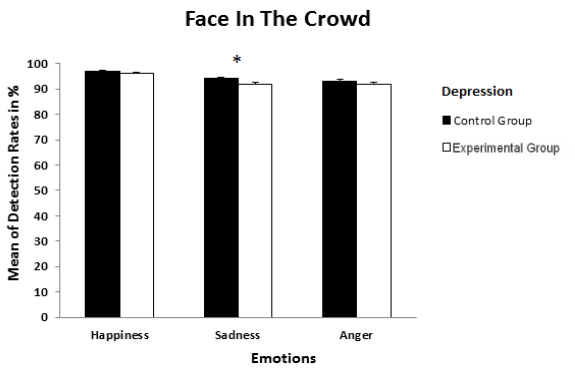

Figure 3.2.1. The main effects of depression on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P< .05

Table 3.2.1. The main effects of depression on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	4.600	.034	1.132	.034
Detection rate of Anger	2.037	.156	1.132	.015
Detection rate of Happiness	1.623	.205	1.132	.012
Detection rate of Sadness	4.524	.035	1.132	.033

The experimental sample showed slower reaction time for general detection of different expression, and for each single specific expression than the control sample, although these RT-differences between the two samples were not significant (see Table 3.2.2. and figure 3.2.2.).

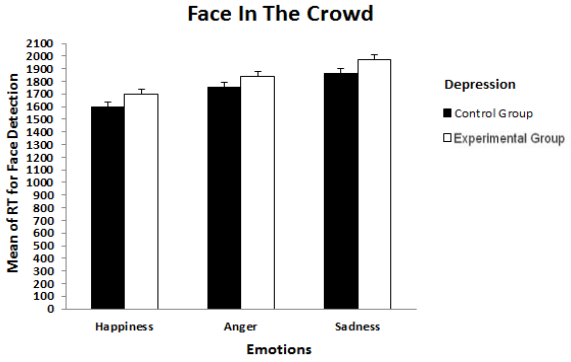

Figure 3.2.2. The main effects of depression on the reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.2. The main effects of depression on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	2.283	.133	1.132	.017
RT of detection rate of Anger	1.644	.202	1.132	.012
RT of detection rate of Happiness	2.310	.131	1.132	.017
RT of detection rate of Sadness	2.372	.126	1.132	.018

A significant main effect of depression on general recognition of emotional type of different facial expression, where the experimental sample had **significantly** lower hit rates in recognition of different facial expression in general than the control sample ($F_{1,132}$=4.613, p<.05, η^2=.034). Concerning the specific emotions, the experimental sample showed lower hit rates in recognition of anger, happiness, and sadness than the control sample, although these differences between the two samples were not significant (see Table 3.2.3. and figure 3.2.3.).

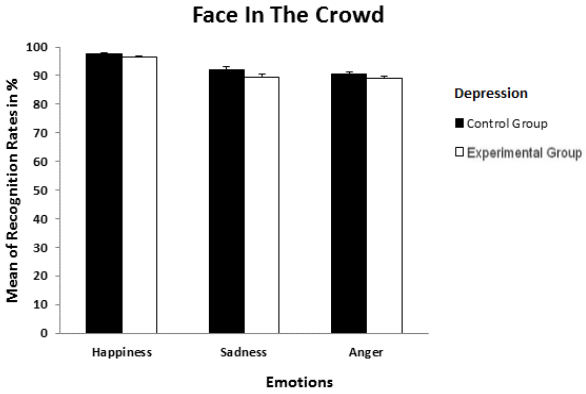

Figure 3. 2.3. The main effects of depression on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.3. The main effects of depression on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	4.613	.034	1.132	.034
Recognition rate of Anger	1.936	.166	1.132	.014
Recognition rate of Happiness	2.822	.095	1.132	.021
Recognition rate of Sadness	3.179	.077	1.132	.024

The experimental sample showed slower reaction time for general recognition of emotional type of different expression, and for each single specific emotion than the control sample, although these RT-differences between the two samples were not significant (see Table 3.2.4. and figure 3.2.4.)

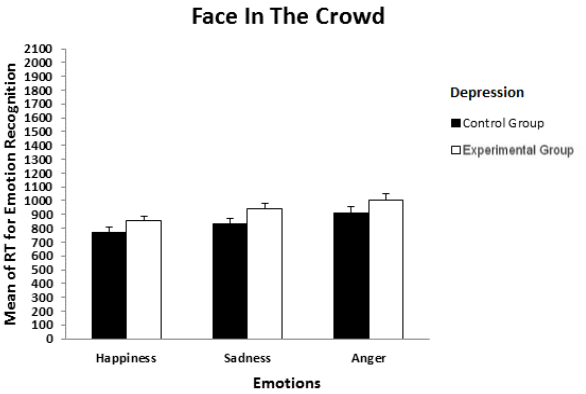

Figure 3.2.4: The main effects of depression on the reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.4. The main effects of depression on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	2.624	.108	1.132	.019
RT of Recognition rate of Anger	1.942	.166	1.132	.014
RT of recognition rate of Happiness	1.879	.173	1.132	.014
RT of Recognition rate of Sadness	3.202	.076	1.132	.024

3.2.2. Effects of culture on recognizing the different emotional expression

To investigate the effects of culture on recognizing the different emotional expression in a crowd of 6 static faces including 5 homogeneous neutral faces, a Univariate Analysis of Covariance (ANCOVA) was computed with $CULTURE_{(Germans/Syrians)}$ as between-subject factor and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

The ANCOVA revealed that:

A significant main effect of cultur on general detection of discrepant expressions and especially on detection of happy and sad faces, where Germans had **significantly** higher hit rates in general detection of the different expression than Syrians ($F_{1,132}$=6.281, p<.05, η^2=.045). Concerning the specific expressions, Germans showed higher hit rates in detecting each one of the three expressions, and **significantly** higher hit rates in detecting happiness and sadness than the Syrians (see tabe 3.2.5. and figure 3.2.5.).

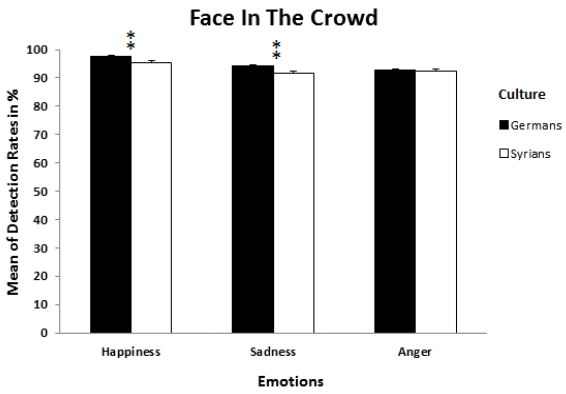

Figure 3.2.5. The main effects of culture on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). **P<.01.

Table 3.2.5. The main effects of culture on detecting the discrepant expression in the crowd

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	6.281	.013	1.132	.045
Detection rate of Anger	.148	.701	1.132	.001
Detection rate of Happiness	8.175	.005	1.132	.058
Detection rate of Sadness	7.922	.006	1.132	.057

Germans showed faster reaction time for general detection of different expression, and for detecting each single specific expression than Syrians, although these RT-differences between the two cultures were not significant (see Table 3.2.6. and figure 3.2.6.).

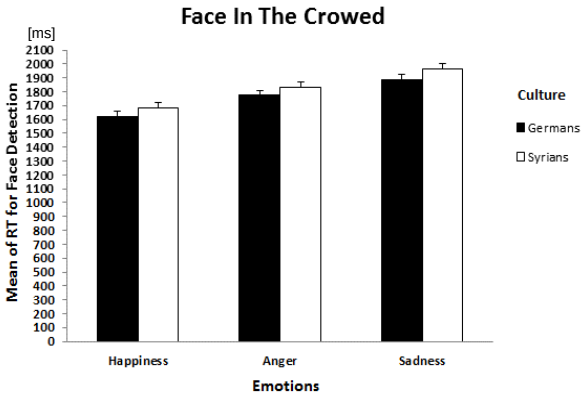

Figure 3.2.6. The main effects of culture on the reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.6. The main effects of culture on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.675	.413	1.132	.005
RT of detection rate of Anger	.415	.520	1.132	.003
RT of detection rate of Happiness	.491	.485	1.132	.004
RT of detection rate of Sadness	.925	.338	1.132	.007

No significant main effect of culture on general recognition of emotional type of different facial expression ($F_{1,132}$=2.573, p=.111, η^2=.019). Concerning the specific emotions, Germans showed higher hit rates in recognizing each one of the three emotions, and **significantly** higher hit rates in recognizing happiness than Syrians(see Table 3.2.7.and figure 3.2.7.).

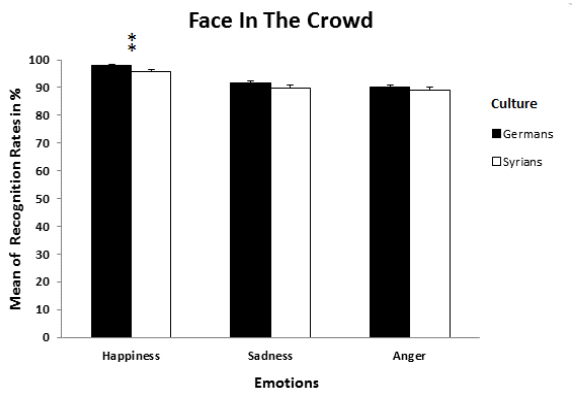

Figure 3.2.7. The main effects of culture on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). **P<.01

Table 3.2.7. The main effects of culture on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	2.573	.111	1.132	.019
Recognition rate of Anger	.703	.403	1.132	.005
Recognition rate of Happiness	10.842	.001	1.132	.076
Recognition rate of Sadness	.826	.365	1.132	.006

Germans showed faster reaction time for general recognition of emotional type of different facial expression, and for recognizing each single specific emotion than Syrians, although these RT-differences between the two cultures were not significant (see Table 3.2.8. and figure 3.2.8.).

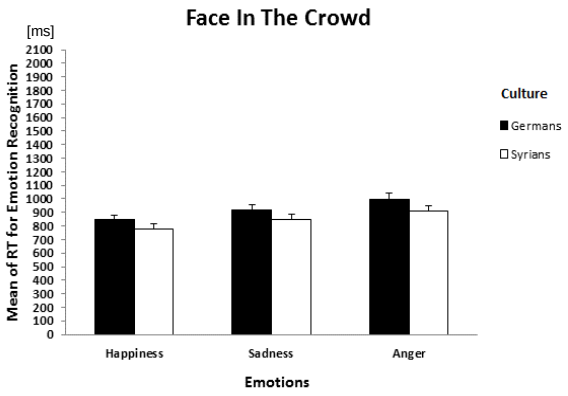

Figure 3.2.8. The main effects of culture on the reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.8. The main effects of culture on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	2.588	.110	1.132	.019
RT of Recognition rate of Anger	2.934	.089	1.132	.022
RT of recognition rate of Happiness	2.169	.143	1.132	.016
RT of Recognition rate of Sadness	1.991	.161	1.132	.015

3.2.3. Interaction effects of depression and culture on recognizing the different emotional expression

In an attempt to find out the interaction effects of depression and culture on recognizing the different emotional expression in a crowd of 6 static faces including 5 neutral faces, ANCOVA was computed here with two between-subject factors ($DEPRESSION_{(low/high)}$ and $CULTURE_{(Germans/Syrians)}$) and THE EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

The ANCOVA revealed **a significant effect of the interaction** between depression and culture on general detection of discrepant expressions ($F_{1,130}$=6.435, p<.05, η^2=.047) and

especially on detection of sad faces, where Germans in the experimental group had **significantly** higher hit rates in general detection of different facial expression than Syrians in the same group (t=3.084, p<.01; P_{bon_holm}<.05), while there were no significant differences between Germans and Syrians in the control sample (see Figure 3.2.9.).

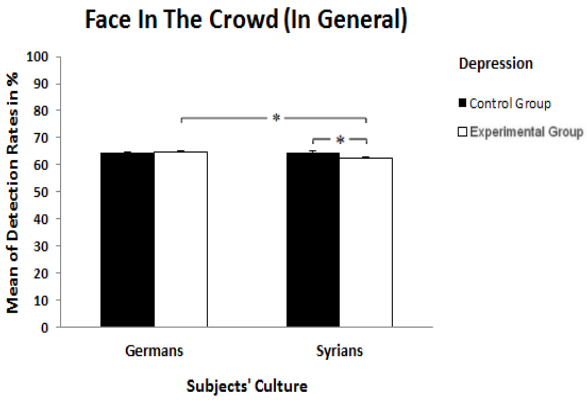

Figure 3.2.9. The interaction effects of depression and culture on general detection of discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

Syrians in the control group showed **significantly** higher hit rates in general detection of different facial expression than Syrians in the experimental group (t=2.665, p=.01; P_{bon_holm}<.05), while there were no significant differences between Germans in the control and experimental groups.

Table 3.2.9. The interaction effects of depression and culture on detecting the discrepant expression in the crowd.

Variable	F	p	df	η^2
Detection rate of target in general	6.435	.012	1.130	.047
Detection rate of Anger	3.829	.053	1.130	.029
Detection rate of Happiness	.126	.723	1.130	.001
Detection rate of Sadness	8.507	.004	1.130	.061

Concerning the specific expressions, Germans in the experimental group had **significantly** higher hit rates in detection of sad faces than Syrians in the same group (t=.674, p<.001; P_{bon_holm}<.01),

while there were no significant differences between Germans and Syrians in the control group. Syrians in the control group showed **significantly** higher hit rates in detection of sad faces than Syrians in the experimental group (t= 3.143, p<.01; P_{bon_holm}<.01), while there were no significant differences between Germans in the control and experimental groups. (see Figure 3.3.10.).

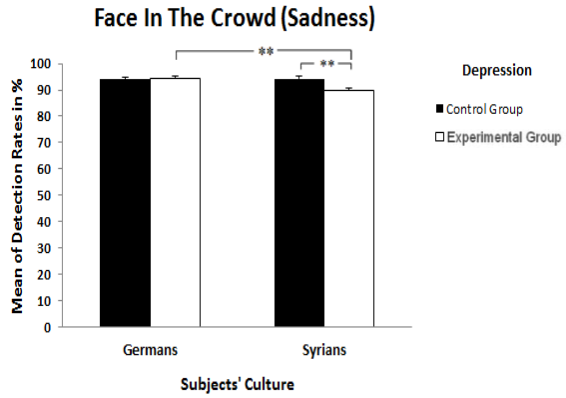

Figure 3.2.10. The interaction effects of depression and culture on detecting the sad face in the crowd. Error bars denote standard error of the mean (SEM). **P<.01

Syrians in the control group showed a tendency to increase the hit rates during detection of angry faces than Syrians in the experimental group (t= 2.349, p<0.05; P_{bon_holm}>.05).

Table 3.2.10. showed no significant effect of the interaction between depression and culture on reaction time of detecting discrepant expression in the crowd.

Table 3.2.10. The interaction effects of depression and culture on reaction time for detecting the discrepant expression in the crowd.

Variable	F	p	df	η^2
RT of detection rate of target in general	1.605	.207	1.130	.012
RT of detection rate of Anger	1.619	.205	1.130	.012
RT of detection rate of Happiness	2.303	.132	1.130	.017
RT of detection rate of Sadness	1.132	.289	1.130	.009

A significant effect of the interaction between depression and culture on general recognition of emotional type of different facial expression ($F_{1,130}$=10.984, p=.001, η^2=.078) and especially on recognizing the angry and sad faces, where Germans in the experimental group had **significantly** higher hit rates in recognizing the emotional type of the different facial expression in general than Syrians in the same group (t= -2,939, p<.01; P_{bon_holm}<.05), while there were no significant differences between Germans and Syrians in the control group (see Figure 3.2.11.).

Syrians in the control group showed **significantly** higher hit rates in recognizing the emotional type of the different facial expression in general than Syrians in the experimental group (t= 3.809, p<.001; P_{bon_holm}<.01), while there were no significant differences between Germans in the control and experimental groups.

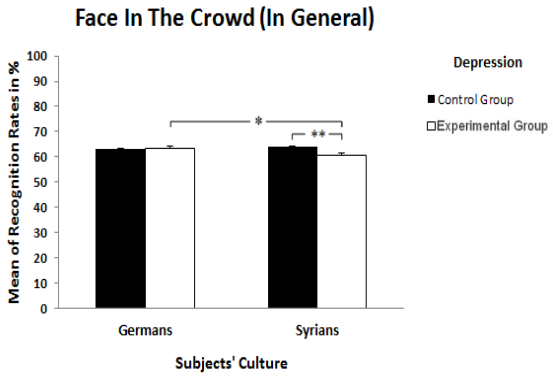

Figure 3.2.11. The interaction effects of depression and culture on general recognition of discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05, **P<.01

Table 3.2.11. The interaction effects of depression and culture on recognizing the discrepant expression in the crowd.

Variable	F	p	df	η^2
Recognition rate of target type in general	10.984	.001	1.130	.078
Recognition rate of Anger	7.714	.006	1.130	.056
Recognition rate of Happiness	.160	.690	1.130	.001
Recognition rate of Sadness	8.541	.004	1.130	.062

Concerning the specific emotions Syrians in the control group showed **significantly** higher hit rates in recognizing angry and sad faces than Syrians in the experimental group (Anger: t= 2.912, p<.01; P_{bon_holm}<.05; Sadness: t= 3.780, p<.001; P_{bon_holm}<.01), while there were no significant differences between Germans in the control and experimental groups. (see Figures 3.2.12. and 3.2.13.).

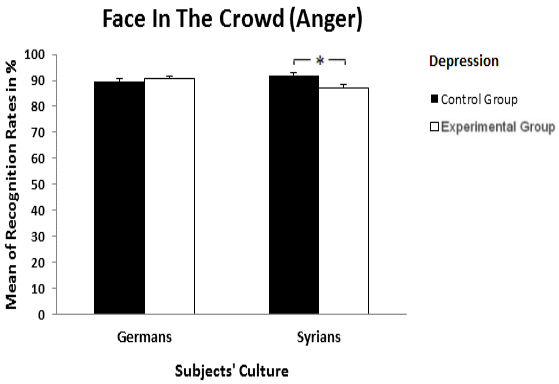

Figure 3.2.12. The interaction effects of depression and culture on recognizing the angry face in the crowd. Error bars denote standard error of the mean (SEM). *P< .05

Germans in the experimental group showed a tendency to to recognize angry and sad faces better than Syrians in the same group (Anger: t=2.314, p<0.05; P_{bon_holm}>.05; Sadness: t=2.367, p<.05; P_{bon_holm}>.05), while they had in the control group a tendency to recognize sad faces better than Syrians in the same group (t= 1,990, p=.05; P_{bon_holm}>.05).

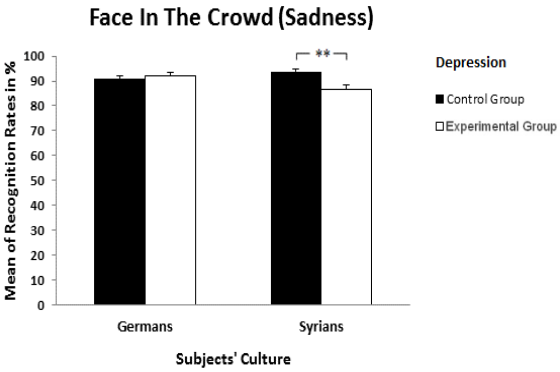

Figure 3.2.13. The interaction effects of depression and culture on recognizing the sad face in the crowd. Error bars denote standard error of the mean (SEM). **P< .01

No significant effect of the interaction between depression and culture on reaction time for recognizing the discrepant expression in the crowd (See table 3.2.12.).

Table 3.2.12. The interaction effects of depression and culture on reaction time for recognizing the discrepant expression in the crowd.

Variable	F	p	df	η^2
RT of Recognition rate of target type in general	.249	.618	1.130	.002
RT of Recognition rate of Anger	.741	.391	1.130	.006
RT of recognition rate of Happiness	.021	.886	1.130	.000
RT of Recognition rate of Sadness	.404	.526	1.130	.003

3.2.4. Interaction effects of subjects' gender and stimuli' gender on recognizing the different emotional expression

A repeated-measures analysis of covariate with GENDER OF STIMULI (male/female) as within-subject factor, SUBJECTS' GENDER (male/female) as between-subject factor and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Based on ANCOVA no significant main effect for SUBJECTS' GENDER was found on detecting the different facial expression in the crowd (see table 3.2.13. and figure 3.2.14.) and also on the reaction time for the face detection(see table 3.2.14. and figure 3.2.15.).

Table 3.2.13. The main effects of subjects' gender on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	2.477	.118	1.132	.018
Detection rate of Anger	2.392	.124	1.132	.018
Detection rate of Happiness	1.545	.216	1.132	.012
Detection rate of Sadness	1.162	.283	1.132	.009

RM-ANCOVA revealed no significant effect of the interaction between subjects' gender and simuli' gender on detecting the different facial expression in the crowd (see table 3.2.16). However, RM-ANOVA showed **a significant main effect** of STIMULI' GENDER on general detection of different facial expression in the crowd and also particularly on detecting every single expression. Where the participants detected the female faces **significantly** better than male faces (see table 3.2.15. and figures 3.2.16.).

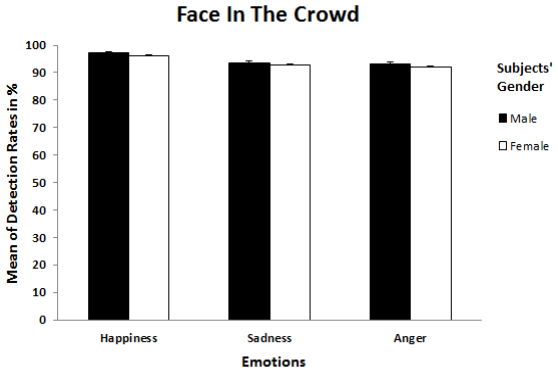

Figure 3.2.14. The main effects of subjects' gender on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.14. The main effects of subjects' gender on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	1.568	.213	1.132	.012
RT of detection rate of Anger	1.283	.259	1.132	.010
RT of detection rate of Happiness	1.183	.279	1.132	.009
RT of detection rate of Sadness	1.794	.183	1.132	.013

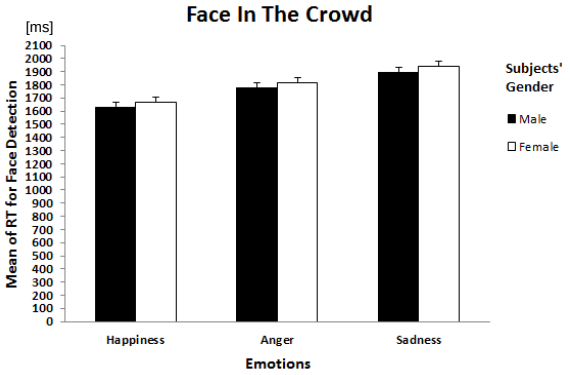

Figure 3.2.15. The main effects of subjects' gender on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.15. The main effects of stimuli' gender on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	615.846	.000	1.134	.821
Detection rate of Anger	133.984	.000	1.134	.500
Detection rate of Happiness	403.350	.000	1.134	.751
Detection rate of Sadness	239.760	.000	1.134	.641

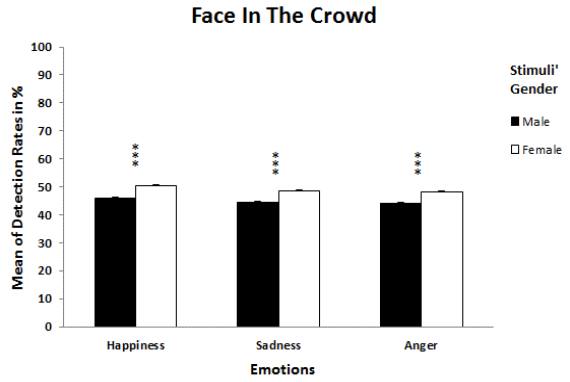

Figure 3.2.16. The main effects of stimuli' gender on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). ***P<.001

Table 3.2.16. The interaction effects of subjects' gender and stimuli' gender on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.053	.819	1.132	.000
Detection rate of Anger	.089	.765	1.132	.001
Detection rate of Happiness	.009	.926	1.132	.000
Detection rate of Sadness	.304	.582	1.132	.002

ANCOVA reported **a significant main effect** for SUBJECTS' GENDER on general recognition of emotional type of the different facial expression and especially on recognizing the sad faces (see table 3.2.17. and figure 3.2.17.), where men recognized **significantly** the emotional type of different facial expression in general, and particularly the sad faces than better women, who were **significantly** slower than men in recognition of happy faces (see table 3.2.18. and figure 3.2.18.). RM-ANCOVA revealed no significant effect of the interaction between subjects' gender and simuli' gender on recognizing the emotional type of the different facial expression in the crowd (see table 3.2.20.).

Table 3.2.17. The main effects of subjects' gender on recognizing the discrepant expression in the crowd

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	4.587	.034	1.132	.034
Recognition rate of Anger	.039	.844	1.132	.000
Recognition rate of Happiness	1.131	.290	1.132	.008
Recognition rate of Sadness	7.224	.008	1.132	.052

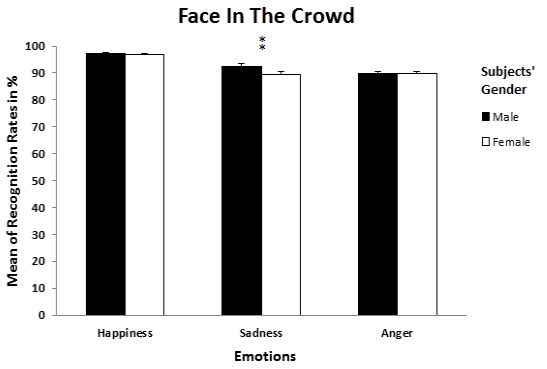

Figure 3.2.17. The main effects of subjects' gender on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). **P<.01

However, RM-ANOVA showed **a significant main effect** of STIMULI' GENDER on general emotion recognition of the discrepant expression in the crowd and also particularly on recognizing every emotion independently. Where the participants recognized the female faces **significantly** better than the male faces (see table 3.2.19. and figures 3.2.19.).

Table 3.2.18. The main effects of subjects' gender on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	2.876	.092	1.132	.021
RT of Recognition rate of Anger	1.136	.289	1.132	.009
RT of Recognition rate of Happiness	5.332	.022	1.132	.039
RT of Recognition rate of Sadness	2.476	.118	1.132	.018

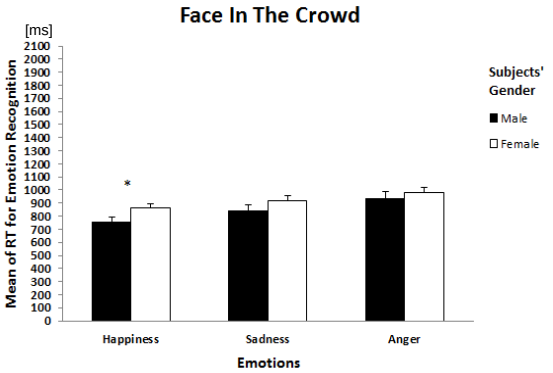

Figure 3.2.18. The main effects of subjects' gender on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

Table 3.2.19. The main effects of stimuli' gender on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	230.076	.000	1.134	.632
Recognition rate of Anger	10.403	.002	1.134	.072
Recognition rate of Happiness	440.664	.000	1.134	.767
Recognition rate of Sadness	131.394	.000	1.134	.495

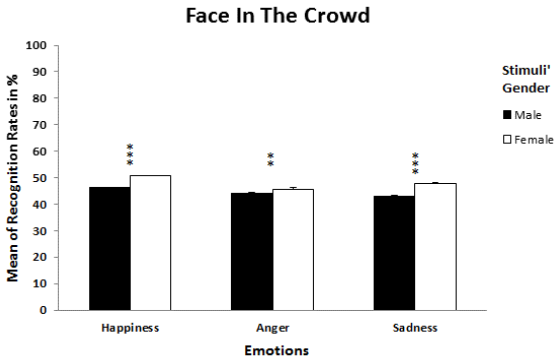

Figure 3.2.19. The main effects of stimuli' gender on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). **P<.01, ***P<.001.

Table 3.2.20. The interaction effects of subjects' gender and stimuli' gender on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	1.993	.160	1.132	.015
Recognition rate of Anger	2.084	.151	1.132	.016
Recognition rate of Happiness	.020	.888	1.132	.000
Recognition rate of Sadness	.437	.510	1.132	.003

3.2.5. Interaction effects of depression and emotion regulation on recognizing the different emotional expression

- Interaction effects of depression and cognitive reappraisal on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with $DEPRESSION_{(low/high)}$ and $COGNITIVE\ REAPPRAISAL_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

ANCOVA reported no significant effect of the interaction between depression and cognitive reappraisal on detection of different facial expression and on the reaction time for face detection. (see table 3.2.21. and 3.2.22.).

Table 3.2.21. The interaction effects of depression and cognitive reappraisal on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	2,784	,098	1.130	,021
Detection rate of Anger	,660	,418	1.130	,005
Detection rate of Happiness	2,614	,108	1.130	,020
Detection rate of Sadness	2,340	,128	1.130	,018

Table 3.2.22. The interaction effects of depression and cognitive reappraisal on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	1.112	.294	1.130	.008
RT of detection rate of Anger	1.936	.167	1.130	.015
RT of detection rate of Happiness	.899	.345	1.130	.007
RT of detection rate of Sadness	.640	.425	1.130	.005

ANOVA also indicated no significant mean effect of cognitive reappraisal on detection of different facial expression and on the reaction time for the face detection. (see table 3.2.23. and 3.2.24.).

Table 3.2.23. The main effects of cognitive reappraisal on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.094	.759	1.133	.001
Detection rate of Anger	.193	.661	1.133	.001
Detection rate of Happiness	1.764	.186	1.133	.013
Detection rate of Sadness	.844	.360	1.133	.006

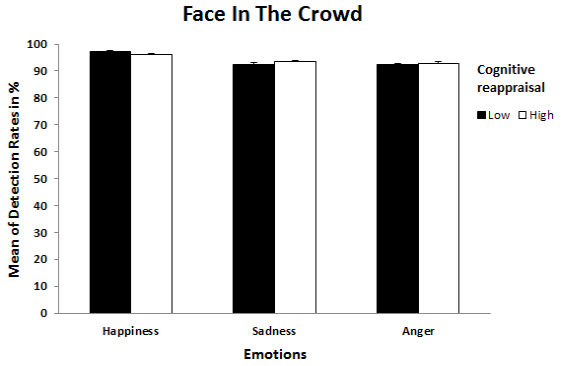

Figure 3.2.20. The main effects of cognitive reappraisal on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.24. The main effects of cognitive reappraisal on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.314	.576	1.133	.002
RT of detection rate of Anger	.374	.542	1.133	.003
RT of detection rate of Happiness	.173	.679	1.133	.001
RT of detection rate of Sadness	.234	.630	1.133	.002

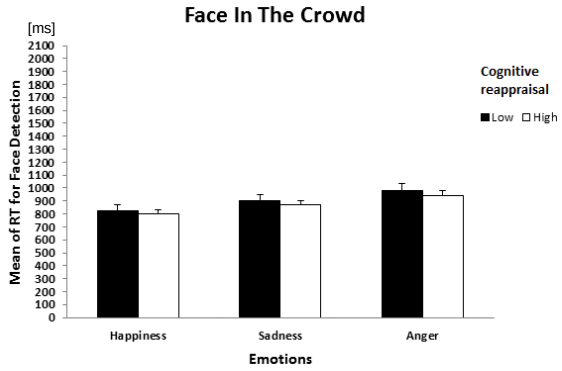

Figure 3.2. 21. The main effects of cognitive reappraisal on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

According to ANCOVA, just **a significant effect of the interaction** between depression and cognitive reappraisal was found on recognition of happy face in the crowd (see table 3.2.25.), where the participants with high cognitive reappraisal in the control group recognized **significantly** the happiness better than The participants with high cognitive reappraisal in the experimental group(t= 2.871, p<.01; P_{bon_holm}<.05).

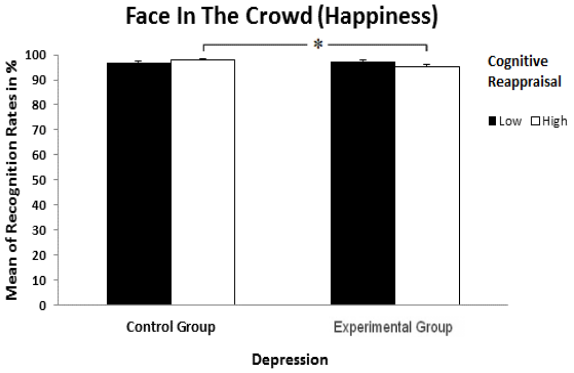

Figure 3.2.22. The interaction effects of depression and cognitive reappraisal on recognizing the happy face in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

Moreover, the participants with low cognitive reappraisal in the experimental group showed a tendency to better recognition of happy faces than the participants with high cognitive reappraisal in the same group (t= 2.179, p<.05; P_{bon_holm}>.05).

Table 3.2.25. The interaction effects of depression and cognitive reappraisal on recognizing the discrepant expression in the crowd.

Variable	F	p	df	η^2
Recognition rate of target type in general	.974	.326	1.130	.007
Recognition rate of Anger	.202	.653	1.130	.002
Recognition rate of Happiness	5.023	.027	1.130	.037
Recognition rate of Sadness	1.124	.291	1.130	.009

Results reported no significant effect of the interaction between depression and cognitive reappraisal on the reaction time for general recognition of emotional type of different facial expression in the crowd and for recognizing each emotion independently(see table 3.2.26).

Table 3.2.26. The interaction effects of depression and cognitive reappraisal on reaction time for recognizing the discrepant expression in the crowd.

Variable	F	p	df	η^2
RT of Recognition rate of target type in general	1.035	.311	1.130	.008
RT of Recognition rate of Anger	1.731	.191	1.130	.013
RT of recognition rate of Happiness	.705	.403	1.130	.005
RT of Recognition rate of Sadness	.651	.421	1.130	.005

ANOVA indicated no significant mean effect of cognitive reappraisal on recognizing the emotional type of the different facial expression and also on the reaction time of emotion recognition (see table 3.2.27. and 3.2.28.).

Table 3.2.27. The main effects of cognitive reappraisal on recognizing the discrepant expression in the crowd.

Variable	F	p	df	η^2
Recognition rate of target type in general	.043	.836	1.133	.000
Recognition rate of Anger	.103	.748	1.133	.001
Recognition rate of Happiness	.478	.490	1.133	.004
Recognition rate of Sadness	.092	.762	1.133	.001

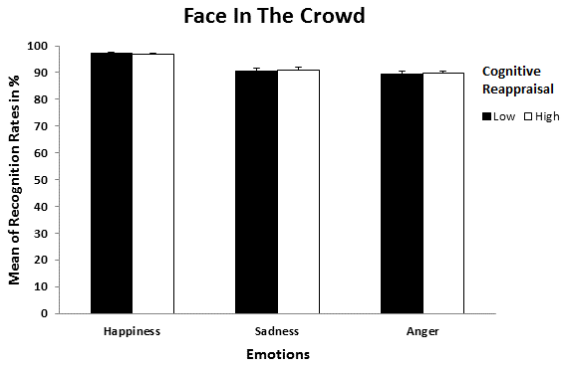

Figure 3. 2. 23. The main effects of cognitive reappraisal on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.28. The main effects of cognitive reappraisal on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.294	.589	1.133	.002
RT of Recognition rate of Anger	.391	.533	1.133	.003
RT of recognition rate of Happiness	.202	.654	1.133	.002
RT of Recognition rate of Sadness	.251	.617	1.133	.002

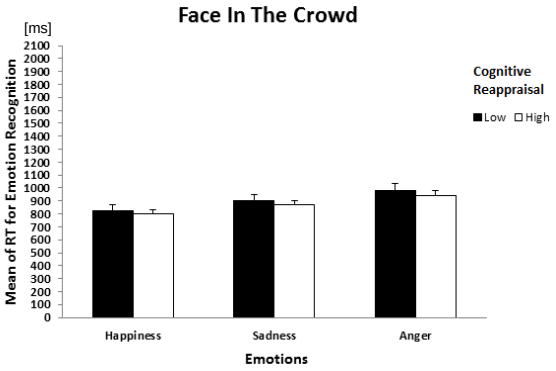

Figure 3.2.24. The main effects of cognitive reappraisal on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

- Interaction effects of depression and expressive suppression on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with DEPRESSION$_{(low/high)}$ and EXPRESSIVE SUPPRESSION$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.29. The interaction effects of depression and expressive suppression on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.683	.410	1.130	.005
Detection rate of Anger	1.873	.173	1.130	.014
Detection rate of Happiness	.001	.972	1.130	.000
Detection rate of Sadness	.337	.562	1.130	.003

ANCOVA reported no significant effect of the interaction between depression and expressive suppression on detecting the different facial expression and on the reaction time for the face detection. (see table 3.2.29. and 3.2.30.).

Table 3.2.30. The interaction effects of depression and expressive suppression on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.394	.531	1.130	.003
RT of detection rate of Anger	.268	.606	1.130	.002
RT of detection rate of Happiness	1.279	.260	1.130	.010
RT of detection rate of Sadness	.132	.717	1.130	.001

ANOVA indicated just **a significant mean effect** of expressive suppression on detection of sadness, where the participants with low expressive suppression detected sad face in the crowd **significantly** better than the participants with high expressive suppression (see table 3.2.31.) However, no significant mean effect of expressive suppression was found on reaction time for the face detection(see table 3.2.32.).

Table 3.2.31.The main effects of expressive suppression on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	1.305	.255	1.133	.010
Detection rate of Anger	.128	.721	1.133	.001
Detection rate of Happiness	.339	.562	1.133	.003
Detection rate of Sadness	4.841	.030	1.133	.035

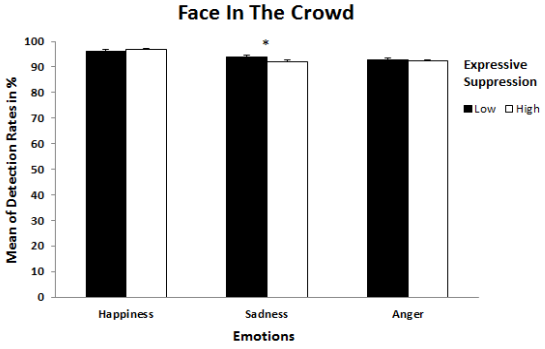

Figure 3.2.25. The main effects of expressive suppression on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

Table 3.2.32. The main effects of expressive suppression on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.051	.822	1.133	.000
RT of detection rate of Anger	.218	.641	1.133	.002
RT of detection rate of Happiness	.250	.618	1.133	.002
RT of detection rate of Sadness	.033	.855	1.133	.000

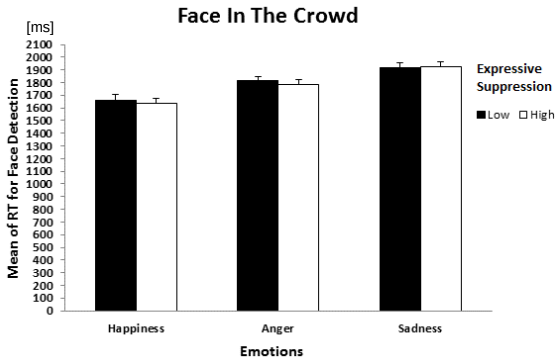

Figure 3.2.26. The main effects of expressive suppression on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

According to ANCOVA, no significant effect of the interaction between depression and expressive suppression was found on recognizing the emotional type of the discrepant expression in the crowd, and also on the reaction time for the emotion recognition (see tables 3.2.33. and 3.2.34.).

Table 3.2.33. The interaction effects of depression and expressive suppression on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.225	.636	1.130	.002
Recognition rate of Anger	.134	.714	1.130	.001
Recognition rate of Happiness	.080	.777	1.130	.001
Recognition rate of Sadness	.959	.329	1.130	.007

Table 3.2.34. The interaction effects of depression and expressive suppression on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.098	.755	1.130	.001
RT of Recognition rate of Anger	.268	.606	1.130	.002
RT of recognition rate of Happiness	1.279	.260	1.130	.010
RT of Recognition rate of Sadness	.132	.717	1.130	.001

ANOVA indicated no significant mean effect of expressive suppression on recognizing the emotional type of the different facial expression and also on the reaction time for the emotion recognition. (see table 3.2.35. and 3.2.36.).

Table 3.2.35. The main effects of expressive suppression on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.322	.572	1.133	.002
Recognition rate of Anger	.012	.912	1.133	.000
Recognition rate of Happiness	.082	.775	1.133	.001
Recognition rate of Sadness	.640	.425	1.133	.005

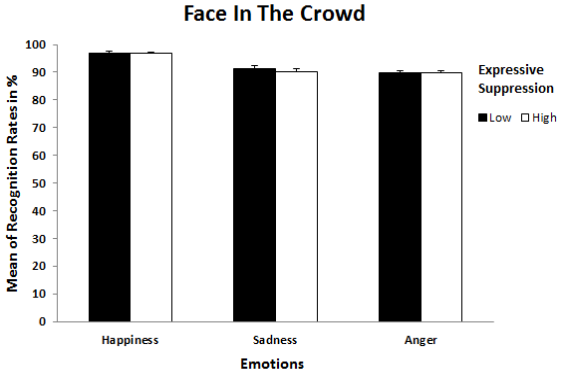

Figure 3.2.27. The main effects of expressive suppression on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.36. The main effects of expressive suppression on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.222	.638	1.133	.002
RT of Recognition rate of Anger	.382	.538	1.133	.003
RT of Recognition rate of Happiness	.081	.777	1.133	.001
RT of Recognition rate of Sadness	.155	.694	1.133	.001

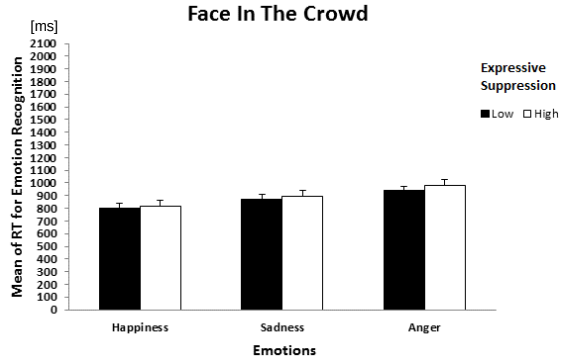

Figure 3.2.28. The main effects of expressive suppression on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

3.2.6. Interaction effects of culture and emotion regulation on recognizing the different emotional expression

- Interaction effects of culture and cognitive reappraisal on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with CULTURE$_{(Germans/Syrians)}$ and COGNITIVE REAPPRAISAL$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.37. The interaction effects of culture and cognitive reappraisal on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.073	.787	1.130	.001
Detection rate of Anger	.609	.437	1.130	.005
Detection rate of Happiness	.243	.623	1.130	.002
Detection rate of Sadness	.100	.752	1.130	.001

ANCOVA reported no significant effect of the interaction between culture and cognitive reappraisal on detection of different facial expression and on the reaction time for the face detection. (see table 3.2.37. and 3.2.38.).

Table 3.2.38. The interaction effects of culture and cognitive reappraisal on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.378	.540	1.130	.003
RT of detection rate of Anger	.071	.790	1.130	.001
RT of detection rate of Happiness	.191	.663	1.130	.001
RT of detection rate of Sadness	.910	.342	1.130	.007

In addition to that there were no significant effect of the interaction between culture and cognitive reappraisal on recognizing the emotional type of the discrepant expression in the crowd, and on the reaction time for emotion recognition(see table 3.2.39. and 3.2.40.).

Table 3.2.39. The interaction effects of culture and cognitive reappraisal on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.229	.633	1.130	.002
Recognition rate of Anger	1.173	.281	1.130	.009
Recognition rate of Happiness	.128	.721	1.130	.001
Recognition rate of Sadness	.022	.883	1.130	.000

Table 3.2.40. The interaction effects of culture and cognitive reappraisal on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	1.197	.276	1.130	.009
RT of Recognition rate of Anger	1.233	.269	1.130	.009
RT of Recognition rate of Happiness	1.244	.267	1.130	.009
RT of Recognition rate of Sadness	.710	.401	1.130	.005

- Interaction effects of culture and expressive suppression on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $EXPRESSIVE\ SUPPRESSION_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.41. The interaction effects of culture and expressive suppression on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	1.808	.181	1.130	.014
Detection rate of Anger	.285	.594	1.130	.002
Detection rate of Happiness	1.310	.255	1.130	.010
Detection rate of Sadness	2.300	.132	1.130	.017

ANCOVA reported no significant effect of the interaction between culture and expressive suppression on detecting the different facial expression and on the reaction time for the face detection. (see table 3.2.41. and 3.2.42.).

Table 3.2.42. The interaction effects of culture and expressive suppression on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.401	.528	1.130	.003
RT of detection rate of Anger	.388	.535	1.130	.003
RT of detection rate of Happiness	1.560	.214	1.130	.012
RT of detection rate of Sadness	.071	.790	1.130	.001

In addition to that there were no significant effect of the interaction between culture and expressive suppression on recognizing the emotional type of the discrepant expression in the crowd, and on the reaction time for emotion recognition(see table 3.2.43. and 3.2.44.).

Table 3.2.43. The interaction effects of culture and expressive suppression on recognizing the emotional type of the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	1.808	.181	1.130	.014
Recognition rate of Anger	.285	.594	1.130	.002
Recognition rate of Happiness	1.310	.255	1.130	.010
Recognition rate of Sadness	2.300	.132	1.130	.017

Table 3.2. 44. The interaction effects of culture and expressive suppression on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.401	.528	1.130	.003
RT of Recognition rate of Anger	.388	.535	1.130	.003
RT of Recognition rate of Happiness	1.560	.214	1.130	.012
RT of Recognition rate of Sadness	.071	.790	1.130	.001

3.2.7 Interaction effects of depression and current mood state on recognizing the different emotional expression

- Interaction effects of depression and current negative mood on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with $DEPRESSION_{(low/high)}$ and $CURRENT\ NEGATIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.45. The interaction effects of depression and current negative mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.115	.735	1.130	.001
Detection rate of Anger	.026	.871	1.130	.000
Detection rate of Happiness	.876	.351	1.130	.007
Detection rate of Sadness	.000	.992	1.130	.000

ANCOVA reported no significant effect of the interaction between depression and current negative mood on detecting the different facial expression and on the reaction time for the face detection (see table 3.2.45. and 3.2.46.).

Table 3.2.46. The interaction effects of depression and current negative mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.069	.793	1.130	.001
RT of detection rate of Anger	.271	.604	1.130	.002
RT of detection rate of Happiness	.051	.822	1.130	.000
RT of detection rate of Sadness	.013	.908	1.130	.000

ANOVA indicated **a significant mean effect** of current negative mood on general detection of facial expression and especially on detecting the sad faces, where the participants with low current negative mood detected the different facial expression in general **significantly** better than the participants with high current negative mood. They were especially better in detection of sad faces (see table 3.2.47.).

Table 3.2.47. The main effects of current negative mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	6.449	.012	1.133	.046
Detection rate of Anger	3.298	.072	1.133	.024
Detection rate of Happiness	3.217	.075	1.133	.024
Detection rate of Sadness	5.013	.027	1.133	.036

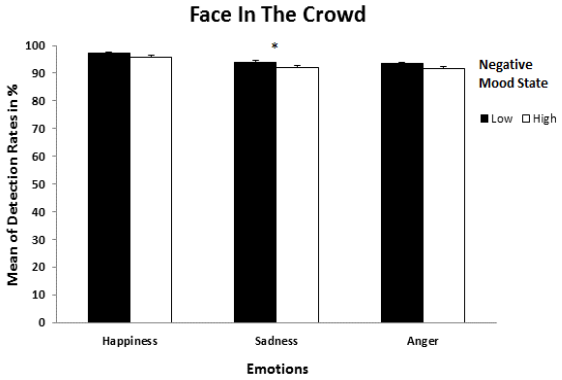

Figure 3.2.29. The main effects of current negative mood on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P< .05

Moreover, **a significant mean effect** of current negative mood was found on the reaction time for the face detection in general, and especially for detection of sad faces.

The participants with low current negative mood detected the different facial expression in general **significantly** faster than the participants with high current negative mood. They were especially faster in detecting sad faces (see table 3.2.48.).

Table 3.2.48. The mean effects of current negative mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	3.844	.052	1.133	.028
RT of detection rate of Anger	3.138	.079	1.133	.023
RT of detection rate of Happiness	3.003	.085	1.133	.022
RT of detection rate of Sadness	4.290	.040	1.133	.031

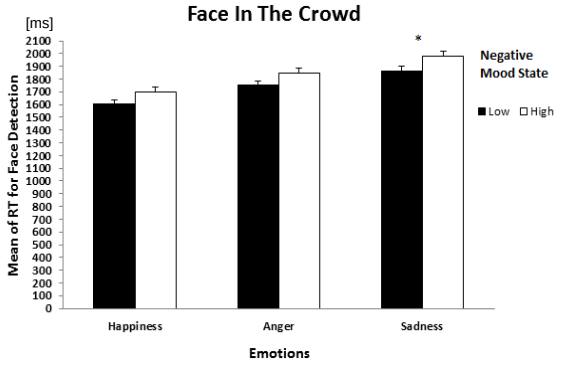

Figure 3.2.30. The mean effects of current negative mood on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

ANCOVA reported no significant effect of the interaction between depression and current negative mood on recognizing the emotional type of the discrepant expression in the crowd (see table 3.2.49.).

Table 3.2.49. The interaction effects of depression and current negative mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.275	.601	1.130	.002
Recognition rate of Anger	.469	.495	1.130	.004
Recognition rate of Happiness	.042	.838	1.130	.000
Recognition rate of Sadness	1.210	.273	1.130	.009

However the participants with low negative mood state in the experimental group showed a tendency to recognize happiness faster than the participants with high negative mood state in the same group (t=2.316, p<.05; P_{bon_holm}>.05).

In addition to that the participants with high negative mood state in the control group showed a tendency to faster reaction time for recognizing the happy faces than the participants with high negative mood state in the experimental group (t=2.047, p<0.05; P_{bon_holm}>.05).

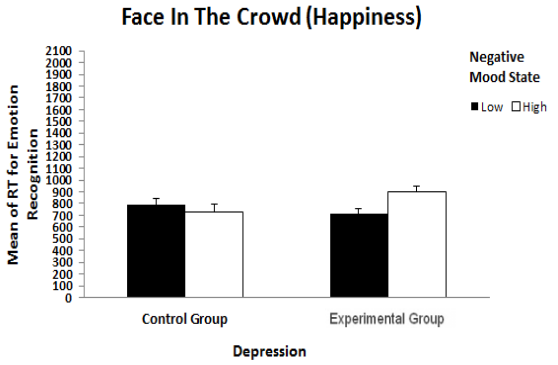

Figure 3.2.31. The interaction effects of depression and current negative mood on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

Table 3.2.50. The interaction effects of depression and current negative mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	2.078	.152	1.130	.016
RT of Recognition rate of Anger	1.220	.271	1.130	.009
RT of Recognition rate of Happiness	4.387	.038	1.130	.033
RT of Recognition rate of Sadness	1.227	.270	1.130	.009

ANOVA indicated **a significant mean effect** of current negative mood on recognizing the happy faces. Where the participants with low negative mood state recognised happy faces **significantly** better than the participants with high negative mood state (see table 3.2.51.).

Table 3.2.51. The main effects of current negative mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	2.294	.132	1.133	.017
Recognition rate of Anger	.353	.553	1.133	.003
Recognition rate of Happiness	4.014	.047	1.133	.029
Recognition rate of Sadness	1.602	.208	1.133	.012

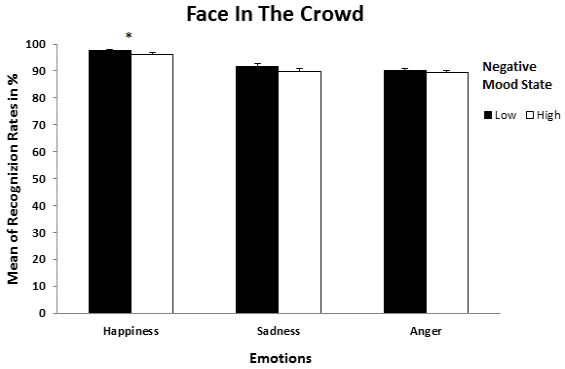

Figure 3.2.32. The main effects of current negative mood on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM) *P<.05.

Moreover, **a significant main effect** of current negative mood was found on reaction time for general recognition of emotional type of the discrepant expression in the crowd, and particularly for recognition of anger and sadness. The participants with low negative mood state recognized the different emotion in general **significantly** faster than the participants with high negative mood state. They were especially faster in recognizing angry and sad faces (see table 3.2.52.).

Table 3.2.52. The main effects of current negative mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	4.881	.029	1.133	.035
RT of Recognition rate of Anger	5.752	.018	1.133	.041
RT of Recognition rate of Happiness	2.444	.120	1.133	.018
RT of Recognition rate of Sadness	4.760	.031	1.133	.035

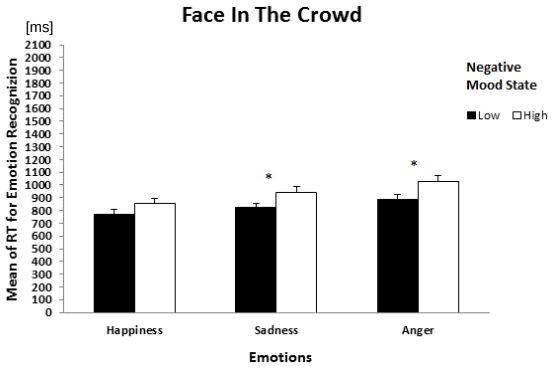

Figure 3.2.33. The main effects of current negative mood on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

- Interaction effects of depression and current positive mood on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with $DEPRESSION_{(low/high)}$ and CURRENT $POSITIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.53. The interaction effects of depression and current positive mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	2.078	.152	1.130	.016
Detection rate of Anger	1.985	.161	1.130	.015
Detection rate of Happiness	1.026	.313	1.130	.008
Detection rate of Sadness	.991	.321	1.130	.008

ANCOVA reported no significant effect of the interaction between depression and current positive mood on detecting the different facial expression and on the reaction time for the face detection. (see table 3.2.53. and 3.2.54.).

Table 3.2.54. The interaction effects of depression and current positive mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	2.684	.104	1.130	.020
RT of detection rate of Anger	3.546	.062	1.130	.027
RT of detection rate of Happiness	1.792	.183	1.130	.014
RT of detection rate of Sadness	2.174	.143	1.130	.016

ANOVA indicated no significant mean effects of current positive mood on detecting the different facial expression in the crowd (see table 3.3.55.).

Table 3.2.55. The main effects of current positive mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	1.384	.241	1.133	.010
Detection rate of Anger	.385	.536	1.133	.003
Detection rate of Happiness	.867	.353	1.133	.006
Detection rate of Sadness	1.297	.257	1.133	.010

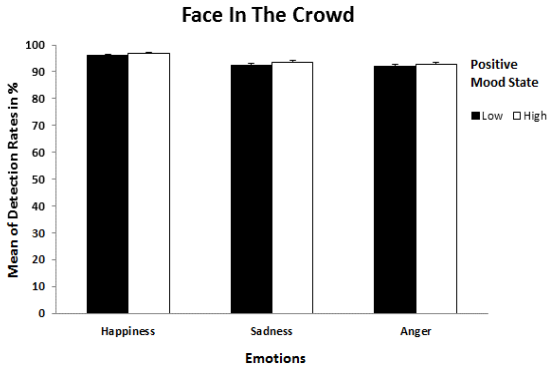

Figure 3.2.34. The main effects of current positive mood on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

However, **a significant mean effect** of current positive mood was found on reaction time for the face detection in general, and especially for detection of happy and sad faces. Where the participants with high current positive mood detected the different facial expression in general **significantly** faster than the participants with low current positive mood. They were especially faster in detecting happy and sad faces (see table 3.2.56.).

Table 3.2.56. The mean effects of current positive mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	4.744	.031	1.133	.034
RT of detection rate of Anger	3.243	.074	1.133	.024
RT of detection rate of Happiness	4.667	.033	1.133	.034
RT of detection rate of Sadness	5.242	.024	1.133	.038

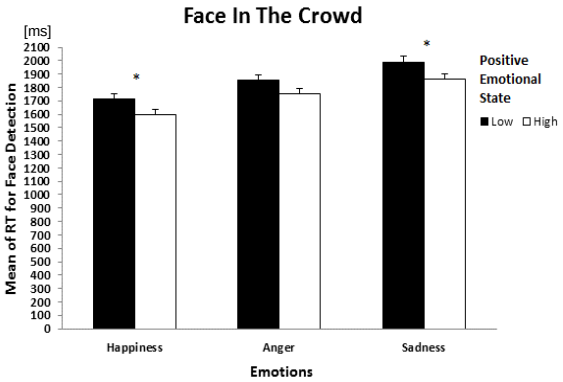

Figure 3.2.35. The mean effects of current positive mood on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P<.05

ANCOVA reported no significant effect of the interaction between depression and current positive mood on recognizing the emotional type of the discrepant expression in the crowd and on the reaction time for the emotion recognition (see table 3.2.57. and 3.2.58.).

Table 3.2.57. The interaction effects of depression and current positive mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.001	.979	1.130	.000
Recognition rate of Anger	.002	.968	1.130	.000
Recognition rate of Happiness	1.439	.233	1.130	.011
Recognition rate of Sadness	.157	.693	1.130	.001

Table 3.2.58. The interaction effects of depression and current positive mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	3.119	.080	1.130	.023
RT of Recognition rate of Anger	2.207	.140	1.130	.017
RT of Recognition rate of Happiness	2.888	.092	1.130	.022
RT of Recognition rate of Sadness	3.127	.079	1.130	.023

ANOVA indicated no significant mean effects of current positive mood on recognizing the emotional type of the discrepant expression in the crowd (see table 3.2.59.).

Table 3.2.59. The main effects of current positive mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	1.455	.230	1.133	.011
Recognition rate of Anger	.028	.867	1.133	.000
Recognition rate of Happiness	3.525	.063	1.133	.026
Recognition rate of Sadness	1.717	.192	1.133	.013

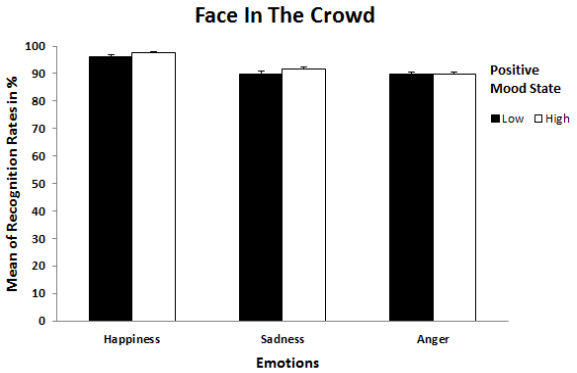

Figure 3.2.36. The main effects of current positive mood on recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

However, **a significant main effect** of current positive mood was found on reaction time for recognition of happy faces. The participants with high positive mood state recognized happy faces **significantly** faster than the participants with low positive mood state (see figure 3.2.37.).

Table 3.2.60. The main effects of current positive mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	3.177	.077	1.133	.023
RT of Recognition rate of Anger	1.198	.276	1.133	.009
RT of Recognition rate of Happiness	4.087	.045	1.133	.030
RT of Recognition rate of Sadness	3.777	.054	1.133	.028

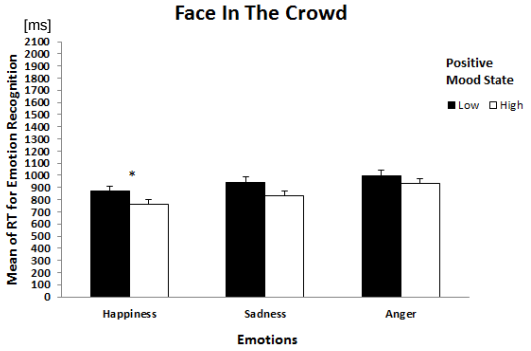

Figure 3.2.37: The main effects of current positive mood on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM). *P< .05

3.2.8. Interaction effects of culture and current mood state on recognizing the different emotional expression

- Interaction effects of culture and current negative mood on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with CULTURE$_{(Germans/Syrians)}$ and CURRENT NEGATIVE MOOD$_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.61. The interaction effects of culture and current negative mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	2.348	.128	1.130	.018
Detection rate of Anger	.726	.396	1.130	.006
Detection rate of Happiness	.976	.325	1.130	.007
Detection rate of Sadness	2.392	.124	1.130	.018

ANCOVA reported no significant effect of the interaction between culture and current negative mood on detecting the different facial expression and on the reaction time for the face detection. (see table 3.2.61. and 3.2.62.).

Table 3.2.62. The interaction effects of culture and current negative mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.046	.831	1.130	.000
RT of detection rate of Anger	.003	.954	1.130	.000
RT of detection rate of Happiness	.270	.604	1.130	.002
RT of detection rate of Sadness	.032	.858	1.130	.000

ANCOVA reported **a significant effect of the interaction** between culture and current negative mood on general recognition of emotional type of the discrepant expression in the crowd, and particularly on recognition of sadness (see table 3.2.63.). Where Syrians with low negative mood state showed a tendency to recognize the different expression in general better than Syrians with high negative mood state (t=2.332, p<.05; P_{bon_holm}>.05). They were especially better in recognising the sad faces (t=2.298, p<.05; P_{bon_holm}>.05). Germans with high negative mood state showed a tendency to recognize the different expression in general better than Syrians with high negative mood state (t=2479, p<.05; P_{bon_holm}>.05). Germans were especially better in recognition of sadness (t=2.204, p<0.05; P_{bon_holm}>.05).

Table 3.2.63. The interaction effects of culture and current negative mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	4.816	.030	1.130	.036
Recognition rate of Anger	1.932	.167	1.130	.015
Recognition rate of Happiness	1.167	.282	1.130	.009
Recognition rate of Sadness	4.001	.048	1.130	.030

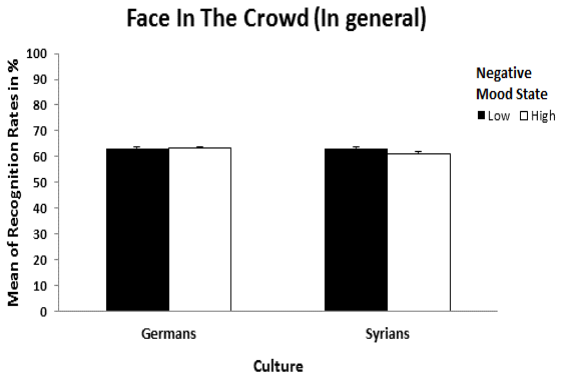

Figure 3.2. 38: The interaction effects of culture and current negative mood on general recognition of discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).

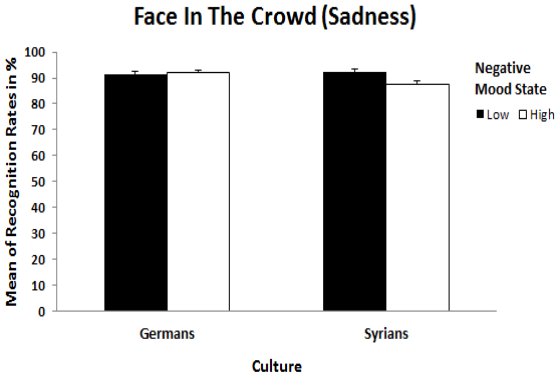

Figure 3.2.39: The interaction effects of culture and current negative mood on recognizing the sad face in a neutral crowd. Error bars denote standard error of the mean (SEM).

Despite previous results, ANCOVA reported no significant effect of the interaction between culture and current negative mood on reaction time for emotion recognition of discrepant expression in the crowd(see table 3.2.64.).

Table 3.2.64. The interaction effects of culture and current negative mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.148	.701	1.130	.001
RT of Recognition rate of Anger	.829	.364	1.130	.006
RT of Recognition rate of Happiness	.051	.821	1.130	.000
RT of Recognition rate of Sadness	.144	.705	1.130	.001

- Interaction effects of culture and current positive mood on recognizing the different emotional expression in the crowd:

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $CURRENT\ POSITIVE\ MOOD_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.65. The interaction effects of culture and current positive mood on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.125	.724	1.130	.001
Detection rate of Anger	.494	.484	1.130	.004
Detection rate of Happiness	.587	.445	1.130	.004
Detection rate of Sadness	.058	.810	1.130	.000

ANCOVA reported no significant effect of the interaction between culture and current positive mood on detecting the different facial expression and on the reaction time for the face detection (see table 3.2.65. and 3.2.66.).

Table 3.2.66. The interaction effects of culture and current positive mood on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.759	.385	1.130	.006
RT of detection rate of Anger	.701	.404	1.130	.005
RT of detection rate of Happiness	.239	.626	1.130	.002
RT of detection rate of Sadness	.987	.322	1.130	.008

In addition to that there was no significant effect of the interaction between culture and current positive mood on recognizing the emotional type of the discrepant expression in the crowd and on the reaction time for emotion recognition (see table 3.2.67. and 3.2.68.).

Table 3.2.67. The interaction effects of culture and current positive mood on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	1.586	.210	1.130	.012
Recognition rate of Anger	.405	.526	1.130	.003
Recognition rate of Happiness	.223	.638	1.130	.002
Recognition rate of Sadness	1.681	.197	1.130	.013

Table 3.2.68. The interaction effects of culture and current positive mood on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.117	.733	1.130	.001
RT of Recognition rate of Anger	.009	.925	1.130	.000
RT of Recognition rate of Happiness	.331	.566	1.130	.003
RT of Recognition rate of Sadness	.108	.743	1.130	.001

3.2.9 Interaction effects of depression and social support on recognizing different emotional expressions

A univariate analysis of covariance (ANCOVA) with $DEPRESSION_{(low/high)}$ and $SOCIAL\ SUPPORT_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.69. The interaction effects of depression and social support on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.370	.544	1.130	.003
Detection rate of Anger	.006	.939	1.130	.000
Detection rate of Happiness	.003	.953	1.130	.000
Detection rate of Sadness	1.374	.243	1.130	.010

ANCOVA reported no significant effect of the interaction between depression and social support on detecting the different facial expression and on the reaction time for the face detection. (see table 3.2.69. and 3.2.70.).

Table 3.2.70. The interaction effects of depression and social support on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.405	.526	1.130	.003
RT of detection rate of Anger	.057	.811	1.130	.000
RT of detection rate of Happiness	.295	.588	1.130	.002
RT of detection rate of Sadness	.934	.336	1.130	.007

ANOVA indicated significant mean effects of social support on general detection of different facial target in the crowd and especially on detecting the sad faces (see table 3.2.71.).

Where the participants who had high social support detected the different facial expression in general **significantly** better than the participants with low social support. They were particularly better in detection of sadness.

Table 3.2.71. The main effects of social support on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	7.715	.006	1.133	.055
Detection rate of Anger	1.319	.253	1.133	.010
Detection rate of Happiness	3.112	.080	1.133	.023
Detection rate of Sadness	10.252	.002	1.133	.072

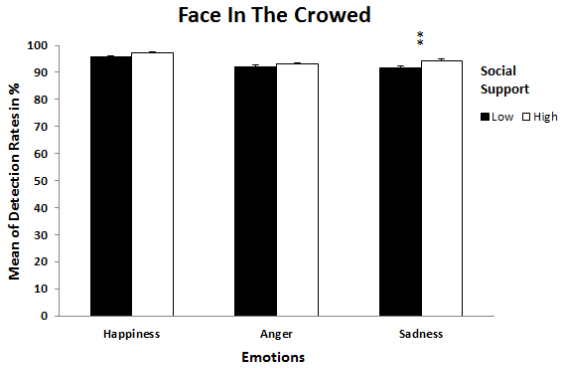

Figure 3.2.40. The main effects of social support on detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).**P<.01

Moreover, **a significant main effect** of social support was found on reaction time for detecting the discrepant expression in the crowd. The participants who had high social support detected the different facial expression **significantly** faster than the participants with low social support (see table 3.2.72.).

Table 3.2.72. The main effects of social support on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	7.796	.006	1.133	.055
RT of detection rate of Anger	6.075	.015	1.133	.044
RT of detection rate of Happiness	6.020	.015	1.133	.043
RT of detection rate of Sadness	9.322	.003	1.133	.065

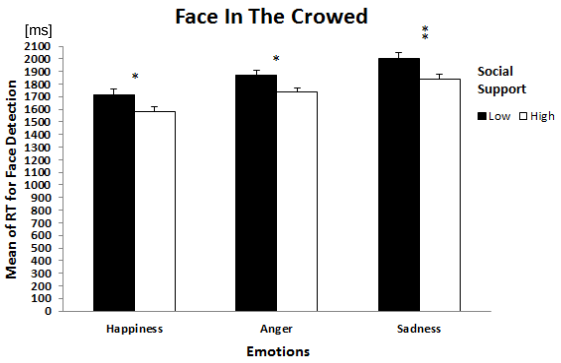

Figure 3.2.41. The main effects of social support on reaction time for detecting the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).*P<.05, **P<.01

ANCOVA reported no significant effect of the interaction between depression and social support on recognizing the emotional type of the discrepant expression in the crowd and on the reaction time for emotion recognition (see table 3.2.73. and 3.2.74.).

Table 3.2.73. The interaction effects of depression and social support on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	2.732	.101	1.130	.021
Recognition rate of Anger	2.056	.154	1.130	.016
Recognition rate of Happiness	.099	.754	1.130	.001
Recognition rate of Sadness	1.992	.160	1.130	.015

Table 3.2.74. The interaction effects of depression and social support on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	.676	.413	1.130	.005
RT of Recognition rate of Anger	.057	.811	1.130	.000
RT of Recognition rate of Happiness	.796	.374	1.130	.006
RT of Recognition rate of Sadness	.256	.265	1.130	.010

ANOVA indicated **a significant mean effects** of social support on general recognition of emotional type of the discrepant expression in the crowd, and especially on recognition of happy and sad faces (see table 3.3.75.). Where The participants who had high social support recognised the different expression **significantly** better than the participants with low social support.

Table 3.2.75. The main effects of social support on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	7.177	.008	1.133	.051
Recognition rate of Anger	1.249	.266	1.133	.009
Recognition rate of Happiness	4.923	.028	1.133	.036
Recognition rate of Sadness	6.503	.012	1.133	.047

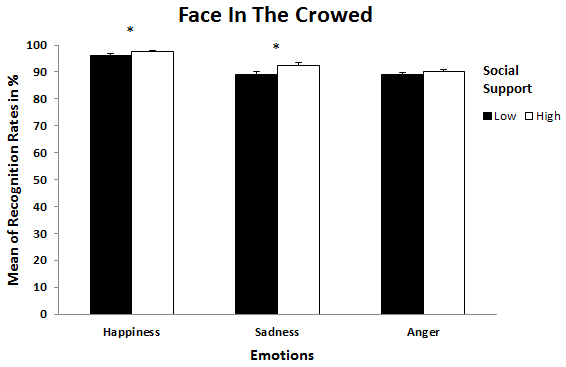

Figure 3.2.42: The main effects of social support on recognizing the emotional type of the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).*P<.05

Moreover, **a significant main effect** of social support was found on reaction time for recognizing emotional type of the discrepant expression in the crowd. The participants who had high social support recognised the different expression **significantly** faster than the participants with low social support (see table 3.2.76.).

Table 3.2.76. The main effects of social support on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	8.087	.005	1.130	.057
RT of Recognition rate of Anger	9.044	.003	1.130	.064
RT of Recognition rate of Happiness	4.212	.042	1.130	.031
RT of Recognition rate of Sadness	8.199	.005	1.130	.058

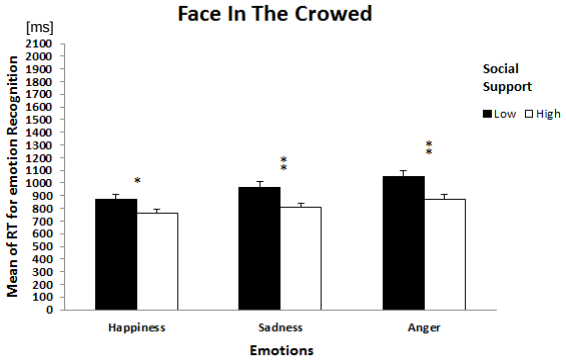

Figure 3.2.43. The main effects of social support on reaction time for recognizing the discrepant expression in the crowd. Error bars denote standard error of the mean (SEM).*P<.05, **P<.01

3.2.10. Interaction effects of culture and social support on recognizing the different emotional expressions

A univariate analysis of covariance (ANCOVA) with $CULTURE_{(Germans/Syrians)}$ and $SOCIAL\ SUPPORT_{(low/high)}$ as between-subject factors and EDUCATIONAL YEARS as covariate factor, and the same dependent variables as set out in section 3.2.1.

Table 3.2.77. The interaction effects of culture and social support on detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Detection rate of target in general	.027	.870	1.130	.000
Detection rate of Anger	.279	.598	1.130	.002
Detection rate of Happiness	.192	.662	1.130	.001
Detection rate of Sadness	.009	.926	1.130	.000

ANCOVA reported no significant effect of the interaction between culture and social support on detecting the different facial expression and on the reaction time for face detection. (see table 3.2.77. and 3.2.78.).

Table 3.2.78. The interaction effects of culture and social support on reaction time for detecting the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of detection rate of target in general	.066	.798	1.130	.001
RT of detection rate of Anger	.023	.879	1.130	.000
RT of detection rate of Happiness	.106	.746	1.130	.001
RT of detection rate of Sadness	.067	.796	1.130	.001

Moreover, no significant effect of the interaction between culture and social support was found on recognizing the emotional type of the discrepant expression in the crowd and on the reaction time for emotion recognition (see table 3.2.79. and 3.2.80.).

Table 3.2.79. The interaction effects of culture and social support on recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
Recognition rate of target type in general	.830	.364	1.130	.006
Recognition rate of Anger	1.195	.276	1.130	.009
Recognition rate of Happiness	.145	.704	1.130	.001
Recognition rate of Sadness	.298	.586	1.130	.002

Table 3.2.80. The interaction effects of culture and social support on reaction time for recognizing the discrepant expression in the crowd.

Variable	*F*	*p*	*df*	η^2
RT of Recognition rate of target type in general	1.496	.223	1.130	.011
RT of Recognition rate of Anger	.532	.467	1.130	.004
RT of Recognition rate of Happiness	1.319	.253	1.130	.010
RT of Recognition rate of Sadness	2.065	.153	1.130	.016

Chapter IV: DISCUSSION

The discussion is divided into three sections: The first section will be devoted to discuss the study's conclusions (see 4.1.). The second section will present the limitations of this study (see 4.2.). The third and final section will provide recommendations for future research (see 4.3.).

4.1. Conclusions

The study's conclusions are divided into four parts. The first part highlights possible changes in facial expression recognition caused by depression, while the second part deals with the role of cultural differences between Germans and Syrians in facial expression recognition. The third part provides a closer look at the interaction effect between depression and culture on facial expression recognition. The fourth and final part investigates the correlations between facial expression recognition and other factors such as gender, social support, cognitive reappraising, and current positive mood.

5.1.1. As this study has shown, and in accordance with the results of relevant previous studies, participants with minimal or mild depression on the whole recognized significantly better the static discrepant expression in a neutral crowd and tended to recognize better the Amsterdam dynamic facial expressions, than participants with moderate or severe depression. With regard to each emotion separately, some differences between the two groups were near to significance (such as for static and dynamic happy faces, static sad faces and dynamic contemptuous faces). In confirmation of this result, control group participants with high current negative or positive mood recognized static and dynamic expressions better than experimental group participants with high current negative or positive mood, although these differences were not statistically significant.

Concerning the detection of static sad faces, emotional processing difficulties in the experimental group appeared to be specific and statistically significant. Moreover, when reaction time was measured in the face in the crowd task, the control group showed faster responses in detecting and recognizing the static discrepant expressions, however, these differences in reaction time were somewhat outside the significance level.

While the experimental group compared to the control group showed higher assessment of emotional intensity for dynamic fearful, disgusted, happy, angry, surprised, and contemptuous expressions, it showed lower assessment of intensity for neutral and sad expressions, although these differences were not statistically significant, or they headed towards significance (such as for neutral and anger). In addition to that, the experimental group showed non-significant higher emotional sensitivity than the control group after recognizing the dynamic expressions, with the exception of happy expressions. The experimental group showed non-significant lower emotional sensitivity toward happiness. This may be due to lower neural responses to happy faces in the limbic, subcortical, and extrastriate cortical regions in the experimental group compared to the control group (see also Fu et al., 2007). Our results indicate that control group participants with high current negative mood and experimental group participants with low current negative mood showed a clear tendency to recognize static happy expressions faster than experimental group participants with high current negative mood.

When all of the aforementioned aspects are taken into account, the findings of this study suggest that participants with moderate or severe depression had difficulties in general emotional processing of static and dynamic facial expressions, and particularly in processing of sad and happy expressions. These results are consistent with the results of Yoon et al. (2016); Demenescu et al. (2010) and Csukly et al. (2009), which indicated that depressed patients showed a significant impairment in recognizing facial expressions, and especially in recognizing of sad and happy expressions, as shown by Surguladze et al. (2004), Mikhailova et al. (1996), and Rubinow & Post (1992). Demenescu et al. (2010) pointed out that depression severity contributes to impairment in recognizing facial expressions. They concluded that “severe and moderate depression is associated with moderate emotion recognition impairment”. Zobel et al. (2010) reported that patients with depression have poor theory of mind (ToM) performance and problematic social-information processing (see section 1.2.6). Stuhrmann (2011) confirmed that there is abnormal neural face processing in depressed patients in the amygdala, the insula, the parahippocampal gyrus, the anteriorer cingulärer cortex, and the orbitofrontal cortex.

Based on the cognitive behavioral theory of depression, the activation and rumination of negative thoughts in depressed patients leads to distraction from the accurate identification of the observed facial target, misperception of facial expressions and increasing of their negative value, or decreasing of their positive value (see Münkler et al., 2015; van Wingen et al. 2011; Kornreich & Philippot 2006).

Our findings showed that participants with high cognitive reappraisal recognized static happy facial expressions in the control group significantly better than participants in the experimental group. Furthermore, depression was significantly and negatively correlated with cognitive reappraisal strategie. This finding is also consistent with the cognitive behavioral point of view that major depression is characterized by difficulties in using positive emotion regulation strategies such as cognitive reappraisal (see also D'Avanzato, 2013; Berking et al., 2013).

5.1.2. In regard to differences across cultures, our findings show that the German and Syrian samples differed significantly from each other in the recognition of certain dynamic and static facial expressions. German participants recognized dynamic disgusted faces and happy static faces significantly better than Syrian participants, while the latter showed significantly higher accuracy in recognizing surprised and angry dynamic faces. These differences may be due to culture-specific decoding strategies, which are inadequate to recognize reliably certain emotions and certain facial areas in some cultures compared to others (see Arizpe, et al., 2016; Miellet et al., 2013 and Jack et al., 2009). Miellet et al. concluded that Caucasians and Asians tend to use different eye movement strategies to scan faces, that led to cultural biases in extracting and gathering visual informations from observed faces (see also Arizpe, et al., 2016). Yan et al. (2015), Caldara et al. (2010) and Sugita (2008) pointed out that the cognitive ability for face processing is similar between all humans, but the information extraction strategies are different across cultures. Gendron et al. (2014) reported that facial emotion recognition depends on cultural contexts, while Kelly et al. (2011) pointed out that "cultural forces may indeed be responsible for shaping eye movements from early childhood".

Despite the better performance of Syrian participants in recognition of anger, particularly in mediterranean dynamic faces, the German participants showed significantly better recognition

of anger in northern European faces than Syrians. This result may be due to bias in facial memory (O'Bryant & McCaffrey, 2006) leading Syrian and German participants to better remember and recognizing angry faces belonging to their own culture.

Participants generally performed better in recognizing facial emotions in the northern European dynamic faces than in Mediterranean faces; these differences were statistically significant in recognizing anger, disgust, contempt, neutral, and sadness. However, Syrian participants performed significantly better in recognizing angry Mediterranean dynamic facial expressions. German participants, on the other hand, performed significantly better in recognizing angry northern European faces and disgusted Mediterranean faces.

Syrians assessed the emotional intensity of dynamic surprised, disgusted and contemptuous expressions significantly higher than the Germans; they also assessed neutral and anger almost significantly higher than the Germans. Syrians showed significantly lower emotional sensitivity than the Germans after recognizing 7 dynamic expressions (fear, disguset, sadness, happiness, anger, surprise, and contempt).

With regard to facial stimuli culture, the emotional intensities of most Northern European expressions (i.e., for disguset, sadness, happiness, anger, contempt and neutral) have been assessed by all participants significantly higher than the emotional intensities of Mediterranean expressions. The participants emotional sensitivities toward Northern European expressions (i.e., for disguset, sadness, happiness, anger, and contempt) were significantly higher than their emotional sensitivities toward Mediterranean expressions.

As mentioned previously, Germans compared to Syrians recognized significantly better the static happy faces. They also detected significantly better the happy and sad faces.

Germans compared to Syrians showed faster responses in detection of static faces, but they showed slower responses in recognizing them, however, these differences in reaction time were not statistically significant. Only in recognition of anger, the result was almost significant.

Based on the cultural differences presented above, Germans showed significantly better performance in recognizing static happy facial expressions and dynamic disgusted facial expressions; they showed significantly higher emotional sensitivity after recognizing dynamic expressions, except neutral, than Syrians. Germans also seemed to be a little faster in detection of static faces.

Syrians showed significantly better recognition of dynamic surprised faces; they tended to show slightly higher assessment of emotional intensity for dynamic expressions than Germans and seemed to be a little bit faster in recognizing static faces.
Germans and Syrians recognized most of the northern European dynamic faces significantly better than Mediterranean faces. A comparison between the results of ADFES and FCT showed that happy expressions seemed somewhat the easiest to identify for the two cultures (see also Calvo et al., 2014), and angry expressions seemed the hardest. Regarding the ADFES separately, contemptuous faces tended to be the hardest.

5.1.3. Taking into account the interaction between depression and culture, Germans compared to Syrians in the experimental group performed significantly better in detecting staticsad faces and also tended to recognize them significantly with higher accuracy; although Syrians compared to Germans in the control group tended to recognize the static sad faces significantly better. In confirmation of this result, German participants with high current negative mood tended to recognize static sad faces significantly better than Syrians with high current negative mood, but there were no significant differences between Syrians and Germans with low current negative mood; although German participants showed lower performance in recognition of sadness than Syrians.
Syrians compared to Germans in the control group reported significantly lower emotional sensitivity after recognizing dynamic sad faces, but there were no significant differences between Syrians and Germans in the experimental group.

5.1.4. Further investigation into the role of other factors in facial expression recognition showed that social support, cognitive reappraisal strategy, and current positive mood seemed to contribute positively to recognition of facial expressions. The participants with high social support showed significantly faster responses in detecting and recognizing static expressions than the participants with low social support. They also showed significantly higher emotional sensitivity toward dynamic happy expressions. The participants with high cognitive reappraisal showed significantly higher emotional sensitivity after recognizing the 8 dynamic expressions and especially toward happy expressions than the participants with low cognitive reappraisal. With regard to the current mood state, the participants with high current positive mood detected and recognized the static happy expressions significantly faster than the

participants with low current positive mood, as well as the participants with low current negative mood recognized the static happy expressions significantly better than the participants with high current negative mood. These results confirm that social support, cognitive reappraisal strategy and current positive mood improve the ability for facial information processing and for understanding others' facial emotions (see also Gul & Khan, 2014; Pacheco-Unguetti et al., 2014; McRae et al., 2012; Marroquín, 2011). McRae K et al. (2012) referred to increased engagement of brain areas responsible for social processing during cognitive reappraising of emotional stimuli. Pacheco-Unguetti et al. 2014 reported that current positive mood enhances the face recognition ability.

Regarding the role of gender variable in facial expression recognition, we found that all female static expressions were detected and recognized significantly better than male static expressions. Moreover, most female dynamic expressions (i.e., disguset, fear, surprise and neutral) were recognized significantly better than male dynamic expressions (see also Gregorić et al. 2014).

4.2. Research Limitations

One of the most important requirements for starting this study was an attempt to achieve a high level of objectivity taking the following aspects into consideration:

- Computer-based tests instead of paper tests were used. Thus, the possibility of interaction between researcher and participants was reduced, hence the researcher had no influence on the tests' results at this point.
- The ADFES was designed to be applied in Mediterranean and Northern European cultures.
- The stimuli in the ADFES and in the FCT were presented for each group in random order on a laptop with a 39,6 cm (15,6") HD LED Display (1280x800 pixels, 32 Bit).
- The study took place in a quiet testing room, away from anything that might distract attention from completing the tests.

In order to further increase the internal reliability and validity of the current study, depression diagnosis was based on a standardized questionnaire (BDI) with high reliability and validity

(see section 2.3.2.1.) and a short diagnostic structured interview (M.I.N.I.), which has a high agreement with other structured instruments (such as WMH-CIDI, SKID, BDI). The M.I.N.I. was applied to avoid also the confounding between depression and other comorbid disorders, where if the patient has other disorders in addition to depression we cannot distinguish whether the effects can be attributed to depression or other disorders.

After taking into account the previous requirements related to objectivity, reliability and validity, we can say that the most important limitations of the current study were as follows:

1- Differences in educational level: Although 76,47% of the respondents in this study were undergraduate and graduate students, there were significant differences in educational years between the cultural groups (Germans and Syrians), depression-groups (control and experimental), and also gender groups (men and women). To control the impact of educational differences on recognizing emotional expressions, the educational years-variable was controlled as a confounding variable in the statistical analyses. Therefore, in future studies it would be interesting to investigate the effect of culture, depression, or gender on recognition of facial expressions in an academic sample, as well as in poorly educated samples.

2- Decrease in number of Syrian women compared to German women due to exclusion of participants who had other disorders (such as psychosis, bipolar disorder, or substance dependence) or health problems related to severe head injury, visual impairment, or inability to use a computer. Future researches should take into account the same number of men and women during the data collection process.

3- It was important to measure the face recognition by responding to computer stimuli, but on a more general note, the mechanisms of facial emotions processing in humans are highly complex, and the methodologies used here must be complemented by others to achieve a fuller understanding of these processes.

4- The face in the crowd task (FCT) included only northern European facial paradigms. This makes it difficult to compare the results of the FCT with the results of the ADFES, which included two stimuli' cultures (Northern European and Mediterranean).

4.3. Recommendations and suggestions for future research

The present study shows that depression can lead to a marked drop in the recognition accuracy of facial expressions. Furthermore, it indicates that the cultural differences between Germans and Syrians influence the facial emotion processing. In addition, other factors such as social support, cognitive reappraisal strategy, and current positive mood play an important role in improving the ability to recognize facial expressions. These findings provide further support for future research aimed to understand the psychological, cultural, and social factors influencing the recognition of facial expressions. They also enhance the role of cognitive behavioral therapy of depression by highlighting the importance of reducing negative biases and promoting positive performance of facial expression recognition.

Measuring the participants' behavioural responses to emotional facial stimuli displayed by computer may not be quite enough to understand the mechanisms of facial expression recognition in humans. Therefore, future research should consider other measurement methods such as measuring the psychophysiological (e.g., eye movements, heart beat and skin conductance response) and neurophysiological signals (e.g., recording of electrical activity of the brain by electroencephalography) during facial expression recognition, in addition to employment of other computer techniques such as automatic face recognition (AFR), Multisense technological system, and high-definition cameras for scanning the movement of facial muscles.

Using different cultures for static and dynamic stimuli can also be considered as an important factor in comparing the results of facial expression recognition and should be taken up in future research.

Moreover, this study provides important implications for cognitive behavioral therapy of depression, which could include training programs for improving recognition of facial expressions and evaluate the effects of such interventions on social interaction and depressive symptoms.

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APPENDICES

- The Mini-International Neuropsychiatric Interview (M.I.N.I.)
- Beck Depression Inventory (BDI)
- Emotion Regulation Questionnaire (ERQ)
- Current Mood State Scale (ASTS: Aktuelle Stimmungsskala)
- The Social Support Questionnaire (F-SozU: Fragebogen zur sozialen Unterstützung)

M.I.N.I.

Mini International Neuropsychiatric Interview

German Version 5.0.0

DSM-IV

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NAME DES PATIENTEN:	_____	***PROTOKOLL NUMMER:***	_____
GEBURTSDATUM:	_____	***Beginn des Interviews:***	_____
NAME DES INTERVIEWERS:	_____	***Ende des Interviews:***	_____
DATUM DES INTERVIEWS:	_____	***GESAMTDAUER DES INTERVIEWS:***	_____

M.I.N.I. 5.0.0 / Deutsche Version / DSM-IV

MODULE	ZEITRAUM KRITERIEN ERFÜLLT	
A. EPISODE EINER MAJOR DEPRESSION	Aktuell (2 Wochen)+ lifetime	
A'. MDE MIT MELANCHOLISCHEM ANTEIL	Aktuell (2 Wochen)	Optional
B. DYSTHYMIE	Aktuell (letzte 2 Jahre)	
C. SUIZIDALITÄT	Aktuell (letzter Monat)	
D. (HYPO)MANISCHE EPISODE	Aktuell + lifetime	
E. PANIKSTÖRUNG	Lifetime + im vergangenen Monat	
F. AGORAPHOBIE	Aktuell	
G. SOZIALE PHOBIE (SOZ. ANGSTSTÖRUNG)	Aktuell (letzter Monat)	
H. ZWANGSSTÖRUNG	Aktuell (letzter Monat)	
I. POSTTRAUMATISCHE BELASTUNGSSTÖR	Aktuell (letzter Monat)	Optional
J. ALKOHOLABHÄNGIGKEIT/MISSBRAUCH	Letzte 12 Monate	
K. DROGENABHÄNGIGKEIT/MISSBRAUCH	Letzte 12 Monate	
L. PSYCHOTISCHE STÖRUNGEN	Lifetime + Aktuell	
M. ANOREXIA NERVOSA	Aktuell (letzte 3 Monate)	
N. BULIMIA NERVOSA	Aktuell (letzte 3 Monate)	
O. GENERALISIERTE ANGSTSTÖRUNG	Aktuell (letzte 3 Monate)	
P. ANTISOZIALE PERSÖNLICHKEITSSTÖRUNG	Lifetime	Optional

ALLGEMEINE HINWEISE

Das M.I.N.I wurde konzipiert als ein kurzes strukturiertes Interview zur Erfassung der hauptsächlichen psychiatrischen Achse-I-Störungen im DSM-IV und ICD-10. Es wurden Validierungs- und Reliabilitätsstudien durchgeführt, die das M.I.N.I mit dem SCID-P für das DSM-III-R und mit dem CIDI (ein von der WHO entwickeltes strukturiertes Interview für nicht-professionelle Interviewer) für das ICD-10 verglichen. Die Ergebnisse dieser Studien zeigen, daß das M.I.N.I annehmbar hohe Valididierungs- und Reliabilitätswerte hat, daß es aber in einer wesentlichen kürzeren Zeit durchgeführt werden kann (Mittelwert 18.7 ±11.6 Minuten, Median 15 Minuten) als die oben angeführten Instrumente. Kliniker können es nach einer kurzen Schulung einsetzen. Nicht-professionelle Interviewer benötigen eine ausführlichere Schulung.

- **Interview :**

Um das Interview so kurz wie möglich zu halten,informieren Sie den Patienten/die Patientin, daß Sie ein klinisches Interview durchführen wollen, das strukturierter ist als üblich und sehr präzise Fragen über psychologische Probleme beeinhaltet, die mit JA oder NEIN zu beantworten sind.

- **Allgemeine Gliederung :**

Das M.I.N.I. Plus ist in Module eingeteilt, die durch Buchstaben gekennzeichnet sind, von denen jeder einer diagnostischen Kategorie entspricht.
– Am Anfang jedes diagnostischen Moduls (mit Ausnahme des Moduls für psychotische Störungen) werden die Screeningfragen, die den Hauptkriterien der Störungen entsprechen, in einem grau-unterlegten Feld aufgeführt.
– Am Ende jedes Moduls kann der Kliniker in den Diagnose-Feldern ankreuzen, welche diagnostischen Kriterien zutreffen.

- **Legende:**

Sätze in "Normalschrift" sollten dem Patienten wörtlich vorgelesen werden, um die Beurteilung der diagnostischen Kriterien standardisieren zu können.

Sätze in "GROSSBUCHSTABEN" sollten dem Patienten nicht vorgelesen werden. Sie sind Anweisungen für den Interviewer und helfen bei der Bewertung der diagnostischen Algorithmen.

Sätze in "**Fettdruck**" geben den zu untersuchenden Zeitraum an. Der Interviewer soll sie so oft wie nötig vorlesen. Nur die Symptome, die innerhalb dieses Zeitrahmens vorlagen, sollten beim Bewerten der Antworten in Betracht gezogen werden.

Antworten mit "darüberstehendem Pfeil" **(➔)** geben an, daß eines von den für die Diagnose notwendigen Kriterien nicht erfüllt ist. In diesem Fall sollte der Interviewer zum Ende des Moduls gehen und in allen Diagnose-Feldern ein NEIN ankreuzen und zum nächsten Modul übergehen.

Wenn verschiedene *Begriffe* mit einem "Schrägstrich /"getrennt aufgeführt werden, sollte der Interviewer nur die Symptome vorlesen, von denen er weiß, daß sie beim Patienten vorliegen (z.B. bei den Fragen A3).

Sätze "(in Klammern)" sind klinische Beispiele für das Symptom. Sie können dem Patienten vorgelesen werden, um die Frage klarer zu machen.

- **Anweisungen für das Rating:**

Alle Fragen müssen bearbeitet werden. Die Antwort erfolgt durch Ankreuzen von JA oder NEIN rechts von jeder Frage.

Der Kliniker sollte sicherstellen, daß jeder Aspekt der Frage vom Patienten berücksichtigt wurde (z.B. Zeitraum, Häufigkeit, Ausmaß und/oder Alternativen).

Symptome aufgrund einer möglichen organischen Erkrankung oder durch Alkohol- bzw. Drogenmißbrauch sollten im M.I.N.I. nicht mit JA beantwortet werden. Fragen zu diesen Störungen finden Sie im M.I.N.I. Plus.

Wenn Sie Fragen haben, Vorschläge machen, an einem Training teilnehmen oder sich über Aktualisierungen des M.I.N.I. informieren wollen, wenden Sie sich bitte an:

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M.I.N.I. 5.0.0 German version / DSM-IV / current (September 1999)
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➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

A. EPISODE EINER MAJOR DEPRESSION

A1	Fühlten Sie sich in den letzten 2 Wochen beinahe jeden Tag und fast während des ganzen Tages traurig, niedergeschlagen oder deprimiert?	NEIN	JA	1
A2	Hatten Sie in den letzten 2 Wochen fast ständig das Gefühl, zu nichts mehr Lust zu haben und das Interesse und die Freude an Dingen verloren zu haben, die Ihnen gewöhnlich Freude machten?	NEIN	JA	2
	➔ WURDEN **A1** ODER **A2** MIT **JA** BEANTWORTET?	NEIN	JA	
A3	**Während der letzten zwei Wochen, als Sie sich deprimiert oder interesselos fühlten:**			
a	Hat Ihr Appetit ab,- oder zugenommen und war das an fast jedem Tag der Fall? Oder haben Sie unbeabsichtigt erheblich an Gewicht zu- oder abgenommen (d.h. ± 5 % des Körpergewichts oder ± 3,5 kg bei einem Körpergewicht von 70 kg in einem Monat)? WENN EINES HIERVON ZUTRIFFT, KREUZEN SIE **JA** AN	NEIN	JA	3
b	Hatten Sie fast jede Nacht Schlafprobleme (Einschlafprobleme, nächtliches oder frühmorgendliches Erwachen, übermäßiges Schlafen)?	NEIN	JA	4
c	Haben Sie beinahe täglich langsamer gesprochen oder sich langsamer bewegt als gewöhnlich, oder waren Sie im Gegenteil unruhig und konnten nicht stillsitzen?	NEIN	JA	5
d	Fühlten Sie sich beinahe täglich müde oder energielos?	NEIN	JA	6
e	Fühlten Sie sich beinahe täglich wertlos oder schuldig?	NEIN	JA	7
f	Hatten Sie beinahe täglich Schwierigkeiten, sich zu konzentrieren oder Entscheidungen zu treffen?	NEIN	JA	8
g	Haben Sie wiederholt daran gedacht, sich etwas anzutun, Selbstmord zu begehen oder haben Sie sich gewünscht, tot zu sein?	NEIN	JA	9
A4	WURDEN **3** ODER MEHR **A3** FRAGEN MIT **JA** BEANTWORTET? (ODER **4 A3** FRAGEN, WENN **A1** ODER **A2** MIT **NEIN** BEANTWORTET WURDEN)	**NEIN**	**JA**	
	WENN DER PATIENT DIE KRITERIEN EINER AKTUELLEN EPISODE EINER MAJOR DEPRESSION ERFÜLLT:	***EPISODE einer MAJOR DEPRESSION AKTUELL***		
A5 a	Hatten Sie während Ihres Lebens weitere Perioden von zwei Wochen oder länger, in denen Sie sich deprimiert oder interesselos fühlten, und lagen während solcher Perioden bei Ihnen die meisten der gerade angesprochenen Probleme vor?	NEIN	JA	10
b	Lagen mindestens zwei Monate ohne Depression oder Interesseverlust zwischen Ihrer aktuellen und Ihrer letzten depressiven Episode?	NEIN	JA	11
	WURDE **A5b** MIT **JA** bantwortet?	**NEIN**	**JA**	
		EPISODE einer MAJOR DEPRESSION FRÜHER		

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

A. EPISODE EINER MAJOR DEPRESSION MIT MELANCHOLISCHEN MERKMALEN (optional)

WENN DER PATIENT DIE KRITERIEN FÜR EINE EPISODE EINER MAJOR DEPRESSION ERFÜLLT (**A4 = JA**), KLÄREN SIE DIE FOLGENDEN KRITERIEN WEITER AB:

A6 a	WURDE **A2** MIT **JA** BEANTWORTET ?	NEIN	JA	12
b	Als Ihre aktuelle depressive Episode am schlimmsten war, haben Sie da auch die Fähigkeit verloren, sich über Dinge zu freuen, die Ihnen früher Freude machten oder Sie aufheiterten? **FALLS NEIN**: Wenn etwas Erfreuliches passierte, fühlten Sie sich dann trotzdem, auch vorübergehend, nicht besser?	NEIN	JA	13
	➔ Wurde entweder **A6a** ODER **A6b** mit **JA** beantwortet ?	NEIN	JA	

Während der letzten zwei Wochen, als Sie sich deprimiert oder interesselos fühlten:

A7 a	Haben Sie das Gefühl der Deprimiertheit anders erlebt als das Gefühl von Trauer beim Tod einer nahestehenden Person ?	NEIN	JA	14
b	Fühlten Sie sich morgens regelmäßig und beinahe täglich schlechter als abends?	NEIN	JA	15
c	Wachten Sie beinahe täglich mindestens zwei Stunden früher auf als sonst und hatten Sie dann Schwierigkeiten, wieder einzuschlafen?	NEIN	JA	16
d	Wurde **A3c** mit **JA** beantwortet (PSYCHOMOTORISCHE HEMMUNG ODER AGITIERTHEIT)?	NEIN	JA	17
e	Wurde **A3a** mit **JA** beantwortet (APPETITLOSIGKEIT ODER GEWICHTSVERLUST)?	NEIN	JA	18
f	Fühlten Sie sich übermäßig oder der Situation unangemessen stark schuldig?	NEIN	JA	19

WURDEN **3** ODER MEHR **A7** FRAGEN MIT **JA** beantwortet ?

NEIN **JA**

EPISODE EINER MAJOR DEPRESSION Mit Melancholischen Merkmalen AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

B. DYSTHYMIE

DIESEN ABSCHNITT NICHT EXPLORIEREN, WENN DER PATIENT AKTUELL DIE KRITERIEN DER EPISODE EINER MAJOR DEPRESSION ERFÜLLT

B1	Fühlten Sie sich in den vergangenen zwei Jahren überwiegend traurig, niedergeschlagen oder deprimiert?	➔ NEIN	JA	20
B2	Kam es in diesem Zeitraum vor, daß Sie sich mehr als zwei Monate gut fühlten?	NEIN	➔ JA	21
B3	**Während dieser Zeit, in der Sie sich meistens deprimiert fühlten:**			
a	Hat sich da Ihr Appetit merklich geändert?	NEIN	JA	22
b	Hatten Sie Schlafprobleme oder schliefen Sie zuviel?	NEIN	JA	23
c	Fühlten Sie sich müde oder energielos?	NEIN	JA	24
d	Haben Sie Ihr Selbstvertrauen verloren ?	NEIN	JA	25
e	Hatten Sie Schwierigkeiten, sich zu konzentrieren oder Entscheidungen zu treffen ?	NEIN	JA	26
f	Fühlten Sie sich hoffnungslos ?	NEIN	JA	27
	WURDEN **2** ODER MEHR **B3** FRAGEN MIT **JA** BEANTWORTET?	➔ NEIN	JA	
B4	Haben Sie diese Probleme sehr belastet oder erheblich in Ihrer beruflichen Leistungsfähigkeit, Ihren sozialen Beziehungen oder anderen Lebensbereichen beeinträchtigt?	➔ NEIN	JA	28
	WURDE **B4** MIT **JA** BEANTWORTET ?	**NEIN**	**JA**	

DYSTHYMIE AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

C. SUIZIDALITÄT

Während des vergangenen Monats:

C1	Dachten Sie da, es wäre besser, tot zu sein oder wünschten Sie sich, zu sterben?	NEIN	JA	1
C2	Haben Sie versucht, sich selbst zu verletzen ?	NEIN	JA	2
C3	Dachten Sie daran, Selbstmord zu begehen?	NEIN	JA	3
C4	Machten Sie einen Plan, wie Sie sich das Leben nehmen könnten?	NEIN	JA	4
C5	Haben Sie versucht, Selbstmord zu begehen?	NEIN	JA	5

Während Ihres Lebens

C6	Haben Sie bereits schon einmal versucht, Selbstmord zu begehen ?	NEIN	JA	6

WURDE MINDESTENS **1** DER FRAGEN MIT **JA** beantwortet ?

FALLS JA, **SPEZIFIZIEREN** SIE DEN SCHWEREGRAD DES SUIZIDRISIKOS WIE FOLGT:

C1 oder C2 oder C6 = JA: GERING
C3 oder (C2 +C6) = JA: MÄSSIG
C4 oder C5 oder (C3 + C6) = JA: HOCH

NEIN **JA**

SUIZIDRISIKO AKTUELL

GERING ☐
MÄSSIG ☐
HOCH ☐

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

D. MANISCHE EPISODE (Hypomanische Episode)

D1 a	Gab es bei Ihnen schon **jemals** eine Zeit, in der Sie sich so überschwenglich, aufgedreht und voller Energie fühlten, daß dies für Sie zu Problemen führte oder andere Leute dachten, daß Sie sich außergewöhnlich benehmen würden? WENN SIE NICHT UNTER DROGEN- ODER ALKOHOLEINFLUß STANDEN	NEIN	JA	1
	FALLS DER PATIENT NICHT GENAU VERSTEHT, WAS SIE MIT "ÜBERSCHWENGLICH" ODER "AUFGEDREHT" MEINEN, PRÄZISIEREN SIE: Mit "überschwenglich" oder "aufgedreht" meine ich: eine deutlich gehobene Stimmung, vermehrte Energie, geringeres Schlafbedürfnis, Gedankenrasen und Ideenfülle, gesteigerte Betriebsamkeit, Kreativität und Antrieb oder impulsives Verhalten?			
	FALLS JA :			
b	Fühlen Sie sich im Moment "überschwenglich", "aufgedreht" oder "voller Energie"?	NEIN	JA	2
D2 a	Gab es bei Ihnen schon **jemals** eine Zeit, in der Sie sich andauernd, mehrere Tage lang, so reizbar fühlten, daß Sie in verbale oder körperliche Auseinandersetzungen gerieten oder fremde Personen anschrieen ?	NEIN	JA	3
	Haben Sie oder andere bemerkt, daß Sie im Vergleich zu anderen Menschen reizbarer waren oder überreagierten, selbst wenn Sie es in diesem Moment für gerechtfertigt hielten? WENN SIE NICHT UNTER DROGEN- ODER ALKOHOLEINFLUß STANDEN			
	FALLS JA :			
b	Fühlen Sie sich im Moment andauernd reizbar ?	NEIN	JA	4
		➔		
	WURDE **D1a** ODER **D2a** MIT **JA** BEANTWORTET?	NEIN	JA	

D3 FALLS D1b ODER D2b = JA : EXPLORIEREN SIE NUR DIE **AKTUELLE** EPISODE
FALLS D1b UND D2b = NEIN : EXPLORIEREN SIE DIE **AUSGEPRÄGTESTE** FRÜHERE EPISODE

Während solcher Zeiten, als Sie sich "überschwenglich", voller Energie oder reizbar fühlten:

a	Hatten Sie das Gefühl, Dinge tun zu können, zu denen andere nicht fähig sind, oder eine besonders wichtige Person zu sein?	NEIN	JA	5
b	Brauchten Sie da weniger Schlaf (fühlten Sie sich z.B. nach nur wenigen Stunden Schlaf ausgeruht)?	NEIN	JA	6
c	Redeten Sie ununterbrochen oder so schnell, daß andere Schwierigkeiten hatten, Sie zu verstehen?	NEIN	JA	7
d	Hatten Sie das Gefühl, daß Ihnen die Gedanken durch den Kopf rasten?	NEIN	JA	8

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

e Waren Sie so zerstreut, daß Sie bereits durch eine kleine Unterbrechung den Faden verloren? NEIN JA 9

f Waren Sie derart aktiv oder ständig körperlich in Bewegung, daß sich andere Ihretwegen Sorgen machten? NEIN JA 10

g Erschienen Ihnen bestimmte Aktivitäten derart angenehm und reizvoll, daß Sie die Risiken und Schwierigkeiten, die Ihnen daraus erwachsen würden, nicht beachteten (z.B. unüberlegte Einkäufe, rücksichtsloses Fahren oder leichtsinnige sexuelle Aktivitäten) ? NEIN JA 11

WURDEN **3** ODER MEHR **D3** FRAGEN MIT **JA** BEANTWORTET ODER **4,** FALLS **D1a = NEIN** (FRÜHERE EPISODE) ODER **D1b = NEIN** (AKTUELLE EPISODE) ? ➔ NEIN JA

D4 Haben diese Probleme mindestens eine Woche lang angedauert **und** waren sie Anlass für Schwierigkeiten zu Hause, bei der Arbeit oder in der Schule **oder** waren Sie wegen solcher Probleme stationär im Krankenhaus? NEIN JA 12
FALLS BEIDE BEJAHT, BEANTWORTEN SIE DIE FRAGE MIT JA

WURDE **D4** MIT **NEIN** BEANTWORTET ?

FALLS JA, SPEZIFIZIEREN SIE, OB "AKTUELLE EPISODE" ODER "FRÜHERE EPISODE"

NEIN	**JA**
HYPOMANISCHE EPISODE	
AKTUELL	•
FRÜHER	•

WURDE **D4** MIT **JA** BEANTWORTET ?

FALLS JA; SPEZIFIZIEREN SIE, OB "AKTUELLE EPISODE" ODER "FRÜHERE EPISODE"

NEIN	**JA**
MANISCHE EPISODE	
AKTUELL	•
FRÜHER	•

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

E. PANIKSTÖRUNG

E1	Hatten Sie mehr als einmal Zustände oder Anfälle, bei denen Sie sich **plötzlich** voller Angst, beklommen oder unbehaglich fühlten, auch in Situationen, in denen die meisten Leute nicht so reagiert hätten? Erreichten diese Beschwerden innerhalb von 10 Minuten den Höhepunkt? KREUZEN SIE JA NUR DANN AN, WENN DIE BESCHWERDEN INNERHALB VON 10 MINUTEN DEN HÖHEPUNKT ERREICHTEN	NEIN	JA	1
E2	FALLS **E1 = NEIN**, BEI E5 NEIN ANKREUZEN UND ZU F1 WEITERGEHEN Trat irgendeiner dieser Zustände oder Anfälle unerwartet und spontan auf oder war unvorhersehbar und ohne direkten Auslöser? FALLS **E2 = NEIN**, BEI E5 NEIN ANKREUZEN UND ZU F1 WEITERGEHEN	NEIN	JA	2
E3	Hatten Sie schon jemals nach einem derartigen Anfall einen Monat oder länger ständig Angst vor einem weiteren Anfall oder machten sich Sorgen über mögliche Folgen eines solchen Anfalls? FALLS **E3 = NEIN**, BEI E5 NEIN ANKREUZEN UND ZU F1 WEITERGEHEN	NEIN	JA	3
E4	**Während des schlimmsten Anfalls, an den Sie sich erinnern können:**			
a	Hatten Sie da Herzrasen oder starkes Herzklopfen?	NEIN	JA	4
b	Schwitzten Sie oder hatten feuchte Hände ?	NEIN	JA	5
c	Litten Sie unter Zittern oder Muskelzucken ?	NEIN	JA	6
d	Hatten Sie das Gefühl von Kurzatmigkeit oder Atemnot?	NEIN	JA	7
e	Hatten Sie Erstickungsgefühle oder einen Kloß im Hals?	NEIN	JA	8
f	Hatten Sie Schmerzen oder ein Druck,- oder Beklemmungsgefühl in der Brust?	NEIN	JA	9
g	Litten Sie unter Übelkeit oder plötzlich auftretende Magen-Darm-Beschwerden?	NEIN	JA	10
h	Fühlten Sie sich benommen, unsicher, schwindelig oder der Ohnmacht nahe?	NEIN	JA	11
i	Empfanden Sie die Dinge in Ihrer Umgebung eigenartig, unwirklich oder ungewohnt? Oder fühlten Sie sich selbst ganz oder teilweise losgelöst bzw. außerhalb Ihres Körpers?	NEIN	JA	12
j	Hatten Sie Angst, verrückt zu werden oder die Kontrolle über sich zu verlieren?	NEIN	JA	13
k	Litten Sie unter Todesangst ?	NEIN	JA	14
l	Hatten Sie Kribbeln oder Taubheitsgefühle?	NEIN	JA	15
m	Litten Sie unter Hitzewallungen oder Kälteschauern ?	NEIN	JA	16
E5	WURDEN SOWOHL **E3** ALS AUCH **4** ODER MEHR **E4** FRAGEN MIT **JA** BEANTWORTET? FALLS **E5 = NEIN**, WEITERGEHEN ZU **E7**	NEIN	JA ***Panikstörung "Lifetime"***	
E6	Hatten Sie im vergangenen Monat häufiger solche Anfälle (2 oder mehr) und ständig Angst vor einem weiteren Anfall? FALLS **E6 = JA**, WEITERGEHEN ZU **F1**	NEIN	JA ***Panikstörung Aktuell***	17
E7	WURDEN **1, 2** ODER **3** SYMPTOME IN **E4** MIT **JA** BEANTWORTET	NEIN	JA ***Panikattacken symptomarm Aktuell***	18

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

F. AGORAPHOBIE

F1	Fühlen Sie sich ängstlich oder unbehaglich an Orten oder in Situationen, aus denen es im Falle eines Panikanfalls oder der gerade besprochenen panikartigen Symptome schwierig wäre zu fliehen oder keine Hilfe erreichbar wäre, wie z.B. in einer Menschenmenge, einer Warteschlange, fern von zu Hause, wenn Sie allein zuhause sind oder sich auf einer Brücke, im Bus, Zug oder Auto befinden?	NEIN	JA	19

FALLS **F1 = NEIN**, BEI F2 NEIN ANKREUZEN

F2	Fürchten Sie diese Orte/ Situationen so sehr, daß Sie sie vermeiden, sich darin sehr unbehaglich fühlen oder diese nur in Begleitung aufsuchen würden?	NEIN	JA	20

Agoraphobie Aktuell

WURDE **F2** (*AKTUELLE* AGORAPHOBIE) **VERNEINT**
und
WURDE **E6** (*AKTUELLE* PANIKSTÖRUNG) **BEJAHT** ?

NEIN **JA**

PANIKSTÖRUNG ohne Agoraphobie AKTUELL

WURDE **F2** (*AKTUELLE* AGORAPHOBIE) **BEJAHT**
und
WURDE **E6** (*AKTUELLE* PANIKSTÖRUNG) **BEJAHT** ?

NEIN **JA**

PANIKSTÖRUNG mit Agoraphobie AKTUELL

WURDE **F2** (*AKTUELLE* AGORAPHOBIE) **BEJAHT**
und
WURDE **E5** (PANIKSTÖRUNG „*LIFETIME*“) **VERNEINT** ?

NEIN **JA**

AGORAPHOBIE Ohne frühere Panikstörung AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

G. SOZIALE PHOBIE (SOZIALE ANGSTSTÖRUNG)

G1	Hatten Sie im vergangenen Monat Angst, die Aufmerksamkeit anderer auf sich zu ziehen oder war Ihnen die Vorstellung peinlich, in bestimmten sozialen Situationen bloßgestellt zu werden, z.B. vor einer Gruppe das Wort zu ergreifen, in Gegenwart anderer zu essen oder zu schreiben oder in anderen sozialen Bereichen beurteilt zu werden?	➔ NEIN	JA	1
G2	Glauben Sie, daß diese Angst übertrieben oder unsinnig ist ?	➔ NEIN	JA	2
G3	Fürchten Sie diese sozialen Situationen so sehr, daß Sie sie vermeiden oder sich darin sehr unwohl fühlen?	➔ NEIN	JA	3
G4	Fühlen Sie sich wegen dieser Angst in der Ausführung Ihrer alltäglichen Arbeiten, Ihren sozialen Aktivitäten oder in Ihrem Wohlbefinden beeinträchtigt?	NEIN	JA	4

WURDE **G4 BEJAHT** ?

NEIN	**JA**
SOZIALE PHOBIE AKTUELL	

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

H. ZWANGSSTÖRUNG

H1 Haben Sie im Verlauf des vergangenen Monats unter aufdringlichen Gedanken oder Vorstellungen gelitten, die unaufhörlich wiederkamen, ohne daß Sie es wollten und die Sie als unangemessen, ängstigend oder belastend erlebten? (Z.B. der Gedanke, daß Sie schmutzig wären oder Keime an sich hätten **oder** Angst davor, andere zu kontaminieren **oder** Angst davor, einer anderen Person Schmerz oder Schaden zuzufügen, obwohl Sie dies nicht wollten **oder** Angst davor, irgendeinen Impuls in die Tat umzusetzen **oder** die Vorstellung, für alle möglichen Dinge, die schief laufen könnten, die Verantwortung zu tragen **oder** aufdringliche sexuelle oder religiöse Vorstellungen oder Impulse) NEIN JA 1

NICHT ZU BERÜCKSICHTIGEN SIND ÜBERMÄSSIGE BESORGNIS ÜBER PROBLEME DES TÄGLICHEN LEBENS UND IMMER WIEDERKEHRENDE GEDANKEN IM ZUSAMMENHANG MIT ANDEREN STÖRUNGEN (EßSTÖRUNG, SEXUELLE DEVIATION, PATH. ALKOHOL,- ODER DROGENKONSUM, PATH. SPIELEN), WEIL DER PATIENT DANN AN DER AKTIVITÄT SELBST FREUDE FINDEN KÖNNTE UND IHR NUR WEGEN IHRER NEGATIVEN KONSEQUENZEN WIDERSTEHEN WÜRDE.

FALLS **H1** = **NEIN, WEITERGEHEN ZU H4**

H2 Sind Ihnen diese Vorstellungen immer wieder in den Sinn gekommen, selbst wenn Sie versuchten, sie zu ignorieren oder sie loszuwerden? NEIN JA 2

FALLS **H2** = **NEIN, WEITERGEHEN ZU H4**

H3 Glauben Sie, dass diese Vorstellungen Ihre eigenen Gedanken sind und dass sie Ihnen nicht von außen eingegeben wurden? NEIN JA 3

H4 Haben Sie im Verlauf des vergangenen Monats den Drang verspürt, bestimmte Dinge immer wieder zu tun, ohne dem widerstehen zu können, wie z.B. immer wieder Ihre Hände oder andere Dinge zu waschen, immer wieder bestimmte Dinge zu kontrollieren (z.B. Herd, Tür) oder zu ordnen oder Handlungen wie z.B. ständiges Zählen oder Wörterwiederholen ? NEIN JA 4

WURDE **H3** ODER **H4 BEJAHT** ? ➔ NEIN JA

H5 Kamen Ihnen diese immer wiederkehrenden Vorstellungen/ Handlungen übertrieben oder unsinnig vor? ➔ NEIN JA 5

H6 Beeinträchtigen Sie diese immer wiederkehrenden Vorstellungen/ Handlungen bei Ihren alltäglichen Verrichtungen, Ihrer Arbeit, Ihren sozialen Aktivitäten oder Beziehungen oder nahmen mehr als 1 Stunde pro Tag in Anspruch? NEIN JA 6

WIRD **H6 BEJAHT**?

NEIN **JA**

ZWANGSSTÖRUNG AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

I. POSTTRAUMATISCHE BELASTUNGSSTÖRUNG (optional)

I1	Erlebten Sie jemals selbst oder wurden Sie Zeuge eines traumatischen Ereignisses, das tatsächlichen oder drohenden Tod oder eine ernsthafte Verletzung für Sie oder eine andere Person beinhaltete? BEISPIELE: LEBENSBEDROHLICHER UNFALL, GEWALTTÄTIGER SEXUELLER ODER KÖRPERLICHER ANGRIFF, TERRORANSCHLAG, GEISELNAHME, ENTFÜHRUNG, BEWAFFNETER RAUBÜBERFALL, BRANDKATASTROPHE, AUFFINDEN EINER LEICHE, UNERWARTETER TOD EINES ANGEHÖRIGEN, KRIEG, NATURKATASTROPHEN) War dies für Sie mit intensiver Furcht, Hilflosigkeit oder Entsetzen verbunden?	➔ NEIN	JA	1
I2	Haben Sie das Ereignis im Verlauf des vergangenen Monats auf belastende Weise wiedererlebt (z.B. durch wiederkehrende Träume, intensiv erlebte Erinnerungen, flashbacks oder körperliche Beschwerden) ?	➔ NEIN	JA	2
I3	**Während des vergangenen Monats :**			
a	Vermieden Sie Gedanken an das Ereignis oder vermieden Sie Situationen oder Dinge, die Sie daran erinnern?	NEIN	JA	3
b	Hatten Sie Schwierigkeiten, sich an einen wichtigen Aspekt des Ereignisses zu erinnern?	NEIN	JA	4
c	Ließ Ihr Interesse an Hobbies oder sozialen Aktivitäten nach?	NEIN	JA	5
d	Fühlten Sie sich von anderen Menschen entfremdet?	NEIN	JA	6
e	Hatten Sie den Eindruck, daß Ihre Gefühle abgestumpft sind?	NEIN	JA	7
f	Hatten Sie das Gefühl, daß Ihre Lebenserwartungen durch das Ereignis eingeschränkt werden?	NEIN	JA	8
	WURDEN **3** OR MEHR **I3** FRAGEN MIT **JA** BEANTWORTET ?	➔ NEIN	JA	
I4	**Während des vergangenen Monats :**			
a	Hatten Sie da Schwierigkeiten, ein- oder durchzuschlafen?	NEIN	JA	9
b	Waren Sie besonders reizbar oder hatten Sie Wutanfälle?	NEIN	JA	10
c	Hatten Sie Schwierigkeiten, sich zu konzentrieren?	NEIN	JA	11
d	Waren Sie unruhig oder ständig “auf dem Sprung”?	NEIN	JA	12
e	Waren Sie übermäßig schreckhaft ?	NEIN	JA	13
	WURDEN **2** ODER MEHR **I4** FRAGEN MIT **JA** BEANTWORTET?	➔ NEIN	JA	
I5	Haben Sie diese Probleme während des vergangenen Monats bei Ihrer Arbeit oder Ihren sozialen Aktivitäten beeinträchtigt oder fühlten Sie sich hierdurch sehr belastet?	NEIN	JA	14
	WURDE **I5 BEJAHT** ?	**NEIN**	**JA**	

POSTTRAUMATISCHE BELASTUNGS-STÖRUNG AKTUELL

M.I.N.I. 5.0.0 German version / DSM-IV / current (September 1999)
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German version: M. Ackenheil, G. Stotz, R. Dietz-Bauer, A. Vossen (Psychiatrische Universitätsklinik, MÜNCHEN, GERMANY)

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

J. ALKOHOLABHÄNGIGKEIT/-MISSBRAUCH

J1	Ist es während der vergangenen 12 Monate mehr als dreimal vorgekommen, daß Sie mehr als 3 alkoholische Getränke innerhalb von 3 Stunden getrunken haben?	➔ NEIN	JA	1
J2	**Während der vergangenen 12 Monate :**			
a	Benötigten Sie da mehr Alkohol als früher, um die gleiche Wirkung zu erzielen?	NEIN	JA	2
b	Wenn Sie weniger getrunken haben, zitterten dann Ihre Hände, schwitzten Sie oder fühlten sich erregt? Kam es vor, dass Sie tranken, um derartige Beschwerden oder einen Kater zu vermeiden? WENN EINES HIERVON ZUTRIFFT, KREUZEN SIE **JA** AN	NEIN	JA	3
c	Kam es vor, daß Sie mehr tranken als ursprünglich beabsichtigt?	NEIN	JA	4
d	Haben Sie bereits erfolglos versucht, Ihren Alkoholkonsum einzuschränken oder gar nicht mehr zu trinken?	NEIN	JA	5
e	Verbrachten Sie an den Tagen, an denen Sie tranken, sehr viel Zeit damit, sich Alkohol zu besorgen, Alkohol zu trinken oder sich von der Alkoholwirkung zu erholen?	NEIN	JA	6
f	Haben Sie Ihre Aktivitäten, wie Arbeit, Freizeit oder soziale Kontakte, aufgrund Ihres Alkoholkonsums eingeschränkt?	NEIN	JA	7
g	Haben Sie weiterhin getrunken, obwohl Sie wußten, daß dies bei Ihnen zu gesundheitlichen oder seelischen Problemen führte?	NEIN	JA	8
	WURDEN **3** ODER MEHR**J2** FRAGEN MIT **JA** BEANTWORTET ?	**NEIN**	**JA**	
		ALKOHOL-ABHÄNGIGKEIT AKTUELL		
	ZEIGT DER PATIENT ALKOHOLABHÄNGIGKEIT?	NEIN	➔ JA	
J3	**Während der vergangenen 12 Monate:**			
a	Waren Sie mehrmals betrunken oder verkatert, als Sie Aufgaben zu erledigen hatten in der Schule, bei der Arbeit oder zu Hause? Hat dies zu Schwierigkeiten geführt? KREUZEN SIE NUR DANN JA AN, WENN DIES PROBLEME VERURSACHT HAT	NEIN	JA	9

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

b Kam es vor, daß Sie schon einmal in irgendeiner Situation betrunken waren, in der ein Verletzungsrisiko bestand, z.B. beim Auto,- oder Motorradfahren oder Bedienen von Maschinen etc.)? NEIN JA 10

c Hatten Sie wegen Ihres Trinkens irgendwelche Probleme mit dem Gesetz, z.B. eine Verhaftung oder Anzeige? NEIN JA 11

d Haben Sie weiterhin Alkohol getrunken, obwohl Sie dadurch Probleme mit Ihrer Familie oder anderen Personen bekommen haben? NEIN JA 12

WURDE **1** ODER MEHR **J3** FRAGEN MIT **JA** BEANTWORTET?

NEIN **JA**

ALKOHOL-MISSBRAUCH AKTUELL

AMPHETAMIN	BENZIN	MORPHINE
CANNABIS	KLEBSTOFF	OPIUM
KOKAIN	GRAS	PALFIUM
CODEIN	HASCHISCH	PCP
CRACK	HEROIN	RITALIN
DILAUDID	LSD	TEMGESIC
ECSTASY	MARIHUANA	THC
AETHER	MESCALIN	TOLUEN
FREEBASE	METHADON	TRICHLORAETHYLEN

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➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

K. STÖRUNGEN IM ZUSAMMENHANG MIT PSYCHOTROPEN SUBSTANZEN

K1 Ich werde Ihnen jetzt eine Liste mit verschiedenen Drogen und Arzneimitteln zeigen.
Nahmen Sie während der vergangenen 12 Monate irgendeine dieser Substanzen mehrmals ein, um "high" zu werden, sich besser zu fühlen oder Ihre Stimmung zu verändern?

➔ NEIN JA

KREUZEN SIE JEDE SUSTANZ AN, DIE EINGENOMMEN WURDE :

Stimulantien: Amphetamine, "speed", Ritalin, Appetitzügler.
Kokain: Crack, "speedball".
Narkotika: Heroin, Morphine, Dilaudid, Opium, Methadon, Paracodein,
Halluzinogene : LSD ("acid")Trips, Mescalin, Peyott, PCP ("angel dust"), Psilocybin, "Fliegenpilze", Ecstasy, MDA, oder MDMA.
Schnüffelstoffe: Ethylchlorid, Lachgas, Pattex
Marihuana: Haschisch, THC, "pot", "gras", "Sheet" Cannabis
Tranquillantien: Valium, Halcion, Barbiturate, Flunis, Tohyps
Verschiedene: Steroide, rezeptfreie Schlafmittel oder Appetitzügler. Weitere?

NENNEN SIE DIE AM HÄUFIGSTEN KONSUMIERTEN SUBSTANZEN: _____
_____

SPEZIFIZIEREN SIE, AUF WELCHE SUBSTANZEN SICH IHRE WEITERE EXPLORATION BEZIEHT:

JEDE EINZELNE SUBSTANZ (ODER SUBSTANZKLASSE) ☐

NUR DIE AM HÄUFIGSTEN KONSUMIERTE SUBSTANZ (ODER SUBSTANZKLASSE) ☐

BEI GEBRAUCH NUR EINER SUBSTANZ (ODER SUBSTANZKLASSE): ☐

K2 **Wenn Sie an Ihren Konsum von [NENNEN SIE DIE SUBSTANZ/ SUBSTANZKLASSE] während der vergangenen 12 Monate denken :**

a Haben Sie bemerkt, daß Sie mehr [NAME DER SUBSTANZ/ SUBSTANZKLASSE] einnehmen mußten, um die gleiche Wirkung wie früher zu erzielen? NEIN JA 1

b Hatten Sie Entzugserscheinungen, wenn Sie versuchten, die Einnahme von [SUBSTANZ/ SUBSTANZKLASSE] einzuschränken oder ganz einzustellen (z.B. Schmerzen, Zittern, Fieber, Schwächegefühle, Übelkeit und Durchfall, Schwitzen, Herzklopfen, Schlafstörungen, Unruhe, Ängstlichkeit, Reizbarkeit und deprimierte Stimmung)?
Oder nahmen Sie irgendwelche Substanzen ein, um das Auftreten solcher Beschwerden (Entzugserscheinungen) zu vermeiden oder um sich besser zu fühlen? NEIN JA 2
WENN EINES HIERVON ZUTRIFFT, KREUZEN SIE **JA** AN

c Kam es wiederholt vor, daß Sie mehr [SUBSTANZ/ SUBSTANZKLASSE] konsumierten, als Sie ursprünglich beabsichtigten? NEIN JA 3

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

d Haben Sie bereits einmal erfolglos versucht, ihren Konsum von [SUBSTANZ/ SUBSTANZKLASSE] zu reduzieren oder einzustellen? NEIN JA 4

e Verbrachten Sie an den Tagen, an denen Sie [SUBSTANZ/ SUBSTANZKLASSE] konsumierten, sehr viel Zeit (mehr als 2 Stunden) damit, diese Substanz zu besorgen, sie einzunehmen oder sich von ihrer Wirkung zu erholen? NEIN JA 5

f Haben Sie ihre Aktivitäten wie Arbeit, Freizeit oder das Zusammensein mit Ihrer Familie oder Freunden aufgrund Ihres Substanzkonsums eingeschränkt? NEIN JA 6

g Haben Sie weiterhin [SUBSTANZ/ SUBSTANZKLASSE] benutzt, obwohl Sie wußten, daß dies bei Ihnen zu gesundheitlichen oder seelischen Problemen führte? NEIN JA 7

WURDEN **3** ODER MEHR **K2** FRAGEN MIT **JA** BEANTWORTET? **NEIN JA**

BENENNEN SIE DIE SUBSTANZ(EN):_____
_____

SUBSTANZ-ABHÄNGIGKEIT AKTUELL

ZEIGT DER PATIENT ABHÄNGIGKT VON DER (DEN) KONSUMIERTEN DROGEN? NEIN JA ➔

K3 **Während der letzten 12 Monate:**

a Waren Sie durch die Einnahme von [SUBSTANZ/SUBSTANZKLASSE] berauscht oder fühlten sich verkatert oder high, als Sie Aufgaben zu erledigen hatten in der Schule, bei der Arbeit oder zu Hause? Hat dies zu Schwierigkeiten geführt? NEIN JA 8
KREUZEN SIE NUR DANN **JA** AN, WENN DIES PROBLEME VERURSACHT HAT

b Kam es vor, daß Sie schon einmal in irgendeiner Situation von [SUBSTANZ/ SUBSTANZKLASSE] berauscht oder high waren, in der ein Verletzungsrisiko bestand, z.B. beim Auto,- oder Motorradfahren oder Bedienen von Maschinen etc.)? NEIN JA 9

c Hatten Sie wegen Ihres Konsums von [SUBSTANZ/ SUBSTANZKLASSE] irgendwelche Probleme mit dem Gesetz, z.B. eine Verhaftung oder Anzeige? NEIN JA 10

d Haben Sie weiterhin [SUBSTANZ/ SUBSTANZKLASSE] benutzt, obwohl Sie dadurch Probleme mit Ihrer Familie oder anderen Personen bekommen haben? NEIN JA 11

WURDE **1** ODER MEHR **K3** FRAGEN MIT **JA** BEANTWORTET ? **NEIN JA**

BENENNEN SIE DIE SUBSTANZ(EN):_____
_____

SUBSTANZ-MISSBRAUCH AKTUELL

L. PSYCHOTISCHE STÖRUNGEN

FRAGEN SIE NACH EINEM BEISPIEL FÜR JEDE MIT JA BEANTWORTETE FRAGE. KREUZEN SIE NUR DANN **JA** AN, WENN DIE BEISPIELE KLAR ZEIGEN, DASS ES SICH UM EINE GEDANKEN,- ODER WAHRNEHMUNGSSTÖRUNG HANDELT ODER SICH DIE BEISPIELE NICHT MIT DER KULTURELLEN ZUGEHÖRIGKEIT DES PATIENTEN ERKLÄREN LASSEN.
BEURTEILEN SIE VOR DEM KODIEREN, OB DIE DENK- UNE WAHRNEHMUNGSSTÖRUNGEN "BIZZAR" SIND.

BIZZARE WAHNVORSTELLUNGEN: DER INHALT IST OFFENSICHTLICH ABSURD, NICHT NACHVOLLZIEHBAR, UNVERSTÄNDLICH UND BASIERT NICHT AUF NORMALEN LEBENSERFAHRUNGEN

BIZZARE HALLUZINATIONEN: EINE STIMME, DIE DIE GEDANKEN UND HANDLUNGEN DER PERSON KOMMENTIERT ODER MEHRERE STIMMEN, DIE MITEINANDER SPRECHEN.

				BIZARR
	Ich werde Ihnen nun einige Fragen zu ungewöhnlichen Erlebnissen stellen, die bei manchen Menschen vorkommen können.			
L1 a	Hatten Sie jemals den Eindruck, daß jemand Sie ausspionierte, ein Komplott gegen Sie schmiedete oder daß man versuchte, Ihnen etwas anzutun? FRAGEN SIE NACH BEISPIELEN.	NEIN	JA	JA
b	**FALLS JA** : Glauben Sie das gegenwärtig auch?	NEIN	JA	JA → **L6a**
L2 a	Hatten Sie jemals den Eindruck, dass jemand Ihre Gedanken lesen oder hören konnte oder daß Sie die Gedanken anderer lesen oder hören konnten?	NEIN	JA	JA
b	**FALLS JA** : Glauben Sie das gegenwärtig auch?	NEIN	JA	JA → **L6a**
L3 a	Hatten Sie jemals den Eindruck, daß eine aussenstehende Person oder Macht Ihnen Gedanken eingegeben hat, die nicht Ihre eigenen waren oder Sie beeinflusste, Dinge zu tun, die Sie normalerweise nicht tun würden? Hatten Sie jemals den Eindruck, besessen zu sein? FRAGEN SIE NACH BEISPIELEN. NICHT-PSYCHOTISCHE BEISPIELE NICHT BERÜCKSICHTIGEN.	NEIN	JA	JA
b	**FALLS JA** : Glauben Sie das gegenwärtig auch?	NEIN	JA	JA → **L6a**
L4 a	Hatten Sie jemals den Eindruck, daß jemand über Fernsehen, Radio oder Zeitung spezielle Botschaften direkt an Sie sandte oder dass eine Ihnen unbekannte Person sich besonders für Sie interessierte?	NEIN	JA	JA
b	**FALLS JA** : Glauben Sie das gegenwärtig auch?	NEIN	JA	JA → **L6a**
L5 a	Haben Ihre Verwandten oder Freunde Ihnen jemals gesagt, daß sie Ihre Ideen für merkwürdig oder ungewöhnlich hielten? FRAGEN SIE NACH BEISPIELEN. KREUZEN SIE JA NUR DANN AN, WENN DIESE EINDEUTIGEN WAHNVORSTELLUNGEN IN L1 BIS L4 NICHT EXPLORIERT WURDEN, Z.B. GRÖSSENWAHN; VERARMUNGSWAHN SCHULD- ODER HYPOCHONDRISCHER WAHN.	NEIN	JA	JA
b	**FALLS JA** : Glauben Ihre Angehörigen oder Freunde das gegenwärtig auch?	NEIN	JA	JA
L6 a	Ist es Ihnen jemals passiert, daß Sie etwas hörten, was andere nicht hören konnten, z.B. Stimmen? HALLUZINATIONEN WERDEN NUR ALS " BIZARR " EINGESTUFT, FALLS DER PATIENT DIE FOLGENDE FRAGE BEJAHT: Hörten Sie eine Stimme, die Ihre Gedanken oder Ihr Verhalten kommentierte oder hörten Sie zwei oder mehr Stimmen, die sich miteinander unterhielten?	NEIN	JA	JA
b	**FALLS JA** : Hörten Sie derartige Dinge auch während des vergangenen Monats?	NEIN	JA	JA → **L8b**
L7 a	Hatten Sie jemals eine Vision während Sie wach waren oder haben Sie Dinge gesehen, die andere nicht sehen konnten? KREUZEN SIE NUR DANN JA AN, WENN SICH DIE VISIONEN NICHT MIT DER	NEIN	JA	

KULTURELLEN ZUGEHÖRIGKEIT DES PATIENTEN ERKLÄREN LASSEN

b **FALLS JA** : Hatten Sie derartige Visionen auch während des vergangenen Monats? NEIN JA

BEURTEILUNG DES UNTERSUCHERS :

L8 b ZEIGT DER PATIENT AKTUELL INKOHÄRENTES DENKEN ODER VERWORRENE SPRACHE ODER AUSGEPRÄGTE ASSOZIATIVE LOCKERUNG? NEIN JA

L9 b WIRKT DER PATIENT AKTUELL ZERFAHREN ODER KATATON? NEIN JA

L10b FÄLLT EINE NEGATIV-SYMPTOMATIK WÄHREND DES INTERVIEWS AUF: Z.B. DEUTLICHE AFFEKTVERFLACHUNG, SPRACHVERARMUNG ODER UNFÄHIGKEIT, ZIELGERICHTETE AKTIVITÄTEN ZU BEGINNEN ODER DURCHZUFÜHREN? NEIN JA

L11 **L1 BIS L10** :

- WURDEN **1 ODER MEHR** FRAGEN UNTER "**b**" BEANTWORTET MIT **JA BIZARR**?

ODER

- WURDEN **2 ODER MEHR** FRAGEN UNTER "**b**" BEANTWORTET MIT **JA** (NICHT BIZARR) ?

NEIN JA

PSYCHOTISCHE EPISODE AKTUELL

L12 **L1 BIS L7** :

- WURDEN **1 ODER MEHR** FRAGEN UNTER "**a**" BEANTWORTET MIT **JA BIZARR**?

ODER

- WURDEN **2 ODER MEHR** FRAGEN UNTER "**a**" BEANTWORTET MIT **JA** (NICHT BIZARR) ?
  (STELLEN SIE SICHER, DASS DIESE 2 SYMPTOME GLEICHZEITIG AUFTRATEN)

ODER

- WURDE **L11** BEANTWORTET MIT **JA** ?

NEIN JA

PSYCHOTISCHE EPISODE FRÜHER

L13a FALLS **L11 BEJAHT** ODER MINDESTENS EIN **JA** BEI **L1** BIS **L7** ANGEKREUZT WURDE:

BESTEHT BEI DEM PATIENTEN

EINE EPISODE EINER MAJOR DEPRESSION (AKTUELL ODER FRÜHER)

ODER EINE MANISCHE EPISODE (AKTUELL ODER FRÜHER)? → NEIN JA

b WURDE **L13A** MIT **JA** BEANTWORTET?

Sie hatten bereits berichtet, daß Sie Zeiten hatten, in denen Sie sich (deprimiert/ überschwenglich/ andauernd reizbar) fühlten.

Traten diese Überzeugungen und Erfahrungen, die Sie gerade beschrieben haben (bejahte Symptome L1 bis L7), nur in solchen Zeiten auf, in denen Sie sich (deprimiert/ überschwenglich/ andauernd reizbar) fühlten? → NEIN JA

WIRD **L13b BEJAHT**?

NEIN JA

AFFEKTIVE STÖRUNG MIT PSYCHOTISCHEN MERKMALEN AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

M. ANOREXIA NERVOSA

M1 a	Wie gross sind Sie?	|__|__|__|		Cm	☐
b	Was war Ihr niedrigstes Gewicht in den vergangenen 3 Monaten?	|__|__|__|		Kg	☐
c	LIEGT DAS GEWICHT DES PATIENTEN UNTER DEM KRITISCHEN SCHWELLENWERT? BEACHTEN SIE DIE TABELLE UNTEN	➔ NEIN	JA		1

Während der vergangenen 3 Monate:

M2	Versuchten Sie da trotz Ihres niedrigen Gewichts, nicht zuzunehmen?	➔ NEIN	JA	2
M3	Befürchteten Sie, zuzunehmen oder dick zu werden, obwohl Sie nur sowenig gewogen haben?	➔ NEIN	JA	3
M4a	Fanden Sie sich zu dick oder fanden Sie einen Teil Ihres Körpers zu dick?	NEIN	JA	4
B	Hing Ihr Selbstwertgefühl sehr von Ihrem Gewicht oder Ihrer Figur ab?	NEIN	JA	5
C	Glaubten Sie, normal- oder übergewichtig zu sein?	NEIN	JA	6
M5	WURDE BEI **M4 MINDESTENS EINE FRAGE BEJAHT**?	➔ NEIN	JA	
M6	BEI FRAUEN: Blieb während der vergangenen 3 Monate Ihre Regel aus, obwohl Sie nicht schwanger waren?	➔ NEIN	JA	7

BEI FRAUEN : WURDEN **M5** UND **M6 BEJAHT**?
BEI MÄNNERN: WURDE **M5 BEJAHT**?

NEIN **JA**

ANOREXIA NERVOSA AKTUELL

TABELLE GRÖSSE / GEWICHT SCHWELLENWERTE (GRÖSSE-OHNE SCHUHE; GEWICHT-OHNE KLEIDUNG)

GRÖSSE (cm)		140	145	150	155	160	165	170	175	180	185	190
GEWICHT (kg)	Frauen	37	38	39	41	43	45	47	50	52	54	57
	Männer	41	43	45	47	49	51	52	54	56	58	61

DER KRITISCHE SCHWELLENWERT LIEGT BEI 15% UNTERHALB DES NORMALGEWICHTS ABHÄNGIG VON GRÖSSE UND GESCHLECHT DES PATIENTEN NACH DSM-IV

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

N. BULIMIA NERVOSA

N1	Hatten Sie in den vergangenen drei Monaten "Freßanfälle" oder Zeiten, in denen Sie innerhalb kurzer Zeit (z.B. innerhalb von 2 Stunden) übermäßig große Mengen an Nahrung zu sich genommen haben?	➔ NEIN	JA	8
N2	Hatten Sie in den vergangenen drei Monaten mindestens zwei "Freßanfälle" pro Woche?	➔ NEIN	JA	9
N3	Hatten Sie während dieser Freßanfälle das Gefühl, keine Kontrolle über Ihr Eßverhalten zu haben?	➔ NEIN	JA	10
N4	Haben Sie irgend etwas unternommen, um nach solchen "Freßanfällen" einer Gewichtszunahme entgegenzusteuern, wie z.B. Erbrechen, Fasten, übermäßiger Sport, Einläufe oder Einnahme von Abführmitteln, Diuretika oder anderen Medikamenten?	➔ NEIN	JA	11
N5	Hängt Ihr Selbstwertgefühl sehr von Ihrem Gewicht oder Ihrer Figur ab?	➔ NEIN	JA	12
N6	SIND DIE KRITERIEN FÜR EINE ANOREXIA NERVOSA ERFÜLLT? FALLS **N6** = **NEIN**, GEHEN SIE ZU **N8**	NEIN	JA	13
N7	Treten diese Freßanfälle nur auf, wenn Sie weniger wiegen als _____kg *? * VERWENDEN SIE DEN KRITISCHEN SCHWELLENWERT AUS DER TABELLE IM ABSCHNITT ANOREXIA NERVOSA	NEIN	JA	14

N8 WURDE **N5 BEJAHT UND N7 VERNEINT** (ODER ÜBERSPRUNGEN)?

NEIN **JA**

BULIMIA NERVOSA AKTUELL

WURDE **N7 BEJAHT** ?

NEIN **JA**

ANOREXIA NERVOSA "Binge-Eating/Purging"-Typus AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

O. GENERALISIERTE ANGSTSTÖRUNG

O1 a	Waren Sie in den vergangenen 6 Monaten oftmals übermäßig ängstlich und besorgt über viele verschiedene Dinge des täglichen Lebens wie z.B. Ihre finanzielle Situation, Ihre Arbeit, Familie oder Ihre Freunde? KREUZEN SIE BEI O1A JA NUR DANN AN, WENN DIE ANGST NICHT AUF MERKMALE EINER ANDEREN STÖRUNG BESCHRÄNKT IST (Z.B. ANGST BEI PANIKATTACKEN, ANGST VOR ÖFFENTLICHEN SITUATIONEN BEI SOZIALER PHOBIE, ANGST VOR KRANKHEIT BEI ZWANGSSTÖRUNG ODER ANGST VOR GEWICHTSZUNAHME BEI EßSTÖRUNG).	➔ NEIN	JA	1
b	Beschäftigten Sie diese Sorgen die meiste Zeit?	➔ NEIN	JA	2
O2	Fällt es Ihnen schwer, diese sorgenvollen Gedanken zu kontrollieren oder behindern diese Sorgen Sie in ihrer Konzentration?	➔ NEIN	JA	3
O3	KODIEREN SIE FÜR O3a BIS O3f NEIN FÜR SOLCHE SYMPTOME, DIE SICH AUF MERKMALE EINER VORHERGEHENDEN STÖRUNG BESCHRÄNKEN **Als Sie sich in den vergangenen 6 Monaten ängstlich oder voller Sorge fühlten, hatten Sie da fast täglich folgende Beschwerden:**			
a	Fühlten Sie sich unruhig, aufgeregt und ständig “auf dem Sprung”?	NEIN	JA	4
b	Fühlten Sie sich angespannt?	NEIN	JA	5
c	Fühlten Sie sich müde, matt oder leicht erschöpfbar?	NEIN	JA	6
d	Hatten Sie Probleme, sich zu konzentrieren oder fühlten Sie sich ganz leer im Kopf?	NEIN	JA	7
e	Fühlten Sie sich oftmals reizbar ?	NEIN	JA	8
f	Hatten Sie Schwierigkeiten zu schlafen (Ein,- oder Durchschlafschwierigkeiten, frühmorgendliches Erwachen oder übermäßiges Schlafen)?	NEIN	JA	9

WURDEN **3** ODER MEHR **O3** FRAGEN **BEJAHT**?

NEIN **JA**

GENERALISIERTE ANGSTSTÖRUNG AKTUELL

➔ **BEDEUTET: GEHEN SIE ZU DEN DIAGNOSEFELDERN, KREUZEN SIE ÜBERALL NEIN AN UND GEHEN SIE ZUM NÄCHSTEN MODUL ÜBER.**

P. ANTISOZIALE PERSÖNLICHKEITSSTÖRUNG (optional)

P1 **Bevor Sie 15 Jahre alt waren, haben Sie da:**

a	Wiederholt Schule geschwänzt oder sind Sie trotz Verbot der Eltern über Nacht von zu Hause weggeblieben?	NEIN	JA	1
b	Wiederholt gelogen, andere "hereingelegt", betrogen oder gestohlen?	NEIN	JA	2
c	Häufig Schlägereien angezettelt oder andere schikaniert, bedroht, oder eingeschüchtert?	NEIN	JA	3
d	Absichtlich Dinge zerstört oder Feuer gelegt?	NEIN	JA	4
e	Absichtlich Tiere oder Menschen verletzt oder gequält?	NEIN	JA	5
f	Jemanden zu sexuellen Handlungen gezwungen?	NEIN	JA	6

➔

WURDEN **2** ODER MEHR **P1** FRAGEN MIT **JA** BEANTWORTET? NEIN JA

P2 KREUZEN SIE BEI DEN UNTENSTEHENDEN HANDLUNGEN NICHT JA AN, WENN DIESE AUSSCHLIEßLICH POLITISCH ODER RELIGIÖS BEGRÜNDET SIND

Haben Sie seit Ihrem 15. Lebensjahr:

a	Wiederholt Verhaltensweisen gezeigt, die andere als unverantwortlich beurteilen würden, z.B. den finanziellen Verpflichtungen nicht nachzukommen oder keiner dauerhaften Tätigkeit nachzugehen?	NEIN	JA	7
b	Absichtlich Dinge getan, die gegen das Gesetz verstoßen, auch wenn Sie nicht dabei erwischt wurden (z.B. das Eigentum anderer zu beschädigen, Diebstähle zu begehen, Drogen zu verkaufen oder ein Kapitalverbrechen zu begehen)?	NEIN	JA	8
c	Handgreifliche Auseinandersetzungen gehabt (auch mit Ihrem Partner oder Ihren Kindern)?	NEIN	JA	9
d	Häufig gelogen oder andere Leute getäuscht, um sich einen Vorteil zu verschaffen oder einfach nur aus Spaß gelogen?	NEIN	JA	10
e	Andere Leute rücksichtslos in riskante oder gefährliche Situationen gebracht?	NEIN	JA	11
f	Ohne Gewissensbisse jemanden schlecht behandelt, verletzt oder angelogen oder gestohlen oder beschädigt?	NEIN	JA	12

WURDEN **3 ODER MEHR P2 FRAGEN BEJAHT**?

NEIN JA
ANTISOZIALE PERSÖNLICHKEITS-STÖRUNG "LIFETIME"

REFERENCES

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Sheehan DV, Lecrubier Y, Harnett Sheehan K, Janavs J, Weiller E, Bonora LI, Keskiner A, Schinka J, Knapp E, Sheehan MF, Dunbar GC. Reliability and validity of the Mini International Neuropsychiatric Interview (M.I.N.I.) according to the SCID-P. *European Psychiatry*, 1997 ; **12** : 232-241.

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The M.I.N.I. was developed simultaneously into French and English. The French and English original versions of the M.I.N.I. for DSM-IV were translated and can be asked to the authors (see page 3). An ICD-10 version is also available into French, English and Danish.

Translations	**M.I.N.I. 4.4 or earlier versions**	**M.I.N.I. 5.0, M.I.N.I. Plus 5.0, M.I.N.I. screen 5.0**
Afrikaans		R. Emsley
Arabic		O. Osman, E. Al-Radi
Basque		In preparation
Bengali		H. Banerjee, A. Banerjee
Brazilian	P. Amorim	In preparation
Bulgarian		L.G. Hranov
Catalan		In preparation
Czech	P. Zvolsky	P. Zvolsky
Chinese		L. Caroll, K-d Juang
Croatian		In preparation
Danish	P. Bech	P. Bech, T. Scütze
Dutch/Flemish	E. Griez, K. Schruers, T. Overbeek, K. Demyttenaere	I. van Vliet, H. Leroy, H. van Megen
Estonian		J. Shlik, A. Aluoja, E. Kihl
Farsi/Persian		K. Khooshabi, A. Zomorodi
Finnish	M. Heikkinen, M. Lijeström, O. Tuominen	M. Heikkinen
German	I. van Denffer, M. Ackenheil, R. Dietz-Bauer	M. Ackenheil, G. Stotz, R. Dietz-Bauer
Gujarati		M. Patel, B. Patel
Greek	S. Beratis	T. Calligas, S. Beratis
Hebrew	J. Zohar, Y. Sasson	R. Barda, I. Levinson
Hindi		C. Mittal, K. Batra, S. Gambir
Hungarian	I. Bitter, J. Balazs	I. Bitter, J. Balazs
Icelandic		J. Stefanson
Italian	P. Donda, E. Weiller, I. Bonora	L. Conti, A. Rossi, P. Donda
Japanese		T. Otsobo, H. Watanabe, H. Miyaoka, K. Kamijima, J. Shinoda, K. Tanaka, Y. Okajima
Latvian	V. Janavs, J. Janavs, I. Nagobads	V. Janavs, J. Janavs
Norwegian	G. Pedersen, S. Blomhoff	K. Leiknes, S. Leganger, E. Malt, U. Malt
Polish	M. Masiak, E. Jasiak	M. Masiak, E. Jasiak
Portuguese	P. Amorim, T. Guterres	T. Guterres, P. Levy, P. Amorim
Punjabi		A. Gahunia, S. Gambhir
Romanian		O. Driga
Russian		A. Bystitsky, E. Selivra, M. Bystitsky
Serbian	I. Timotijevic	I. Timotijevic
Setswana		K. Ketlogetswe
Slovenian	M. Kocmur	M. Kocmur
Spanish	L. Ferrando, J. Bobes-Garcia, J. Gibert-Rahola	L. Ferrando, L. Franco-Alfonso, M. Soto, J. Bobes, O. Soto, L. Franco, J. Gibert
Swedish	M. Waern, S. Andersch, M. Humble	C. Allgulander, M. Waern, M. Humble, S. Andersh
Turkish	T. Örnek, A. Keskiner, I. Vahip	T. Örnek, A. Keskiner
Urdu		A. Taj, S. Gambhir
Welsh		In preparation

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German version: M. Ackenheil, G. Stotz, R. Dietz-Bauer, A. Vossen (Psychiatrische Universitätsklinik, MÜNCHEN, GERMANY)

BDI II

Name	Alter	Geschlecht m / w	Datum

Anleitung: Dieser Fragebogen enthält 21 Gruppen von Aussagen. Bitte lesen Sie jede dieser Gruppen von Aussagen sorgfältig durch und suchen Sie sich dann in jeder Gruppe **eine Aussage** heraus, die am besten beschreibt, wie Sie sich **in den letzten zwei Wochen, einschließlich heute, gefühlt haben**. Kreuzen Sie die Zahl neben der Aussage an, die Sie sich herausgesucht haben (0, 1, 2 oder 3). Falls in einer Gruppe mehrere Aussagen gleichermaßen auf Sie zutreffen, kreuzen Sie die Aussage mit der höheren Zahl an. Achten Sie bitte darauf, dass Sie in jeder Gruppe nicht mehr als eine Aussage ankreuzen, das gilt auch für Gruppe 16 (Veränderung der Schlafgewohnheiten) oder Gruppe 18 (Veränderungen des Appetits).

1. Traurigkeit
- **0** Ich bin nicht traurig
- **1** Ich bin oft traurig
- **2** Ich bin ständig traurig
- **3** Ich bin so traurig oder unglücklich, dass ich es nicht aushalte

2. Pessimismus
- **0** Ich sehe nicht mutlos in die Zukunft
- **1** Ich sehe mutloser in die Zukunft als sonst
- **2** Ich bin mutlos und erwarte nicht, dass meine Situation besser wird
- **3** Ich glaube, dass meine Zukunft hoffnungslos ist und nur noch schlechter wird

3. Versagensgefühle
- **0** Ich fühle mich nicht als Versager
- **1** Ich habe häufiger Versagensgefühle
- **2** Wenn ich zurückblicke, sehe ich eine Menge Fehlschläge
- **3** Ich habe das Gefühl, als Mensch ein völliger Versager zu sein

4. Verlust von Freude
- **0** Ich kann die Dinge genauso gut genießen wie früher
- **1** Ich kann die Dinge nicht mehr so genießen wie früher
- **2** Dinge, die mir früher Freude gemacht haben, kann ich kaum mehr genießen
- **3** Dinge, die mir früher Freude gemacht haben, kann ich überhaupt nicht mehr genießen

5. Schuldgefühle
- **0** Ich habe keine besonderen Schuldgefühle
- **1** Ich habe oft Schuldgefühle wegen Dingen, die ich getan habe oder hätte tun sollen
- **2** Ich habe die meiste Zeit Schuldgefühle
- **3** Ich habe ständig Schuldgefühle

6. Bestrafungsgefühle
- **0** Ich habe nicht das Gefühl, für etwas bestraft zu sein
- **1** Ich habe das Gefühl, vielleicht bestraft zu werden
- **2** Ich erwarte, bestraft zu werden
- **3** Ich habe das Gefühl, bestraft zu sein

7. Selbstablehnung
- **0** Ich halte von mir genauso viel wie immer
- **1** Ich habe Vertrauen in mich verloren
- **2** Ich bin von mir enttäuscht
- **3** Ich lehne mich völlig ab

8. Selbstvorwürfe
- **0** Ich kritisiere oder tadle mich nicht mehr als sonst
- **1** Ich bin mir gegenüber kritischer als sonst
- **2** Ich kritisiere mich für all meine Mängel
- **3** Ich gebe mir die Schuld für alles Schlimme, was passiert

9. Selbstmordgedanken
- **0** Ich denke nicht daran, mir etwas anzutun
- **1** Ich denke manchmal an Selbstmord, aber ich würde es nicht tun
- **2** Ich möchte mich am liebsten umbringen
- **3** Ich würde mich umbringen, wenn ich die Gelegenheit dazu hätte

10. Weinen
- **0** Ich weine nicht öfter als früher
- **1** Ich weine jetzt mehr als früher
- **2** Ich weine beim geringsten Anlass
- **3** Ich möchte gern weinen, aber ich kann nicht

Summe Seite 1:

Bitte wenden

11. Unruhe
- **0** Ich bin nicht unruhiger als sonst
- **1** Ich bin unruhiger als sonst
- **2** Ich bin so unruhig, dass es mir schwer fällt, stillzusitzen
- **3** Ich bin so unruhig, dass ich mich ständig bewegen oder etwas tun muss

12. Interessenverlust
- **0** Ich habe das Interesse an anderen Menschen oder an Tätigkeiten nicht verloren
- **1** Ich habe weniger Interesse an anderen Menschen oder an Dingen als sonst
- **2** Ich habe das Interesse an anderen Menschen oder an Dingen zum größten Teil verloren
- **3** Es fällt mir schwer, mich überhaupt für irgend etwas zu interessieren

13. Entschlussunfähigkeit
- **0** Ich bin so entschlussfreudig wie immer
- **1** Es fällt mir schwerer als sonst, Entscheidungen zu treffen
- **2** Es fällt mir sehr viel schwerer als sonst, Entscheidungen zu treffen
- **3** Ich habe Mühe, überhaupt Entscheidungen zu treffen

14. Wertlosigkeit
- **0** Ich fühle mich nicht wertlos
- **1** Ich halte mich für weniger wertvoll und nützlich als sonst
- **2** Verglichen mit anderen Menschen fühle ich mich viel weniger wert
- **3** Ich fühle mich völlig wertlos

15. Energieverlust
- **0** Ich habe so viel Energie wie immer
- **1** Ich habe weniger Energie als sonst
- **2** Ich habe so wenig Energie, dass ich kaum noch etwas schaffe
- **3** Ich habe keine Energie mehr, um überhaupt noch etwas zu tun

16. Veränderungen der Schlafgewohnheiten
- **0** Meine Schlafgewohnheiten haben sich nicht verändert
- **1a** Ich schlafe etwas mehr als sonst
- **1b** Ich schlafe etwas weniger als sonst
- **2a** Ich schlafe viel mehr als sonst
- **2b** Ich schlafe viel weniger als sonst
- **3a** Ich schlafe fast den ganzen Tag
- **3b** Ich wache 1-2 Stunden früher auf als gewöhnlich und kann nicht mehr einschlafen

17. Reizbarkeit
- **0** Ich bin nicht reizbarer als sonst
- **1** Ich bin reizbarer als sonst
- **2** Ich bin viel reizbarer als sonst
- **3** Ich fühle mich dauernd gereizt

18. Veränderungen des Appetits
- **0** Mein Appetit hat sich nicht verändert
- **1a** Mein Appetit ist etwas schlechter als sonst
- **1b** Mein Appetit ist etwas größer als sonst
- **2a** Mein Appetit ist viel schlechter als sonst
- **2b** Mein Appetit ist viel größer als sonst
- **3a** Ich habe überhaupt keinen Appetit
- **3b** Ich habe ständig Heißhunger

19. Konzentrationsschwierigkeiten
- **0** Ich kann mich so gut konzentrieren wie immer
- **1** Ich kann mich nicht mehr so gut konzentrieren wie sonst
- **2** Es fällt mir schwer, mich längere Zeit auf irgend etwas zu konzentrieren
- **3** Ich kann mich überhaupt nicht mehr konzentrieren

20. Ermüdung oder Erschöpfung
- **0** Ich fühle mich nicht müder oder erschöpfter als sonst
- **1** Ich werde schneller müde oder erschöpft als sonst
- **2** Für viele Dinge, die ich üblicherweise tue, bin ich zu müde oder erschöpft
- **3** Ich bin so müde oder erschöpft, dass ich fast nichts mehr tun kann

21. Verlust an sexuellem Interesse
- **0** Mein Interesse an Sexualität hat sich in letzter Zeit nicht verändert
- **1** Ich interessiere mich weniger für Sexualität als früher
- **2** Ich interessiere mich jetzt viel weniger für Sexualität
- **3** Ich habe das Interesse an Sexualität völlig verloren

Übertrag Seite 1:	Gesamt Seite 1+2:
Summe Seite 2:	

ERQ

EMOTION REGULATION QUESTIONNAIRE

Department of clinical psychology

Wir möchten Ihnen gerne einige Fragen zu ihren Gefühlen stellen.Uns interessiert, wie Sie Ihre Gefühle unter Kontrollte halten, bzw. regulieren. Zwei Aspekte Ihrer Gefühle interessieren uns dabei besonders. Einerseits ist dies Ihr emotionales Erleben, also was Sie innen fühlen. Andererseits geht es um den emotionalen Ausdruck, also wie Sie Ihre Gefühle verbal, gestisch oder im Verhalten nach außen zeigen.

Obwohl manche der Fragen ziemlich ähnlich klingen, unterscheiden sie sich in wesentlichen Punkten. Bitte beantworten Sie jede Aussage.

Nr.		Stimmt überhaupt nicht			Neutral			Stimmt vollkommen
		1	2	3	4	5	6	7
1	Wenn ich mehr positive Gefühle (wie Freude oder Heiterkeit) empfinden möchte, ändere ich, woran ich denke.	☐	☐	☐	☐	☐	☐	☐
2	Ich behalte meine Gefühle für mich.	☐	☐	☐	☐	☐	☐	☐
3	Wenn ich weniger negative Gefühle (wie Traurigkeit oder Ärger) empfinden möchte, ändere ich, woran ich denke.	☐	☐	☐	☐	☐	☐	☐
4	Wenn ich positive Gefühle empfinde, bemühe ich mich, sie nicht nach außen zu zeigen.	☐	☐	☐	☐	☐	☐	☐
5	Wenn ich in eine stressige Situation gerate, ändere ich meine Gedanken über die Situation so, dass es mich beruhigt.	☐	☐	☐	☐	☐	☐	☐
6	Ich halte meine Gefühle unter Kontrolle, indem ich sie nicht nach außen zeige.	☐	☐	☐	☐	☐	☐	☐
7	Wenn ich mehr positive Gefühle empfinden möchte, versuche ich über die Situation anders zu denken.	☐	☐	☐	☐	☐	☐	☐
8	Ich halte meine Gefühle unter Kontrolle, indem ich über meine aktuelle Situation anders nachdenke.	☐	☐	☐	☐	☐	☐	☐
9	Wenn ich negative Gefühle empfinde, sorge ich dafür, sie nicht nach außen zu zeigen.	☐	☐	☐	☐	☐	☐	☐
10	Wenn ich weniger negative Gefühle empfinden möchte, versuche ich über die Situation anders zu denken.	☐	☐	☐	☐	☐	☐	☐

Bitte überprüfen Sie, ob Sie alle Fragen beantwortet haben!
Vielen Dank!

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

ASTS

CURRENT MOOD STATE SCALE

Department of clinical psychology

Nachfolgend finden Sie eine Liste mit Wörtern, die verschiedene Gefühle und Gefühlszu-stände beschreiben. Bitte lesen Sie sorgfältig jedes einzelne Wort und kreuzen Sie dann die Zahl an, die am besten Ihren Gefühlszustand im Moment beschreibt. Bitte machen Sie bei jeder Aussage ein Kreuz.

Nr.	Ich fühle mich:	überhaupt nicht	sehr schwach	schwach	etwas	ziemlich	stark	sehr stark
1	zornig	1	2	3	4	5	6	7
2	abgeschlafft	1	2	3	4	5	6	7
3	unglücklich	1	2	3	4	5	6	7
4	traurig	1	2	3	4	5	6	7
5	angenehm	1	2	3	4	5	6	7
6	betrübt	1	2	3	4	5	6	7
7	freudig	1	2	3	4	5	6	7
8	hoffnungslos	1	2	3	4	5	6	7
9	müde	1	2	3	4	5	6	7
10	verärgert	1	2	3	4	5	6	7
11	frohgemut	1	2	3	4	5	6	7
12	entmutigt	1	2	3	4	5	6	7
13	fröhlich	1	2	3	4	5	6	7
14	erschöpft	1	2	3	4	5	6	7
15	heiter	1	2	3	4	5	6	7
16	verzweifelt	1	2	3	4	5	6	7
17	wütend	1	2	3	4	5	6	7
18	entkräftet	1	2	3	4	5	6	7
19	lustig	1	2	3	4	5	6	7

Eberhard Karls
Universität
Tübingen

F-SozU K-14

SOCIAL SUPPORT QUESTIONNAIRE

SHORT VERSION WITH 14 ITEMS

Department of clinical psychology

Dieser Fragebogen geht es um Ihre Beziehungen zu wichtigen Menschen, also zum Partner, zu Familienmitgliedern, Freunden und Bekannten, Kollegen und Nachbarn. Bitte entscheiden Sie sich bei jeder Aussage für eine der fünf Einschätzungen, indem Sie die entsprechende Zahl ankreuzen.

Nr.		trifft nicht zu	trifft eher nicht zu	trifft teilweise zu	trifft zu	trifft genau zu	Wer ist genau, wie z.B. (Vater, Geschwister, Cousinen, Freunde..u.s.w)
		1	2	3	4	5	
1	Ich finde ohne weiteres jemanden, der sich um meine Wohnung kümmert, wenn ich mal nicht da bin.	☐	☐	☐	☐	☐	
2	Es gibt Menschen, die mich ohne Einschränkung so nehmen wie ich bin.	☐	☐	☐	☐	☐	
3	Ich erfahre von anderen viel Verständnis und Geborgenheit.	☐	☐	☐	☐	☐	
4	Ich habe einen sehr vertrauten Menschen, mit dessen Hilfe ich immer rechnen kann.	☐	☐	☐	☐	☐	
5	Bei Bedarf kann ich mir ohne Probleme bei Freunden oder Nachbarn etwas ausleihen.	☐	☐	☐	☐	☐	
6	Ich habe Freunde / Angehörige, die sich auf jeden Fall Zeit nehmen und gut zuhören, wenn ich mich aussprechen möchte.	☐	☐	☐	☐	☐	
7	Ich kenne mehrere Menschen, mit denen ich gerne etwas unternehme.	☐	☐	☐	☐	☐	
8	Ich habe Freunde / Angehörige, die mich einfach mal umarmen.	☐	☐	☐	☐	☐	
9	Wenn ich krank bin, kann ich ohne Zögern Freunde / Angehörige bitten, wichtige Dinge für mich zu erledigen.	☐	☐	☐	☐	☐	
10	Wenn ich mal sehr bedrückt bin, weiß ich, zu wem ich damit ohne weiteres gehen kann.	☐	☐	☐	☐	☐	
11	Es gibt Menschen, die Freude und Leid mit mir teilen.	☐	☐	☐	☐	☐	
12	Bei manchen Freunden/Angehörigen kann ich auch mal ganz ausgelassen sein.	☐	☐	☐	☐	☐	
13	Ich habe einen vertrauten Menschen, in dessen Nähe ich mich ohne Einschränkung wohl fühle.	☐	☐	☐	☐	☐	
14	Es gibt eine Gruppe von Menschen (Freundeskreis, Clique), zu der ich gehöre und mit der ich mich häufig treffe.	☐	☐	☐	☐	☐	

Bitte überprüfen Sie, ob Sie alle Fragen beantwortet haben!
Vielen Dank!