Emotion Regulation in Traumatized Afghan Refugees: A Transdiagnostic Perspective on its Role in Psychopathology and Treatment

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„Man darf nie an die ganze Straße denken, verstehst du? Man muss nur an den nächsten Schritt denken, an den nächsten Atemzug, an den nächsten Besenstrich. (…) Dann macht es Freude; das ist wichtig, dann macht man seine Sache gut. Und so soll es sein.“

(Michael Ende, Momo)

Abstract

In response to the high rates of comorbidity as well as the severe social impairment among trauma-exposed refugees, research on transdiagnostic processes appears promising in this population and might have a substantial impact on our understanding and, ultimately, the treatment of refugee mental health. Transdiagnostic processes are core processes which are not only involved in the development and maintenance of single diagnoses but are shared among many. By reducing complexity, transdiagnostic approaches might address some of the structural as well as conceptual challenges in providing adequate treatment to a large number of affected refugees. One factor that has gained considerable attention within the transdiagnostic approach is emotion regulation. There is accumulating evidence supporting emotion regulation as a transdiagnostic process in mental disorders in Western, non-refugee populations. However, research on its role in trauma-exposed refugees is still in its infancy. This thesis examines the transdiagnostic role of emotion regulation in the psychopathology and treatment of trauma-exposed Afghan refugees by the use of multiple methods. Thus, it aims to overcome some of the limitations of previous research which has predominately taken a disorder-specific perspective and has mostly examined emotion regulation through a single methodology.

Study I was designed as cross-sectional study investigating the transdiagnostic contribution of deficits in emotion regulation to psychopathology and social impairment among 74 male Afghan refugees. Higher symptom severities of PTSD, depression, and anxiety/insomnia were related to the Difficulties in Emotion Regulation Scale (DERS) subscales nonacceptance, goals, impulse, strategies, and clarity, but none of our outcomes was related to lack of emotional awareness. Emotion dysregulation accounted for significant variance in PTSD, depression and anxiety/insomnia beyond demographics and trauma exposure with moderate to large effect sizes. Further findings show that deficits in emotion regulation were related to social impairment independently of symptom severities of PTSD, and anxiety/insomnia, but not of depression.

Study II examined the antecedents and consequences of worry as a specific emotion regulation strategy which seemed particularly relevant for refugees due to their frequent premigration trauma events as well as postmigration stressors. Using an ecological momentary assessment (EMA) paradigm for the first time in this population, 45 Afghan trauma-exposed refugees received five prompts per day asking them to report on momentary levels of worrying and negative as well as positive affect. In addition, sleep quality was assessed in the morning and

the occurrence of postmigration stress at night. The low average compliance rate, which varied largely across participants, indicates that EMA is a feasible method in refugees only under certain conditions. Contrary to our hypothesis, our findings did not reveal a bidirectional relationship (a) between worry and affective experiences and (b) between worry and poor sleep quality. However, at the between-subject level, we found significant associations; people with a greater tendency of worry reported increased negative affect and decreased positive affect as well as decreased sleep quality (and vice versa). At a within-subject level, the study provides preliminary indications for a unidirectional relationship between worry and affect at a day level; worry experienced on a given day predicted increased negative affect on the next day; in turn, positive affect predicted decreased worrying on the next day. In contrast to our hypotheses, the interaction between worry and postmigration stress did not reach significance in predicting affect and sleep.

Taken together, both studies highlight the need and potential directions for transdiagnostic interventions that target emotion regulation as a whole and emotion regulation strategies such as worry in particular among trauma-exposed refugees. These clinical implications were implemented in the development of a novel transdiagnostic group intervention for traumatized refugees. The *Skills-Training of Affect Regulation–a Culture-sensitive Approach* (STARC) focuses on conveying strategies to improve emotional clarity and to regulate strong emotions in a culture-sensitive way. *Study III* examined the feasibility, acceptability and effectiveness of STARC by conducting a randomized controlled trial (RCT) in a routine clinical setting. 44 Afghan refugees were randomized to the STARC intervention or a waitlist. STARC revealed to be a highly accepted and feasible intervention in our setting. In terms of its efficacy, STARC showed promising treatment results. Compared to wait-list, STARC revealed medium to large comparative effect sizes improving emotion dysregulation, transdiagnostic as well as posttraumatic stress symptoms, and caregivers' ratings of emotional competence, but not anger reactions. Effects were maintained over 3 months. Besides showing promising results of STARC, the study also provides first experimental evidence for emotion regulation as a transdiagnostic treatment construct among refugees.

In sum, the present thesis aimed to shed light on the transdiagnostic role of emotion regulation in trauma-exposed Afghan refugees using various methodological approaches such as a cross-sectional, an EMA, and an RCT design. Although no final conclusions can be drawn yet, the present thesis supports the notion that emotion regulation might qualify as a transdiagnostic

process among trauma-exposed refugees, promising to address in treatment. Possible avenues for future research on specific aspects of emotion regulation as well as clinical implications are outlined.

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1. General Introduction

"It feels like a gearbox malfunction. I am not able to change gears well-controlled. Straight away the aggression gear turns up"

"Yesterday I cried in school. During class. I just went to the bathroom and cried. I could not stop crying. It just overwhelmed me"

"Here in Germany everything is different. In the place I come from, conflicts are intense, but short. Here, you kill with words. And the consequences of conflicts last forever"

Difficulties in emotion regulation, such as those illustrated by the three young Afghan refugees above, are common features of emotional distress, experienced by refugees who have been forced to leave their country due to human rights violations, persecution and conflict. With rising numbers of forcibly displaced people worldwide, the population and their mental health problems have gained increasing attention in clinical psychology. In 2018, an unprecedented number of people, 70.8 million, were displaced around the world (UNHCR, 2019). While the vast majority of these people did not cross an international border (41.3 million), 29.4 million people were forced to leave their country and qualified as refugees or asylum seekers. The United Nations defines a refugee as any person who "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside of the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country" (United Nations, 1951, p. 9). An asylum seeker, in contrast, is someone who is seeking international protection but whose claim for refugee status has not yet been determined. Despite these legal differences, the term *refugee* will be used throughout this thesis to collectively describe individuals from a refugee or asylum-seeker background.

With 2.7 million in number, refugees from Afghanistan represented the second largest refugee group by country of origin worldwide in 2018 (UNHCR, 2019). These people were compelled to flee oppression and war, which has characterized daily life in Afghanistan for decades. The invasion by the Soviet Union (1979-1989) was followed by years of civil war and culminated in the Taliban's seizure of power. Following the terror attacks on September 11, 2001, the international coalition ended the Taliban's rule of terror in Afghanistan. However, the security situation continues to escalate both in intensity and scope with daily terrorist attacks

and oppression posing dangers for the civilian population. In addition to political instability (particularly around the elections in 2018 and 2019), the humanitarian situation remains dire, as the possibility of a prolonged drought and other resource scarcity issues threaten greater levels of displacement and human suffering.

Germany has taken a leading role in accepting refugees in recent years. In 2018, Germany hosted the fifth largest refugee population with 1.06 million refugees, preceded only by Turkey, Pakistan, Uganda and Sudan (UNHCR, 2019). In Germany, people from Afghanistan also represent a significant population, with 126,000 refugees at the end of 2018.

Having escaped direct danger and often a traumatic environment, refugees continue to be confronted with many challenges during the resettlement process. All these pre- and postmigration factors present risk factors for the development of mental disorders and make refugees a particularly vulnerable group (Fazel, Wheeler, & Danesh, 2005; Li, Liddell, & Nickerson, 2016). Epidemiological studies indicate generally high prevalence rates of mental disorders, though estimates vary widely. A recent systemic review, including over 39,000 adult internally displaced people and refugees from 21 countries, reported the highest prevalence for post-traumatic stress disorder (PTSD, 3–88%), depression (5–80%), and anxiety disorders (1–81%; Morina, Akhtar, Barth, & Schnyder, 2018). But the review also demonstrated elevated rates of other severe psychiatric disorders, such as substance abuse, psychosis, suicidality, personality disorders, and other forms of mood and anxiety disorders. A smaller review which focuses solely on refugees resettled in Western countries identified this group to be approximately ten times more likely to develop PTSD than an age-matched Western population (Fazel et al., 2005).

Even though prevalence rates are excessively high among refugees, there is still a significant proportion of people who seem to be resilient and do not go on to develop significant psychopathology when facing the numerous potentially traumatic events or daily stressors described above. This raises the question of whether there are underlying psychological processes that may explain such pathways to differential mental health outcomes in refugee groups, ranging from resilience following these adverse events to the development of psychological problems.

Pathways from Refugee Experiences to Psychological Outcomes

Nickerson, Bryant, Silove, and Steel (2011) addressed the question about pathways from refugee experience to psychological outcomes. They proposed a model of psychological

reactions to refugee-related trauma which is based on available evidence from refugee mental health research and more general traumatic stress research (adapted by Nickerson, 2018). By introducing three different levels, which take contextual factors as well as psychological processes into account, the model focuses on aspects that are unique or particularly important in the context of the refugee experience.

On *Level 1*, the model introduces exposure to potentially traumatic events in the context of persecution, conflict, or generalized violence. Such experiences can include, for example, being exposed to war and combat, witnessing the death of others in the home country or during the flight, torture and interpersonal violence like physical assault or rape. Most of these traumatic experiences are of an interpersonal nature, occur over prolonged periods of time, and are often repeated (Nickerson et al., 2011). The well-known dose-effect relationship, which posits an association between event magnitude and clinical outcome, has been replicated numerous times in refugees (e.g., Richard F. Mollica, McInnes, Poole, & Tor, 1998; Schweitzer, Melville, Steel, & Lacherez, 2006). Besides premigration trauma, the model introduces postmigration factors such as ongoing threat and daily stressors on this level. In recent years, there has been a growing body of research confirming the detrimental role of various postmigration factors including socioeconomic and interpersonal difficulties, as well as stressors relating to the asylum-seeking process and immigration policy, that affect mental health in refugees (for a review, see Li et al., 2016). A postmigration environment is characterized by many uncertainties, such as an insecure residential status, separation from family, difficulties obtaining employment, financial support or housing. All of this was shown to have an accumulative impact on the mental health burden of refugees (Porter & Haslam, 2005).

While research has extensively investigated the role of external factors (*Level 1*) on refugee mental health in the last decades, little attention has been given to internal or psychological factors that contribute to clinical outcome. These psychological processes are introduced on L*evel 2* of the discussed model. Learning more about the potential underlying processes that link the refugee experience to divergent mental health outcomes is of great importance to better understand why some individuals develop symptoms while others do not. Identifying and understanding these processes would significantly inform interventions that facilitate the psychological recovery of refugees, as they are tangible processes to address in treatment. This dissertation focuses on studying one specific process, which is discussed in more detail below.

The core psychological processes on *Level 2* of the model are theorized to contribute to the development and maintenance a range of different psychological reactions that are exhibited by

refugees on *Level 3*. These include trauma-related disorders (i.e., PTSD, depression, anxiety), other psychological responses (e.g., other disorders or responses, such as grief, shame, and guilt) as well as functional impairment or quality of life in general. Even though PTSD is the most examined and well-known psychological response, it is not the only one. Recent data proposes high comorbidity rates between PTSD and depression in community as well as in treatment-seeking refugee samples (e.g., Haagen, ter Heide, Mooren, Knipscheer, & Kleber, 2017; Marshall, Schell, Elliott, Berthold, & Chun, 2005; Nickerson, Schick, Schnyder, Bryant, & Morina, 2017). In a previous systematic review on refugees resettled in Western countries, four studies revealed an average prevalence of 71% of those diagnosed with major depression also had a diagnosis of PTSD, and 44% of those diagnosed with PTSD also had a diagnosis of major depression (Fazel et al., 2005). However, methodological limitations (small, unrepresentative samples, diagnostic inaccuracies etc.) might limit the generalizability of these findings. Despite the fact that most of the studies focus on the high comorbidity between PTSD and depression, there are also a few studies which examine other comorbid disorders like alcohol dependence (Kozarić-Kovacić, Ljubin, & Grappe, 2000), somatic pain (Van Ommeren et al., 2002) and anxiety (Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997). Furthermore, comorbid psychopathology is associated with an elevated level of social impairment in refugees. In a study among Bosnian refugees, comorbidity was strongly correlated with social impairment, with an odds ratio of 3.5 comparing a comorbid PTSD group with a PTSD-only group (Momartin, Silove, Manicavasagar, & Steel, 2004).

State-of-the-Art Treatment Approaches for Refugees

Due to the high prevalence rates and consequently the pressing need to enhance the availability and quality of mental health services for traumatized refugees, the field has advanced significantly in the last few years in further understanding the efficacy of treatments, implementation barriers and how to provide treatment to increase effectiveness in real-world contexts (Murray, Metz, & Callaway, 2019; Nosè et al., 2017). However, there remain barriers and shortcomings, e.g. the persistent focus on PTSD in most of the investigated treatments. A novel umbrella review summarized 14 reviews on the prevalence of common mental disorders as well as on the efficacy of psychosocial and pharmacological interventions in adult and children refugees (Turrini et al., 2017). Cognitive behavioral interventions and in particular narrative exposure therapy (NET) were the most studied interventions with positive outcomes against inactive but not active comparators. The review also revealed that only a minority of the included studies collected data on the efficacy of interventions on outcome measures other

than PTSD; and this despite the fact that the review also demonstrated that depression and anxiety were at least as frequent as PTSD.

While most state-of-the-art research to date has focused on trauma-focused treatments, there is a critical gap between research and clinical practice. In fact, the approach that has dominated refugee mental health treatment in recent decades most is not the trauma-focused one but may be best described as a multimodal treatment approach (Nickerson et al., 2011). In Germany, for example, most of the specialized treatment centers, organized in the German Association of Psychosocial Centers for Refugees and Victims of Torture (BAfF), follow this multimodal approach which integrates resettlement assistance, referrals for medical care and psychotherapeutic interventions (BAfF, 2018). The psychotherapeutic interventions may involve trauma-focused treatment, but mostly focus on psychological support, directive or non-directive counselling, assistance with practical issues, and problem-solving delivered at the individual, couple, family or community level (Nickerson et al., 2011). Supporters of this multimodal approach criticize the trauma-focused approach for being too narrow in scope and not being sufficiently comprehensive to address the diverse and complex needs and symptoms of refugees. This view is also supported by empirical evidence highlighting the high comorbidities, the severe social impairment as well as the strong impact of postmigration stressors on refugee mental health (Li et al., 2016). It is argued that because of the complex situation of refugees facing not only multiple premigration traumatic events but also various postmigration living difficulties and psychosocial stressors, a range of different interventions is required (Berliner, Mikkelsen, Bovbjerg, & Wiking, 2004). A review on the efficacy of these two contrasting approaches revealed preliminary evidence for trauma-focused approaches but only poor evidence for the multimodal approach (Nickerson et al., 2011). However, serious limitations in the methodologies of the reviewed studies as well as a lack of RCTs for the multimodal approach preclude drawing firm conclusions. The controversy in the field underlines the scale of the scientist-practitioner gap and the urgent need for appropriate approaches that integrate both views and are still grounded in valid empirical data.

Transdiagnostic Pathways to Refugee Mental Health

One novel approach which has the potential to meet the various demands and challenges of providing adequate and effective treatment to a large number of people might be treatment approaches that focus on transdiagnostic processes. Transdiagnostic processes are core processes which are not only involved in the development and maintenance of single diagnoses

but are shared among many disorders (e.g., A. G. Harvey, Watkins, Mansell, & Shafran, 2004; Kring & Sloan, 2010). Therefore, they are valuable processes to address in treatment. In the last few years, we have seen a turn toward these process-based therapies that aim to target core mediators and/or moderators rather than symptom constellations (Hofmann & Hayes, 2018). Treatments that target transdiagnostic processes could be particularly beneficial for refugees who present a complex clinical profile as they allow simultaneous treatment of several comorbid pathologies for a given client rather than sequentially addressing multiple diagnoses with different treatments. Encompassing an overarching transdiagnostic treatment protocol rather than multiple disorder-specific psychological treatment protocols could further facilitate training and supervision of psychotherapists (McEvoy, Nathan, & Norton, 2009). This might possibly result in an increased number of treatment units, which is much needed in the mental health sector to cover the needs of refugees. In the German specialized mental health care units such as Refugio München, average waitlist times exceeding six months have been reported as a result of the recent increase in refugees (BAfF, 2018). Of note, 44% of refugees and referrers who contacted the treatment services were declined and are not even included in this waitlist statistics. Additionally, low-threshold, transdiagnostic approaches might be beneficial for a large number of affected people, independently of their exact diagnosis. It enables more flexible treatment scheduling and shorter waiting times by forming therapy groups according to language, cultural and/or sociodemographic characteristics rather than by specific disorders. Finally, transdiagnostic approaches reduce the need to know how to make differential diagnoses, which is challenging given the language barriers and the lack of validated instruments (Spedding & Chibanda, 2019). In sum, transdiagnostic approaches might simplify complexity, both from a theoretical as well as from a practical perspective. This is particularly important in a mental health sector low in resources (Murray et al., 2019).

Due to the number of potential advantages of transdiagnostic interventions, there is a growing body of transdiagnostic treatment approaches, which have been designed in recent years to meet the special needs of refugees. Problem Management Plus (PM+) is a transdiagnostic scalable psychological interventions, originally developed by the World Health Organization (WHO) for use in communities affected by adversity that typically do not have access to specialist care (Dawson et al., 2015). The multi-behavioral intervention is delivered in a group or an individual format over five weeks. A number of trials demonstrate first promising results on the feasibility and effectiveness of the low intensity intervention (e.g., Bryant et al., 2017; Rahman et al., 2016). Within the scope of the EU Horizon2020

STRENGTHS project, PM+ is currently implemented and investigated in Europe and key Middle Eastern countries for adult and adolescent Syrian refugees (Sijbrandij et al., 2017). Another transdiagnostic treatment approach is the Culturally Adapted CBT (CA-CBT; Hinton, Hofmann, Rivera, Otto, & Pollack, 2011), adapted for individual as well as group treatment of traumatized refugee and ethnic minority populations. The program includes between 12 and 14 sessions and uses psychoeducation, meditation, and Yoga-like exercises. It has proven its effectiveness with various cultural groups, including individuals with Cambodian, Egyptian, and Latino backgrounds (Hinton, Chhean, et al., 2005; D.E. Hinton et al., 2011; Jalal, Samir, & Hinton, 2017). CA-CBT is currently adapted and investigated in a large multicenter study in Germany, with preliminary promising results among Afghan refugees (Kananian, Ayoughi, Farugie, Hinton, & Stangier, 2017). The Common Elements Treatment Approach (CETA) is an additional transdiagnostic approach that teaches CBT elements common to evidence-based treatments for trauma, anxiety, depression, and behavioral problems (e.g., behavioral activation, cognitive restructuring; Murray et al., 2014). It was developed specifically for Low-to-Middle-Income Country (LMIC) settings that rely on non-mental health providers. CETA is not considered as a new treatment, but rather as a new way to organize and train providers by giving guidance as to the order in which to deliver the elements based on each patient's presenting problems. CETA has been proven to be effective in low-resourced settings such as among survivors of torture and militant attacks in Iraq and among displaced Burmese adults in Thailand (Bolton et al., 2014; Weiss et al., 2015). Both RCTs demonstrated medium to large effect sizes for PTSD, depression, anxiety and social dysfunction. Just as PM+ and CA-CBT, CETA is currently adapted for the treatment of resettled refugees in high-income countries and investigated in a large multicenter trial in Germany.

Given the recent upsurge in interventions currently referred to as transdiagnostic, Sauer et al. (2016) propose three broad categories into which these treatments can be placed: 1) *Universally applied therapeutic principles* as a top-down approach in that it applies an existing treatment strategy to a wide range of conditions; 2) *Modular treatments* as a flexible approach which offers an assembled bank of discrete strategies to create a treatment that maps onto any patient's presenting problems, regardless of diagnosis; 3) *Shared mechanisms treatments* as a bottom-up approach in that it targets shared mechanisms implicated in the development and maintenance of certain classes of psychopathology. Whereas PM+ as well as CA-CBT can be subsumed under *universally applied therapeutic principles,* and CETA

under *modular treatments*, *shared mechanisms treatments* in the field of refugee mental health are still lacking.

Emotion Regulation as a Transdiagnostic Pathway

There is a myriad of important transdiagnostic processes which might be relevant for the mental health of people with a refugee background. The literature on non-refugee samples, for instance, underlines processes like attentional biases (Mathews & MacLeod, 2005), anxiety sensitivity (Naragon-Gainey, 2010), neuroticism (Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014) and psychological flexibility (Levin et al., 2014) as processes of transdiagnostic importance. One process that has been suggested to be particularly fruitful to investigate and target in treatment is emotion regulation. In fact, extant research has identified refugees as a population that may be especially likely to experience emotion regulation difficulties (see below for details; Doolan, Bryant, Liddell, & Nickerson, 2017).

Emotion regulation is a broad concept that has been defined and studied in different ways. This is also why it has been criticized as it may risk subsuming every process or behavior used to modify emotions, which would eventually compromise the empirical value and utility of the concept (Sloan et al., 2017). In order to respond to this criticism, it is important to first clarify the definition of emotion regulation. Two prominent conceptual frameworks of emotion regulation are prevailing in the literature:

First, there is the *process model of emotion regulation*, pioneered by Gross (1998a, 1998b). The model describes four stages that constitute the formation of an emotional response: stimulus, attention, appraisal, and response. Importantly, a number of strategies can be applied to regulate emotions at these different stages of the emotion generative process. These strategies are generally divided into those that are antecedent-focused or response-focused. Antecedent-focused strategies are those that are applied before the emotion generation process has fully completed (e.g., reappraisal, attentional deployment), while response focused strategies include attempts to modulate affect after an emotional, behavior, or physiological response (e.g., suppression; Gross, 2002). Research along this framework has mostly focused on the relationship between specific emotion regulation strategies and clinical symptoms in cross-sectional and experimental designs: A meta-analysis on specific emotion regulation strategies across psychopathology found that rumination, avoidance, and suppression were more strongly associated with a number of Axis-I disorders than were reappraisal and acceptance (Aldao & Nolen-Hoeksema, 2010). In particular, cognitive emotion regulation strategies such as

rumination and reappraisal have received increasing attention in the last couple of years. A recent review examines whether existing research offers enough evidence to classify alterations in the use of selected cognitive emotion regulation strategies as transdiagnostic processes (Cludius, Mennin, & Ehring, in press). It concludes that a reduced use of cognitive reappraisal and an increased use of negative rumination are present across a number of disorders, whereas increased levels of positive rumination appear to be confined to bipolar disorder. However, the causal nature of altered cognitive emotion regulation strategy use still needs to be further addressed in prospective and/or experimental studies. Rumination and worry, two important cognitive emotion regulation strategies which are also subject of this dissertation, are subsumed under the superordinate process known as repetitive negative thinking (RNT). Ehring and Watkins (2008) define RNT as a thinking process that is (a) repetitive, (b) passive and/or relatively uncontrollable and (c) focused on negative content. Recent efforts undertaken to investigate RNT as a potential transdiagnostic factor yielded compelling results, substantiating RNT as a core process manifesting across various disorders (McEvoy, Watson, Watkins, & Nathan, 2013; Wahl et al., 2019).

Second, there is a model which focuses on *broad deficits in emotional functioning and regulation*. Kim L Gratz and Roemer (2004) proposed a seminal integrative conceptualization, which defines emotion regulation as the capacity to monitor, evaluate and modify emotional reactions in a way that facilitates adaptive functioning. They suggest four key dimensions of emotion regulation: (a) awareness and understanding of one's emotions, (b) acceptance of negative emotions, (c) the ability to successfully engage in goal-directed behavior and control impulsive behavior when experiencing negative emotions, and (d) the ability to use situationally appropriate emotion regulation strategies. The Difficulties in Emotion Regulation Scale (DERS; Kim L Gratz & Roemer, 2004) was developed to operationalize this multidimensional conceptualization. The model has been extensively used in clinical research and deficits in the different aspects of emotion regulation revealed to be common features across a variety of psychological disorders including anxiety, mood, eating, substance abuse and trauma-related disorders (e.g., Buckholdt et al., 2015; Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010; Mennin, McLaughlin, & Flanagan, 2009; Svaldi, Griepenstroh, Tuschen-Caffier, & Ehring, 2012; Tull, Barrett, McMillan, & Roemer, 2007).

Emotion Regulation in Trauma Survivors

Emotion regulation has gained growing attention for its transdiagnostic influence on multiple forms of psychopathology. However, its role may be particularly salient in the context of trauma-related disorders, as intense emotional reactions to trauma-related cues are common in the aftermath of traumatic events and need to be regulated adaptively. Emotion dysregulation has extensively been found to be associated with psychopathology in trauma survivors, including depression, PTSD, anxiety and substance use (Ehring & Quack, 2010; Messman-Moore & Bhuptani, 2017; Seligowski, Lee, Bardeen, & Orcutt, 2015). In terms of PTSD, for example, a meta-analysis including 57 studies examined the relationship between PTSD symptom severity and several aspects of emotion regulation (Seligowski et al., 2015). Firstly, it revealed a strong correlation between PTSD symptoms and general deficits in emotion regulation, as measured by the DERS (r = .53, k = 13). Secondly, strong associations for five of the seven examined emotion regulation strategies, particularly rumination (r = .51, k = 5), thought suppression (r = .47, k = 13), and avoidance (r = .40, k = 20) were demonstrated. Stemming on the strategy-based framework of emotion regulation, the literature predominantly points to a tendency of individuals with PTSD to over-utilize maladaptive emotion regulation strategies such as emotional suppression, and, in contrast, show difficulties effectively implementing adaptive strategies such as cognitive reappraisal (Boden et al., 2013; Moore, Zoellner, & Mollenholt, 2008). Additionally, psychobiological models on trauma-related disorders depend on the idea of widespread deficits in emotion processing, especially in individuals who have been exposed to multiple and prolonged traumatic events (Frewen & Lanius, 2006; Litz, Orsillo, Kaloupek, & Weathers, 2000). These deficits are manifested in the PTSD reexperiencing and hyperarousal symptoms during trauma recall as the result of a failure of regulatory inhibitory control over fear-induced arousal and distress.

Even though the link between emotion regulation and trauma-related symptoms is well established in mostly cross-sectional studies, the precise nature of this relationship remains unclear. Firstly, there is a body of research, suggesting it to be a crucial factor mediating the relationship between external factors such as adverse life events and several types of psychopathology, including depression (O'Mahen, Karl, Moberly, & Fedock, 2015; Schierholz, Krüger, Barenbrügge, & Ehring, 2016), self-harm (Peh et al., 2017), PTSD (Burns, Jackson, & Harding, 2010; Goldsmith, Chesney, Heath, & Barlow, 2013) and anxiety (Goldsmith et al., 2013). Most of the studies seem to focus on research on childhood and

betrayal trauma. Along this line of research, (childhood) trauma has been conceptualized as a distal risk that triggers the development of proximal maladaptive emotion regulation strategies or general deficits in emotion regulation in a very critical phase (Cicchetti & Toth, 2005). This, in turn, contributes to elevated risk for many forms of psychopathology. Indirect evidence comes from a prospective investigation with a sample of 691 undergraduate women who were involved in an ongoing longitudinal study at the time of a campus shooting (Bardeen, Kumpula, & Orcutt, 2013). Results indicated that emotion dysregulation prospectively predicted the development of PTSD symptoms following exposure to a potentially traumatic event when accounting for the effects of existing symptomatology. Furthermore, emotion regulation deficits were found to influence the ability to recover from PTSD symptoms over time. In sum, there is emerging evidence for emotion regulation as an important mediator being involved in both the development as well as the maintenance of various trauma-related psychological symptoms.

A second line of research argues that deficits in emotion regulation may function as a moderating factor, buffering or exacerbating the association between adverse life events or stress and psychological symptoms. Thus, emotion regulation might help to explain why some individuals exposed to traumatic events develop symptoms, while others are resilient. Theoretical assumptions suggest, for instance, that individuals who are confronted with heightened emotional responses and physiological arousal in the aftermath of a traumatic event or severe stressor, but lack elevated abilities to regulate these intense emotions effectively, might perceive the emotional emotion response as unpredictable and uncontrollable (Tull et al., 2007). This might contribute to behavioral avoidance, thus worsening PTSD symptoms. Supporting evidence for the moderating role of emotion regulation comes from a variety of different study designs and samples. For example, a study among a sample of postpartum women demonstrated that difficulties in emotion regulation moderated the impact of exposure to child maltreatment on time-dependent cortisol reactivity to an Emotional Stroop task (England-Mason et al., 2017). The transdiagnostic, moderating nature of emotion regulation is highlighted by a prospective study examining the association between the experience of PTSD symptoms and substance use. Findings revealed that PTSD symptoms were only associated with later substance use in the context of deficits in emotion regulation , assessed using both self-report and behavioral measures (Tull, Bardeen, DiLillo, Messman-Moore, & Gratz, 2015). In the wider literature on the effects of negative life stress, a number of experimental procedures have demonstrated that the use of maladaptive emotion

regulation strategies such as state rumination intensifies the negative effects of life stress on mood (e.g., Connolly & Alloy, 2017; Genet & Siemer, 2012).

Apart from being a mediator or moderator, emotion regulation deficits could also be consequences of a third factor (e.g., consequence of psychological symptoms), maintaining psychopathology through negative feedback loops. Longitudinal designs are needed to test this assumption.

In sum, theoretical assumptions as well as empirical data vary in defining the precise role of emotion regulation in the interplay between traumatic experiences and multiple forms of psychopathology. A mediating and moderating role is discussed as well as the idea of emotion regulation as a consequence of psychological symptoms. Importantly, all of these assumptions are not contradictory, but might even complement each other.

Emotion Regulation in Refugees

A number of specific characteristics of the refugee experience make refugees especially vulnerable to difficulties in emotion regulation. First, this group has typically been exposed to multiple and repeated interpersonal traumatic events in their home countries or while fleeing, which contributes to the elevated rates of PTSD and other trauma-related disorders observed within this population (Fazel et al., 2005). Moreover, once resettled or in a place of relative safety, refugees are regularly exposed to reminders of their prior traumatic events, by virtue of the dosage and breadth of their prior exposure to traumatic events and current circumstances (i.e., monitoring the status of family and friends in the home country where persecution is often ongoing). This diffuse exposure to trauma reminders in their daily lives can lead to repeated instances of heightened emotional responses and physiological arousal. In fact, repeated exposure to interpersonal traumatic experiences has been identified as a risk factor associated with deficits in emotion regulation (Ehring & Quack, 2010; Walsh, DiLillo, & Scalora, 2011). This data, which is again stemming mostly from the research on childhood trauma, is supported by data on treatment-seeking refugees from various backgrounds as well as on Syrian refugee children and adolescents (Khamis, 2019; Nickerson et al., 2015). In both studies, the number of trauma types endorsed revealed to significantly predict difficulties in emotion regulation. Second, there is preliminary data that not only severe premigration but also postmigration stressors are associated with difficulties in emotion regulation (Nickerson et al., 2015). But these postmigration stressors are very prominent among refugees, making this group further vulnerable to deficits in emotion regulation. It is argued that individuals

who experience stressful living conditions, which are beyond their control (akin to the postmigration experience for many refugees), are more likely to engage in ineffective strategies to manage such distress. However, this theoretical assumption as well as the direction of the measured association between postmigration living difficulties and emotion regulation difficulties has not yet been tested.

Due to the possible vulnerability of refugees to emotion regulation difficulties, there is a small yet growing body of mostly cross-sectional research which explores emotion regulation in its various potential roles. A recent study conducted in Lebanon and Jordan addressed the question which pre-trauma, trauma-specific, and post-trauma risk factors may contribute to difficulties in emotion regulation, as a clinical phenomenon among child and adolescent refugees (Khamis, 2019). Consistent with the wider trauma literature, difficulties in emotion regulation were predicted by older age, number of traumas endorsed and various coping styles such as social withdrawal and blaming others. Expressiveness in family relationships as well as a positive school environment appeared to be salient protective factors which is stressing the importance of fostering a favorable family and school environment. Particularly relevant in the context of resettled refugees, the more time the participants had spent in their host countries, the less difficulties in emotion regulation they reported. Emotion dysregulation as a possible mediator of the relationship between refugee experiences (trauma exposure and living difficulties) and psychological outcomes was examined in a culturally diverse group of treatment-seeking refugees by Nickerson et al. (2015). Findings revealed that different dimensions of emotion dysregulation served as mediators, depending on the psychological criteria (PTSD, depression, explosive anger) as well as the predictor (number of types of traumatic events experienced, post migration living difficulties). Difficulties in the capacity to engage in goal-directed behavior played a significant role for PTSD, mediating not only its association to trauma exposure but also to living difficulties. Lack of emotional clarity was correlated with PTSD severity and served as a mediator between postmigration living difficulties and PTSD. Regarding depression and explosive anger as psychological outcomes, the study uncovered the respective mediating roles of limited access to emotion regulation strategies and impulse control difficulties. A similar study, with 147 non-treatment-seeking refugees from a variety of cultural backgrounds, found that certain types of emotion regulation difficulties, namely limited access to emotion regulation strategies and lack of emotional clarity, significantly predicted PTSD (Doolan et al., 2017). The dimension lack of emotional clarity was in the center of attention of two studies on alexithymia in refugees.

Alexithymia is defined as the difficulty to identify, describe and express emotional responses, thus overlapping with the DERS dimension lack of emotional clarity. Within the wider trauma literature, alexithymia has been robustly linked to PTSD symptom severity. In a meta-analysis on the prevalence of alexithymia in 12 studies encompassing 1,095 individuals with PTSD, a large effect size was found associating PTSD with alexithymia (Frewen, Dozois, Neufeld, & Lanius, 2008). Park et al. (2015) replicated this well-established association for the first time in a sample of 199 refugees from North Korea. But the study did not only investigate alexithymia as a clinical phenomenon, characteristic of PTSD patients, but also revealed a moderating role of alexithymia in the relationship between the number of traumas endorsed and the symptom severity of PTSD. This suggests that as individuals experience more traumatic events, being able to clearly identify and express emotions may be crucial to reducing PTSD symptoms.

Another stream of research followed the strategy-based framework of emotion regulation. By using experimental designs in the lab these studies overcame some of the limitations of previous, mostly cross-sectional research on emotion regulation in refugees. In these studies, the contribution of specific emotion regulation strategies such as reappraisal – defined as changing how an individual thinks about a particular situation to alter its emotional impact – and suppression – defined as attempts to push away thoughts and negative affect – to mental health outcomes was examined. An experimental study with 82 refugees (including 33 torture survivors) from a variety of countries of origin showed that torture exposure influenced the impact of suppression on one's affective state following exposure to trauma-related stimuli (Nickerson et al., 2016). Even though torture survivors were not more likely to engage in emotional suppression than non-torture survivors overall, torture survivors who suppressed their feelings when being exposed to images depicting scenes of interpersonal trauma, subsequently reported greater negative affect than those who did not suppress their feelings. In contrast, refugees who had not been exposed to torture showed the opposite pattern, namely, a negative relationship between state suppression and distress. This negative correlation, however, could only been shown for participants with high levels of PTSD and might point to possible short-term benefits of suppression to manage distress. A second study with the same sample investigated the impact of cognitive reappraisal on negative affect, heart rate, and intrusive memories following exposure to emotional images in the lab (Nickerson, Garber, et al., 2017). Engaging in cognitive reappraisal, in contrast to suppression, led to lower levels of intrusive memories in the two days following the experiment, but again only

among individuals with high levels of PTSD. The habitual emotion regulation style of suppression moderated this association: Refugees with low trait suppression and high PTSD symptoms showed significantly lower levels of negative affect when engaging in cognitive reappraisal compared to suppression. All in all, the limited studies on specific emotion regulation strategies point out the complexity of the question of adaptive emotion regulation strategies among refugees. Accordingly, the efficacy of these strategies may differ across individual differences in habitual emotion regulation styles, level of distress, trauma exposure and cultural groups.

Despite the mixed findings concerning the nature of emotion regulation as clinical phenomenon, or process (mediator and/or moderator) and the different conceptual frameworks used when studying emotion regulation (broad emotional functioning and strategy-based framework), studies have consistently demonstrated that emotion regulation is implicated in psychopathology in refugees and other trauma survivors. Accordingly, the clinical significance of emotion regulation in refugees is further supported by results from a small pilot study on the efficacy of CA-CBT among Cambodian refugees. The reduction of PTSD severity was mediated by an improvement in one's emotion regulation ability (Hinton, Hofmann, Pollack, & Otto, 2009).

The majority of the studies on emotion regulation in refugees have been conducted with rather heterogeneous samples in terms of their cultural background. Even though refugees all share the experience of forced migration and having lived in politically unstable countries, they differ substantially concerning culture, religion, and values. Emotions, and thus also the regulation of emotions are always embedded in the meanings and practices that constitute our sociocultural world (Mesquita, De Leersnyder, & Albert, 2013). Thus, it is not surprising that how cultures view emotions critically shapes whether individuals engage in emotion regulation and whether that emotion regulation is adaptive (B. Q. Ford & Mauss, 2015). This is why culture needs to be considered when trying to understand the role of emotion regulation in psychopathology and treatment. This can be reached for example by studying a culturally-homogenous group of Afghan refugees in a first step. There is a significant body of research on cultural differences in emotion regulation (for a review, see B. Q. Ford & Mauss, 2015; Mesquita et al., 2013). But research has mainly followed the strategy-based framework and focused on cultural differences in the use of the two emotion regulation strategies reappraisal and suppression. Many studies, for instance, point to the tendency that in Western, individualistic cultures, the use of suppression is related to reduced mental health, whereas the

reverse was found in Eastern collectivist individuals (Arens, 2013). Outside the strategy-based framework, research on the extent to which features of general deficits in emotion regulation are generalizable across different cultures is very limited and not available at all for the Afghan culture. We return to these cultural issues in the Discussion section (see interpersonal emotion regulation).

Of note, it is not simply the membership in a cultural group that affects emotion regulation but also the extent to which an individual is oriented towards a particular culture. Furthermore, culture is dynamic and thus complex. Within the Afghan culture – just as within any other culture – you can find diverse ethnic, linguistic and tribal groups such as Pashtuns, Tajiks, Hazaras and Uzbeks, who all differ in their cultures themselves.

Aim of the Present Thesis

The current thesis aims to further unravel and understand the role of emotion regulation in the psychopathology and treatment of trauma-exposed Afghan refugees resettled in Germany. Aiming to overcome the limitations of extant research, this thesis explicitly takes a transdiagnostic perspective. Furthermore, as most of the previous data emerged from cross-sectional work, this thesis examines emotion regulation with a multitude of different methodological approaches. All of the studies were conducted with a culturally-homogenous sample of Afghan refugees in a naturalistic field setting at Refugio München, an outpatient unit for traumatized refugees.

Even though some cross-sectional work has already demonstrated the presence and significance of deficits in emotion regulation among refugees, it has failed to adopt a transdiagnostic perspective to date. For this reason, *Study I* was designed as an initial study investigating the contribution of difficulties in emotion regulation to the presence of a variety of symptom categories such as PTSD, depression, and anxiety/insomnia symptoms among a sample of trauma-exposed Afghan refugees. Furthermore, *Study I* addressed the question of whether and to what extent emotion regulation is a relevant factor that maintains social impairment over and above psychopathology.

Study II followed the strategy-based framework of emotion regulation and focused on the consequences and antecedents of worry, a specific emotion regulation strategy which might be particularly relevant for refugees. Given the current focus on the impact of reappraisal and suppression in the literature on traumatized refugees as well as the focus on either retrospective self-report or lab-based assessments, this study extends previous research. By using ecological

momentary assessment (EMA), current worry episodes as well as a transdiagnostic set of outcomes (affective experiences, sleep quality) were assessed in real time on participants' smartphones in their natural environments. Thus, a novel and promising methodology was used to assess the momentary use and the longitudinal effects of emotion regulation strategies outside the lab in a naturalistic setting.

Finally, a randomized wait-list controlled trial (*Study III*) was conducted, which examined the effectiveness of a novel, culture-sensitive emotion regulation therapy. To the best of the authors' knowledge, this is the first treatment study of a shared mechanisms treatment focusing on emotion regulation skills among refugees. Given the various benefits of transdiagnostic approaches as well as the relevance of targeting the construct of emotion regulation in this sample, this study addressed an important clinical gap. The study further aimed to provide first experimental evidence on emotion regulation as a relevant transdiagnostic treatment construct central to the maintenance of different forms of psychopathology in traumatized refugees. It addressed the question if difficulties in emotion regulation decrease after effective treatment together with symptoms across disorders (Sloan et al., 2017).

2. Study I:

Emotion Regulation as a Transdiagnostic Factor in Afghan Refugees

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Abstract

Objective: In response to the high rates of comorbidity as well as the severe social impairment among refugees, the examination of transdiagnostic factors such as emotion regulation appears particularly promising in this group. This study investigates the contribution of difficulties in emotion regulation to the self-reported symptom levels of posttraumatic stress disorder (PTSD), depression, and anxiety/insomnia, which are highly prevalent symptoms among refugees. In addition, the link between emotion regulation and social impairment is examined. **Method**: Participants were 74 male Afghan refugees exposed to trauma. They completed measures of trauma exposure, difficulties in emotion regulation (Difficulties in Emotion Regulation Scale), PTSD (PTSD Checklist for DSM–5), depression, anxiety/insomnia, and social impairment (General Health Questionnaire–28). **Results**: Higher symptom severities of PTSD, depression, and anxiety/insomnia were related to the Difficulties in Emotion Regulation Scale subscales nonacceptance, goals, impulse, strategies, and clarity, but none of our outcomes was related to lack of emotional awareness. Difficulties in emotion regulation accounted for significant variance in PTSD, depression, and anxiety/insomnia beyond demographics and trauma exposure. When predicting social impairment, difficulties in emotion regulation accounted for significant variance beyond PTSD and anxiety/insomnia but not beyond depression. **Conclusion**: The findings indicate that emotion regulation may be a transdiagnostic key factor contributing to symptoms of different mental disorders as well as social impairment in trauma-exposed refugees. It highlights the need and potential directions for transdiagnostic interventions that target these difficulties.

Clinical Impact Statement

Following a transdiagnostic approach, the study reveals a significant contribution of difficulties in emotion regulation not only to symptoms of posttraumatic stress disorder but also depression, anxiety/insomnia symptoms, and social impairment in a group of Afghan trauma-exposed refugees. From a clinical perspective, the study suggests that targeting emotion regulation in treatment would not only take high levels of comorbidity into account but also severe social impairment. Because of its parsimony, transdiagnostic interventions for refugees appear particularly promising to meet the various structural (e.g., low resources) as well as conceptual challenges (e.g., high comorbidity) to providing effective mental health care for refugees.

Introduction

Even though refugees escape from direct danger by leaving their home, psychological distress often persists for a long time, making this population one of the largest risk groups for mental disorders worldwide (Maier, Schmidt, & Mueller, 2010) So far, research on refugees has mainly focused on posttraumatic stress disorder (PTSD; Miller & Rasmussen, 2010). However, this focus appears too narrow because refugees show complex symptom structures. Meta-analyses among refugees reveal high prevalence rates of approximately 30% for PTSD and depression as well as 40% for anxiety disorders (Lindert, Ehrenstein, Priebe, Mielck, & Brähler, 2009; Steel et al., 2009). Disordered sleep seems to be a further major mental health issue (Hinton, Pich, Chhean, Pollack, & McNally, 2005). For example, in a group of internally displaced people, 41.4% were suffering from insomnia (Basishvili et al., 2012). There is growing evidence that comorbidity rates are excessively high in refugee groups. Findings from a recent study conducted among treatment-seeking refugees indicated that 47.0% met criteria for PTSD and depression, 33.6% met criteria for depression only, and just 2.2% met criteria for PTSD only (Nickerson, Schick, et al., 2017).

The high and often comorbid psychological distress experienced by refugees emphasizes the great demand for broad, easily accessible treatment approaches. In addition to past trauma, refugees struggle with numerous postmigration living difficulties such as an insecure residence status, unstable housing, discrimination, and language barriers that adversely affect general psychological distress and social impairment (Li et al., 2016). Thus, there is, from a practical clinical perspective, a particular need for interventions that provide low-threshold, effective strategies for daily life and interactions with the social environment in exile because the research on refugee mental health is still dominated by programs that are almost entirely focused on PTSD (Miller & Rasmussen, 2010). Furthermore, the clinical practice faces numerous structural (e.g., lack of treatment places in the few specialized treatment centers; financial and language barriers to receiving treatment) as well as conceptual challenges (culturally differing conceptualizations of trauma and illness, lack of tailored models to guide interventions, difficulties in valid diagnostics) to provide adequate treatment to this vulnerable group (Nickerson et al., 2011).

A transdiagnostic approach aiming to identify key processes that are involved in the development and maintenance across different mental disorders categories as well as patterns of comorbidity (e.g., Kring & Sloan, 2010; Sloan et al., 2017) appears particularly promising

to meet some of the various challenges raised above. For example, interventions that are not disorder specific but instead target key transdiagnostic processes can be offered to a large group of patients showing heterogeneous symptom presentations, which further simplifies dissemination of treatments. In addition, whereas allocation to traditional disorder-specific treatments depends heavily on access to reliable and valid assessment of diagnoses, which is complicated by cultural and language barriers in refugees, this can be expected to be less crucial when offering transdiagnostic treatments. Finally, the aim to develop and widely disseminate culturally adapted low-threshold interventions for refugees may be more readily achievable by developing a smaller number of transdiagnostic treatments applicable to a large group of patients with differing symptom presentation rather than having to adapt a large number of disorder-focused interventions.

One factor that has gained considerable attention within the transdiagnostic approach is emotion regulation. The current study is based on the seminal integrative conceptualization proposed by Kim L Gratz and Roemer (2004). They described difficulties in emotion regulation across six domains, being reflected in the Difficulties in Emotion Regulation Scale (DERS). There is a growing body of cross-sectional (e.g., O'Bryan, McLeish, Kraemer, & Fleming, 2014) and longitudinal studies (e.g., Bardeen, Kumpula, et al., 2013) showing an association between emotion regulation and PTSD symptoms. A comprehensive meta-analysis including 57 studies revealed strong correlations between PTSD severity and not only general difficulties in emotion regulation (r = .53, k = 13) but also five of the seven examined emotion regulation strategies, particularly rumination (r = .51, k = 5), thought suppression (r = .47, k = 13), and avoidance (r = .40, k = 20; Seligowski et al., 2015). Aside from PTSD, depression and anxiety are equally linked to deficits in emotion regulation (Berking & Wupperman, 2012) also in trauma survivors (e.g., Huh, Kim, Lee, & Chae, 2017). Emotion regulation appears to be an important mechanism, partially mediating the relationship between trauma exposure and depression as well as anxiety (e.g., Goldsmith et al., 2013). Similarly, there is some evidence that maladaptive emotion regulation strategies can impair sleep (Guastella & Moulds, 2007).

Even though research is still very limited, there is now preliminary evidence that difficulties in emotion regulation may also be a transdiagnostic risk factor for psychopathology in refugees: Findings reveal a mediating role of specific dimensions of difficulties in emotion regulation in the relationship between refugee experiences (trauma exposure and postmigration living difficulties) and psychological outcomes (PTSD, depression, anger) in a group of treatment-seeking refugees mostly from Turkey, Iran, Sri Lanka, and Bosnia (Nickerson et al.,

2015). Another study found that certain dimensions of difficulties in emotion regulation, namely lack of emotional clarity and limited access to emotion regulation strategies, significantly predicted PTSD severity in a sample of refugees from culturally diverse backgrounds (Doolan et al., 2017). The clinical significance of emotion regulation is supported by findings from a study investigating mechanisms underlying the efficacy of a cognitive behavioral therapy intervention for PTSD in a small sample of 24 Cambodian refugees resettled in the United States. The reduction of PTSD severity was mediated by improvement in emotion regulation ability (Hinton et al., 2009).

However, past research has mostly concentrated on PTSD rather than using a transdiagnostic approach including other relevant symptom categories such as depression, anxiety, and insomnia. Furthermore, most studies have been conducted with rather heterogeneous samples in terms of their cultural background. Even though refugees all share the experience of forced migration and having lived in politically unstable countries, they differ substantially concerning culture, religion, and values. These factors all affect refugees' manifestation of mental health, their help-seeking behavior, and treatment expectations (Helman, 2007). In a metaanalysis, culture was found to be a moderator of the relationship between specific emotion regulation strategies and mental health (Hu et al., 2014). For the development of effective interventions that target the special needs of refugees, the cultural backgrounds need to be taken into account. This can be reached, for example, by studying culturally homogenous refugee samples (but note that alternative approaches, e.g., qualitative studies, are also conceivable).

Symptoms of psychopathology are not the only relevant outcome variable in refugees; instead, social impairment is also of paramount importance. As mentioned above, refugees are often confronted with numerous postmigration difficulties. These psychosocial stressors as well as comorbid psychopathology can result in an elevated level of social impairment in refugees. In a crosssectional study with 126 Bosnian refugees, comorbidity was strongly associated with social impairment, with an odds ratio of 3.5 comparing a group diagnosed with PTSD and depression with a pure PTSD group (Momartin et al., 2004). Not being able to adaptively and successfully function across life roles has severe consequences for refugees trying to settle down and integrate in a foreign country. Integration has been shown to be hindered by impairment (Schick et al., 2016). Whereas there is generally no doubt that symptoms of psychopathology adversely affect social impairment, the literature reveals that this relationship between symptoms and impairment remains unexpectedly weak, as indicated, for example, by

a review on depression (McKnight & Kashdan, 2009). Hence, there is a need to study other transdiagnostic factors such as emotion regulation contributing to social impairment beyond psychological symptoms. Preliminary evidence already confirms this assumption for PTSD symptoms: In a study among women with childhood abuse histories, emotion regulation revealed to contribute to social impairment beyond the effects of PTSD (Cloitre, Miranda, Stovall-McClough, & Han, 2005).

Objective

The first goal of the study was to examine emotion regulation as a transdiagnostic factor involved in various forms of psychopathology in a culturally homogenous refugee sample. We hypothesized significant positive correlations between the different dimensions of difficulties in emotion regulation and PTSD, depression, and anxiety/insomnia symptom severity. Furthermore, we assumed a unique predictive contribution of difficulties in emotion regulation, reflected by the fact that emotion regulation difficulties still account for variance in PTSD, depression, and anxiety/insomnia symptoms when other common risk factors are statistically controlled for.

The second goal of the study was to investigate the role of emotion regulation in social impairment. We expected significant positive correlations between the dimensions of difficulties in emotion regulation and social impairment. Finally, we hypothesized a unique predictive contribution of emotion regulation in social impairment beyond common risk factors and the effects of PTSD, depression, and anxiety/insomnia, respectively.

Demographic factors such as age, residence status, time settled in exile, and number of traumatic events endorsed were chosen as covariates on a priori basis. All of these factors have been identified in earlier research as common risk factors that are likely to contribute to refugee mental health (Steel et al., 2006).

We chose to study a culturally homogenous group of male Afghan refugees. This group is not only disproportionally affected by mental health issues (Alemi, James, Cruz, Zepeda, & Racadio, 2014) but also represents the second largest refugee group with 2.6 million worldwide in 2017 (UNHCR, 2018). More than 3 decades of political turmoil resulted in an unprecedented rate of prolonged exposure to war and trauma, and many displaced Afghans continue to suffer from insecurity in exile because the asylum approval rate radically started to decrease in Germany, particularly among young single men. To our knowledge, no studies have been conducted yet investigating the role of emotion regulation in this particularly vulnerable group.

Method

Sample

Data were collected from individuals who participated in two separate studies. The first study investigated a subgroup of participants (n = 50) prior to receiving treatment at an outpatient unit for victims of torture and war (Study 1). In the second study, the remaining participants (n = 24) were not treatment seeking at the time of the study and were recruited via referrals from teachers and social workers or via community advertisements (Study 2). Thus, the final, more representative sample consisted of 74 Afghan refugees and asylum seekers settling in Munich, Germany. Inclusion criteria that were set a priori for the combined sample included (a) being a refugee or asylum seeker from Afghanistan, (b) being male, (c) being at least 15 years old, and (d) having been exposed to a traumatic event in Afghanistan or on the way into exile. These criteria were applied to both studies, with an additional criterion for the clinical study (that treatment seeking participants could not be older than 21 years). All participants from the two studies described above who met these criteria were included in our analyses. We examined only male participants because the majority of refugees settling in Germany are male. Knowing that gender has an influence on both emotion regulation and on psychopathology (Nolen-Hoeksema, 2012), we decided to limit our sample to men.

Participants in this study had a mean age of 20.49 years (SD = 5.84; range = 15–47 years). The average time in Germany was 2.10 years (SD = 0.69; range = 1–4.5 years). The average years spent in education were 7.84 (SD = 4.42; range = 1–18 years). The majority of the sample was currently going to school or attending a German course (86.5%, n = 64); 10.8% of the sample were employed (n = 8), and 1.4% were unemployed (n = 1). Seventeen participants had been granted a residence permit (23.0%), whereas the remaining 57 participants had an insecure residence status (77.0%).

Measures

All measures used in this study were translated and backtranslated in Dari by experienced translators in accordance with gold standard practices (Bontempo, 1993); discrepancies were solved by consensus involving the research team and the translators.

Trauma exposure. The number and type of traumatic experiences were assessed by a traumatic event checklist consisting of 23 items derived from the Posttraumatic Stress

Diagnostic Scale (Foa, 1996) and the Harvard Trauma Questionnaire event list (Richard F Mollica et al., 1992). Participants were asked to rate whether they had experienced or witnessed different potentially traumatic events. Overall trauma exposure was represented by a count of the number of types of traumatic events reported.

Difficulties in emotion regulation. We used the DERS (Kim L Gratz & Roemer, 2004) to assess individual difficulties in emotion regulation. Six subscale scores can be computed from the 36 Items: (a) nonacceptance of emotions (Nonacceptance), (b) difficulties engaging in goal-directed behavior when distressed (Goals), (c) impulse control difficulties (Impulse), (d) lack of emotional awareness (Awareness), (e) limited access to Emotion regulation strategies (Strategies), and (f) lack of emotional clarity (Clarity). Participants rate the items on a Likert scale (1 = *almost never*, 0–10%, to 5 = *almost always*, 91–100%). The DERS showed adequate construct and predictive validity and good test-retest reliability over a period of 4–8 weeks (ρ = .88; Kim L Gratz & Roemer, 2004). Internal consistency for the scale in the present study was excellent for the total score (α = .92) and varied between .59 and .87 for the subscales. An abbreviated version of the DERS showed good model fit in a culturally diverse refugee sample, including Afghan refugees (Doolan et al., 2017).

Posttraumatic stress symptom severity. The PTSD Checklist for DSM–5 (PCL-5) consists of 20 items mapping directly onto the four symptom clusters of PTSD (Weathers et al., 2013). Participants rate on a 5-point scale (0 = *not at all* to 4 = *extremely*) how much they were distressed in the last month by the symptoms described. PCL-5 scores exhibited strong test-retest reliability (r = .82) and convergent (r = .74 to .85) and discriminant (r = .31 to .60) validity (Blevins, Weathers, Davis, Witte, & Domino, 2015). Internal consistency for the scale in this study was .90. A PCL-5 score of 33 was suggested to be optimally efficient for detecting PTSD cases according to *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition, scoring criteria (Weathers et al., 2013).

Depression, anxiety/insomnia symptom severity, and social impairment. The General Health Questionnaire (Goldberg et al., 1997) is a screening instrument for general psychological health. Three of its subscales were used to measure symptom levels of depression, anxiety/insomnia, and social impairment. Each subscale consists of seven items measured on a 4-point Likert scale ranging from 0 to 3. The anxiety/insomnia score is a summarized one with five items focusing on anxiety and two on insomnia. The measure is an international tool that has been translated and applied in many different languages. A large-scaled study confirmed it as a psychometrically valid measure within various cultural

backgrounds, with the average area under the receiver-operating characteristic curve from 82 to 94 (Goldberg et al., 1997). The questionnaire has already been used successfully in Afghan refugee populations (e.g., Kananian et al., 2017). In the current study, each of the three subscales demonstrated adequate internal consistency (α: depression = .88; anxiety/insomnia = .76; social impairment = .70).

Procedure

The study was approved by the local research ethics committee (project number 2017_76_Koch_b). A member of the research group explained the purpose of the study at the beginning of the survey to each participant and emphasized that the participation is voluntary, that one could stop participating at any point, and that the data would remain anonymous and not used for the asylum process. All participants—and in case of being minor also their guardians—gave written informed consent. Only participants who were currently not receiving treatment were reimbursed for taking part in the study. The study interviews were conducted by supervised master-level students of clinical psychology aided by trained interpreters at an outpatient treatment center in Munich. The psychologist directed all questions to the participant in German, the translator repeated the items in Dari, and the participant filled out the questionnaire. This assisted self-report, which is common in the research with refugees (e.g., Doolan et al., 2017) was necessary because many of the participants had low education or lacked experience in filling out questionnaires.

Statistical Analysis

Analyses were conducted using IBM SPSS version 24. Pearson correlation analyses between all predictor and criterion variables as well as the relevant demographic covariates were examined to supplement the regression analysis. First, three hierarchical multiple regression analyses were conducted with PTSD symptom severity, depression, and anxiety/insomnia severity as the outcome variables. This statistical procedure allows to specify a fixed order of entry for variables to test the effects of certain predictors independent of the influence of others. In the first step, the demographic variables age, time since arrival in Germany, and residence status (i.e., secure/insecure) were entered, followed by trauma exposure (i.e., number of types of traumatic events experienced and/or witnessed) in a second step. In the third step, the sum score of difficulties in emotion regulation was entered. We included only the DERS sum score instead of all subscales in the regression models as a large number of predictors combined with a high multicollinearity between the subscales variance

inflation factor (VIF range = 1.69–4.20; tolerance range = 0.24 –0.59) would have led to instability in the results. Second, to investigate the contribution of emotion regulation in predicting social impairment over and above PTSD, depression, and anxiety/insomnia symptom severity, three separate hierarchical multiple regression analyses were conducted. In all regression analyses, social impairment was the dependent variable. As predictors, demographic as well as trauma variables were entered in the first two steps, symptom levels of PTSD, depression, or anxiety/insomnia, respectively, in the third step, and emotion regulation in the fourth step.

To correct for multiple comparison, a Bonferroni correction was utilized for all regression analyses by adjusting alpha to .017. We used Cohen's f^2 as the effect size for incremental R^2. It is the ratio of the proportion of variance accounted for by the relevant predictor to proportion of variance unaccounted for. According to Cohen's (1988) guidelines, $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes. As the study analyzed a combined sample of two separate studies, a post-hoc power analysis was calculated. Based on $\alpha = .017$ and $N = 74$ participants, it revealed high power (= .81) to detect incremental variances of medium effect sizes in the last step ($f^2 = .15$).

Results

Participant Characteristics

Participants had experienced or witnessed an average of 11.97 types of traumatic events (*SD* = 3.81; range = 4 to 21). An overview of the traumatic events most frequently reported is provided in Table A.1 in the Supplementary Material. Overall, participants reported a high mean of PTSD severity of 38.33 (*SD* = 14.74), which corresponds to a rate of probable PTSD diagnosis of 65.0% (*n* = 48). The mean symptom levels for depression was 9.12 (*SD* = 5.50), for anxiety/insomnia 11.04 (*SD* = 4.31), and for social impairment 10.69 (*SD* = 3.85).

Transdiagnostic Role of Difficulties in Emotion Regulation in PTSD, Depression, and Anxiety/Insomnia

Bivariate correlations for all study variables are shown in Table A.2 in the Supplementary Material. The three psychopathology variables were significantly correlated with the nonacceptance, goals, impulse, strategies, and clarity subscales, ranging from *r* = .35 to *r* = .63.

Greater difficulties on theses scales were associated with greater PTSD, depression, and anxiety/insomnia severity. The awareness scales did not correlate with any outcome.

Results of the hierarchical multiple regressions in the explanation of PTSD, depression, and anxiety/insomnia symptom severity are presented in Table 2.1 (see also Table A.3 in the Supplementary Material for more details). When predicting PTSD symptom severity, demographic variables accounted for significant variance (16%) in the first step. An insecure residence status emerged as a significant predictor of greater PTSD severity. When trauma exposure was entered into the model in the second step, it significantly predicted PTSD symptom severity and improved the model, accounting for an additional 9% of the variance. Finally, when difficulties in emotion regulation were entered in the third step, the model significantly improved in line with our hypothesis, accounting for an additional 21% of the variance, which is equivalent to an effect size of $f^2 = .40$.

Looking at depression symptoms as the dependent variable, demographics and trauma exposure did not account for significant variance in the first two steps. As expected, there was a significant increase of 35% in R^2 after the inclusion of emotion regulation as a predictor in Step 3 ($f^2 = .67$).

In the regression analysis predicting anxiety/insomnia symptoms, the first step accounted for 26% of the variance. Longer time settled in Germany as well as an insecure residence status were associated with greater anxiety/insomnia symptoms. Trauma exposure, entered in the second step, did not account for significant additional variance. In line with our hypothesis, in the final step, emotion regulation emerged as a significant predictor of anxiety/insomnia, accounting for an additional 14% of the variance ($f^2 = .25$).

Table 2.1

Hierarchical Regression Analyses Predicting Symptom Severities

Variables	R^2 (Adj.)	ΔR^2	*B*	*SE* B	β	*p*
(1) Criterion variable: PTSD (PCL-5)						
Step 1	.16 (.13)	.16				.006
Age			-0.25	0.28	-.10	.386
Time in Germany			0.40	0.20	.22	.048
Residence status			11.67	3.91	.34	.004
Step 2	.26 (.21)	.09				.004
Trauma exposure			1.29	0.44	.33	.004
Step 3	.47 (.43)	.21				<.001
ER difficulties (DERS)			.30	0.06	.50	<.001
(2) Criterion variable: Depression (GHQ-28)						
Step 1	.08 (.04)	.08				.131
Age			-0.04	0.11	-.05	.696
Time in Germany			0.06	0.08	.09	.462
Residence status			3.41	1.53	.26	.029
Step 2	.12 (.07)	.04				.069
Trauma exposure			0.33	0.18	.23	.069
Step 3	.48 (.44)	.35				<.001
ER difficulties (DERS)			0.14	0.02	.64	<.001
(3) Criterion variable: Anxiety/insomnia (GHQ-28)						
Step 1	.26 (.23)	.26				<.001
Age			0.16	0.08	.22	.040
Time in Germany			0.17	0.05	.33	.002
Residence status			4.33	1.07	.43	<.001
Step 2	.30 (.26)	.04				.060
Trauma exposure			0.24	0.12	.21	.060
Step 3	.44 (.39)	.14				<.001
ER difficulties (DERS)			0.07	0.02	.40	<.001

Note. ER = emotion regulation; DERS = Difficulties in Emotion Regulation Scale; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version).

Role of Difficulties in Emotion Regulation in Social Impairment

Social impairment was significantly positively associated with all DERS subscales except the awareness and nonacceptance subscale (see Table A.2 in the Supplementary Material). In the three regression models predicting social impairment, neither demographics nor trauma exposure accounted for significant variance in the first two steps, as illustrated in Table 2.2 (see also Table A.4 in the Supplementary Material for more details). In the first regression model, PTSD severity was a significant predictor of social impairment in Step 3 ($\Delta R^2 = .18$, $p < .001$,

f^2 = .11). In line with our hypothesis, difficulties in emotion regulation significantly predicted social impairment beyond the effects of demographics, trauma exposure and PTSD symptoms in the final step (ΔR^2 = .07, p = .008). Similarly, depression accounted for additional variance in the second regression model (ΔR^2 = .23, p < .001). Contrary to the hypothesis, difficulties in emotion regulation did not significantly predict social impairment beyond depression symptoms in the last step (ΔR^2 = .04, p = .047, f^2 = .06). In the final regression model, anxiety/insomnia did not account for significant variance Step 3 (ΔR^2 = .06, p = .029). In line with our hypothesis, emotion regulation significantly predicted social impairment beyond anxiety/insomnia and other risk factors (ΔR^2 = .15, p < .001, f^2 = .22).

Table 2.2

Hierarchical Regression Analyses Predicting Social Impairment

Variables	R^2 (Adj.)	ΔR^2	*B*	*SE* B	β	*p*
Step 1	.10 (.06)	.10				.065
Age			0.07	0.08	.11	.348
Time in Germany			0.12	0.05	.26	.029
Residence status			1.92	1.06	.21	.074
Step 2	.10 (.05)	.00				.978
Trauma exposure			<-0.01	0.13	<-.01	.978
Regression I						
Step 3	.28 (.23)	.18				<.001
PTSD (PCL-5)			0.13	0.03	.50	<.001
Step 4	.36 (.30)	.07				.008
ER difficulties (DERS)			0.05	0.02	.34	.008
Regression II						
Step 3	.33 (.28)	.23				<.001
Depression (GHQ-28)			0.36	0.07	.51	<.001
Step 4	.37 (.31)	.04				.047
ER difficulties (DERS)			0.04	0.02	.27	.047
Regression III						
Step 3	.16 (.10)	.06				.029
Anxiety/ insomnia (GHQ-28)			0.27	0.12	.30	.029
Step 4	.31 (.25)	.15				<.001
ER difficulties (DERS)			0.07	0.02	.46	<.001

Note. ER = emotion regulation; DERS = Difficulties in Emotion Regulation Scale; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version). Steps 1 and 2 were identical for all three regression analyses and are therefore only presented once.

Discussion

Building on mostly disorder-specific work, the present study sought to follow a transdiagnostic framework examining emotion regulation in a sample of trauma-exposed Afghan refugees. Regarding our first study aim, we found that difficulties in emotion regulation accounted for significant variance in PTSD, depression, and anxiety/insomnia symptoms over and above demographics and trauma exposure. In terms of incremental variance, the effect sizes were moderate in the anxiety/insomnia model and large in the PTSD and depression model (Cohen, 1988).

The results are largely consistent with previous studies examining the association between difficulties in emotion regulation and PTSD in culturally diverse refugee populations (Doolan et al., 2017) or other trauma populations (e.g., Ehring & Quack, 2010; O'Bryan et al., 2014). However, they extend them by showing that not only PTSD but also depression and anxiety/insomnia severity was significantly correlated with all DERS subscales except for lack of emotional awareness. The nonsignificant correlations of the awareness scale are contrary to our hypotheses and the alexithymia literature, which would suggest a strong relationship between PTSD and a low awareness of one's own emotional state as well as difficulties describing one's own emotions (Frewen et al., 2008). However, the nonsignificant findings are consistent with previous research revealing divergent patterns of relationships between the awareness subscale with relevant outcome measures (Bardeen, Fergus, & Orcutt, 2012). It has been argued before that awareness of negative emotional states may not be necessary or sufficient for the adaptive regulation of emotion and the scale might fail to distinguish between adaptive (e.g., accepting) and nonadaptive (e.g., ruminative; Tull et al., 2007) types of emotion regulation. Additionally, the interdependent self-construal that is prevailing in collectivistic cultures like the Afghan one might underlie this finding. In favor of the group, individuals are likely to put their own interests, emotions, and needs behind (Hazel R. Markus & Kitayama, 1991), which might explain why the personal awareness of emotions is less relevant for the own well-being in collectivist cultures.

From a broader perspective, the findings contribute to the debate between disorder-focused and transdiagnostic approaches and support the idea that different symptom categories might be manifestations of a limited number of core underlying factors. Explaining medium to large percentages of incremental variance, emotion regulation seems to be one of these transdiagnostic factors but most likely not the only one relevant for psychopathology in our sample. Other potential mechanisms discussed in the literature on refugee mental health are,

for example, cognitive appraisals and memory processes (Nickerson, 2018). Because comorbidity rates are excessively high among refugees, approaching psychopathology from a transdiagnostic framework by focusing for example on emotion regulation is particularly promising in this group to improve treatment efficiency and implementation fidelity. In addition, a transdiagnostic approach appears more parsimonious from a theoretical perspective because the high comorbidity between PTSD, depression, anxiety, and insomnia can be expected to be at least partly due to symptom overlap (see also Flory & Yehuda, 2015). The fact that refugees are confronted with numerous postmigration stressors that were shown to have a negative impact on the ability to regulate emotions (Nickerson et al., 2015) further stresses the need for tailored interventions that target these difficulties. When examining the sociodemographic covariates included, it is of note that an insecure residence status as well as longer time in exile partly predicted psychopathology, which corresponds to earlier research highlighting the detrimental psychological impact of insecurity and long-term postmigration living difficulties, possibly being reflected by a longer time in exile (Schweitzer et al., 2006; Steel et al., 2006).

Regarding our second study goal, aiming at social impairment as a relevant outcome in addition to psychopathology, all of the dimensions of the DERS with direct behavioral aspects (goals, impulse, strategies) were positively correlated with social impairment in contrast to the other subscales (awareness, nonacceptance), which deal with a more internal management of feelings. The data thus correspond well to social impairment as a construct which largely depends on functional behavior in day-to-day life. The clarity subscale which was also correlated with social impairment might represent an exception because of its importance for interpersonal relationships (Vanheule, Inslegers, Meganck, Ooms, & Desmet, 2010). Importantly, our findings show that difficulties in emotion regulation were related to social impairment independently of symptom severities of PTSD and anxiety/insomnia but not beyond depression. Its incremental contribution was small to medium in effect for the anxiety/insomnia and the PTSD model, respectively. The results extend those of Cloitre et al. (2005), who found that emotion regulation was a strong predictor of impairment beyond the effects of sociodemographic and severity of PTSD symptoms in childhood abuse survivors. The study highlights the transdiagnostic role of emotion regulation, having not only an impact across multiple disorders but partly also on social impairment beyond relevant symptom categories. When aiming to improve social impairment, the additional contribution of emotion regulation indicates that the effects of disorder-specific treatments on PTSD and anxiety/insomnia could be increased by integrating interventions on emotion regulation. However, the fact that

depression still accounted for the largest proportion of the variance in social impairment (23%) beyond which difficulties in emotion regulation did not reach significance confirms the paramount impact of depression on social impairment consistently referred to in the literature (McKnight & Kashdan, 2009). If at all, emotion regulation was related to social impairment independently of the strong effects of depression, bigger sample sizes are needed to detect this effect.

Limitations

The current study had several limitations that bear noting. First, generalizability to other refugee populations concerning the country of origin and gender is limited because the study examined only a culturally homogenous sample of male Afghan refugees. Second, our study is limited by the fact that we conducted post hoc power analysis as the study was part of two separate studies. Third, we calculated different regression models for predicting each psychopathological outcome as well as social impairment beyond each psychopathological variable separately because of the limited sample size. In a larger sample, future research should use structural equation modeling to examine the comprehensive role of emotion regulation in different mental disorders and social impairment. In this single model, the predictive role of the different subscales of the DERS could also be investigated more precisely without issues of multicollinearity. Fourth, we exclusively used self-report measures and used a translator to assist the assessment. Even though the questionnaires have all previously been successfully used in its Dari version, they have not all been validated in Dari. Future research should include structured clinical interviews and additional outcome measures on direct behavioral effects of difficulties in emotion regulation such as dissociation, suicide attempts, and substance abuse. Moreover, experimental designs involving more objective indicators of emotion regulation appear informative. This could also reduce the biases of reduced standardization in assisted self-report. Although assisted self-report is frequently used in research with refugee samples, to our knowledge, no validation studies for this method have been conducted to date. Finally, the study used a cross-sectional design, which precludes inferences about causality. It remains unclear whether difficulties in emotion regulation is a transdiagnostic risk factor or the consequence of mental disorders as well as social impairment.

Conclusion

In summary, the current study contributes to the growing literature in support of emotion regulation as a transdiagnostic factor. It is the first study to confirm the important role of emotion regulation in a sample of trauma-exposed Afghan refugees for the highly relevant and comorbid symptoms of PTSD, depression, and anxiety/insomnia. Future research should provide evidence for emotion regulation as a mechanism of change in longitudinal designs with larger samples. The study further points out the unique role of emotion regulation for social impairment, indicating that emotion regulation is a relevant factor that maintains impairment over and above psychopathology. Thus, this study has important practical implications and highlights the need for tailored mechanism-based treatment approaches in contrast to disorder-based approaches in refugees. Such transdiagnostic approaches would not only address comorbid disorders simultaneously but also improve social impairment more than a mere disorder-specific treatment. From a practical perspective, transdiagnostic interventions are more parsimonious and cost effective, which is particularly relevant in refugee settings, where the demand exceeds supply in trained mental health professionals and in which there are low resources for training its few professionals in all relevant diagnosis-specific protocols. Because culturally adapted interventions revealed to be more effective interventions in a meta-analysis (Benish, Quintana, & Wampold, 2011), our group has developed a culture-sensitive emotion regulation therapy for people with a refugee background (Koch, Ehring, & Liedl, 2017), which is currently being evaluated in a randomized controlled trial (Clinicaltrials.gov ID: NCT03162679). Integrating these interventions in a phasebased approach appears to be a particularly promising avenue. In a first step, individuals could be offered a low-threshold, transdiagnostic treatment focusing on emotion regulation. Those still in need for treatment afterward could be referred to disorder-specific or trauma-focused therapies in a second step

3. Study II:

Daily Worry in Trauma-Exposed Afghan Refugees:

Relationship with Affect and Sleep in a Study Using Ecological

Momentary Assessment

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Abstract

Objective: Repetitive negative thinking – and worry as a common variant – have been suggested to be transdiagnostic maintaining factors of psychopathology in refugees. Using an ecological momentary assessment (EMA) approach, this study tested the feasibility of EMA and the hypothesis of a self-reinforcing relationship (a) between worry and affect and (b) between worry and sleep in refugees. Additionally, we examined whether worry interacts with postmigration stress to impact on affect and sleep. **Method**: For one week, 45 trauma-exposed Afghan refugees received five prompts per day asking them to report on momentary levels of worrying and negative as well as positive affect. In addition, sleep quality was assessed in the morning and the occurrence of postmigration stress at night. **Results**: Our findings did not indicate a bidirectional relationships (a) between worry and affective experiences and (b) between worry and poor sleep quality. However, worry experienced on a given day predicted increased negative affect on the next day; in turn, positive affect predicted decreased worrying on the next day. Hypotheses on the interaction between worry and stress in predicting affect and sleep were not supported. **Conclusion**: These preliminary findings suggest unidirectional effects of daily worry on negative affect and positive affect on daily worry. However, the low compliance rate and the small sample size precludes drawing strong conclusions. Implications for further EMA research among refugees are discussed.

Introduction

In response to the unprecedented numbers of refugees being forcibly displaced as well as consistent evidence for elevated rates of psychological disorders in this group, research on refugee mental health has advanced significantly in recent years (Turrini et al., 2017). However, there has long been a rather narrow focus on posttraumatic stress disorder (PTSD), with considerably less attention paid to other mental health problems in this group (Nickerson, 2018). In addition, research has largely focused on the role of premigration traumatic events in the development of psychopathology, and much less is known about other risk and maintaining factors of psychopathology in refugees. In order to develop more effective and tailored psychological interventions, there is a need to better understand psychological processes maintaining mental health problems across diagnostic categories. It therefore appears particularly promising to investigate the role of transdiagnostic processes in this population.

Refugees from Afghanistan resettling in western countries are a group facing a particularly high mental health burden which has been linked to premigration traumatic events (such as prolonged exposure to war) as well as an unstable postmigration situation (Alemi et al., 2014). Due to a radically decreasing asylum approval rate in Germany, many Afghans are currently confronted with an insecure residence status, lack of work permit and separation from their families. In contrast to other refugee populations (e.g., those originating from Syria), Afghan refugees have nevertheless been underrepresented in research on refugee mental health, possibly due to challenges such as relatively low average levels of education, unstable living conditions in exile and multiple, chronic traumatization.

Repetitive Negative Thinking and Worry as Transdiagnostic Processes

Repetitive negative thinking (RNT), defined as excessive thinking about current concerns, problems, past experiences or worries about the future, has been identified in Western samples as an important transdiagnostic process (Ehring & Watkins, 2008). There is evidence from a number of cross-sectional as well as prospective studies showing that RNT plays a crucial role in the development and/or maintenance of psychological disorders (Ehring & Watkins, 2008; McEvoy et al., 2013; Spinhoven, van Hemert, & Penninx, 2018; Watkins, 2008). In the literature on refugee mental health, this process has often been referred to as “thinking a lot” (Hinton, Barlow, Reis, & de Jong, 2016). This key idiom of distress is one of the nine entries in the Diagnostic and Statistical Manual-5 glossary of cultural concepts of distress (DSM-5; American Psychiatric Association 2013). It is used in many cultures to express thinking about one or more distress-

inducing topics such as current worries or past negative events, and can in turn trigger negative emotional, somatic as well as mental symptoms (Hinton et al., 2016). In a cross-cultural review on "thinking too much idioms", it was associated with different types of symptom severities such as depression, anxiety, and PTSD, but also with aspects of experience not reducible to psychiatric symptoms or disorders, such as socioeconomic vulnerability (Kaiser et al., 2015).

One common variant of RNT or thinking a lot is worry It is defined as a chain of thoughts and images, negatively affect–laden and relatively uncontrollable which involves mostly future-focused anticipation of negative outcomes (Borkovec, Robinson, Pruzinsky, & DePree, 1983). In a study on trauma-exposed Cambodian refugees, worry has been identified as the most common type of dysphoric cognition under the construct of thinking too much (Hinton et al., 2016). Worry is a dysfunctional cognitive coping strategy involved in a large number of different disorders such as generalized anxiety disorder, depression, and PTSD (Bardeen, Fergus, & Wu, 2013; Ehring & Behar, in press). It is conceivable that RNT in the form of worry is highly prevalent in refugees with mental health problems, for several reasons. First, many refugees have experienced premigration trauma events, and excessive worrying is common in trauma survivors (e.g., Michael, Halligan, Clark, & Ehlers, 2007; Roussis & Wells, 2008). In addition, this group is frequently confronted with postmigration problems and situations that are related to an ambiguous and potentially negative outcome, such as socioeconomic disadvantage, unemployment, separation from their families, discrimination, and uncertainty related to the asylum application process (Porter & Haslam, 2005). As both premigration trauma load and postmigration life stress make the refugee population vulnerable to extensive worrying, it appears important to better understand the antecedents and consequences of excessive worry in this group. In one of the few studies on this topic to date, worry was investigated in a sample of 201 Cambodian trauma-exposed refugees (Hinton, Nickerson, & Bryant, 2011). Results of a path analysis suggested that worry is associated with PTSD and that this relationship is mediated by somatic arousal and trauma recall. However, the study solely focused on PTSD and was limited to a cross-sectional design, which does not allow drawing inferences about causality or directions of the associations.

Ecological Momentary Assessment Among Refugees

To address this shortcoming, the current study used smartphone-based ecological momentary assessment (EMA) to investigate the proximal antecedents and consequences of worry in a sample of trauma-exposed refugee in their natural environments. EMA assessments involved

repeated sampling of participants' current worry episodes as well as emotional and mental experiences in response to prompts emitted by a smartphone. EMA maximizes ecological validity and minimizes recall bias when reporting momentary experiences in daily life. Furthermore, it enables us to investigate dynamics changes in worry and other psychological processes across time. The rich and nuanced data collected through EMA designs allows elaborated analyses on micro-processes of worry through refined statistical techniques: e.g., multilevel modeling to examine the interplay with other processes such as affect or sleep in a real-world context (Myin-Germeys et al., 2009). Indeed, an EMA study produces multilevel data that can be analyzed at different levels, such as the prompt, day, and person levels. As smartphone technology has been documented to be both appealing and accessible among refugees (smartphone use between 66% - 89 %, depending on country of origin; Emmer, Richter, & Kunst, 2016; UNHCR, 2017), we assumed that EMA would be a promising assessment tool for refugees.

Bidirectional Relationships Between Worry, Affect and Sleep

According to the transcultural "thinking a lot" (TAL) model, cognitions such as worry trigger both negative affect and somatic symptoms such as headache and poor sleep (Hinton et al., 2016). These symptoms can in turn be expected to trigger more worrying, leading to a vicious circle. The current study focused on affective experience and sleep as possible antecedents and consequences of worry. Specifically, we aimed to test the self-reinforcing cycle, proposed by the TAL model, in which worrying contributes to negative affect and sleep disturbances, resulting in further worrying.

To the best of our knowledge, no study has tested the proposed bidirectional relationships (a) between worry and affective experiences and (b) between worry and poor sleep quality in a refugee population. In the broader literature on Western, non-refugee populations, the existing, limited data does not provide clear evidence either. To date, there are only two EMA studies examining the proposed self-reinforcing cycle within one study design but both focus on worry and sleep; data on affect is still lacking. First, Thielsch, Ehring, et al. (2015) found that pre-sleep worrying among patients with generalized anxiety disorder predicted reduced sleep quality, which in turn resulted in increased levels of worry on the subsequent day. However, the second study indicated that worry experienced on a particular day predicted increased sleep disturbances at the following night among high trait worrier, but not vice versa (McGowan, Behar, & Luhmann, 2016). In sum, there is very little evidence on the bidirectional relationship to date, with the effect of worry on sleep appearing more consistent than the reverse one.

As an alternative to bidirectional effects, unidirectional detrimental effects of daily worry on sleep as well as on subsequent levels of positive and negative affect might be prevailing. These unidirectional effects have been investigated more thoroughly and show clearer evidence to date. In a study combining self-reports and long-term sleep monitoring with actigraphy among Japanese students, repetitive thought in the evening predicted longer sleep-onset latency, decreased sleep efficiency, and reduced total sleep time (Takano, Sakamoto, & Tanno, 2014). A similar study found that daily worry predicted heightened sympathetic and reduced parasympathetic action as well as impaired subjective sleep in a non-clinical sample (Weise, Ong, Tesler, Kim, & Roth, 2013). According to psychological models of insomnia, this is due to a physiological arousal and emotional distress being triggered by worry and leading to the perception of sleep problems and genuine sleep deficits (Allison G Harvey, 2002; A. G. Harvey, Tang, & Browning, 2005).

In terms of affect, experimentally induced worry and rumination revealed to increase negative affect and decrease positive affect among a community sample in a series of two studies (McLaughlin, Borkovec, & Sibrava, 2007). However, this unidirectional relationship of worry and affect could not be replicated in a clinical sample (Kircanski, Thompson, Sorenson, Sherdell, & Gotlib, 2018). Given the unclear findings and the mere focus on Western samples to date, it remains to be tested whether the relationship between worry and affective experience as well as sleep in refugees is of an unidirectional or a bidirectional nature, as predicted by the transcultural TAL model (Hinton et al., 2016).

Interaction Between Worry and Stress

In the group of trauma-exposed refugees, there is accumulating evidence pointing to a key impact of postmigration stress such as discrimination, loneliness, and fear of deportation on mental health (Li et al., 2016). However, it is conceivable that not all refugees respond to these stressors in a similar way, but that their response is moderated by a number of vulnerability and resilience factors. Worry might be a vulnerability factor for psychological symptoms that may exert deleterious effects especially in interaction with postmigration stress which refugees experience in their daily lives. Corroborative evidence for this hypothesis comes from studies conducted in Western populations showing, e.g., that the combination of elevated trait RNT (in the form of rumination) and a stressful event is associated with increased negative affect and general distress (Moberly & Watkins, 2008; M. S. Robinson & Alloy, 2003). In addition, not only trait rumination but also the state level of so-called stress-reactive rumination was shown to

interact with the experience of life stress to prospectively predict depressive symptoms and negative mood in diary studies (Connolly & Alloy, 2017; Genet & Siemer, 2012). As rumination and worry are closely related, overlapping constructs, the question arises whether the finding that engaging in stress-reactive rumination leads to higher subsequent negative effects on symptoms or affect when it occurs in interplay with life stress might be transferrable to the process of worry in refugees. Therefore, the current study not only investigated the main effect of worry on psychological distress (i.e., affective experience, sleep quality), but also the interactive effects of worry and postmigration stress on these outcomes.

Objective

The current study used an EMA paradigm in which Afghan refugees reported their current levels of worry and affect as well as quality of nighttime sleep and postmigration stress for seven days in their daily life. As past research has not frequently used EMA in refugee populations, we were initially interested in the feasibility (i.e., compliance and reactivity) of an EMA design with this specific sample. Furthermore, the study aimed to investigate Afghan refugees for the self-reinforcing relationships (a) between worry and affect and (b) between worry and sleep. Finally, we aimed to examine the interaction between worry and postmigration stress in predicting affect and sleep. The following hypotheses were tested:

1) Bidirectional relationship between worry and affect:
   1a) Worry significantly predicts increased levels of negative affect and decreased levels of positive affect.

   1b) Negative affect significantly predicts increased levels of worrying and positive affect significantly predicts decreased levels of worrying.

2) Bidirectional relationship between worry and sleep:
   2a) Worry significantly predicts decreased sleep quality at the following night.
   2b) Sleep quality significantly predicts increased levels of worrying on the next day.
3) Interaction between worry and stress:
   3a) The interaction between postmigration stress and worry significantly predicts an increase in negative affect and decrease in positive affect.
   3b) The interaction between postmigration stress and worry significantly predicts a decrease in sleep quality.

Given the nested structure of our data, we were able to test our hypotheses not only at a between-subject level, but also at different within-subject levels; e.g., sleep variables are only specified at the day level; and affect both at the day and prompt levels. This multi-level approach allows us to explicitly differentiate between predictions at a trait-like level (between-subject level) as well as between longer-term (day-level) and short-term (prompt-level) predictions.

Method

Participants

We aimed to recruit participants with a range of mental health burden, providing greater power to investigate the role of worry in individuals reporting different levels of distress. This is why we used two different recruitment strategies. First, participants were recruited from a sample of patients taking part in a clinical intervention study at an outpatient unit for victims of torture and war (n = 21; Koch, Ehring, & Liedl, 2019). Second, participants were recruited via referrals from teachers and social workers or via community advertisements (n = 31). A priori inclusion criteria were as follows: (1) being a refugee or asylum seeker from Afghanistan, (2) being at least 15 years of age, (3) being literate in Dari or German and (4) having been exposed to a traumatic event in Afghanistan or on the way into exile. Seven participants were excluded from statistical analyses because of their low compliance with the EMA protocol (i.e., responded to < 20% EMA signals). Reported reasons for the low compliance were technical problems (n = 2) and no time and motivation (n = 5). When comparing the excluded with the included participants on the baseline variables, we did not find a substantial difference on the GHQ-28; both groups exceeded the cut-off with excluded participants showing only a slightly lower score (M = 31.67, SD = 14.18) than the included ones (M = 36.21, SD = 15.36). Similarly, both groups showed the mean PCL-5 scores around the established cut-off of 33 indicative for PTSD, with excluded participants again scoring slightly lower (M = 29.67, SD = 12.01) than those in the included sample (M = 34.24, SD =14.74). Concerning the number of traumatic events, descriptive differences were only minor between the two groups (excluded participants: M = 10.29, SD = 5.50; included participants: M = 11.87, SD = 4.31). Thus, the final sample consisted of 45 Afghan refugees and asylum seekers settling in Munich, Germany.

The majority of participants were male (n =41; 91%) with ages ranging from 15 to 47 years (M = 22.91, SD = 7.46). Participants had arrived in Germany on average 2.02 years ago (SD =

0.80; range = 1.00 to 4.83) and had spent 8.64 years in education (*SD* = 4.69; range = 1 to 18). Most of the sample currently went to school or attended a German-language course (87%, *n* = 39); 11% of the sample were employed (*n* = 5), and 2% were unemployed without a working permit (*n* = 1). Twelve participants had been granted a residence permit (27%), whereas the remaining 33 participants had an insecure residence status (73%). Ten participants (22%) were taking sleeping medication during the time of the study but were asked to keep the intake stable.

EMA Measures

All measures used in this study were translated into Dari and back-translated into German by experienced translators in accordance with gold standard practices (Bontempo, 1993). Minor discrepancies were rectified by the research team and translators with experience in working with mental health material.

Worry. Earlier EMA research has used different items to operationalize worry, e.g., asking questions for worry duration, burden, frequency, and intensity (e.g., Thielsch, Andor, & Ehring, 2015). As EMA can only have a few items per prompt, we decided to focus on worry intensity ("How much do you worry right now?"), which was easy to understand. Participants rated this item on a visual analogue scale, ranging from 0 = *not at all* to 100 = *a lot*). Participants were asked to complete this item 5 times per day.

Negative and Positive Affect. Negative and positive affect were assessed using ten items of emotional adjectives. In consultation with Afghan translators with extensive experience in the mental health sector, four items were selected from the International Positive and Negative Affect Schedule Short-Form ("afraid", "upset", "ashamed", and "active"; I-PANAS-SF; Thompson, 2007); and six items were added, which were relevant and applicable within the Afghan language ("helpless", "guilty", "sad", "relaxed,", "happy", and "satisfied"). Participants rated the extent to which they felt each emotion at the current moment on a visual analogue scale, ranging from 0 = *not at all* to 100 = *very much*. We aggregated the rating scores as indicators of negative and positive affect, which showed excellent reliability over time and across people ($R_{KF} > .99$ for both scales[1]). Participants were asked to complete this item 5 times a day.

[1] R_{KF} is a between-subject reliability coefficient, estimating the reliability as an average over k time points for fixed coefficients (F), and is indicative of the consistency of item responses over time and across people (Shrout & Lane, 2012).

Sleep. Sleep quality was measured with one item ("How well did you sleep last night?"), analogous to Thielsch, Ehring, et al. (2015). It was rated on a visual analogue scale, ranging from 0 = *very bad* to 100 = *very good*). Participants were asked to complete this item at the first prompt of each day. Additional sleep-related items were included in this measurement for a different research question not of relevance for the current analyses.

Postmigration Stress. We used the Postmigration Living Difficulties (PMLD) Checklist (Silove et al., 1997; Steel, Silove, Bird, McGorry, & Mohan, 1999) and adapted it to the German context and to the daily assessment format. This adapted checklist includes 16 postmigration stressors, and participants were asked to rate the extent to which each of the stressors was of concern to them on a particular day. The checklist was completed every evening during the EMA phase (i.e., at the last prompt of a day). Items are rated on a 5-point scale (0 = *not a problem* to 4 = *a very serious problem*). Items scored at least 3 (a moderately serious problem) are considered positive responses, adding to a total count of daily postmigration stressors. The scale showed an excellent reliability over time and across people ($R_{KF} > .99$[1]).

Dispositional Questionnaires

Participants completed several self-report questionnaires during the lab appointments.

The **Traumatic Event Checklist** consisted of 23 items adapted from the *Posttraumatic Diagnostic Scale* (PDS; Foa, Cashman, Jaycox, & Perry, 1997) and the event list of the *Harvard Trauma Questionnaire* (HTQ; Richard F Mollica et al., 1992). Participants were asked to rate if they had experienced or witnessed different potentially traumatic events. Overall trauma exposure was represented by a count of the number of types of traumatic events reported.

The **General Health Questionnaire** (GHQ-28; Goldberg et al., 1997) was used to assess general psychological health on the different subscales somatization, anxiety/insomnia, social dysfunction and depression, and the **PTSD Checklist for DSM-5** (PCL-5; Weathers et al., 2013) to assess the severity of PTSD symptoms. Both of these measures have strong psychometric properties and can be used as screening instruments to detect psychological distress (via cut-off of 23/24; Goldberg et al., 1997) or a probable PTSD (via DSM-5 diagnostic algorithm for PTSD; Blevins, Weathers, Davis, Witte, & Domino, 2015).

Procedure

The study was approved by the local Research Ethics Committee (project number 2017_76_Koch_b). We used mobile-phone-based EMA to collect data from participants 5 times

a day (fixed time-based design: 7:45 am [weekdays] or 10:30 am [weekend], 1:00 pm, 4:00 pm, 7:00 pm, and 9:30pm) for a period of 7 days. Most participants used their personal smartphone for the assessment. For those with no appropriate device, the research team provided a smartphone for the duration of the assessment. Whereas affect and worry were reported at each of the five daily prompts, participants rated the postmigration stress they experienced over the course of the day only once in the evening (last prompt of the day) and their sleep quality upon awakening once in the morning (first prompt of the day). The EMA items were presented in the following order: Sleep/Postmigration Stress (where applicable), positive and negative affect, and worry. Each prompt had to be answered within 30 minutes after receiving the signal. Responses that were not completed within the time limit were not recorded in the system. Before and after the 7 days of EMA, participants attended two appointments in the lab. During the first meeting, a member of the research group explained the purpose of the study, gave a briefing on the EMA procedure and emphasized that the participation was voluntary, that participants could withdraw from the study at any point and that data would remain anonymous and not used for the asylum process. All participants – and in case of being minor also their guardians – then gave written informed consent. They also completed the trauma list and answered some demographic questions. At the second and last appointment, they completed a pack of questionnaires (GHQ-28, PCL-5). Participants also filled in additional questionnaires that are not of relevance for the current analyses and results of which will be reported elsewhere. At the end of the 1-week course of EMA, participants were compensated for their time. For the EMA-week, participants received €10, but only if they answered 80% of all prompts. The two assessment meetings were compensated with €18. For participants taking part in the treatment study, the assessment was part of the standard assessment; these participants were therefore not compensated for their participation in the assessment session.

Statistical Analysis

All the hypotheses were tested with package lme4 of R software, version 3.6.1. (Bates, Mächler, Bolker, & Walker, 2015). Because of the nested structure of our data, we used hierarchical linear modeling (HLM), which allows testing our hypotheses at different levels (i.e., between-subject level, day-level, and/or prompt-level).

Our first model had a two-level structure, with the day level nested to the person level. As sleep was only reported on a daily basis, worry and affect ratings were also specified at the day level by aggregating the scores per day. All predictors were person-mean centered prior to all

analyses to best capture the effect of within-subject fluctuations during the EMA week. HLM analyses tested whether a day-level variable for Person *j* on Day *d* (e.g., NA_{dj}) was predicted by the other variable on Day *d* -1 (e.g., $Worry_{(d-1)j}$), after controlling for the level of the dependent variable on Day *d* -1 (e.g., $NA_{(d-1)j}$). Separate models were estimated for each of the variables as an independent variable with the other variable as a predictor, which allowed us to test the direction of the association between worry and affect as well as worry and sleep. All models assumed random effects for the intercept and slope, which were allowed to vary across participants. Exemplarily for the lagged regression on negative affect (NA, Hypothesis 1a), the model is specified in the following equations:

$$\text{Level 1 (day-level): } NA_{dj} = \beta_{0j} + \beta_{1j} Worry_{(d-1)j} + \beta_{2j} NA_{(d-1)j} + r_{dj},$$

$$\text{Level 2 (person-level): } \beta_{0j} = \gamma_{00} + \gamma_{01} Worry_{pm,j} + u_{0j},$$

$$\beta_{1j} = \gamma_{10} + u_{1j},$$

$$\beta_{2j} = \gamma_{20} + u_{2j}.$$

In the level-1 model, the level of NA on day *d* is predicted by worry and NA on the previous day, *d* - 1 (with r_{dj} as the residual). The intercept (β_{0j}) is a function of the person-mean (pm) of the predictor for person *j* across all days (e.g., $Worry_{pm,j}$). Thus, we were able to analyze the relationship between worry and affect also at a between-subject level, which represents more stable, trait-like effects (i.e., people with a greater tendency to worry would report a higher level of negative affect over the EMA course). All level-1 coefficients (β_{0j}, β_{1j}, and β_{2j}) were assumed to vary at level-2 with random effects u_{0j}, u_{1j} and u_{2j}.

A similar two-level model was additionally specified at the prompt- (instead of day-) level for affective experience, because – in contrast to sleep – affect was reported 5 times a day. Therefore, we estimated additional models for the momentary relationship between worry and affective experience, which allows us to differentiate between short-term (prompt-level) as well as longer-term (day-level) predictions.

To test Hypotheses 3 (i.e., the interaction between worry and stress in predicting negative affect and sleep), interaction terms were added to the above described models at the day level. Two types of interactions were considered here: (a) within-level interaction, e.g., $Worry_{(d-1)j}$ X $Stress_{(d-1)j,}$ and (b) cross-level interaction, $Worry_{(d-1)j}$ X $Stress_{pm,j}$ when predicting affect and sleep. The former interaction speaks to a day-level phenomena (i.e., on a day when people experienced higher levels of stress, worry would exhibit a lager effect on affect and sleep), whereas the latter cross-level interaction taps into a person (or trait) level phenomenon (i.e., people who experienced

higher levels of stress tend to show a higher effect of worry on affect and sleep). All predictors were person-mean centered.

Results

Descriptive Statistics and Compliance with EMA

Table 3.1 shows range, means, and standard deviations for the scales assessed at baseline and via EMA. Around a half of the participants (*n* = 26; 58%) met the criteria for a probable PTSD diagnosis according to the DSM-5 diagnostic algorithm, and 73% of all participants (*n* = 23) exceeding the cut-off for psychological distress, as measured by the GHQ-28. Across all participants, the most important stressor was a fear of deportation, which was reported on 80% of daily (evening) prompts, followed by fear for family back home (76%) and separation from family (72%; see Figure 3.1 for more details).

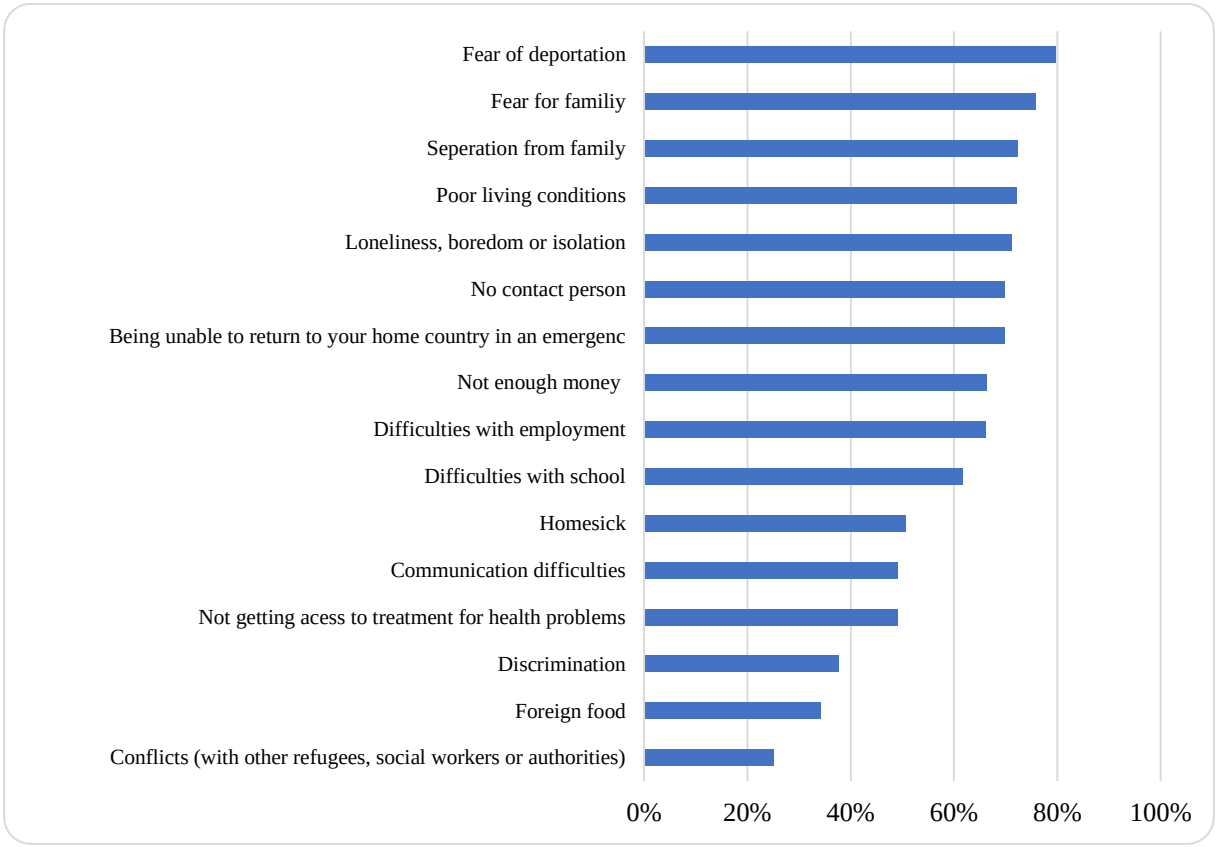

Figure 3.1 Mean percentages of days, when the respective postmigration stressor was reported.

After excluding 7 participants with very low compliance rates (< 20%), the final data of 866 responses from 45 participants were submitted to analysis (out of the possible 1,575 observations). The mean response rate was 55% with the range of 21 – 95% (*SD* = 20.75). Exact compliance rates for the different EMA variables are shown in Table 3.1. Exploratory correlation and regression analyses were conducted to identify demographic or dispositional factors that were associated with the compliance rate. Longer time settled in Germany (r = .31; p =.037), lower PTSD symptom severity (r = .40; p =.006), and a secure residence status, t (43) = 2.28, p = .028, all predicted a higher compliance rate. We also tested whether there was an increasing or decreasing trend of worry over the course of EMA, because participating in EMA per se may have influenced the levels of worry (i.e., reactivity to EMA). Therefore, an additional HLM analysis was conducted, in which momentary worry was predicted by prompt number (i.e., the number of prompts received so far). Prompt number was not a significant predictor of worry, indicating that worry did not have a linear trend over the course of the assessment, B = 0.06, SE = 0.12, t =0.50, p =.622.

Table 3.1

Descriptive Statistics for Study Variables (N = 45[a])

Variable	*M* (*SD*)	Range	EMA Compliance: Percentage (*SD*)
Dispositional Variables			
Number of Types of Traumatic Events	11.87 (4.31)	4 - 21	
PCL-5	34.24 (14.74)	7 - 70	
GHQ-28	36.21 (15.36)	13 - 73	
EMA Variables			
Worry	56.85 (29.94)	0 - 100	55% (21)
Negative Affect	30.41 (23.48)	0 - 95	55% (21)
Positive Affect	46.35 (22.39)	0 - 97	55% (21)
Postmigration Stress	9.98 (4.07)	0 - 16	60% (24)
Sleep Quality	48.24 (25.46)	0 - 100	51% (28)

Notes. [a] Final sample after having excluded seven participants due to very low compliance (< 20%); EMA = Ecological Momentary Assessment; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version).

Bidirectional Relationship Between Worry and Affect

To test Hypotheses 1, we estimated different HLMs with worry predicting negative or positive affect (Hypothesis 1a) and with negative or positive affect predicting worry (Hypothesis 1b). First, we estimated the models at a day level for longer-term predictions and second zoomed in and estimated the models at a prompt level for short-term predictions.

For the day-level, results on the analyses of the bidirectional relationship between worry and negative affect as well as positive affect, respectively, are presented in Table 3.2. In the model predicting negative affect, we simplified it by fixing random effects of negative affect (u_{2j}) as zero because of converge issues. As hypothesized, worry on the previous day *d-1* predicted increased levels of negative affect on the subsequent day *d*. However, this association between worry and negative affect was unidirectional as negative affect did not significantly

predict worry on the subsequent day. In both models, we found a significant effect of a between-subject predictor: i.e., the person-mean of worry on negative affect as well as of the person-mean of negative affect on worry. These significant between-subject effects indicate that people with greater tendency of worrying showed higher levels of negative affect, and vice versa. In terms of positive affect, we found similar significant between-subject effects; the person-mean of worry predicted decreased positive affect and the person-mean of positive affect predicted decreased worry. In contrast to our hypothesis, we found no significant within-subject effect of worry on a given day predicting positive affect on the next day. However, the effect of positive affect on worry was significant; higher levels of positive affect were associated with decreased levels of worry on the subsequent day. It is noteworthy that the autocorrelation of worry was not significant in this model.

For the prompt level, results on the analyses of the bidirectional relationship between worry and negative affect as well as positive affect respectively, are presented in Table 3.3. Contrary to our hypotheses, neither the effect of worry on affect nor the effect of affect on worry was significant at the prompt level, with all *p*s >.16.

Bidirectional Relationship Between Worry and Sleep

Two parallel HLM analyses were conducted with worry predicting sleep quality (Hypothesis 2a) and sleep quality predicting worry (Hypothesis 2b) at the day level. Results are shown in Table 3.2. At the between-subject level, the person-mean of worry significantly predicted decreased sleep quality, whereas the person-mean of sleep quality significantly predicted decreased levels of worrying. This indicates that people with a greater tendency of worrying reported poorer sleep quality and vice versa. Contrary to our hypothesis, however, we found no significant within-subject effect of sleep quality on worry or vice versa (Table 3.2).

Table 3.2

HLM Parameter Estimates for the Bidirectional Models at a Day Level

Fixed effect: β	Estimates (*SE*)	*t*	*p*
Dependent Variable: Negative Affect$_d$ [a]			
Worry $_{d-1}$	0.14 (0.06)	2.24	.030
Worry $_{pm}$	0.55 (0.10)	5.72	<.001
Negative Affect $_{d-1}$	0.15 (0.06)	2.40	.018
Dependent Variable: Worry$_d$ [b]			
Negative Affect $_{d-1}$	-0.04 (0.11)	-0.33	.741
Negative Affect $_{pm}$	0.95 (0.15)	6.22	<.001
Worry $_{d-1}$	0.17 (0.07)	2.31	.022
Dependent Variable: Positive Affect$_d$ [a]			
Worry $_{d-1}$	-0.09 (0.06)	-1.45	.157
Worry $_{pm}$	-0.44 (0.10)	4.57	<.001
Positive Affect $_{d-1}$	0.17 (0.07)	2.61	.001
Dependent Variable: Worry$_d$ [b]			
Positive Affect $_{d-1}$	-0.17 (0.08)	-2.04	.042
Positive Affect $_{pm}$	-0.82 (0.17)	-4.74	<.001
Worry $_{d-1}$	0.08 (0.07)	1.10	.276
Dependent Variable: Sleep Quality$_d$ [c]			
Worry $_{d-1}$	0.11 (0.20)	0.56	.576
Worry $_{pm}$	-0.46 (0.11)	-4.26	<.001
Sleep Quality $_{d-1}$	-0.12 (0.13)	-0.81	.421
Dependent Variable: Worry$_d$ [d]			
Sleep Quality $_{d-1}$	-0.04 (0.08)	-0.49	.632
Sleep Quality $_{pm}$	-0.90 (0.21)	-4.23	<.001
Worry $_{d-1}$	0.08 (0.08)	1.02	.309

Notes. d = day; pm = person-mean; [a] number of observations: 245; [b] number of observations: 243; [c] number of observations: 91; [d] number of observations:146.

Table 3.3

HLM Parameter Estimates for the Bidirectional Models at a Prompt Level

Fixed effect: β	Estimates *(SE)*	*t*	*p*
Dependent Variable: Negative Affect$_i$ [a]			
Worry $_{i-1}$	0.06 (0.03)	1.65	.108
Worry $_{pm}$	0.57 (0.09)	6.45	<.001
Negative Affect $_{i-1}$	0.18 (0.04)	4.38	<.001
Dependent Variable: Worry$_i$ [b]			
Negative Affect $_{i-1}$	0.08 (0.12)	0.69	.497
Negative Affect $_{pm}$	0.96 (0.14)	6.69	<.001
Worry $_{i-1}$	0.20 (0.04)	5.21	<.001
Dependent Variable: Positive Affect$_i$ [a]			
Worry $_{i-1}$	-0.04 (0.04)	-1.10	.280
Worry $_{pm}$	-0.43 (0.10)	4.42	<.001
Positive Affect $_{i-1}$	0.18 (0.05)	3.91	<.001
Dependent Variable: Worry$_i$ [b]			
Positive Affect $_{i-1}$	-0.07 (0.06)	-1.32	.187
Positive Affect $_{pm}$	-0.82 (0.18)	-4.60	<.001
Worry $_{i-1}$	0.24 (0.04)	6.03	<.001

Notes. i = prompt number; pm = person-mean; [a] number of observations: 582; [b] number of observations: 576.

Interaction Between Worry and Stress

In our last hypothesis, we predicted that postmigration stress (daily and person-mean) would moderate the relationship between the level of worrying on a given day and affective experience on the next day (Hypothesis 3a) or sleep quality at the following night (Hypothesis 3b). In contrast to the hypothesis, none of the interaction effects was significant in the estimated models (see Table B.1 in the Supplementary Material). This finding indicates that postmigration stress did not interact with worry to impact on subsequent affective experience or sleep.

Discussion

In this study, we examined naturally occurring worry at various times of the day among trauma-exposed Afghan refugees in a naturalistic setting by using an EMA paradigm. As this is one of the first studies to use the EMA methodology in a sample of trauma-exposed refugees, we initially aimed to explore the acceptability and feasibility of this technology. Contrary to our hypothesis, our findings did not indicate a bidirectional relationship (a) between worry and affective experiences and (b) between worry and poor sleep quality. However, worry experienced on a given day predicted increased negative affect on the next day; in turn, positive affect predicted decreased worrying on the next day.

Feasibility of EMA

After having excluded 7 participants because of very low compliance rate (< 20%), the average compliance rate was 55% although it varied largely across participants. This rate is significantly lower than an average compliance of 78% measured in a pooled dataset of 10 EMA studies among 1,717 individuals with various mental health conditions (Rintala, Wampers, Myin-Germeys, & Viechtbauer, 2019). In a meta-analysis among adolescents the compliance rate has been shown to range from 51% to 92% (Heron, Everhart, McHale, & Smyth, 2017). Given our relatively young sample, our compliance rate is comparable, but clearly at the lower end of the continuum found in adolescents. Consequently, our results need to be considered in the context of a low compliance resulting in limited observations per estimated model. The low compliance might have also contributed to the limited standard deviation, particularly of those variables, which were only assessed once a day (e.g., sleep and postmigration stress).

In sum, the high variance in the compliance rate indicates that EMA is a feasible method in refugees under certain conditions. This is why we strongly recommend the following measures to be taken in future studies in order to reach higher completion rates: 1) A shorter time settled in Germany, an insecure residence status as well as a higher PTSD symptom severity were all associated with a lower compliance rate. This indicates that the more insecure and distressed people are in their daily life, the harder it is to adhere to a burdensome and time-consuming EMA protocol for seven days. These people might need particularly close support while participating in EMA studies, for example, by effective briefing and communication during the sampling procedure consistent with guidelines for the use of EMA protocols among clinical populations (Palmier-Claus et al., 2011). 2) Future research should provide more

incentives for responding to all prompts. One possibility is to give a greater financial compensation. Internal incentives would also be worth considering, such as increasing the motivation for participating: Although we did not conduct a structured assessment on the participants' understandings on the study protocol, the results of our informal interview suggest that a lot of our participants did not understand why it is important to answer each prompt. Thus, it might be helpful to further motivate them by explaining the study's rational and the importance of high involvement and complete participation more precisely. 3) Due to the fact that a lot of people from a refugee background lack experience in filling out questionnaires, it is particularly important that the EMA procedure is practiced. Together with a translator, all questions as well as the response scales should be gone over in detail and arising questions should be answered beforehand to ensure each item is understood. Afterwards, participants should complete at least one practice entry under supervision.

Bidirectional Relationship Between Worry and Affect

As suggested by the transcultural TAL model (Hinton et al., 2016), we additionally aimed to examine the bidirectional relationships between worry and affect (Hypothesis 1) and between worry and sleep (Hypothesis 2) at different levels (i.e., between-subject level, day level, and/or prompt level). However, in contrast to the TAL model's predictions, our data did not support a bidirectional relationship between worry and affect. Instead, we found the relationship seems to be more complex, depending on whether we estimate long-term (day-level) or short-term (prompt-level) prediction models. At the between-subject (i.e., person-mean) level, we found that worry was associated with increased negative affect and decreased positive affect. This means, for example, that people with a greater tendency of worry reported higher levels of negative affect over the course of EMA (and vice versa). Note that these between-subject results do not inform the direction of the associations due to the cross-sectional nature. On the other hand, our day-level analyses indicated specific unidirectional effects; (a) worry on a given day predicted increases in negative affect on the next day, and (b) positive affect on a given day predicted decreases in worry on the next day. However, these prospective effects were not observed in the prompt-level analyses, which suggest that the associations between worry and affect are not visible in this relatively short (several hours) time window.

The null findings at the prompt level are consistent with recent models stressing the role of worry in avoiding affective experiences. For example, the contrast avoidance model suggests that worry serves to sustain, rather than to change, levels of negative and positive affect in the

service of avoiding emotional contrast (Llera & Newman, 2014; Newman & Llera, 2011). The model has been validated repeatedly among nonclinical and clinical participants (Kircanski et al., 2018; Newman et al., 2019).

Our results, however, might indicate that the avoidance function of worry might only be successful in the short-term, but not the longer term: We found significant effects at the day level, in that the level of worrying during the day predicted increases in negative affect on the next day. For positive affect, only the reverse effect was found in that higher levels of positive affect on a given day predicted decreased levels of worrying on the next day. This is in line with clinical data on the effectiveness of treatment approaches which aim to increase positive affect such as pleasant activity scheduling and behavioral activation in order to decrease RNT: Behavioral activation has not only been confirmed to be an efficient intervention in reducing rumination in addition to symptoms of depression in a meta-analysis (Mazzucchelli, Kane, & Rees, 2009), but also in reducing excessive worry among a community population of excessive worriers (Chen, Liu, Rapee, & Pillay, 2013).

Another reason for the discrepancy between results at the prompt vs. day level might lie in the time-interval dependency of cross-lagged panel models (Kuiper & Ryan, 2018). Depending on the time-interval of observation, cross-lagged panel models can lead to different parameter estimates. In our data, for example, the autoregressive effects which represent the stabilities of the variables appeared to be higher the smaller the time-interval was. This made it more difficult for additional predictors to reach significance beyond these autoregressive effects.

Bidirectional Relationship Between Worry and Sleep

We also tested the bidirectional relationship between worry and sleep. At the between-subject level, we found significant associations between worry and poor sleep quality; people with a greater tendency of worry reported decreased sleep quality (and vice versa). On a day level, however, worry on a given day did not significantly predict decreased sleep quality on the subsequent night nor did sleep quality predict changes in worrying on the next day. Our results are at odds with the predictions derived from the TAL model as well as the results of several EMA studies that mostly confirm unidirectional relationships between worry and sleep (McGowan et al., 2016; Thielsch, Ehring, et al., 2015). Of note, several participants gave the same or similar rating score on their sleep quality over the course of EMA, resulting in a small mean of within-person standard deviation across participants [M (SD) = 15.31; range: 0 – 48.32]. This may have contributed to the lack of within-subject findings. Additionally, the number of

observations used in the models was limited due to many missing values in the sleep variable, which was only assessed once a day in the morning. Whereas the first model predicting sleep used only 91 observations [observation per person: M = 2.84; SD = 1.55)], the second reversed model predicting worry made use of 146 observations. Future research with a higher compliance rate and consequently a higher number of observations as well as a larger standard deviation within person is therefore much needed to draw final conclusions about a bidirectional or unidirectional relationship.

Interaction Between Worry and Stress

To test our third hypothesis, we examined the interactive effect of worrying and postmigration stress. This is the first study assessing postmigration stress repeatedly in the daily life of refugees via EMA in contrast to the usual retrospective assessment with the PMLD Checklist. Our participants reported a high number of postmigration stressors everyday with the fear of deportation being the most relevant one. However, postmigration stress did not exacerbate the psychological distress that follows worrying. There are a number of methodological factors that need to be taken into account when interpreting these findings. First, the low compliance again resulted in the small number of observations ranging between 66 and 166. This limited the statistical power to detect the very small effects of the interactions, especially in the models predicting negative and positive affect. Second, another possible reason might lie in the way we operationalized postmigration stress. We used the widely accepted PMLD Checklist and adapted it to the daily assessments. Thus, we had a daily score of how many stressors the participants had experienced throughout the day and were only able to examine the moderating role of postmigration stress on a day level. In previous studies on stress-reactive rumination among non-refugee populations, however, participants recorded stressors on every prompt, reducing retrospective biases and being able to analyze short-term detrimental effect of engaging in rumination in interplay with current life stress (Connolly & Alloy, 2017; Moberly & Watkins, 2008). The use of the checklist might have also contributed to the very small mean of within-person standard deviation across participants [M (SD) = 1.56; range: 0 – 3.69], as some of the predefined stressors assessed such as poor living conditions might be relatively stable.

Limitations

Results from the current study must be considered in the context of limitations. First, the low compliance rate has led to reduced statistical power, and questions the representativeness of the sampling and thus, the validity and generalizability of the findings. We cannot preclude systematic noncompliance on a prompt level. Therefore, we need to be cautious in drawing solid conclusions from this data for the cross-lagged associations. Second, our research is limited by not including other source of information such as objective measures of sleep disturbance (e.g., polysomnography, actigraphy) as well as standard self-report questionnaires to measure trait worry at baseline (e.g., Penn State Worry Questionnaire; Meyer, Miller, Metzger, & Borkovec, 1990). Third, even though our study design allowed to investigate phenomena micro-longitudinally and to elucidate predictive lagged relationships, it is important to note that we cannot infer exact causality from these results. Therefore, experimental studies are needed to investigate the causal effect of worry on the affect, sleep, and the maintenance of psychopathology in refugees. Fourth, third factors influencing the variables of interest cannot be ruled out in a naturalistic setting. For example, some assessments were taking place in the month of Ramadan, which might have had an influence on the participants, especially on their sleep quality.

Conclusion

Due to the cost efficiency and accessibility, smart-device technology can be a useful tool for assessment in minority groups. It is noteworthy that this EMA study focused on a unique and particularly vulnerable population that is currently underrepresented in research. Despite the methodological challenges involved, it appears promising to use EMA for the assessment of transdiagnostic processes maintaining mental health problems in trauma-exposed refugees under certain conditions. As discussed in detail above, some modifications to the setting of EMA research in this group appear warranted.

In light of the study limitations, a replication of our findings is clearly necessary. Nevertheless, a number of preliminary conclusions can be drawn from the current findings. Even though we did not find evidence for the self-reinforcing cycle between worry and affective experience or sleep, our day-level findings imply that decreased positive affect predicts increased worry, which results in increased negative affect. Moreover, people with a greater tendency of worry reported not only increased negative affect and decreased positive affect but also decreased sleep quality.

Thus, the findings are in line with the idea that worry appears to be a relevant transdiagnostic factor in trauma-exposed refugees, which needs to be addressed in treatment. If findings can be replicated and extended in future research, a relevant clinical implication in the long run may be to address worry both directly in treatment to reduce experiences of negative emotions but also indirectly by teaching strategies aiming to maintain and increase experiences of positive emotions. Our group tried to implement these findings in the development of a culture-sensitive skills-training for refugees, which also targets cognitive processes such as worrying (Koch et al., 2019)

4. Study III:

Effectiveness of a Transdiagnostic Group Intervention to Enhance Emotion Regulation in Refugees:
A Pilot Randomized Controlled Study

Abstract

Objective: There are several challenges to providing mental health care for refugees, including high rates of comorbidity and various structural barriers. Targeting transdiagnostic processes in a low-threshold group intervention appears particularly promising to meet these challenges. This study examined the feasibility, acceptability and efficacy of a new transdiagnostic intervention, Skills-Training of Affect Regulation–a Culture-sensitive Approach (STARC), focusing on strategies to improve emotional clarity and to regulate strong emotions in a culture-sensitive way. **Method:** A parallel-group (STARC vs. wait-list) randomized-controlled study with 44 male Afghan refugees (M_{age} = 18.50; range: 15-21) was conducted in a routine clinical setting (NCT03162679). **Results:** In ITT analyses, participants of STARC significantly improved in self-reported difficulties in emotion regulation ($\Delta d_{STARK\text{-}WL}$ = 1.22), transdiagnostic symptom severity ($\Delta d_{STARK\text{-}WL}$ = 1.69), posttraumatic stress symptoms ($\Delta d_{STARK\text{-}WL}$ = 1.19), caregiver-reported emotional competence ($\Delta d_{STARK\text{-}WL}$ = -0.90), but not anger reactions ($\Delta d_{STARK\text{-}WL}$ = 0.50) compared to wait-list. Effects were maintained over 3 months. Exploratory analyses revealed stable housing in youth welfare institutions and higher education as possible moderators of the treatment effect on emotion dysregulation and partly on transdiagnostic symptoms. **Conclusion**: STARC is a feasible and accepted transdiagnostic intervention in routine clinical setting and effective for young Afghan refugees according to self-reports. If replicated in large-scale studies with active control groups, it might be promising as an initial low-threshold intervention offered in a phased-based and/or stepped care approach.

Introduction

There is a pressing need to enhance the availability and quality of mental health services for traumatized refugees. However, the field faces numerous barriers to providing adequate treatment to this vulnerable group. Importantly, the sheer number of people who are forcibly displaced worldwide due to conflict, violence, and persecution presents a challenge, given that a substantial percentage reports exposure to numerous potentially traumatic events. Studies indicate variable but generally very high rates of various mental disorders among refugees, including posttraumatic stress disorder (PTSD), depression and anxiety (Morina et al., 2018). In the last few years, increased awareness about refugee mental health problems has led to the development of a number of evidenced-based treatments for this particular group. A novel umbrella review summarizing 14 reviews on the efficacy of psychosocial and pharmacological interventions in adult and children asylum seekers and refugees supported the effectiveness of different forms of cognitive behavioral interventions, in particular narrative exposure therapy (Turrini et al., 2017). The review also revealed that the field is still dominated by programs and research activities that are almost entirely focused on PTSD. However, PTSD is only one of the various emotional disorders following trauma exposure. There is not only growing evidence that overall prevalence rates of depression and anxiety are as high as rates of PTSD, but also that comorbidity rates are elevated among refugee populations. In a systematic review on refugees resettled in western countries, four studies revealed that 71% of those diagnosed with major depression also had a diagnosis of PTSD, and 44% of those diagnosed with PTSD also had a diagnosis of major depression (Fazel et al., 2005). These complex symptom profiles represent a challenge for our mental health services that are largely focused on applying evidence-based disorder-specific treatments. There are further barriers on a structural level such as a lack of resources in the health care systems and few specialized treatment providers. Due to language barriers and cultural differences it can be challenging to make a sufficiently accurate clinical diagnosis in clients from refugee backgrounds in order to establish the indication for a disorder-specific treatment.

Transdiagnostic Approach

An alternative approach that targets transdiagnostic processes involved in psychopathology might therefore be a promising avenue. It could overcome some of the barriers to providing adequate treatment to the large number of affected refugees. Transdiagnostic approaches aim to simultaneously address both principal and comorbid disorders by targeting commonalities

across the disorders. They are based on the notion that many of the common psychological disorders share core maintaining processes and can therefore be treated by interventions that are not tailored to each specific diagnosis but to these common processes, leading to an even greater generalization of treatment effects across comorbid emotional disorders (McEvoy et al., 2009). From a practical perspective, a transdiagnostic treatment approach can reach a greater number of affected people by utilizing group therapy format. Specifically, it enables more flexible treatment scheduling and shorter waiting times by forming therapy groups according to language, cultural and/or sociodemographic characteristics rather than by specific disorders. By providing one intervention that is applicable to a broad range of disorders, transdiagnostic interventions do not necessarily require extensive assessment of discrete disorders. Particularly in sectors with low resources, this parsimonious approach provides further tangible benefits regarding the training of professionals and the dissemination of the treatment protocol. Due to their various benefits, there is a growing body of promising transdiagnostic treatment approaches for refugees, such as Problem Management Plus (PM+; Sijbrandij et al., 2017), subsumed under *Universally Applied Therapeutic Principles* within the transdiagnostic literature, and Common Elements Treatment Approach (CETA; Murray et al., 2014), classified as a *Modular Treatment*. However, treatments of the third category of transdiagnostic interventions, *Shared Mechanisms Treatments*, are still lacking.

Emotion Regulation as a Transdiagnostic Process

Based on the transdiagnostic approach described above, the current study focused on emotion regulation, as one of the transdiagnostic processes which has gained significant research interest in recent years (Aldao, Gee, De Los Reyes, & Seager, 2016). Emotion regulation has been defined as the capacity to monitor, evaluate and modify emotional reactions in a way that facilitates adaptive functioning (Kim L Gratz & Roemer, 2004). Extensive research has shown that difficulties in emotion regulation are involved in the development and maintenance of a variety of psychological disorders, including anxiety, mood, eating and substance abuse disorders in general (Aldao, Nolen-Hoeksema, & Schweizer, 2010), and also specifically among trauma survivors (e.g., Goldsmith et al., 2013; Huh et al., 2017; Seligowski et al., 2015). Importantly, there is growing evidence that emotion regulation difficulties may also contribute to psychopathology in refugees. In a group of Afghan refugees resettled in Germany, deficits in emotion regulation significantly contributed to PTSD, depression and anxiety/insomnia symptoms as well as to social impairment beyond other established predictors (Koch, Liedl, & Ehring, 2020). An Australian study conducted with resettled refugees from a

variety of backgrounds found that difficulties in specific emotion regulation dimensions mediated the association between refugee experiences (trauma exposure, postmigration living difficulties) and psychological outcomes (PTSD, depression, anger; Nickerson et al., 2015). These findings indicate that emotion regulation might be a potentially important target for interventions that aim to transdiagnostically reduce psychopathological symptoms among refugees. Importantly, there is preliminary clinical evidence showing that emotion regulation is a mediator for treatment change in a CBT intervention for Cambodian refugees (Hinton et al., 2009).

Existing evidenced-based interventions focusing on emotion regulation, such as Skills Training in Affective and Interpersonal Regulation (STAIR; Cloitre, Cohen, & Koenen, 2011) and Dialectical Behavior Therapy (DBT; Linehan, 2014) are already well established for Western patients. As cultural modifications have been shown to increase the acceptance and effectiveness of interventions (for a meta analysis, see Benish et al., 2011), the authors have developed a culture-sensitive emotion regulation intervention for refugees: *Skills-Training of Affect Regulation – A Culture-sensitive Approach (STARC)*. The program is designed as a group therapy as earlier research suggests that group interventions for traumatized refugees are effective (e.g., D.E. Hinton et al., 2011; Pfeiffer, Sachser, Rohlmann, & Goldbeck, 2018). However, to our knowledge, this is the first study to evaluate the feasibility, acceptability and effectiveness of a transdiagnostic group intervention targeting emotion regulation processes as a central treatment target in refugees.

In the current study, STARC was tested in a sample of young Afghan refugees, as this group currently represents a highly relevant population in Germany, both in size (Bundesamt für Migration und Flüchtlinge, 2018) as well as in mental health burden (Alemi et al., 2014). Due to the country's shattered history, many Afghans have been exposed to premigration stressors such as multiple traumatic events, separation from family and disruption in education. In exile, they are additionally confronted with severe postmigration living difficulties such as an insecure residence status, unstable housing and separation from family. There is a large body of research revealing a strong impact of different pre- as well as postmigration factors on refugees' mental health (Li et al., 2016); however, there is only limited empirical research as to how these factors may moderate treatment effects. Existing studies addressing this issue face serious methodological limitations, such as the lack of a control condition (Sonne et al., 2016; van Wyk, Schweitzer, Brough, Vromans, & Murray, 2012; Whitsett & Sherman, 2017).

Objectives and Hypotheses

The major objective of this study was to examine the feasibility, acceptability, and effectiveness of the culturally modified skills training STARC among traumatized Afghan refugees in a routine clinical setting. To demonstrate feasibility and acceptability of the intervention, we assessed treatment retention across the 14 sessions of STARC, attendance rates as well as client satisfaction. We hypothesized that STARC leads to decreased difficulties in emotion regulation as well as transdiagnostic symptom severity as primary outcomes, and decreased posttraumatic stress symptoms and anger reaction as secondary outcomes. We additionally expected that STARC leads to improvements in participants' emotional competence rated by the clients' caregivers. To test these hypotheses, outcome variables were assessed at pre- and post-treatment and compared to a wait-list control group (WL). Furthermore, we hypothesized that treatment gains are maintained at 3 months after the treatment. As an exploratory research question, we examined specific pre- as well as postmigration factors (trauma exposure, years in education and housing) as potential moderators of the treatment effects.

Method

Trial Design

A single-center, block randomization, parallel-group (STARC vs. WL) design was chosen to address these questions. Assessors conducting the clinical interviews at the pre-assessment were blinded for results from other assessments taken at this time point. Post-assessments did not include clinical interviews but exclusively comprised assisted self-report measures. The study was approved by the local Research Ethics Committee and registered with ClinicalTrials.gov, with the identifier NCT03162679.

Participants

Participants were recruited from among the patient population referred to Refugio Munich, a specialized center for psychosocial treatment of refugees. In addition, information about the study was spread to schools, youth welfare institutions and relevant refugee associations asking for referrals by educators, social workers, and psychologists. Eligible patients were informed about the study and invited to participate.

Inclusion criteria were: (1) being a refugee or asylum seeker from Afghanistan, (2) being between 15 and 21 years old, (3) a history of exposure to one or more traumatic events, (4) reporting difficulties in emotion regulation in the screening interview, and (5) male gender. Due to potential cultural barriers to discussing personal topics between women and men, we followed the recommendation by Kira et al. (2012) and offered only same-sex groups. Exclusion criteria were: (1) psychosis, (2) serious suicidal ideations, (3) serious dissociation, and (4) currently receiving psychotherapy elsewhere.

Measures

All self-report measures used in this study were translated into Dari and then back-translated by experienced translators in accordance with gold standard translation practices (Bontempo, 1993).

Clinical Interview. In order to screen for inclusion/exclusion criteria and to assess participants' clinical status, we used the Mini International Neuropsychiatric Interview Screen (M.I.N.I. 7.0.2; Sheehan et al., 1998). The MINI is a structured interview assessing the 17 most common mental disorders according to DSM-5 and ICD-10. Two additional screening questions covered our inclusion criteria of difficulties in emotion regulation: (1) Have you been overwhelmed by strong emotions in the last four weeks, resulting in aggressive/auto-aggressive behavior or social isolation? (2) Have you had difficulties calming down when upset without alcohol, tobacco, and other drugs/substance use?

Trauma Exposure. The number and type of traumatic experiences were assessed using a 22-item traumatic events list developed for the current study. The list was derived from the trauma event lists of both the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1996) and the Harvard Trauma Questionnaire (HTQ; Richard F Mollica et al., 1992). We computed a total count of different traumatic events experienced or witnessed by each participant (range: 0 to 22).

Difficulties in Emotion Regulation. The Difficulties in Emotion Regulation Scale (DERS; Kim L Gratz & Roemer, 2004) is a widely-used, theoretically-driven, and psychometrically-sound self-report measure to assess multiple aspects of emotion dysregulation, including nonacceptance of emotions, difficulties engaging in goal-directed behavior when distressed,

impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Participants rate the items on a Likert scale (1 = *almost never, 0 − 10 %* to 5 = *almost always, 91 − 100 %*). The total sum score of all items was used in the current study. The Dari version of the assessment tool has not been validated yet. However, an abbreviated version of the translated DERS showed good model fit in a culturally diverse refugee sample, including Afghan refugees (Doolan et al., 2017). The DERS proved to be a reliable measure in the current sample, with an excellent Cronbach's α of .90 for the total score at pre-assessment.

Transdiagnostic Symptom Severity. The General Health Questionnaire-28 (GHQ-28; Goldberg et al., 1997) is a transdiagnostic measure of current mental health. The scale asks whether the respondent has recently experienced particular symptoms or behaviors concerning the four dimensions somatic symptoms, anxiety/insomnia, social dysfunction and severe depression. By summing up the relevant items, a total symptom severity score can be computed from the 28 items. Items are measured on a 4-point Likert scale ranging from 0 to 3. The GHQ-28 has been translated into many languages and extensively been used in different settings and cultures, including Afghan refugee populations (Kananian et al., 2017; Sadeghi, Shojaeizadeh, Arefi, & Shaahmadi, 2016). Many studies have validated the tool as a reliable measure of mental health in different segments of populations across countries (Goldberg et al., 1997). With a Cronbach's α of .86 for the total score at pre-assessment in the present sample, the GHQ-28 shows good internal consistency.

Posttraumatic Stress Symptom Severity. The PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) assesses the 20 DSM-5 symptoms of PTSD. The PCL-5 has been validated as a psychometrically sound measure of monitoring symptom change during treatment (Wortmann et al., 2016). Participants rate on a 5-point Likert scale (0 = *not at all* to 4 = *extremely*) how much they were distressed in the last month by the PTSD symptoms described. The overall severity score is computed as the sum of all item scores. Internal consistency for the total score in this study was .83 (Cronbach's α) at pre-treatment.

Anger Reactions. The Dimensions of Anger Reactions-5 (DAR-5; Forbes et al., 2014) scale is a psychometrically sound screening tool, consisting of five items, to measure the five dimensions of anger (frequency, intensity, duration, aggression and interference with social functioning). The items were scored on a 9-point Likert scale (0 = *none of the time* to 8 = *all of the time*), adapted to the original version of DAR (Forbes et al., 2004), with higher sum scores

indicative of worse symptomatology. In this study, a Cronbach's α of .76 demonstrates acceptable internal consistency.

Emotional Competence. To assess observer-rated emotional competence, the Emotional Competence Questionnaire (ECQ; Rindermann, 2009; German: Emotionale-Kompetenz-Fragebogen) was used. The questionnaire revealed good psychometric properties in a sample of young adults aged 16 and above (Rindermann, 2009). We chose to measure emotional competence on three of the ECQ's subscales: the perceived abilities to (1) recognize own emotions (15 items), (2) regulate own emotions (13 items), and (3) express emotions (17 items). Responses were made on a 5-point Likert-type scale ranging from 1 (= *strongly disagree*) to 5 (= *strongly agree*). An excellent internal consistency of α =.90 at pre-assessment was found in the present sample.

Client Satisfaction. All participants assessed their treatment satisfaction at the end of their treatment with the Treatment Experience Scale (TES) which we adapted from Cloitre (2014). Satisfaction with the intervention in general, with specific aspects of it and with the group atmosphere is assessed in seven items on a 5-point Likert scale ranging from 0 - 4. Higher mean scores indicate greater satisfaction. The internal consistency used for this study was α = .88.

Treatment Conditions

STARC is a manual-based group treatment for refugees aiming to improve emotional understanding, clarity and expression on the one hand and adaptive emotion regulation on the other hand over the course of 14 sessions (Koch & Liedl, 2019). The development of the intervention was based on four important sources. Firstly, many strategies included in the program are drawn from evidence-based emotion regulation treatments for Western patients, especially STAIR (Cloitre et al., 2011) and DBT (Linehan, 2014). Second, when selecting the strategies to be included in the program, we considered empirical evidence on the role of emotion regulation for psychopathology in traumatized refugees. According to current research, the two emotion regulation dimensions 'Lack of Emotional Clarity' as well as 'Limited Access to Emotion Regulation Strategies' are particularly relevant predictors of PTSD symptom severity among refugees (Doolan et al., 2017; Koch, 2015). The first two modules of STARC are therefore dedicated to improving emotional understanding, clarity and expression as well as teaching emotion regulation strategies. Third, elements from culturally adapted therapy programs for refugees or migrants were adapted for STARC, especially from CA-CBT (Hinton, Rivera, Hofmann, Barlow, & Otto, 2012) and a psychoeducation manual (Liedl, Schäfer, &

Knaevelsrud, 2013). In addition, the treatment was developed along the framework for culturally sensitive interventions consisting of eight relevant dimensions proposed by Bernal and Sáez-Santiago (2006). A special focus was given for example to the use of religious sayings (e.g. Islamic hadith) and metaphors, expressing ideas in culturally relevant visual and verbal forms (e.g., symbols like a traffic light as an emotional warning system, or an overflowing glass representing hyperarousal and overwhelming emotions). Referring to the dimension of language, our intervention uses a simple language and visual, nonverbal material. The program acknowledges and integrates the clients' values, traditions, and interpersonal styles when dealing with strong emotions by engaging in group discussions and conveying a non-judgmental attitude. For an overview of all the dimensions and their implementation in the STARC program, see Table C.1 in the Supplementary Material. Finally, STARC was developed in consultation with mental health professionals with extended experiences in the treatment of our target group. In addition, feedback from patients belonging to the target group who were attending STARC treatment during a pilot phase was collected throughout the intervention as well as after the intervention by an external assessor via a semi-structured interview (Koch et al., 2017). As a consequence of this feedback, two additional sessions (Session 5: Warning signals and Session 11: Sadness) as well as suggestions for metaphors and additional material were integrated in the program.

STARC is divided into four modules. The first module (five sessions) focuses on identifying, labelling and understanding emotions as the foundation of a flexible and functional use of emotion regulation strategies. In the second module (four sessions), specific emotion regulation strategies within the three channels of experience are conveyed: behavioral (e.g. behavioral activation, emergency/distress tolerance skills), cognitive (e.g. attentional regulation) and physiological strategies (e.g. relaxation techniques like progressive muscle relaxation and deep breathing). In the third module (four sessions), the management of specific emotions (anger, sadness, fear, and pleasant emotions) is discussed and novel emotion regulation strategies are adapted. The last module (one session) is used to consolidate the newly acquired knowledge and skills. Contents of the individual sessions are described in Table 4.1. Participants' caregivers were invited for a two-hour information session informing them how they can support participants throughout the treatment (e.g. with homework, relaxation techniques etc.). STARC was designed as a group program to counteract social isolation and stigma, which are commonly reported among refugees (Bunn, Goesel, Kinet, & Ray, 2015). In addition, groups might be more compatible for survivors coming from cultures where there is

greater importance placed on the role of the extended family, the identification with a community and collectivist notions of self (Kira et al., 2012). Lastly, group-based treatments allow meeting greater demand in the context of limited funding and resources. The treatment was conducted by the first and last author (who have also developed the manual) with the help of a translator at Refugio Munich. Each session lasted 90 minutes. The groups ranged in size from six to nine participants.

Wait-list (WL). Participants of the WL control condition received no intervention during the study period, but were offered treatment after the post-assessment.

Table 4.1

Content of STARC Sessions

Module	Sessions	Content
I: Training of Emotional Clarity	1. Introduction 2. Getting to Know one's Emotions 3. Understanding Emotions 4. Emotional Warning System: Traffic Lights 5. Individual Warning Signs	– Introduction to the intervention's content and goals (with the help of videos and stories) – Building trust and cohesiveness (e.g. via group rules, games etc.) – Exploration of emotions and their importance (with the help of pictures, feelings diary) – Presentation of a model how physiology, cognition and behavior interrelate in emotions – Discussion about overwhelming emotions and hyperarousal by the symbol of a spilling glass – Introduction to a traffic light, symbolizing an emotional warning system – Identifying individual warning signs on all senses
II: Training of specific Emotion Regulation Strategies	6. Physiological Strategies 7. Cognitive Strategies 8. Trigger 9. Behavioral Strategies	– Use of biofeedback to strengthen physiological self-efficacy – Collection of different physiological (e.g., deep breathing), cognitive (e.g., attention regulation) and behavioral (e.g., sports) emotion regulation strategies in a treasure box – Introduction to the concept of triggers with the help of a film clip and identification of personal triggers – Exchange of experiences and alternatives to self-harm (e.g., emergency/distress tolerance skills)
III: Management of specific Emotions	10. Anger/ Aggression 11. Sadness 12. Anxiety 13. Pleasant Emotions	– Management of anger and provocations (e.g., with the help of religious sayings such as Islamic hadith) – Dealing with sadness and grieve (e.g., via grieve rituals) – Breaking the cycle of anxiety (e.g., via a positive imagination) – Promoting the importance of pleasurable activities in order to have pleasant emotions
IV: Consolidation	14. Graduation	– Appraisal of newly acquired skills collected in the treasure box – Celebration with certificates

Power Analysis

Based on our pilot study as well as on comparable group intervention studies with refugees (D.E. Hinton et al., 2011; Koch et al., 2017; Pfeiffer et al., 2018), we assumed medium sized

treatment effects. Power analysis using G*Power® (Faul, Erdfelder, Lang, & Buchner, 2007) revealed that a sample size of 34 participants would suffice to detect statistically significant medium effect of f = 0.25 for the Condition x Time interaction (with α = .05, ß = 0.8, two assessments). Taking an expected drop-out rate of 30% for group programs for traumatized patients into account (Imel, Laska, Jakupcak, & Simpson, 2013), a total sample of 44 participants was deemed necessary to obtain sufficient power.

Procedure

The randomized controlled trial was carried out between May 2017 and December 2018 in the routine clinical setting of a specialized treatment center for refugees. Interested participants were initially invited to a screening appointment, where they were informed about the study procedure, the randomization process and the treatment but also screened for inclusion/exclusion criteria (including the trauma list). In case of eligibility and interest in the study, all participants and their guardians (only applicable for participants below the age of 18) were asked to provide written informed consent. After recruitment of a cohort of at least 12 eligible participants, each of these participants was randomly assigned to either STARC or WL. Three cohorts were recruited and randomized in this way (range of cohort size: 13 to 18 participants). After randomization, each participant underwent a diagnostic interview (MINI) and completed the assessment battery (DERS, GHQ-28, PCL-5, and DAR-5). Completion of self-report measures was assisted by master-level students of clinical psychology and trained interpreters. This assisted self-report was necessary due to a lack of experience with filling out questionnaires and illiteracy of some participants. All participants completed the assessments at two time points: (a) pre-treatment; (b) post-treatment (i.e., after the 14 sessions of STARC). Participants who received STARC additionally completed (c) a follow-up assessment at 3 months after the last treatment session. At post-assessment, participants who had received STARC were additionally asked to fill out an adapted version of the TES which asks for client satisfaction. Relevant caregivers (social workers, psychologists, and teachers) assessed the clients' emotional competence (ECQ) at all three time points. In two cases, there was no relevant caregiver who could fill out the questionnaire. If participants were receiving psychopharmacological treatment, they were allowed to continue the treatment throughout the study and report dose changes.

Randomization progressed in accordance with three electronically generated allocation sequences (i.e., one for each treatment cohort; www. sealedenvelope.com/simple-randomiser/v1/lists) with randomized allocation block size (2, 4, and 6). An independent staff

member of the LMU created the allocation sequence and the randomization in the different groups was performed by another independent staff member at Refugio. During data collection, the allocation sequence was concealed from all researchers, therapists, and participants.

Statistical Analysis

Data were analyzed using SPSS 24. Baseline differences on demographic and clinical variables between the two conditions were explored using independent *t* tests for continuous and chi-square tests for categorical variables. All analyses were conducted using linear mixed modeling (LMM) with random intercepts and slopes and a diagonal covariance structure. Mixed effect models are an intention-to-treat approach that can handle missing data under the missing at random assumption (Gueorguieva & Krystal, 2004). For all analyses, primary outcomes were DERS and GHQ-28 sum scores and secondary outcomes were PCL-5, DAR-5 and ECQ sum scores. The basic model was a two-level (participants and measurement points) repeated-measures design with the outcomes as dependent variable. The Level-1 model included the time variable, which captures within-person change over the different assessments. In the Level-2 model, treatment condition was used as a between-person characteristic representing a predictor of the slope. The expected difference in the slope between STARC and WL of the different outcome variables was represented by the Condition x Time interaction. Moderation effects were analyzed for our primary outcomes by adding the moderator to each model (Condition × Time × Moderator). We tested years of education and trauma exposure as continuous moderators and housing as a binary one (youth welfare institution vs. collective accommodation centers) in different models. Simple slope tests with centered predictors were tested post-hoc in case of a significant three-way interaction.

To investigate long-term treatment effects, LMM were conducted only within the STARC condition. Our outcome variables were predicted by dummy codes of time on Level 1. The time dummies were created to reflect the differences between the pre-treatment and follow-up (t1, coded as 1, 0, 0 for the pre-treatment, post-treatment, and follow-up) and between the post- and follow-up assessment (t2, coded as 0, 1, 0).

Both per-protocol (PP) and intention-to-treat (ITT) analyses were performed. Participants who had completed all assessments and had attended at least half of the therapy sessions were included in the PP sample (i.e., completer). The ITT sample comprised all randomized participants. All effects were tested at the .05 α-level (two-tailed). Assumptions about normality of residuals were assessed by visual inspection of normal probability (QQ) plots. Three different effect sizes (Cohen's *d*) were calculated from the observed means and standard deviations: (1)

$d_{within} = (M_{pre} - M_{post})/ SD_{pooled\text{-}pre}$ for the within-group differences, (2) $\Delta d_{STARC\text{-}WL} = [(M_{preSTARC} - M_{postSTARC}) - (M_{preWL} - M_{postWL})]/ SD_{pooled\text{-}pre}$ for the difference between the within-group effect sizes (comparative effect sizes; Morris, 2008) and (3) $d_{post} = (M_{postWL} - M_{postSTARC})/ SD_{pooled\text{-}post}$ for the between-group differences at post-treatment.

Additionally, we calculated the reliable change index (RCI; Jacobson & Truax, 1991) for our primary outcomes to check for clinically reliable improvement within the PP sample. Using the reliability coefficients (DERS: Cronbach's α = .90; GHQ-28: α = .86) and the initial standard deviations of the measures, a score of 17.44 points on the DERS and of 12.57 on the GHQ-28 indicated reliable change. The group difference (improved vs. no change vs. deteriorated) was tested through chi-square test.

Results

Sample

Participant flow is shown in Figure 4.1. Fifty-nine participants were screened, 15 of whom had to be excluded as they did not meet inclusion criteria (n = 2), declined to participate in the study protocol (n = 12) or did not provide guardian's informed consent (n = 1). Finally, 44 participants agreed to take part in the study and were randomly assigned to STARC (n = 22) and WL (n = 22).

The mean age of the final sample was 18.39 years (SD = 1.65). All except three participants were unaccompanied young refugees (93%, n = 41). The average time spent in education was 6.58 years (SD = 3.80). Six participants had been granted a residence permit (14%), whereas the remaining 38 participants had an insecure residence status (86%). Fifteen participants were living in collective accommodation centers (34%), while 29 were living in youth welfare institutions (66%). Participants had experienced or witnessed an average of 12.20 types of traumatic events (SD = 2.66; range = 7 to 18). For an overview of the most frequently reported traumatic events, see Table C.2 in the Supplementary Material. The vast majority of participants met DSM-5 criteria for PTSD (82%, n = 36) and depression (52%, n = 23). The other diagnoses measured by the MINI were as follows: Social Phobia (11%, n = 5), Agoraphobia (9%, n = 4), Obsessive-Compulsive Disorder (5%, n = 2), Panic Disorder (5%, n = 2), Substance-Related Disorders (2%, n = 1) and Alcoholism (2%, n = 1). Participants randomly assigned to the two conditions did not differ at baseline regarding demographic, diagnostic, and clinical characteristics (see Table 4.2).

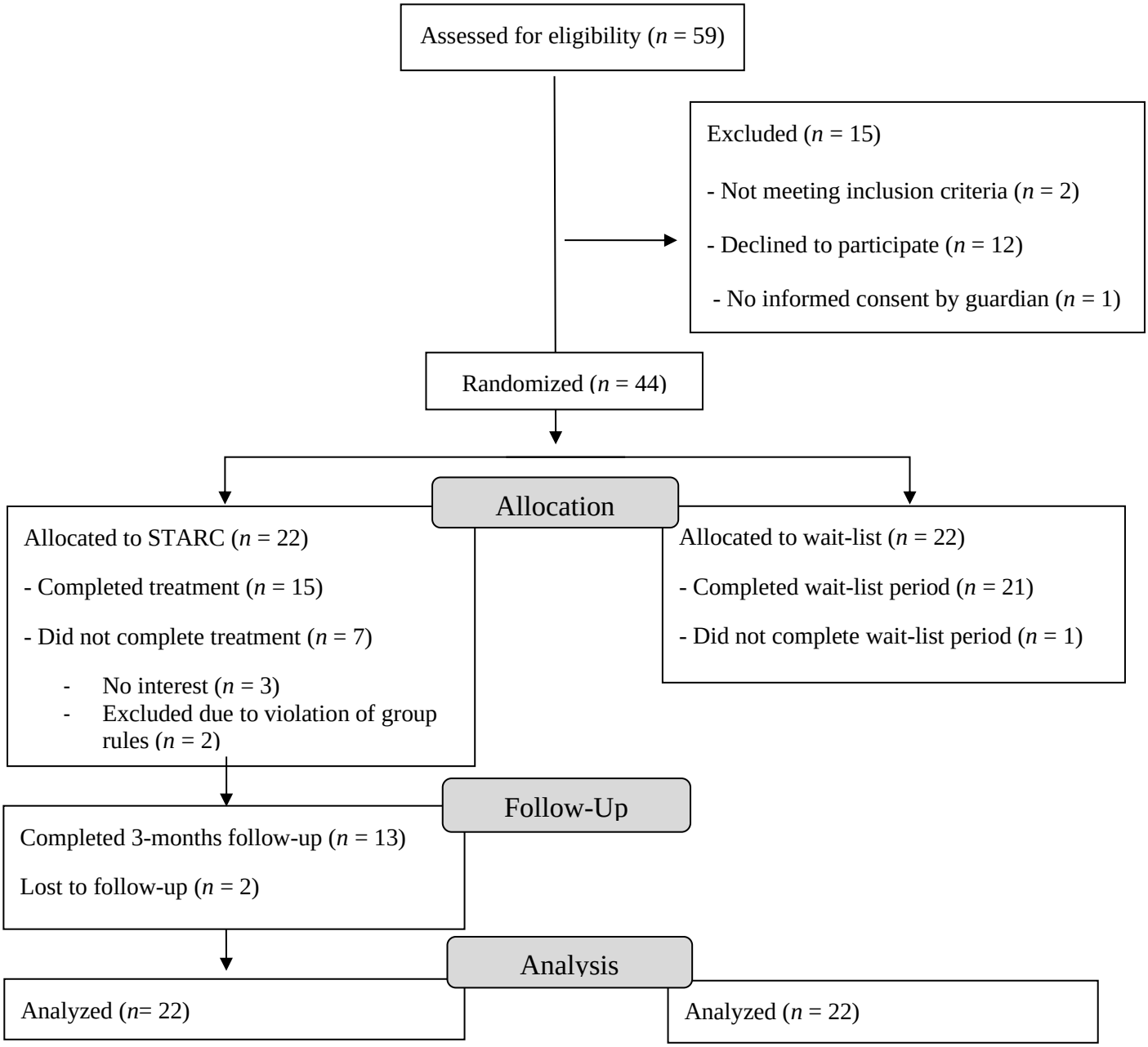

Figure 4.1 Flow of Participants

Table 4.2

Demographic Variables and Pre-treatment Characteristics

	STARC (n = 22)	WL (n = 22)	Statistics
Age (years), *M* (*SD*)[a]	18.36 (1.50)	18.41 (1.82)	t (42) = -0.09, p = .93
Education (years), *M* (*SD*)	6.20 (4.33)	6.95 (3.25)	t (38.94) = -0.65, p = .52
Housing, *n* (%)			χ^2 (1) = 0.91, p = .34
Collective accommodation centers	6 (27)	9 (41)	
Youth welfare institutions	16 (73)	13 (59)	
Insecure residence status, *n* (%)	20 (91)	18 (82)	χ^2 (1) = 0.77, p = .38
Time in Germany (years), *M* (*SD*)	2.20 (0.67)	2.13 (0.59)	t (42) = 0.41, p = .68
MINI diagnoses, *n* (%)			
PTSD	19 (86)	17 (77)	χ^2 (1) = 0.61, p = .43
Depression	11 (50)	12 (55)	χ^2 (1) = 0.91, p = .76
Other	6 (27)	6 (27)	χ^2 (1) = 0.00, p > .99
Number of types of traumatic events, *M* (*SD*)	12.55 (2.99)	11.86 (2.32)	t (42) = 0.85, p = .40

Note. WL = Wait-list.

Treatment Retention, Attendance and Acceptability

Treatment dropout was 32% in the STARC condition (n = 7) and 5% in the WL condition (n = 1). In the STARC condition, three participants discontinued treatment due to lack of motivation after the 5th and 3rd session. After the 6th session, two participants decided to change treatment setting to an individualized addiction and depression treatment, respectively. Due to serious violation of basic group rules, two participants needed to be excluded from the treatment by the therapists after Session 6. In the WL, one participant could not be reached for the post-assessment. Study non-completers did not differ significantly from completers in terms of sociodemographic and outcome variables at baseline.

The average attendance of those who completed the treatment was 11.27 sessions (81%, range: 7–14). Reasons for non-attendance were mostly illness, school/work appointments and vacation. The participants who had received STARC reported a very high satisfaction with the treatment on the TES (M = 3.41, SD = 0.66).

Treatment Outcomes

Observed means and standard deviations of all outcome measures by condition and time are shown in Table 4.3. For each final model, visual assessment of plots confirmed that model residuals were normally distributed.

Primary Outcomes. Primary outcomes were difficulties in emotion regulation and transdiagnostic symptoms as measured by the DERS and GHQ-28 respectively. Results of LMM analyses revealed significant Condition × Time interactions (DERS: *B*= -23.97, *SE*=8.68, 95% CI [-41.51, -6.44], *p*=.009; GHQ-28: *B*= -20.23, *SE*=4.78, 95% CI [-29.89, -10.57], *p*<.001), indicating that STARC differed from WL regarding changes on both primary outcome measures over time (see Table C.3 in the Supplementary Material). STARC led to significantly higher reductions in emotion regulation difficulties and transdiagnostic symptom severity than WL, with high comparative effect sizes (DERS: $\Delta d_{\text{STARC-WL}}$= 1.22; GHQ-28: $\Delta d_{\text{STARC-WL}}$= 1.69).

Reliable change indices in the per-protocol-sample showed that 8 of 15 (53.3%) participants in the STARC condition showed reliable change in emotion regulation difficulties compared to only 2 of 21 (9.5%) in the waitlist, $\chi^2(2) = 8.50$, p =.014. Regarding transdiagnostic symptoms, 8 of 15 (53.3%) participants in the STARC condition showed reliable change, compared to only 1 of 21 (4.8%) in the waitlist, $\chi^2(2) = 11.94$, p =.003.

Secondary Outcomes. Analyses yielded significant Condition × Time interactions for posttraumatic stress symptoms as measured by the PCL-5 (*B*=-14.87, *SE*=4.07, 95% CI [-23.11, -6.64], *p*=.001) as well as for caregivers' rated emotional competence, as measured by the ECQ (*B*=22.66, *SE*=6.12, 95% CI [10.16, 35.17], *p*<.001). However, the Condition x Time interaction did not reach significance for anger reactions, as measured by the DAR-5 (*B*=-4.46, *SE*=3.04, 95% CI [-10.64, 1.69], *p*=.15).

The superiority of STARC to WL on the PCL-5 as well as on the ECQ is further supported by large effect sizes comparing the within-group effects sizes of the two conditions with each other (PCL-5: $\Delta d_{\text{STARC-WL}}$= 1.19; ECQ: $\Delta d_{\text{STARC-WL}}$= -0.90), but only a medium one for anger reactions (DAR-5: $\Delta d_{\text{STARC-WL}}$= 0.50).

When repeating the analyses with a PP sample (n = 36), results remained unchanged for both the primary as well as secondary outcomes. Table C.3 in the Supplementary Material lists the results of the mixed effect models for all outcomes for the ITT as well as the PP sample.

Long-Term Treatment Effects. In the STARC condition, treatment effects on all primary as well as secondary outcomes were sustained over the course of 3 months. There was a significant main effect of the dummy variable t1, comparing pre- to follow-up assessments (DERS: *B*=26.57, *SE*=6.32, 95% CI [13.36, 39.77], *p*<.001; GHQ-28: *B*=13.31, *SE*=4.00, 95% CI [4.98, 21.64], *p*=.003; PCL-5: *B*=11.72, *SE*=5.54, 95% CI [6.45, 19.90], *p*<.001; DAR-5: *B*=7.91, *SE*=1.94, 95% CI [3.85, 11.97], *p*=.001: ECQ: *B*=-20.59, *SE*=5.79, 95% CI [-32.58, -8.60], *p*=.002), and a non-significant main effect of the dummy variable t2, comparing post- to follow-up assessments (DERS: *B*=5.05, *SE*=7.73, 95% CI [-11.51, 21.61], *p*=.653; GHQ-28: *B*=-2.26, *SE*=4.72, 95% CI [-12.21, 7.76], *p*=.644; PCL-5: *B*=0.98, *SE*=2.88, 95% CI [-5.19, 7.15], *p*=.740; DAR-5: *B*=4.24, *SE*=2.59, 95% CI [-1.25, 9.72], *p*=.121: ECQ: *B*=5.16, *SE*=6.25, 95% CI [-7.71, 18.04], *p*=.416). The pre–follow-up effect sizes revealed large reductions on all self-reported outcomes (DERS: d_{within} = 1.35; GHQ-28: d_{within} = 1.11; PCL-5: d_{within} = 0.96; DAR-5: d_{within} = 0.81; ECQ: d_{within} = -1.08) and a large improvement on externally rated emotional competence (ECQ: d_{within} = -1.08).

PP analyses confirmed the robustness of our long-term findings on all variables. Table C.4 in the Supplementary Material lists the long-term treatment results of the mixed effect models for all outcomes for the ITT as well as the PP sample.

Table 4.3

Means and Standard Errors, and Within- and Between-Group Effect Sizes (Cohen's d) by Condition

		Pre-Assessment		Post-Assessment					3- Months Follow-Up		
	Condition	***n***	***M* (*SE*)**	***n***	***M* (*SE*)**	d_{within}	$\Delta d_{STARC-WL}$	d_{post}	***n***	***M* (*SE*)**	d_{within}
ER Difficulties (DERS)	STARC	22	117.86 (4.61)	15	95.47 (7.52)	1.11			13	90.60 (6.76)	1.35
	WL	22	116.38 (3.94)	21	118.58 (4.56)	-0.11	1.22	0.91			
Transdiagnostic Symptoms (GHQ-28)	STARC	22	48.51 (2.64)	15	33.00 (4.06)	1.30			13	35.31 (3.70)	1.11
	WL	22	42.95 (2.45)	21	47.72 (2.67)	-0.40	1.69	1.04			
Posttraumatic Stress Symptoms (PCL-5)	STARC	22	48.49 (2.38)	15	38.53 (3.38)	0.88			13	37.69 (2.75)	0.96
	WL	22	42.47 (2.31)	21	46.00 (3.20)	-0.31	1.19	0.54			
Anger Reactions (DAR-5)	STARC	22	22.16 (2.00)	15	18.27 (2.89)	0.39			13	14.08 (2.15)	0.81
	WL	22	20.23 (2.27)	21	21.42 (2.51)	-0.12	0.50	0.28			
Emotional Competence – External Rating (ECQ)	STARC	22	117.23 (4.00)	14	141.98 (5.22)	-1.30			12	137.79 (5.42)	-1.08
	WL	20	115.06 (4.32)	18	122.67 (4.60)	-0.40	-0.90	-0.99			

Note. ITT = intention-to-treat; ER = emotion regulation; WL = wait-list; $d_{within} = (M_{pre} - M_{post})/ SD_{pooled\text{-}pre}$; $\Delta d_{STARC\text{-}WL} = [(M_{preSTARC}\text{-}M_{postSTARC}) - (M_{preWL}\text{-}M_{postWL})] / SD_{pooled\text{-}pre}$; $d_{post} = (M_{postWL} - M_{postSTARC})/ SD_{pooled\text{-}post}$.

Moderation. When years in education were added to the analysis, we found a Condition x Time x Education effect on our primary outcomes DERS, $F(1, 36.02)=6.86$, $p = .013$ and GHQ-28, $F(1, 36.67)=4.27$, $p = .046$. All significant 3-way interactions were qualified by a significant negative simple slope over time for highly ($M + 1\ SD$) and average educated participants in the STARC condition, but not for lower educated participants ($M – 1\ SD$). Participants with more than 10 years of education improved by $B = -35.55$ scores ($SE=7.54$, $t=-4.72$, $p<.001$) on the DERS in contrast to average educated participants who improved by $B = -20.91$ scores ($SE=5.77$, $t=-3.62$, $p<.001$). Regarding GHQ-28, highly educated participants improved by $B = -23.68$ ($SE=4.46$, $t=-5.31$, $p<.001$) in contrast to $B = -15.52$ ($SE=3.40$, $t=-4.56$, $p<.001$) in the average educated participants. No simple slope analyses were significant in the WL. This indicates that participants who spent more years in education had a significantly greater beneficial effect on both emotion regulation as well as on transdiagnostic symptoms.

When examining the participants' housing situation as a moderator of the treatment effect, the three-way interaction Condition x Time x Housing revealed to be significant for DERS, $F(1, 37.56) = 4.91$, $p = .033$, but not for GHQ-28. The significant interaction could be specified by significant negative simple slopes over time only in the participants of the STARC condition living in youth welfare institutions. For this group the estimated slope for the DERS was $B = -35.94$ ($SE=7.28$, $t=-4.94$, $p<.001$). This points out that only participants living in youth welfare institutions in contrast to collective accommodation centers significantly improved in emotion regulation, while housing did not make a difference over time in the WL.

Trauma exposure showed no Time x Condition x Moderator effect on any of the outcome measures.

Adverse Events

There were no adverse events related to the interventions or the trial.

Discussion

The present pilot randomized controlled study aimed to demonstrate the feasibility, acceptability and effectiveness of STARC, a novel transdiagnostic group intervention for traumatized refugees. Participants stated a very high satisfaction with the intervention, which was supported by a good attendance rate of 81%. Retention of clients from active treatment was very similar to a dropout rate of 30%, which revealed to be average for group programs with

traumatized patients in a meta-analysis (Imel et al., 2013). Particularly considering the challenging nature of the patient population in terms of the participants' young age, their severe psychological distress as well as their unstable life situation with respect to accommodation and asylum status, these indicators demonstrate that STARC is a feasible treatment to deliver and acceptable to patients in a routine clinical setting.

STARC treatment led to significant decreases in emotion regulation difficulties as well as in multiple dimensions of psychopathology, including transdiagnostic symptoms (depression, anxiety/insomnia, social dysfunction and somatization) and PTSD, relative to WL. Treatment effects were maintained up to 3 months after the intervention, which provides preliminary support for its sustainability. Importantly, the effects of STARC on emotion regulation were further confirmed by external ratings of the participants' caregivers on participants' emotional competence. Comparative effect sizes (relative to WL) on all measures were medium to large and similar to group treatments targeting disorder-specific symptoms among refugees (D.E. Hinton et al., 2011; Pfeiffer et al., 2018). STARC fits well in the larger framework of transdiagnostic treatments which have gained a recent upsurge (e.g., PM+, CETA) and may help to further bridge the mental health treatment gap for refugees. Our trial extends it, however, by investigating a *Shared Mechanism Treatment* for the first time in refugees. Among a small set of relevant pre- as well as postmigration factors, stable housing and higher education moderated the treatment effect on emotion regulation and partly on transdiagnostic symptoms.

Contrary to our hypothesis, we did not find a significant interaction effect on anger reactions from pre- to post-assessment, even though anger decreased in the STARC condition with a moderate effect size of $d = .50$. Additionally, anger reactions significantly improved from pre-assessment to follow-up with a large effect size. However, our data provides some preliminary evidence suggesting that anger might only improve in the long-term. Anger reactions significantly improved from pre-assessment to follow-up in the STARC condition, but this finding needs to be replicated with a control group. Indeed, anger may be more resistant to change through emotion regulation treatment than other symptoms, which is consistent with a randomized controlled trial of an emotion regulation therapy with traumatized adolescents: Anger was one of the single outcomes the authors could not find an effect on (J. D. Ford, Steinberg, Hawke, Levine, & Zhang, 2012). Furthermore, recent research in a large sample of refugees resettled in Australia demonstrates that explosive anger was strongly connected to postmigration living difficulties (Nickerson et al., 2015). Multidisciplinary treatment

approaches targeting relevant postmigration stressors in psychosocial counselling sessions in addition to STARC might be more favourable to reduce anger reactions.

Moderation analyses revealed that more highly educated participants as well as participants with stable housing benefited more from the treatment. Due to the small sample size, these findings need to be interpreted with caution. However, moderation analyses were included in this study in an exploratory manner as they provide contextual information that is important to consider when interpreting the final results of this study. Participants in this study were aged between 15 and 21. Thus, these individuals were forced to leave their home country during a critical educational phase, disrupting schooling, stability and social development (Lustig et al., 2004). However, research on the role of education as a predictor of young refugees' mental health or mental health development remains inconsistent and unclear (Fazel, Reed, Panter-Brick, & Stein, 2012). Future studies therefore need to replicate our exploratory finding as it may have important practical implications. It would stress the importance of continuing schooling in exile as soon as possible as a longer break or a lack of education might lead to long-lasting detriments in the recovery of this population. However, our finding might also indicate that in spite of all efforts to minimize the cultural or educational biases of STARC, it is still based predominantly on western concepts which might be understood and implemented more easily by well-educated individuals. In terms of stable housing as a second moderator, a previous meta-analysis has shown indeed that refugees with permanent, private accommodation have significantly better mental health than those resettled in institutional and temporary private accommodations (Porter & Haslam, 2005), but we still do not know how this affects treatment outcomes. In our exploratory analyses only the participants living in youth welfare institutions showed a significant decrease in emotion regulation difficulties. In contrast to shared accommodation centers, the welfare institutions offer more privacy, safety and particularly more social stability due to a closer support by social workers. Thus, our results reflect psychosocial paradigms of trauma recovery, which underline the role of safe recovery environments (M. R. Harvey, 1996; Miller & Rasmussen, 2010). The exploratory nature of these analyses as well as the fact that we could not replicate the moderating role of housing on transdiagnostic symptoms do not enable final interpretations though. Lastly, we could not find an impact of trauma exposure on the treatment effects. This is consistent with findings by van Wyk et al. (2012) who argued that trauma exposure might be a significant factor in the onset of symptoms, but not in the maintenance or recovery of pathology. In sum, the current study

suggests to have a closer look at the influence of stabilizing factors in the postmigration environment a treatment is delivered in.

Strengths and Limitations

The current study shows a number of strengths, including the fact that the study was conducted in a routine clinical setting with typical referral routes and few inclusion/exclusion criteria that enhance external validity and generalizability. On the other hand, a number of limitations need to be taken into account when interpreting the findings. First, all treatments were conducted by the same two therapists who are also the authors of the STARC program. In addition, intervention fidelity was not formally tested. Future studies should replicate the current findings with other therapists and also include formal fidelity checks. Second, generalizability of the treatment effects to other refugee populations differing in age, country of origin and gender is limited as the study only examined a culturally homogenous sample of young, male Afghan refugees. Third, although the study was adequately powered for the main treatment effect, it was underpowered for the moderation analyses. Due to the exploratory nature of the moderation analyses, we did not account for multiple testing. A larger and more heterogeneous sample is needed to replicate the findings. Furthermore, our study design is restricted by comparing STARC to a WL without any active control condition. Although this is defensible as a first step of evaluating a new treatment, the findings do not allow drawing conclusions about whether the treatment effects might be influenced by nonspecific psychotherapeutic effects rather than the specific effects of STARC. Fifth, due to ethical reasons, our design lacked a follow-up assessment of the WL. Sixth, no blinded interviewer-rated assessment of outcome variables was available in the current study. Instead, the evaluation of treatment outcome was exclusively based on assisted self-reports. Future studies should include gold standard clinical interviews at post- and follow-up-assessments. Reassuringly, however, the effectiveness of the STARC intervention was supported by converging evidence based on caregivers' ratings of participants' emotional competence. Finally, the study is limited by the use of measures that had not all been validated in Afghan samples.

Conclusion

Despite these limitations, the results of this pilot study suggest STARC to be a feasible, well accepted and effective structured transdiagnostic group intervention in highly distressed Afghan refugees attending a routine clinical setting. However, in spite of the large treatment effects of STARC, a substantial proportion of the participants were still highly distressed after

the intervention. This is not surprising as the sample had been exposed to multiple traumatic events for years, and was still facing a large number of stressors at the time of treatment, including insecure residence status and unstable housing. If the effectiveness of STARC is replicated in future large-scale studies, two clinical applications of the program appear particularly promising. First, it could be investigated as a Phase 1 treatment in a phase-based treatment approach for traumatized individuals, where is can then be followed by a disorder-specific treatment, e.g. trauma-focused therapy for PTSD (see Cloitre et al., 2010 for a description of such an approach). Moreover, STARC could be valuable in stepped care programs as it provides a transdiagnostic low-threshold treatment in a group format that can be offered to refugees with varying types of psychological disorders. Based on the current findings, this may already be sufficient for a subgroup of patients, whereas others may require additional, more specialist treatment in the next step.

5. General Discussion

The present thesis aimed to examine the transdiagnostic role of emotion regulation in the psychopathology and treatment of traumatized Afghan refugees, using various methodological approaches. *Study I* asked how much emotion regulation may contribute to a range of different symptom categories (PTSD, depression, anxiety/insomnia) as well as to social impairment with a cross-sectional study design. Using an EMA paradigm, *Study II* investigated the antecedents and consequences of worry as a specific and particularly relevant emotion regulation strategy among refugees. Finally, *Study III* examined emotion regulation as a transdiagnostic treatment construct. In a pilot RCT, the effectiveness of a group intervention which focuses on emotion regulation was investigated among a group of traumatized Afghan refugees in a routine clinical setting. In this chapter, the main findings of the dissertation are summarized and discussed in relation to existing research about transdiagnostic processes. Implications of this thesis for basic research as well as the clinical practice are outlined, and the general strengths and limitations are identified.

Summary of Findings

As an introductory study on the role of emotion regulation in trauma-exposed Afghan refugees, *Study I* investigated if overall deficits in emotion regulation are present across a range of different disorder categories. Consistent with our hypotheses, we found that difficulties in emotion regulation accounted for significant variance in PTSD, depression and anxiety/insomnia symptoms over and above demographics and trauma exposure. When looking into the specific dimensions more precisely, higher symptom severities of PTSD, depression and anxiety/insomnia were related to the DERS subscales nonacceptance, goals, impulse, strategies and clarity, but none of our outcomes were related to a lack of emotional awareness. In a second step, the study went beyond symptoms of psychopathology as relevant outcome variables in refugees, and also investigated social impairment. Our findings revealed that difficulties in emotion regulation were related to social impairment after accounting for both sociodemographics, trauma exposure, as well as the severity of PTSD in a first regression model and anxiety/insomnia in a second model. However, our hypothesis that emotion regulation accounted for variance beyond depression was not supported, as results suggested that depression still accounted for the largest proportion of variance in social impairment.

In *Study II* we chose to study proximal antecedents and consequences of a specific emotion regulation strategy, which seemed particularly relevant for refugees due to their high rates of premigration trauma events as well as postmigration stressors. Worry, which is a common

variant of the broader concept of RNT as well as the cultural idiom of distress "thinking a lot", was examined in the daily life of Afghan refugees, using an EMA paradigm for the first time in this population. The low average compliance rate which varied largely across participants indicated that EMA is a feasible method in refugees only under certain conditions. Contrary to our hypothesis and the proposed transcultural "thinking a lot" model by Hinton et al. (2016), our findings did not confirm a bidirectional relationship (a) between worry and affective experiences and (b) between worry and poor sleep quality. However, at the between-subject level, we found significant associations; people with a greater tendency of worry reported increased negative affect, decreased positive affect as well as decreased sleep quality (and vice versa). At a within-subject level, the study provides preliminary evidence for a unidirectional relationship between worry and affect at a day level; worry experienced on a given day predicted increased negative affect on the next day; in turn, positive affect predicted decreased worrying on the next day. These results could not be confirmed at a prompt level for short-term predictions. In contrast to our hypotheses, the interaction between worry and postmigration stress did not reach significance in predicting affect and sleep. However, a number of methodological shortcomings preclude drawing strong conclusions.

Taken together, both studies highlight the need and potential directions for transdiagnostic interventions that target emotion regulation as a whole, and emotion regulation strategies such as worry in particular among trauma-exposed refugees. *Study I* concludes that such an intervention would not only address comorbid disorders simultaneously but might also improve social impairment more than a mere disorder-specific treatment. *Study II* gives some indications on the relevance as well as on the directions of how to address worry in treatment with refugees. Worry appeared to be a prevalent emotion regulation strategy in Afghan refugees, associated with negative effects on affect and sleep. Even though the predictive findings are still very preliminary, they propose to address worry both directly but also indirectly by teaching strategies aiming to maintain and increase experiences of positive emotions.

The clinical implications and potential directions of *Study I* and *II* were implemented in the development of a novel transdiagnostic group intervention for traumatized refugees. *The Skills-Training of Affect Regulation–a Culture-sensitive Approach* (STARC) focuses on strategies to improve emotional clarity and to regulate strong emotions in a culture-sensitive way. To examine the feasibility, acceptability and efficacy of STARC, we conducted an RCT in a sample of traumatized Afghan refugees in a routine clinical setting (*Study III*). STARC was found to be a highly accepted and feasible intervention in our setting. In terms of its efficacy, STARC showed

promising treatment results. Compared to wait-list, it revealed medium to large comparative effect sizes improving emotion dysregulation, transdiagnostic as well as posttraumatic stress symptoms, and caregivers' ratings of emotional competence, but not anger reactions. Effects were maintained over 3 months. Exploratory analyses indicate that the superiority of STARC on our primary outcomes (emotion regulation difficulties and transdiagnostic symptoms) was specific to participants with more years in education and partly with stable housing. Note that despite the large treatment effects of STARC, a substantial proportion of the participants were still highly distressed after the intervention.

Criteria for Emotion Regulation as a Transdiagnostic Process

In sum, this thesis contributes to the body of research exploring if emotion regulation can be classified as a transdiagnostic process. Although this question has been addressed extensively in Western, non-refugee samples (e.g., Cludius et al., in press; Sloan et al., 2017), research among trauma-exposed refugees is still scarce. Due to the fact that there is no universally accepted definition of a transdiagnostic process, this thesis follows the influential one by A. G. Harvey et al. (2004). They suggest that a process needs to meet at least two requirements to be considered transdiagnostic. First, it must be descriptively present across a range of different disorders. Second, the process must be mechanistically transdiagnostic, which means it should causally contribute to the development and/or maintenance of psychopathology, rather than being a mere epiphenomenon of these disorders. Thus, changes in emotion regulation difficulties should take place after effective treatment and should lead to a change across various transdiagnostic symptoms.

In *Study I*, difficulties in emotion regulation have been found to be associated with symptoms of PTSD, depression, and anxiety/insomnia. Even though our data only relies on a single sample of Afghan refugees suffering from comorbid disorders simultaneously and not on different samples with distinct disorders, it provides preliminary evidence that difficulties in emotion regulation spans a wide range of conditions (i.e., meeting the first criterion proposed by A. G. Harvey et al., 2004).

By focusing on the transdiagnostic effects or antecedents of worry as one specific maladaptive emotion regulation strategy, *Study II* addressed the second criterion for transdiagnostic processes suggested by Harvey et al. 2004. The longitudinal, cross-lagged data, assessed via EMA, allows us to move forward in our understanding of how emotion regulation strategies and other psychological variables influence each other. Our predictive findings do

not indicate bidirectional, mutually-maintaining relationships but a unidirectional effect of worry on negative affect. The use of worry significantly predicted decreased levels of negative affect on the subsequent day, which is indicative of the suggested causal role of emotion regulation strategies as a transdiagnostic process. However, we could not find cross-lagged effects of worry on positive affect or sleep quality.

Study III furthers our knowledge on the transdiagnostic, therapeutic process of emotion regulation among refugees. The findings of our RCT indicate that targeting the process of emotion regulation in an intervention leads to clinical improvements. The participants receiving the STARC treatment reported not only significantly improved emotion regulation deficits and social impairment but also decreased psychological distress (i.e., PTSD, depression, anxiety, insomnia, and somatization symptoms). This is early evidence on the causal contribution of emotion regulation to psychopathology in traumatized refugees and lends further preliminary support to the notion of emotion regulation as an underlying process that may contribute to changes in symptoms of multiple forms of psychopathology following treatment (i.e., meeting the second criterion proposed by A. G. Harvey et al., 2004).

Although no final conclusions can be drawn yet, the present thesis supports the notion that emotion regulation might qualify as a transdiagnostic process among trauma-exposed refugees according to the criteria by A. G. Harvey et al. (2004). It does not only provide preliminary evidence that emotion regulation may be regarded as descriptively transdiagnostic – by virtue of simple co-occurrence across a range of psychological symptoms categories – but also as mechanistically transdiagnostic. However, the nature of the mechanistic role of emotion regulation needs to be clarified in future research with the help of prospective as well as experimental studies with an active control group. As reviewed in the introduction, theoretical assumptions as well as empirical findings are mixed, suggesting emotion regulation as a mediator and/or moderator in the interplay between different psychological phenomena. Furthermore, emotion regulation could also be the consequence of a third factor maintaining psychopathology.

One possible next step to disentangle the different mechanistic roles might be to study emotion regulation as a causal mechanism of change. This would build upon the current thesis, which examined emotion regulation as an outcome variable and not as a causal mechanism of change. Future intervention studies should assess emotion regulation repeatedly during the course of the treatment and at follow-up to collect data for true longitudinal mediation analyses where change in emotion regulation can be examined in relation to whether it precedes

symptom change. Such research has the potential to elucidate the precise role of emotion regulation in the course of refugee mental health. By providing important information on how best to optimize therapeutic change for this population, it would have important clinical implications (Kazdin & Nock, 2003).

Implications for Basic Research

As described in the general introduction, emotion regulation is a notoriously broad concept that encompasses a multitude of processes (e.g., Gross & Thompson, 2007; Kring & Werner, 2004). Therefore, we initially introduced two prominent conceptual frameworks of emotion regulation that are prevailing in the literature. In two of our studies (*Study I* and *III*) we focused on the integral conceptualization on *broad deficits in emotional functioning and regulation* by Kim L Gratz and Roemer (2004). In *Study II*, we followed the *strategy-based framework* of emotion regulation (identified by Aldao et al., 2010; Gross, 1998a). We chose worry as one specific maladaptive emotion regulation strategy and examined its antecedents and consequences in the daily life of our participants. The inclusion of both broad deficits in emotion regulation and specific maladaptive emotion regulation strategies acknowledges the multifaceted nature of emotion regulation.

Given the limited body of research on emotion regulation in trauma-exposed refugees to date, this broad approach seemed reasonable and informative as a first step. Future research, however, should build upon this research and focus on more specific aspects of emotion regulation to expand our knowledge and understanding on this broad concept in the specific sample of refugees. According to our findings as well as our clinical experiences, some future directions for basic research on emotion regulation will be discussed below.

Interpersonal Emotion Regulation

Emotions and thus also emotion regulation are not mere *intra*personal processes, but also occur *inter*personally and thus depend on our (social) context, on our cultural norms and values. Emotions are regulated by the ways in which our worlds are structured and our lives are organized (Mesquita et al., 2013). This is why we need to take culture and the social context into account when studying emotion regulation. It is for this reason that we decided to study a culturally homogenous group of Afghan refugees.

The concept of emotion regulation has long been limited to a focus on *intra*personal processes, occurring within the person. Newer models on emotion regulation now integrate an *inter*personal perspective and emphasize the social components and their undeniable influence on how one is able to manage emotions (Barthel, Hay, Doan, & Hofmann, 2018). From our clinical experience, a lot of our clients taking part in the STARC program, emphasized the role of trusted others helping them to regulate their emotions in the treatment sessions. They stated that they did not have problems with regulating emotions back home, as they were with their families. But being in Germany mostly by themselves, they did not know what to do with their intense emotions and how to calm down effectively. They felt the need to learn new (*intra*personal) strategies to manage emotions independently, as they are shifting between different contexts. These clinical experiences might refer to the conceptualization of the self (known as "self-construal"), which is widely discussed in cross-cultural psychology as being central to understand cultural differences in behavior, thought, and emotion (De Leersnyder, Boiger, & Mesquita, 2013; Hazel Rose Markus & Kitayama, 2010). The different self-construals prevailing in the different contexts may have an influence on how emotions are typically and most efficiently regulated, as the strategies are chosen to be consistent with cultural goals and self-concept (Matsumoto, Yoo, & Nakagawa, 2008). An interdependent self-construal is more prominent in collectivistic cultures, such as the Afghan one. In this context, the self is conceptualized as being highly interconnected to the external social environment, possibly facilitating the use of interpersonal emotion regulation strategies. Social responsibility and harmony is a primary motivation for behavior and emotion (Cross, Hardin, & Gercek-Swing, 2010). This is in contrast to an independent self-construal, prevailing mostly in individualistic western cultures, such as the German one. In this context, the unique self is placed as the central reference point for guiding behavior and emotions.

Most studies on the impact of culture on emotion regulation have addressed *intra*personal strategies. There has been considerable interest in the differences of the effectiveness of the two emotion regulation strategies suppression and reappraisal in various cultural contexts (B. Q. Ford & Mauss, 2015). In contrast to individualistic cultures, there seems to be a preference for emotional suppression in cultures that value inter-connectedness. Findings from a meta-analysis showed that Eastern vs. Western cultural values categories had a significant moderating effect on the relationship between expressive suppression and mental health (Hu et al., 2014). The negative relationship was stronger in the Western than in the Eastern cultural values category. In terms of *inter*personal emotion regulation, research is still rare, but a recent study provides preliminary findings on cultural differences supporting the notion that participants from

collectivistic cultures (e.g., East Asia) report stronger engagement in *inter*personal emotion regulation strategies such as social modeling and perspective taking in daily life (Liddell & Williams, 2019). Engaging in these strategies also seemed to be more beneficial for East Asian groups immediately after being exposed to a stressful situation, as these strategies appear more congruent with cultural contexts and preferences.

Among trauma-exposed refugees, research on emotion regulation strategies has solely focused on *intra*personal strategies to date, including this thesis: Other than worry, the use and effectiveness of cognitive reappraisal and suppression, depending on the traumatic history and psychological distress of the participants, have been in the center of research attention (Nickerson et al., 2016; Nickerson, Garber, et al., 2017). However, *inter*personal emotion regulation strategies have been overlooked in the research on refugee mental health. Both, current data on the impact of culture on emotion regulation as well as our clinical experience highlight the need to integrate and investigate both *intra*personal as well as *inter*personal aspects of emotion regulation in refugees. Future studies should focus on the habitual use and effectiveness of these different emotion regulation strategies in refugees from varous cultural contexts, who migrate from non-Western to Western countries. Such immigration often involves a transition from collectivistic cultures to individualistic cultures. In a longitudinal study, refugees could repeatedly be assessed upon arriving in exile in order to investigate change in the habitual use of the different emotion regulation strategies and its effects on mental health. In sum, taking a cultural view into account and broadening the array of studied emotion regulation strategies by integrating *inter*personal strategies might be a vital issue for future research among trauma-exposed refugees. It would further inform future interventions on when and in which (cultural) contexts to use which emotion regulation strategies most efficiently.

Emotion Regulation Flexibility

There are recent theoretical contributions and studies, which call into question if particular emotion regulation strategies can be distinguished as overly adaptive and maladaptive per se. It is argued that adaptive forms of emotion regulation rather involve the flexible use of different strategies depending on current situational context and personality characteristics (e.g., Aldao, Sheppes, & Gross, 2015; Kobylińska & Kusev, 2019). This research indicates that emotion regulation flexibility may be more important in influencing psychological outcomes than the use of specific emotion regulation strategies. Following the question about flexibility in emotion regulation among refugees might be a promising future line of research. In fact,

psychological flexibility is a crucial skill for refugees and ethnic minorities, who are dealing with multiple adaptations that require great flexibility (Patel & Hinton, 2017). They must form a new cultural identity through language use and code-switching, learn about different cultural ideas about proper behavior as well as social interaction and adapt their personal and professional plans according to the legal circumstance and other postmigration living difficulties.

By considering or even manipulating the context, future research could shed light on how the efficacy of emotion regulation strategies varies depending on the circumstances. According to the person-by-situation approach to emotion regulation by Troy, Shallcross, and Mauss (2013), the adaptability of different strategies of emotion regulation depends on the situational context, such as the controllability of a situation in which they are applied. Engaging in reappraisal, for example, is supposed to be adaptive when facing stressors that are uncontrollable (when the person can regulate only the self); but maladaptive when stressors can be controlled (when the person can change the situation). In a cross-sectional study, higher cognitive-reappraisal ability was associated with lower levels of depression but only for those participants suffering from uncontrollable stress in contrast to controllable stress (Troy et al., 2013). Results from an EMA study further confirm the person-by-situation approach. Participants with relatively high well-being used reappraisal more in situations they perceived as lower in controllability and less in situations they perceived as higher in controllability (Haines et al., 2016). This all suggests that reappraisal as one specific emotion regulation strategy might be highly adaptive when encountering relatively uncontrollable stress, because in these situations an emotion might be the only aspect that can be changed. However, when facing a stressor that seems rather controllable, other strategies, such as changing the actual situation (i.e., problem-focused coping) might be more beneficial. Accordingly, reappraisal cannot simply be classified as adaptive or maladaptive, but it needs to be used flexibly.

Refugees are typically confronted with various, mostly uncontrollable, postmigration stressors in their daily life, such as an insecure residence permit, living in shared accommodation centers with little privacy and fear for family back home (Li et al., 2016). Future studies should therefore target the effectiveness of various emotion regulation strategies in interaction with the controllability of the stressor encountered. This would extend our research (*Study II)* on the impact of worry on psychological outcomes in interaction with postmigration stress. By additionally measuring the controllability of the postmigration stressors encountered, the effects of engaging in a certain set of emotion regulation strategies

could be investigated depending on the context. According to the person-by-situation approach, refugees should show better psychological outcomes when engaging, for example, in reappraisal in situations with low controllability, e.g. dealing with an insecure residence permit, compared to a situation with higher controllability e.g. conflicts with other residents of the accommodation center. This research could be conducted in the daily life of refugees by using EMA to report several times a day on the participants' use of different emotion regulation strategies (e.g., reappraisal, worry etc.), the perceived controllability of the stressors encountered and the wellbeing. As an alternative, different stress situations could be manipulated in an experimental setting and individuals could be randomly assigned to use specific emotion regulation strategies. This research would enhance our knowledge on the strategies that may be most helpful for refugees facing different forms of controllable and uncontrollable stressors. Thus, it may directly inform the development of interventions tailored for refugee groups.

Clinical Implications

STARC in a Phase-Based Approach

Given the positive treatment effects of STARC which are consistent with a growing body of research highlighting the effectiveness of other transdiagnostic treatment approaches in refugees, a potentially beneficial next step could be to integrate these approaches in different treatment settings. Despite large treatment effects discussed in *Study III*, a substantial proportion of the participants of STARC were still highly distressed after the intervention. This is not surprising as the sample had been exposed to multiple traumatic events for years, and was still facing a large number of stressors at the time of treatment. Compared to trauma-focused treatments, e.g. NET (Neuner et al., 2010), and in line with the transdiagnostic concept of the treatments, the effects of such programs are rather broad. Their effects are reflected more in improvements of general mental health as well as quality of life than in disorder-specific or trauma-specific symptoms. Indeed, STARC showed larger reductions on transdiagnostic symptoms ($\Delta d_{\text{STARK-WL}} = 1.69$) than on PTSD symptoms ($\Delta d_{\text{STARK-WL}} = 1.19$). This is also consistent with data on other transdiagnostic interventions such as PM+ and CA-CBT (Bryant et al., 2017; Kananian et al., 2017). Thus, the idea of a phase-based treatment approach for those still suffering from distinct disorder-specific symptoms after having received a transdiagnostic treatment appears promising: Transdiagnostic programs which focus on emotion regulation,

e.g. STARC, could be followed by disorder-specific treatments. Given that the largest proportion of our sample was suffering from PTSD, followed by depression, either a trauma-focused treatment, e.g. NET, or a depression-focused intervention seems beneficial in a second step. Research indicates that such a phase-based approach is associated with more complete PTSD remission and lower drop-out rates (Cloitre et al., 2010). There is evidence from non-refugee groups that substantial emotion regulation difficulties (i.e., anger and aggression) interfere with the effectiveness of first-line trauma-focused therapy in non-refugee groups (Foa, Riggs, Massie, & Yarczower, 1995; Forbes et al., 2008). In fact, reduction of these problems in *Phase 1* was shown to predict exposure success in reducing PTSD in *Phase 2* among women with PTSD related to childhood abuse (Cloitre, Koenen, Cohen, & Han, 2002).

Future studies could investigate these phase-based approaches for example by comparing three different study arms in a RCT. In this trial, the different treatments, such as STARC and NET, could be compared to each other and to an active nonspecific treatment, e.g. Supportive Counseling, in different combinations: 1) STARC + NET, 2) Supportive Counseling + NET, and 3) STARC + Supportive Counseling. Thus, the beneficial effect of a phase-based treatment in which NET is preceded by STARC could be investigated by comparing it to the study arm when NET is preceded by a nonspecific treatment. The comparison of STARC + NET to STARC + Supportive Counseling, in which the trauma-focused aspect (the putative source of adverse effects) was eliminated, provided baseline data regarding adverse effects in a nonexposure treatment with the same controls. This is interesting as trauma-focused, exposure treatments are sometimes criticized for potential adverse effects. Furthermore, such a study design would facilitate to disentangle the effects of the different treatment steps, e.g. by comparing STARC to an active control group (i.e., Supportive Counseling). Thus, the specific effects of STARC could be investigated. This would also address one of the methodological shortcomings of *Study III* which lacked an active control condition.

STARC as a School-Based Intervention

Due to the fact that most refugees do not have adequate access to mental health services mostly as a result of transportation and language barriers, stigma, lack of health insurance and other structural barriers (Sullivan & Simonson, 2016), there is a need not only to think about novel treatment approaches, but also to think about innovative treatment settings to provide treatment to this vulnerable group. Schools are situated in unique positions to shorten the gap in service delivery for those who would not otherwise have access to these services. This is why

there is a growing awareness about the relevance of school-based mental health services amongst educators and policy makers, but few studies have explored their effectiveness to date (Franco, 2018). As STARC is designed as a low-threshold, transdiagnostic intervention, it might be a promising intervention to be adapted as a school-based intervention for a large number of young refugees. Trained social workers or psychologists in schools could deliver STARC in schools. Our clinical experience with STARC underlines the relevance of this idea. In fact, a lot of our referrals to the treatment program came from teachers, social workers and psychologists at schools. This is not surprising, as many of our participants reported on challenging situations in the school context in which they were overwhelmed by emotions and could not control them. A lot of our participants for example described that they had difficulties concentrating in school. When being confronted with their lack of performance they described that they became very sad, angry and/or even aggressive towards themselves or others. Another participant described a situation in which they learned about family-related vocabulary when he got overwhelmed by his emotions and memories which led to a dissociative state. Furthermore, schools with large class sizes and students from very different cultural as well as social background represent an important context for interpersonal relationships, and this requires good emotion regulation skills.

Based on these experiences, we are in the process of piloting an adapted version of STARC in collaboration with SchlaU school in Munich. This specialized school provides a comprehensive schooling for young refugees. As time constraints may pose challenges in schools regarding student schedules and potential inconsistent attendance, we modified and shortened STARC so that it is now delivered in three workshop sessions, each on every module of the intervention. Data from this study will help inform how to effectively provide school-based mental health services.

STARC in Refugees with Hazardous Substance Use/Substance Use Disorder (SUD)

Exposure to traumatic events as well as high comorbidity puts refugees as risk for elevated levels of alcohol and other substance use. However, clear prevalence data on SUD in refugees and migrants is still scarce (Ezard, 2012; Horyniak, Melo, Farrell, Ojeda, & Strathdee, 2016; Weaver & Roberts, 2010). It is apparent that this group faces particularly high barriers to get access to mental health services as they often find themselves rejected from both mental health care programs and addiction services (Welbel et al., 2013). Consequently, it has been recommended that integrating substance use services into general psychological treatment

offered to refugees and migrants would be beneficial. However, there is a major gap regarding effective, culture-sensitive interventions to address substance use in refugees. In the broader literature on non-migrant populations with SUD and PTSD, there is evidence that low-threshold, cognitive-behavioral treatments for patients with co-occurring SUD and PTSD are effective to improve difficulties in emotional regulation and various psychological symptoms (Schäfer et al., 2019). Based on research highlighting the role of emotion dysregulation for substance use in traumatized individual, emotion dysregulation is being increasingly recognized as a potential key target for substance use prevention and treatment interventions (Kelly & Bardo, 2016). Findings from a prospective study among young adult women for example revealed that PTS symptoms were only associated with later substance use in the context of heightened emotion dysregulation, assessed using both self-report and behavioral measures (Tull et al., 2015). Even though we did not assess alcohol and other substance use in either of our studies, our clinical experience confirms the assumption that many of our clients used alcohol or other drugs as an emotion regulation strategy. Many reported that they do not know any alternatives how to manage their strong emotions and calm down other than with alcohol or drugs.

STARC was shown to be a highly accepted and effective culture-sensitive intervention in traumatized refugees. With its focus on the transdiagnostic process of emotion regulation, it might be a promising intervention for individuals with the dual problem of psychological symptoms as a consequence of traumatic experiences and hazardous substance use/SUD. This is why STARC is currently adapted in collaboration with experts for hazardous substance use/SUD and examined in a multisite RCT. The adapted program (STARC-SUD) additionally integrates evidence-based elements from the SUD field (e.g., psychoeducation and self-reflection regarding substance use, motivational interventions, and relapse prevention).

General Strengths and Limitations

Without any doubt, the findings of the current thesis need to be considered in the context of some general strengths and limitations that have already been touched upon above. Some major arguments are summarized again and extended in the following section.

Conceptualization of Emotion Regulation

Despite the conceptualization of emotion regulation as a multicomponent and dynamic process, the operationalization and methods to study it are largely limited to examining it as a singular construct and through a single methodology. In fact, also the current thesis is predominantly based on a singular construct; the integrative construct by Kim L Gratz and Roemer (2004) on broad deficits in emotional functioning and regulation. Two of our studies used the DERS as their main outcome. *Study II* extends it, however, by following the strategy-based framework and investigating one specific emotion regulation strategy. As discussed in closer detail above, future research should move forward and investigate more specific concepts and aspects of emotion regulation in refugees, e.g. by recognizing the importance of the context that shapes emotion regulation (i.e., by studying interpersonal emotion regulation) or by focusing on emotion regulation flexibility.

Methodology to Study Emotion Regulation

In terms of the methodology, the thesis is not limited to a single methodological approach, which is major strength of this work. It extends previous – mostly cross-sectional – research by using a variety of different methodological approaches. Emotion regulation was not only examined in a cross-sectional design, but also longitudinally in an EMA study as well as experimentally in an RCT.

However, all three methodological approaches of the studies are based on self-reports to assess emotion regulation deficits or strategies. In fact, self-report assessment tools, primarily questionnaires, are ubiquitous in the study of emotional regulation (Adrian, Zeman, & Veits, 2011), but they are criticized for not being sufficiently objective. Self-reports, for example, bear the risk of being influenced by social desirability bias and rely on the introspective ability of the participants as well as the consistent understanding of the items and the rating scales. Furthermore, the extent to which individuals can accurately self-report on their emotion regulation abilities can be questioned, as it requires distinct insight into emotional phenomena and meta-cognitions (M. D. Robinson & Clore, 2002). Given the risks of self-reports, the current thesis integrated EMA in addition to retrospective questionnaires in *Study II* and an external rating on the emotional competence of the clients in *Study III*. By making two methodological adaptations, we further tried to ensure a valid data collection and a consistent understanding of the different items in this population. These were necessary and speak to the validity of our findings, but also risk standardization. First, we needed to translate

all questionnaires into Dari. Even though we conducted the translation process according to gold standards, we cannot ensure the validity of all of the translated questionnaires. Large-scale validation studies would be needed for this. Second, completion of self-report measures was assisted in all studies by master-level students of clinical psychology and trained interpreters. This assisted self-report was necessary due to a lack of experience with filling out questionnaires and low-literacy of some participants. However, this procedure limits the standardization of the assessment and – to our knowledge – validation studies for this common assessment method among refugees are still lacking.

Future studies should use multimodal approaches to assess emotion regulation in refugees, e.g. by combining self-report measures with observational or psychophysiological data. Previous studies, for example, have used a modified version of the Paced Auditory Serial Addition Task – Computerized (PASAT-C; Kim L. Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Tull et al., 2015), as a behavioral measure of the emotion dysregulation dimension of the willingness to experience emotional distress in order to pursue goal-directed behavior. Furthermore, there are a number of established experimental paradigms in which participants are exposed to emotionally evocative stimuli (e.g., film clips, photos, vignettes) followed by an emotion regulation strategy implementation (e.g., Nickerson, Garber, et al., 2017). These laboratory paradigms allow for the measurement of participants' subsequent emotions and cognitions but also psychophysiological or neurobiological data while participants are engaging in different emotion regulation strategies. While these paradigms are valuable to assess short-term effects of emotion-regulation strategies in the lab, they are limited, however, in their external, long-term validity, that is their ability to assess whether the tendency to engage in certain emotion-regulation strategies is associated with clinically significant levels of psychopathology (Aldao et al., 2010).

Research in Routine Clinical Setting

The research contribution made by this dissertation is highlighted by the fact that all studies were conducted at Refugio München, an outpatient unit for traumatized refugees. This naturalistic setting offers several strengths contributing to the relevance of the research to real-world practice. Indeed, the scientific work directly involved both clinicians and researchers from the very onset of the research program. The research was primarily motivated from clinical interest as the local clinicians reported they were struggling with a lot of patients in treatment suffering from difficulties in emotion regulation. These deficits often manifest in aggressive

and auto-aggressive behavior, substance abuse, social withdrawal, and/or dissociation. Consequently, the question arose if data can confirm the clinical impression that refugees show significant deficits in emotion regulation which might even underly psychopathology. Secondly, there was a pressing need for tailored intervention that target these deficits in a culturally sensitive way. The current thesis tried to address both questions with the help of methodologically rigorous studies which stay as close as possible to the procedures and clients of a routine clinical setting at the same time.

By involving clinicians in the whole process of the research from the initial idea to the planning and conducting of the studies, this dissertation is bridging the much discussed scientist-practitioner gap, which refers to the poor connection between empirical evidence generated by academia and the perceived practicality and use of that evidence by clinical practitioners (Drabick & Goldfried, 2000; Kazdin, 2008). Making practitioners true partners in the research, development, and dissemination process was repeatedly identified as the key to effective dissemination as well as the implementation of the clinical research findings and evidence-based treatment approaches (Sobell, 1996). This seems particularly relevant in refugee mental health care, as we are currently confronted with a large gap between evidence-based trauma-focused approaches, which are sparsely implemented in real-word settings and empirically poorly supported multimodal treatment approaches, which are the predominant treatment approaches in most of the specialized treatment centers to date (Nickerson et al., 2011).

Our research approach seemed to have proven successful when we evaluate our dissemination process. The STARC program, which was developed based on empirical data gained in this dissertation, was published and made available as a low-threshold intervention for practitioners in their private practices, clinics, in schools, and/or youth welfare institutions. Furthermore, various workshops have taken place to train therapists all around Germany and Austria in implementing the treatment protocol. Practitioners as well as researchers showed strong interest in our STARC program and as a result it is now even adapted and implemented in different settings (see above for more details).

Conducting research in a routine clinical setting, however, implies strengths but also weaknesses; a constant tradeoff between internal and external validity. The life of refugees is subject to many unexpected and inexplicable changes, which cannot fully be controlled for in research. Afghan refugees seeking asylum in Germany are facing a particularly unstable postmigration living situation. Most of the participants, for example, had an insecure residence

status and many lacked a working permit. All of this was shown to have an influence on mental health (Li et al., 2016), and might also influence the openness to take part in research studies and consequently also our study findings. Therefore, a strict randomization, such as ours in *Study III*, is of paramount importance in clinical trials examining this population. In *Study II*, however, the residence status revealed to be a significant predictor for the compliance rate, and thus limits the representativeness of the sampling.

Small sample sizes are another shortcoming of our studies, inherent to the research in naturalistic settings with limited resources. Clearly, replication studies with greater samples and greater power are necessary, particularly to conduct more elaborate analyses, e.g. structural equation models in *Study I*, more valid moderation analyses in *Study III*, and/or investigations of the effects of the different dimensions of difficulties in emotion regulation across all studies.

Furthermore, the lack of an active control group in *Study III* limits the internal validity of our findings. Findings do not allow drawing conclusions about whether the treatment effects might be influenced by nonspecific psychotherapeutic effects rather than the specific effects of STARC. However, comparing the STARC intervention to a waitlist group might reflect real-world settings better than comparing it to an active control group. Given the high refusal rates as well as the high average waitlist times of specialized treatment centers such as Refugio, the waitlist group resembles a treatment as usual group.

In terms of the recruitment process and the sample, we again put a special emphasis on the practical relevance and the external validity of our research. Most of the participants were recruited from the clients of Refugio, with typical referral routes and very little exclusion criteria in order to reflect real-world circumstances. For example, we also included participants with low literacy in *Study I* and *Study III*. In both of these studies, we limited our sample to men. The reasons for this were twofold: First, we aimed to form gender-homogenous treatment groups due to potential cultural barriers to discussing personal topics between women and men (Kira et al., 2012). However, the number of male clients exceeds by far the number of women seeking treatment at Refugio. Second, as gender was found to have an influence on both emotion regulation and on psychopathology, studying a gender-homogenous group has the benefit of a stronger validity of the findings for this single group (Nolen-Hoeksema, 2012). But this limits the generalizability of our findings. Furthermore, we deliberately decided to investigate Afghan refugees as a culturally homogenous group. Given the high mental health burden as well as the high numbers of Afghans seeking treatment in outpatient units such as Refugio München, studying this group seems particularly relevant for the clinical practice. To

date, this group is underrepresented in research, possibly due to challenges such as relatively low average levels of education, unstable living conditions – frequently including an insecure visa status in exile – and a very high mental health burden (Alemi et al., 2014). Given that culture is suggested to have a significant impact on emotion regulation (Hu et al., 2014), it was important to study a culturally homogenous sample Despite the benefits of studying an exclusively Afghan sample, this focus limits the generalizability of our findings to other refugee groups. Nonetheless, since refugees of Afghan background constitute a large group among the refugee/asylum seeking population in Germany, finding appropriate methods of delivering evidence-based psychological treatments in this population is worthwhile.

Conclusion

The current dissertation aimed to explore emotion regulation as a potentially important transdiagnostic pathway to refugee mental health. While firm conclusions cannot be drawn yet, this thesis contributes to our limited knowledge on emotion regulation in refugees. It further extends it significantly by offering a transdiagnostic perspective as well as by using a variety of novel methodological approaches. First, results indicated that overall deficits in emotion regulation contributed to a range of different disorder categories in trauma-exposed Afghan refugees. Second, in an elaborated EMA design, we found that worry was a relevant, maladaptive emotion regulation strategy which is associated with transdiagnostic symptoms including affect and poor sleep. Finally, our intervention study gives preliminary evidence on the causal nature of altered emotion regulation in the maintenance of psychopathology. STARC – as a novel intervention focusing on emotion regulation – proved to be feasible, highly acceptable from the perspective of clients and also effective in reducing emotion regulation deficits and different symptoms across disorder categories among traumatized Afghan refugees.

Given the promising results reported in this thesis, and the numerous challenges around providing adequate psychological support to refugee populations, this body of work could act as a platform to encourage further research into emotion regulation and other transdiagnostic processes in refugees. This is of paramount importance because even though this body of work was a promising first step with a substantial impact on our understanding and, ultimately, our treatment of affected refugees, it has also has raised many questions in need of further investigation. In conclusion, emotion regulation was found to be a significant issue among an Afghan refugee sample, and in the words of a STARC client:

> *"I have been angry a lot and also aggressive. And I did not understand why. I always thought there is something wrong with me. But now I know why things like that happen. I learned how to control myself in certain situations before my emotional traffic light turns on red."*

Zusammenfassung

Emotionsregulation bei traumatisierten Geflüchteten:
Eine transdiagnostische Perspektive auf deren Rollen in Psychopathologie und Behandlung

Noch nie zuvor gab es weltweit eine so große Anzahl von Menschen, die aufgrund von Krieg, Gewalt und Vertreibung ihre Heimat verlassen mussten, wie im vergangenen Jahr 2018 (UNHCR, 2019). Die Schutzsuchenden entkommen durch ihre Flucht zwar einer unmittelbaren Bedrohung, allerdings hält die psychische Belastung häufig noch lange an, was diese Population zu einer Risikogruppe für entsprechende Erkrankungen macht (Fazel et al., 2005; Turrini et al., 2017). Zusätzlich sind Geflüchtete in der Regel vielfältigen psychosozialen Stressoren ausgesetzt. Dies ist mit einer ungünstigeren Prognose für die psychische Gesundheit assoziiert (Li et al., 2016). Epidemiologische Studien deuten auf hohe Prävalenzen psychischer Störungen in dieser besonders vulnerablen Gruppe hin. In der Literatur werden für Geflüchtete stark schwankende PTBS-Prävalenzen zwischen 3% und 88%, Depressions-Prävalenzen zwischen 5% und 80%, sowie Angststörungs-Prävalenzen zwischen 1% und 81% berichtet (Morina et al., 2018). Bei einer Untersuchung in einer zentralen Aufnahmeeinrichtung für Asylsuchende in Bayern wurden bei 64% der Untersuchten eine oder mehrere psychiatrische Diagnosen gestellt, wobei PTBS mit 32% die häufigste Diagnose darstellte (Richter, Lehfeld, & Niklewski, 2015). Schlussendlich deutet die aktuelle Literatur auf sehr hohe Komorbiditäten unter Geflüchteten hin (Fazel et al., 2005; Nickerson, Schick, et al., 2017).

Aus diesem Grund erscheint die Erforschung von transdiagnostischen Prozessen in dieser Population besonders vielversprechend. Unter transdiagnostischen Prozessen versteht man Prozesse, die nicht nur einzelnen, sondern verschiedenen Störungsbildern zugrunde liegen (Kring & Sloan, 2010; McEvoy et al., 2009). Nach Jahrzehnten einer Dominanz der ausschließlich störungsspezifischen Perspektive in der Klinischen Psychologie und Psychotherapie (insbesondere der Kognitiven Verhaltenstherapie), ist in den letzten Jahren insgesamt ein gesteigertes Interesse an transdiagnostischen Prozessen und ihrer Integration in Therapieprogrammen zu beobachten. Indem sie Komplexität reduzieren, könnten transdiagnostische Therapieansätze einigen der strukturellen wie auch konzeptuellen Herausforderungen der adäquaten psychotherapeutischen Versorgung von Geflüchteten begegnen. Neben der Adressierung von Komorbiditäten bietet der transdiagnostische Ansatz auch einige praktische Vorteile, unter anderem die Möglichkeit, die Therapiegruppen vor allem nach sprachlichen, kulturellen und/oder soziodemographischen Merkmalen zusammenzustellen und dabei ein breites Spektrum an Störungsbildern einzuschließen. Schlussendlich erleichtert ein transdiagnostischer Therapieansatz die Schulung von Fachkräften, da nicht alle Therapeut*innen in allen bestehenden störungsspezifischen Manualen spezifisch trainiert werden müssen. Dies ist insbesondere in einem Gesundheitssektor mit geringen finanziellen und personellen Ressourcen von Bedeutung.

Ein transdiagnostischer Prozess, der zunehmend Aufmerksamkeit in der Literatur und Praxis erfährt, stellt der der Emotionsregulation dar. Dieser umfasst Strategien und Prozesse, die das Auftreten, die Intensität, die Dauer und den Ausdruck einer Emotion oder einer emotionalen Reaktion verändern (Überblick bei Koole, 2009). Gemäß der integrativen Konzeptualisierung von Gratz und Roemer (2004) zeichnet sich eine adaptive Regulation durch den Einbezug von situativen, kulturellen und persönlichen Kontextinformationen aus. Die Autoren definieren als Kerndimensionen von Schwierigkeiten in der Emotionsregulation a) Nichtakzeptanz von emotionalen Reaktionen, b) Schwierigkeiten, zielgerichtetes Verhalten in emotionalen Belastungssituationen zu zeigen, c) Impulskontrollschwierigkeiten, d) beschränkter Zugang zu Emotionsregulationsstrategien, e) Mangel an emotionaler Bewusstheit, und f) Defizite, Gefühle zu erkennen und einzuordnen. Diese Dimensionen spiegeln sich in der Difficulties in Emotion Regulation Scale (DERS) wider, die auch in der vorliegenden Arbeit verwendet wurde. Schwierigkeiten in der Emotionsregulation sowie der Einsatz von maladaptiven Emotionsregulationsstrategien werden mit einer Vielzahl psychischer Störungen in Verbindung gebracht (Überblick bei Barnow, 2012), so auch mit Traumafolgestörungen wie der PTBS (für eine Metaanalyse, siehe Seligowski et al., 2015), der Depression, Angststörungen, sowie Substanzmissbrauch (Ehring & Quack, 2010; Messman-Moore & Bhuptani, 2017; Seligowski et al., 2015). Nach traumatischen Ereignissen sind Betroffene häufig mit heftigen emotionalen Reaktionen konfrontiert. Es ist wichtig, diese starken Emotionen adaptiv regulieren zu können. Das fällt allerdings aufgrund ihrer hohen Intensität besonders schwer, sodass ausgeprägte Fähigkeiten in der Emotionsregulation gefordert sind.

Während für die Relevanz von Emotionsregulation für die psychische Gesundheit bei westlichen Stichproben (ohne Fluchthintergrund) einige Evidenz vorliegt (u.a. Aldao et al., 2016; Kring & Sloan, 2010), steht die Forschung in diesem Bereich für die Population der Geflüchteten noch am Anfang (z.B. Doolan et al., 2017; Nickerson et al., 2015). Hinzu kommt, dass die Forschung bei Geflüchteten bisher stark störungsspezifisch auf die PTBS ausgerichtet war (Miller & Rasmussen, 2010). Dieser Fokus greift allerdings angesichts der oben aufgeführten hohen Komorbiditäten häufig zu kurz und wird der Komplexität der Alltagsprobleme und psychischen Belastungen von Geflüchteten nicht gerecht.

Ziel der vorliegenden Dissertation ist es demnach, bestehende Wissenslücken bzgl. der Rolle von Emotionsregulation in der Psychopathologie und Psychotherapie von traumatisierten afghanischen Geflüchteten zu schließen. Dabei nimmt die Arbeit bewusst eine transdiagnostische Perspektive ein und untersucht die Rolle von Emotionsregulation in einem breiten Spektrum von psychischen Symptomen mithilfe von verschiedenen querschnittlichen

und längsschnittlichen Methoden. Alle Studien wurden mit traumatisierten, afghanischen Geflüchteten im klinischen Routinesetting bei Refugio München durchgeführt, einem Behandlungszentrum für traumatisierte Geflüchtete und Folteropfer. Obwohl Afghan*innen die weltweit zweitgrößte kulturelle Gruppe unter Geflüchteten darstellt (UNHCR, 2019) und unter besonders hohen psychischen Belastungen leiden (Alemi et al., 2014), sind sie bisher in der psychologischen Flüchtlingsforschung unterrepräsentiert.

Als erster Schritt wurde in *Studie I* querschnittlich der Beitrag von Schwierigkeiten in der Emotionsregulation für die Psychopathologie und das psychosoziale Funktionsniveau von 74 männlichen afghanischen Geflüchteten untersucht. Stärkere Symptome der PTBS, Depression und Angststörung/Insomnie korrelierten mit den DERS Subskalen Nichtakzeptanz, zielgerichtetes Verhalten, Impulsivität, Emotionsregulationsstrategien und emotionale Klarheit. Keiner der abhängigen Variablen war mit der Skala der emotionalen Bewusstheit assoziiert. Emotionsdysregulation stellte sich als ein bedeutsamer Prädiktor heraus, welcher jeweils Varianz der PTBS, Depression und Angststörung/Insomnie-Symptomatik über demografische Risikofaktoren und die Traumaanzahl hinaus aufklärte. In einem zweiten Schritt, ging die Studie über Symptome der Psychopathologie als relevante Zielvariable für Geflüchtete hinaus und untersuchte das psychosoziale Funktionsniveau. Unsere Ergebnisse zeigen, dass Emotionsregulation einen bedeutsamen Einfluss auf das Funktionsniveau hat, sogar unabhängig von Psychopathologie. Schwierigkeiten in der Emotionsregulation stellte sich nicht nur als signifikanter Prädiktor zur Vorhersage des psychosozialen Funktionsniveaus über soziodemografische Risikofaktoren und die Traumaanzahl hinaus heraus, sondern auch jeweils über PTBS-Symptome, sowie Angststörungs-/Insomnie-Symptome. Depressions-symptome hatten die größte Vorhersagekraft für das psychosoziale Funktionsniveau, worüber hinaus – entgegen unserer Hypothese – Schwierigkeiten in der Emotionsregulation keine zusätzliche Varianz aufklärte. Aus den Ergebnissen lassen sich wichtige praktische Implikationen ableiten, u.a. da ein eingeschränktes psychosozialen Funktionsniveau ein zentrales Hindernis in Bezug auf die im Empfangsland erforderliche Anpassungs- und Integrationsleistung darstellt (Schick et al., 2016).

Studie II untersuchte den Einsatz und die Folgen von Sich-Sorgen als eine spezifische kognitive Emotionsregulationsstrategie, die aufgrund der häufigen traumatischen Ereignisse und bedeutsamen Postmigrationsstressoren besonders relevant für Geflüchtete erscheint. Nach Wissensstand der Autorin wurde hierfür erstmalig in der Population von Geflüchteten ein Ecological Momentary Assessment (EMA) Paradigma genutzt: 45 traumatisierte Afghan*innen wurden fünfmal am Tag aufgefordert, auf ihrem Smartphone die Intensität ihrer momentanen

Sorgenprozesse, sowie ihre Gefühle zu bewerten. Zusätzlich wurden die Schlafqualität am Morgen sowie die erfahrenen Postmigrationsstressoren am Abend erfragt. Entgegen unserer Hypothesen und dem transkulturellen „Thinking a lot“ Model von Hinton et al. (2016) konnten die Studienergebnisse keinen bidirektionalen Zusammenhang (a) zwischen Sich-Sorgen und (positiven und negativen) Affekt sowie (b) zwischen Sich-Sorgen und geringer Schlafqualität bestätigen. Allerdings fanden sich bei auf der Zwischensubjekt-Ebene signifikante Assoziationen; Menschen mit einer größeren Tendenz zum Sich-Sorgen berichteten insgesamt von stärkerem negativen Affekt und schwächerem positiven Affekt sowie einer geringen Schlafqualität (und vice versa). Auf der Innersubjektebene gibt die Studie vorläufige Hinweise auf einen unidirektionalen Zusammenhang zwischen täglichem Sorgen und Affekt; das Sorgen am Vortag sagte verstärkten negativen Affekt am darauffolgenden Tag vorher. Im Gegenzug sagte positiver Affekt reduziertes Sorgen am darauffolgenden Tag vorher. Diese signifikanten Ergebnisse konnten allerdings für kurzzeitigere Vorhersagen auf der Prompt-Ebene nicht repliziert werden (d.h. Sorgen am Morgen sagten z.B. nicht Affekt zur nächsten Befragung am Mittag vorher). Schlussendlich wurde auch unsere Hypothese einer signifikanten Interaktion zwischen Sorgen und Postmigrationsstressoren in der Vorhersage von Affekt und Schlaf nicht bestätigt: Der täglich erfahrene Postmigrationsstress verstärkte nicht die negativen Auswirkungen von Sorgenprozessen.

Zusammengenommen unterstreichen die beiden Studien insgesamt die Notwendigkeit transdiagnostischer Interventionen für Geflüchtete, die auf eine Verbesserung von Emotionsregulationsfähigkeiten bzw. dem Aufbau von adaptiven Emotionsregulationsstrategien abzielen. Darüber hinaus geben sie Hinweise, welche psychologischen Aspekte besonders in der Behandlung Beachtung finden sollten. All dies floss in die Entwicklung eines neuen transdiagnostischen Gruppentherapieprogramms für Geflüchtete mit ein. Das *Skills-Training zur Affektregulation- ein kultursensible Ansatz* (STARK) legt einen Schwerpunkt auf die Verbesserung der emotionalen Bewusstheit sowie auf die kultursensible Vermittlung von Techniken zur Emotionsregulation. *Studie III* untersucht die Machbarkeit, Akzeptanz und Wirksamkeit des STARK-Programms in einer randomisierten, kontrollierten Studie im klinischen Routinesetting. 44 junge afghanische Geflüchtete wurden entweder einer Interventionsgruppe oder Wartelistenkontrollgruppe (WLKG) randomisiert zugewiesen. STARK stellte sich als ein vielversprechendes transdiagnostisches Therapieprogramm für Geflüchtete heraus. Die durchschnittliche Dropout-Rate sowie die hohe Therapiezufriedenheit sprechen für eine gute Akzeptanz und Durchführbarkeit der Intervention im klinischen Routinesetting. Im Vergleich zu den Teilnehmern der WLKG, verbesserten sich

die Teilnehmer der STARK-Bedingung signifikant mit mittleren bis zu starken Effektstärken bzgl. Defiziten in der Emotionsregulation, transdiagnostischen Symptomen und PTBS Symptomen. Die positiven Ergebnisse in der Selbstauskunft unterstützend, zeigte sich auch eine signifikante Verbesserung der emotionalen Kompetenz der Teilnehmer, extern geratet durch enge Bezugspersonen. Entgegen unserer Hypothesen bestätigten die Ergebnisse keine signifikante Verbesserung von Ärgerreaktionen bei den Teilnehmern der STARK-Bedingung im Vergleich zur WLKG. Die positiven Therapieeffekte blieben hypothesenkonform über drei Monate hinweg stabil. STARK stellt damit eine vielversprechende, transdiagnostische Intervention für Geflüchtete dar, die möglicherweise als eine niedrigschwellige erste Behandlungsoption in einem phasenbasierten oder gestuften Behandlungsmodell (Stepped Care) umgesetzt werden kann.

Zusammenfassend liefern die vorliegenden Studien erste Hinweise darauf, dass Emotionsregulation auch für traumatisierte afghanische Geflüchtete die vorgeschlagenen zwei Bedingungen von A. G. Harvey et al. (2004) erfüllt, um sich als ein transdiagnostischer Prozess zu qualifizieren. *Studie I* deutet an, dass Schwierigkeiten in der Emotionsregulation in verschiedenen, komorbiden psychischen Störungsbildern präsent sind (d.h. Kriterium I von A. G. Harvey et al., 2004). Die zwei weiteren Studien zielen auf die längsschnittliche Untersuchung der potentiell kausalen Rolle von Emotionsregulation für die Entwicklung bzw. Aufrechterhaltung von psychischen Symptomen ab (d.h. Kriterium II von A. G. Harvey et al., 2004). Während *Studie II* Hinweise auf die negativen Effekte der spezifischen Emotionsregulationsstrategie des Sich-Sorgens v.a. auf (negativen) Affekt gibt, untersucht *Studie III* Emotionsregulation als transdiagnostisches Behandlungskonstrukt. Die therapeutische Arbeit an Emotionsregulation durch das STARK-Programm führte zu einer breiten Symptomreduktion bei den geflüchteten Teilnehmern und bietet damit trotz einiger Limitationen (keine aktive Kontrollgruppe, Emotionsregulation nicht als Mediator getestet) erste Hinweise darauf, dass sich Emotionsregulation auch bei traumatisierten Geflüchteten als ein vielversprechendes transdiagnostisches Behandlungskonstrukt qualifizieren könnte.

Abschließend werden Implikationen für zukünftige Grundlagenforschung zu Emotionsregulation bei traumatisierten Geflüchteten abgeleitet und klinischen Implikationen, die sich aus dieser Arbeit ergeben, vorgestellt. Außerdem wird eine kritische Betrachtung der Forschungsergebnisse vorgenommen und dabei insbesondere auf das Potential und die Limitationen von Forschung im klinischen Routinesetting am Beispiel der drei Studien eingegangen.

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Appendix A:

Supplementary Material *Study I*

Emotion Regulation as a Transdiagnostic Factor in Afghan Refugees

Appendix A

Table A.1

Most Frequently Reported Types of Traumatic Events (N = 74)

	n	%
Being close to death	68	91.9
Lack of shelter	63	85.1
Lack of food and water	61	82.4
Physical assault by a foreign person	55	74.3
Murder of a family member or friend	53	71.6
Combat or exposure to a war-zone	53	71.6
Serious accident, fire or explosion	51	68.9
Murder of stranger or strangers	48	64.9
Unnatural death of a family member or friend	46	62.2
Torture	46	62.2

Table A.2
Correlations Between Relevant Outcome Variables and Covariates

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	-														
2. Time in Germany	-.03	-													
3. Residence status	-.18	-.14	-												
4. Trauma exposure	.35**	-.17	.05	-											
5. ER difficulties (DERS total score)	-.22	.05	.23	.13	-										
6. Nonacceptance (DERS)	.03	-.06	.17	.20	.70**	-									
7. Goals (DERS)	-.16	.10	.18	.13	.83**	.64**	-								
8. Impulse (DERS)	.26*	.09	.26*	.12	.89**	.54**	.74**	-							
9. Awareness (DERS)	-.13	-.14	-.11	-.04	.10	.33**	.23*	.07	-						
10. Strategies (DERS)	-.21	.11	.20	.05	.91**	.62**	.75**	.75**	-.09	-					
11. Clarity (DERS)	.24*	.08	.26*	.07	.81**	.39**	.61**	.65**	.16	.72**	-				
12. PTSD (PCL-5)	-.16	.18	.32**	.22	.60**	.46**	.59**	.61**	-.15	.57**	.41**	-			
13. Depression (GHQ-28)	-.10	.05	.26*	.17	.67**	.48**	.52**	.63**	-.02	.67**	.52**	.63**	-		
14. Anxiety/Insomnia (GHQ-28)	.13	.26*	.34**	.22	.45**	.43**	.50**	.42**	-.20	.39**	.35**	.62**	.45**	-	
15. Social impairment (GHQ-28)	.06	.22	.16	.00	.46**	.22	.42**	.56**	.06	.37**	.29*	.47**	.51**	.36**	-

Note. Residence status (0 = secure; 1 = insecure); ER = emotion regulation; DERS = Difficulties in Emotion Regulation Scale; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version); *$p < .05$, **$p < .01$.

Table A.3
Hierarchical Regression Analyses Predicting Symptom Severities

Variable	R^2 (Adj.)	ΔR^2	*B*	*SE B*	β	*p*
(1) Criterion variable: PTSD (PCL-5)						
Step 1	.16 (.13)	.16				.006
Age			-0.25	0.28	-.10	.386
Time in Germany			0.40	0.20	.22	.048
Residence status			11.67	3.91	.34	.004
Step 2	.26 (.21)	.09				.004
Age			-0.55	0.29	-.22	.059
Time in Germany			0.49	0.19	.27	.013
Residence Status			10.62	3.73	.31	.006
Trauma exposure			1.29	0.44	.33	.004
Step 3	.47 (.43)	.21				<.001
Age			-0.22	0.25	-.09	.390
Time in Germany			0.39	0.16	.22	.018
Residence status			7.47	3.24	.22	.024
Trauma exposure			0.86	0.38	.22	0.29
ER difficulties (DERS)			.30	0.06	.50	<.001
(2) Criterion Variable: Depression (GHQ-28)						
Step 1	.08 (.04)	.08				.131
Age			-0.04	0.11	-.05	.696
Time in Germany			0.06	0.08	.09	.462
Residence status			3.41	1.53	.26	.029
Step 2	.12 (.07)	.04				.069
Age			-0.12	0.12	-.13	.303
Time in Germany			0.08	0.08	.12	.306
Residence status			3.15	1.51	.24	.041
Trauma exposure			0.33	0.18	.23	.069
Step 3	.48 (.44)	.35				<.001
Age			0.04	0.09	.04	.672
Time in Germany			0.04	0.06	.05	.561
Residence status			1.62	1.20	.13	.182
Trauma exposure			0.12	0.14	.08	.408
ER difficulties (DERS)			0.14	0.02	.64	<.001
(3) Criterion Variable: Anxiety/Insomnia (GHQ-28)						
Step 1	.26 (.23)	.26				<.001
Age			0.16	0.08	.22	.040
Time in Germany			0.17	0.05	.33	.002
Residence status			4.33	1.07	.43	<.001
Step 2	.30 (.26)	.04				.060
Age			0.11	0.08	.14	.198
Time in Germany			0.19	0.05	.36	.001
Residence status			4.14	1.06	.41	<.001
Trauma exposure			0.24	0.12	.21	.060
Step 3	.44 (.39)	.14				<.001
Age			0.18	0.08	.25	.019
Time in Germany			0.17	0.05	.32	.001
Residence status			3.40	0.97	.33	.001
Trauma exposure			0.14	0.12	.12	.242
ER difficulties (DERS)			0.07	0.02	.40	<.001

Note. ER = emotion regulation; DERS = Difficulties in Emotion Regulation Scale; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version).

Table A.4

Hierarchical Regression Analyses Predicting Social Impairment

Variable	R^2 (Adj.)	ΔR^2	*B*	*SE B*	β	*p*
Step 1	.10 (.06)	.10				.065
Age			0.07	0.08	.11	.348
Time in Germany			0.12	0.05	.26	.029
Residence status			1.92	1.06	.21	.074
Step 2	.10 (.05)	.00				.978
Age			0.07	0.08	.11	.380
Time in Germany			0.12	0.06	.26	.032
Residence status			1.93	1.07	.21	.077
Trauma exposure			<-0.01	0.13	<-.01	.978
Regression Analysis 1						
Step 3	.28 (.23)	.18				<.001
Age			0.14	0.08	.22	.062
Time in Germany			0.06	0.05	.12	.277
Residence status			0.54	1.02	.06	.595
Trauma exposure			-0.17	0.12	-.17	.160
PTSD (PCL-5)			0.13	0.03	.50	<.001
Step 4	.36 (.30)	.07				.008
Age			0.18	0.07	.27	.019
Time in Germany			0.07	0.05	.14	.193
Residence status			0.52	0.97	.06	.599
Trauma exposure			-0.18	0.12	-.18	.115
PTSD (PCL-5)			0.08	0.04	.30	.028
ER difficulties (DERS)			0.05	0.02	.34	.008
Regression Analysis 2						
Step 3	.33 (.28)	.23				<.001
Age			0.12	0.07	.18	.112
Time in Germany			0.09	0.05	.20	.062
Residence status			0.80	0.96	.09	.410
Trauma exposure			-0.12	0.11	-.12	.285
Depression (GHQ-28)			0.36	0.07	.51	<.001
Step 4	.37 (.31)	.04				.047
Age			0.15	0.07	.23	.043
Time in Germany			0.09	0.05	.19	.067
Residence status			0.72	0.94	.08	.448
Trauma exposure			-0.14	0.11	-.14	.196
Depression (GHQ-28)			0.24	0.09	.34	.014
ER difficulties (DERS)			0.04	0.02	.27	.047

Regression Analysis 3						
Step 3	.16 (.10)	.06				.029
Age			0.05	0.08	.07	.581
Time in Germany			0.07	0.06	.15	.232
Residence status			0.83	1.15	.09	.474
Trauma exposure			-0.07	0.13	-.07	.600
Anxiety/ insomnia (GHQ-28)			0.27	0.12	.30	.029
Step 4	.31 (.25)	.15				<.001
Age			0.15	0.08	.22	.065
Time in Germany			0.09	0.05	.18	.111
Residence status			0.89	1.05	.10	.400
Trauma exposure			-0.13	0.12	-.12	.286
Anxiety/ insomnia (GHQ-28)			0.06	0.12	.07	.609
ER difficulties (DERS)			0.07	0.02	.46	<.001

Note. ER = emotion regulation; DERS = Difficulties in Emotion Regulation Scale; PCL-5 = PTSD Checklist for DSM-5; GHQ-28 = General Health Questionnaire (28 item version). Steps 1 and 2 were identical for all three regression analyses and are therefore only presented once.

Appendix B:

Supplementary Material *Study II*

Daily Worry in Trauma-Exposed Afghan Refugees: Relationship with Affect and Sleep in a Study Using Ecological Momentary Assessment

Appendix B

Table B.1

HLM Parameter Estimates for the Interaction of Worry and Postmigration Stress

Fixed effect: β	Estimates (*SE*)	*t*	*p*
Dependent Variable: Negative Affect$_{d}$ [a]			
Worry $_{d-1}$	-0.11 (0.15)	0.78	.435
Worry $_{pm}$	0.44 (0.11)	3.98	<.001
Negative Affect $_{d-1}$	0.25 (0.09)	2.76	.007
Postmigration Stress $_{d-1}$	-0.05 (0.43)	-0.12	.908
Postmigration Stress $_{pm}$	1.66 (0.80)	2.07	.044
Postmigration Stress $_{d-1}$ * Worry $_{d-1}$	0.07 (0.04)	1.92	.057
Postmigration Stress $_{pm}$ * Worry $_{d-1}$	0.02 (0.01)	1.74	.085
Dependent Variable: Positive Affect$_{d}$ [a]			
Worry $_{d-1}$	0.08 (0.20)	0.38	.706
Worry $_{pm}$	-0.36 (0.11)	-3.22	.003
Positive Affect $_{d-1}$	0.30 (0.09)	3.18	.002
Postmigration Stress $_{d-1}$	-0.15 (0.48)	-0.32	.750
Postmigration Stress $_{pm}$	-1.20 (0.80)	-1.49	.143
Postmigration Stress $_{d-1}$ * Worry $_{d-1}$	-0.09 (0.05)	-1.88	.062
Postmigration Stress $_{pm}$ * Worry $_{d-1}$	-0.01 (0.02)	-0.62	.546
Dependent Variable: Sleep Quality$_{d}$ [b]			
Worry $_{d-1}$	0.19 (0.82)	0.24	.816
Worry $_{pm}$	-0.31 (0.14)	-2.12	.038
Sleep Quality $_{d-1}$	-0.20 (0.14)	-1.48	.156
Postmigration Stress $_{d-1}$	-0.65 (1.99)	-0.32	.747
Postmigration Stress $_{pm}$	-0.17 (1.02)	-0.17	.866
Postmigration Stress $_{d-1}$ * Worry $_{d-1}$	0.29 (0.22)	1.33	.192
Postmigration Stress $_{pm}$ * Worry $_{d-1}$	-0.01 (0.07)	-0.10	.927

Note. d = day; pm = person-mean; [a] number of observations: 166; [b] number of observations: 66.

Appendix C:

Supplementary Material *Study III*

Effectiveness of a Transdiagnostic Group Intervention to Enhance Emotion Regulation in Refugees: A Pilot Randomized Controlled Study

Table C.1

Dimensions for Culturally Sensitive Interventions Addressed in STARC

Dimension	Selected examples of how the dimension is addressed in STARC
Language	- Use of a simple language - Visual, nonverbal material
Person / Goals	- Clarifying the role of the therapist (= Person) and the clients' expectations towards a treatment (= Goals) in an initial clinical interview
Metaphors	- Expressing ideas in culturally relevant visual and verbal forms (e.g., symbols such as a traffic light as an emotional warning system, or an overflowing glass representing hyperarousal and overwhelming emotions)
Content	- Conveying a non-judgmental attitude, encouraging to take the cultural contexts into account before judging a behavior - Making use of group discussions as a method to integrate opinions of the clients' own cultural group
Concept	- Introduction of emotion regulation as the concept of STARC with the help of the metaphor of a rider to reduce stigma: - Clients should learn to control their horse, meaning their emotions, and not be thrown out of the saddle, meaning not being overwhelmed by their own emotions or losing control. For this it is important to get to know one's horse, meaning one's emotions, in order to use an effective riding technique, meaning emotion regulation strategy.
Methods	- Easily accessible, sensible methods for daily life (e.g. audio file with the relaxation technique on the smartphone, treasure box with all relevant skills)
Context	- Increasing social support 1) by delivering the treatment in a group format and 2) by integrating relevant resource persons in the treatment

Table C.2

Most Frequently Reported Types of Traumatic Events (N = 44)

	n	%
Being close to death	42	95.5
Lack of shelter	41	93.2
Lack of food and water	39	88.6
Combat or exposure to a war-zone	36	81.8
Physical assault by a foreign person	34	77.3
Murder of a family member or friend	33	75.0
Torture	31	70.5
Murder of stranger or strangers	31	70.5
Serious accident, fire or explosion	29	65.9
Unnatural death of a family member or friend	27	61.4

Table C.3

Results of the Linear Mixed Effects Model for all Dependent Variables, ITT- and PP-Sample

	Emotion Regulation Difficulties (DERS)			Transdiagnostic Symptoms (GHQ-28)			Posttraumatic Stress Symptoms (PCL-5)			Anger Reactions (DAR-5)			Emotional Competence – External rating (ECQ)		
Fixed parts	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
ITT (*n* = 44)															
Intercept	116.34	4.19	<.001	42.95	2.49	<.001	42.47	2.29	<.001	20.23	2.09	<.001	116.55	4.24	<.001
Group	1.48	5.93	.804	5.59	3.52	.121	6.02	3.24	.070	1.93	2.95	.517	0.68	5.88	.908
Time	2.44	5.71	.672	4.67	3.15	.146	3.67	2.65	.174	0.92	1.98	.644	4.12	4.15	.328
Group x Time	-23.97	8.68	.009	-20.23	4.78	<.001	-14.87	4.07	.001	-4.46	3.04	.150	22.66	6.12	<.001
PP (*n* = 36)															
Intercept	115.89	4.53	<.001	43.28	2.68	<.001	42.63	2.44	<.001	19.76	2.24	<.001	117.78	4.15	<.001
Group	-.26	7.01	.971	5.37	4.15	.203	7.77	3.79	.048	1.87	3.47	.593	-4.57	6.27	.471
Time	2.68	6.00	.658	4.97	3.30	.141	3.76	2.76	.181	0.47	2.03	.817	4.72	4.36	.288
Group x Time	-22.54	9.21	.019	-20.62	5.06	<.001	-15.63	4.21	.001	-3.84	3.11	.226	23.79	6.44	.001

Note. ITT: intention-to-treat; PP: per-protocol.

Table C.4

Long-term Results of the Linear Mixed Effects Model for all Dependent Variables in the STARC Condition, ITT- and PP-Sample

	Emotion Regulation Difficulties (DERS)			Transdiagnostic Symptoms (GHQ-28)			Posttraumatic Stress Symptoms (PCL-5)			Anger Reactions (DAR-5)			Emotional Competence – External rating (ECQ)		
Fixed parts	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
ITT (*n* = 22)															
Intercept	91.29	5.73	<.001	35.20	3.40	<.001	36.77	2.32	<.001	14.25	1.77	<.001	137.82	5.18	<.001
Time (t1)	26.57	6.32	<.001	13.31	4.00	.003	11.72	2.54	<.001	7.91	1.94	.001	-20.59	5.79	.002
Time (t2)	5.05	7.73	.653	-2.26	4.72	.644	0.98	2.88	.740	4.24	2.59	.121	5.16	6.25	.416
PP (*n* = 13)															
Intercept	90.60	6.23	<.001	35.31	3.45	<.001	37.69	2.61	<.001	14.08	2.05	<.001	139.51	5.09	<.001
Time (t1)	26.09	7.33	.003	13.20	4.77	.011	12.85	3.10	.001	7.58	2.34	.007	-23.51	6.53	.002
Time (t2)	3.64	7.20	.624	-1.85	4.69	.701	1.22	3.00	.690	4.39	2.77	.138	6.02	6.78	.385

Note. ITT: intention-to-treat; PP: per-protocol; t1: dummy for pre to follow-up comparison; t2: dummy for post to follow-up comparison.