

**THE EVALUATION OF EXPRESSED SELF-
CONTEMPT:**

A MULTI-METHOD EVALUATION

L'évaluation de l'auto-mépris exprimé: une évaluation multi-
méthodes

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ABSTRACT

Background: Emotions and emotional processing play a central role in daily life as well as in psychotherapy. Self-contempt is a type of maladaptive emotion in which individuals evaluate themselves as lower than their ideal. Self-contempt may be a frequent but overlooked clinical phenomenon, associated with a number of psychological problems such as less resilience, more intense symptoms, increased levels of sadness and shame. Emotional processing is important in diverse psychopathologies and self-contempt interferes with productive emotional processing.

Objectives: The aim of this thesis is to investigate self-contempt with a multimodal methodology. Our first empirical study aims to develop a 5-point Likert scale to evaluate expressed self-contempt and investigate the validity and reliability of this scale in three different samples and settings. Our second empirical study aims to explore emotional processing in daily life via ecological momentary assessment (EMA) and compare it to emotional processing assessed with the Classification of Affective Meaning States (CAMS) in an analogue psychotherapy session involving a self-critical two-chair dialogue. Finally, the aim of our third empirical study is to explore the validation of a neurobehavioral assessment of expressed self-contempt combining the previously developed scale and functional magnetic resonance imaging (fMRI).

Methods: Across our empirical studies, an analogue psychotherapy session aimed to mimic a psychotherapy session in healthy controls. This may be useful to get an idea of what might happen in psychotherapy and is a way to mimic psychotherapy in individuals who are not currently undergoing any. In the analogue psychotherapy session, we used a self-critical two-chair dialogue as an emotion-eliciting task potentially increasing the expression of self-

contemptuous emotional content. For our first objective, we used the newly developed expressed self-contempt rating scale on three groups of participants that were healthy controls (N=20), patients with borderline personality disorder (N=21) and patients with major depressive disorder (N=20). For our second objective, N=42 healthy controls participated in an analogue psychotherapy session including a self-critical two-chair dialogue and responded to a one-week period of EMA using a smartphone. We compared daily life EMA self-reports and observer-rated CAMS results from the analogue psychotherapy session to compare emotional processing in both settings. For our third objective, N=28 healthy controls participated in two analogue psychotherapy sessions including a self-critical two-chair dialogue, from which individualized self-contemptuous stimuli were extracted, and then underwent two fMRIs during which they were presented with those same individualized self-contemptuous stimuli.

Results: The results of our first empirical study showed that expressed self-contempt was higher in the healthy control group, which was in a self-critical two-chair dialogue setting, than in the patients groups who both were in a first session of psychotherapy. The results of our second empirical study showed that the more participants reported fear and loneliness in their daily life, the more they were able to move through early expressions of distress toward deeper transformative emotional experiences when they participated in a self-critical two-chair dialogue. The exploratory results of our third empirical study showed a trend activation in the insula when self-contempt expressed in the analogue psychotherapy session was used in the fMRI data analysis.

Discussion: Expressed self-contempt assessment using our newly-developed scale is better used in a self-critical two-chair dialogue setting. Emotional processing can be assessed in daily life using EMA and compared to emotional processing in an analogue psychotherapy session including a self-critical two-chair dialogue. A neurobehavioral assessment

investigating neural activation associated with expressed self-contempt from a self-critical two-chair dialogue providing individualized self-contemptuous stimuli is feasible and seems promising methodologically to further explore and better understand expressed self-contempt. Our multi-method approach might bring new elements and knowledge in emotion research, as self-contempt is still a rather understudied emotion. Indeed, the exploration of emotional processing and self-contempt across the three empirical studies of this thesis tend to show that, on the one hand, self-contempt is useful to assess and to work on in psychotherapy; on the other hand, expanding the use of daily-life assessment is also promising where emotional processing's evaluation is concerned. This thesis mainly contributes to the development, validation, and exploration of promising tools or designs to evaluate and assess self-contempt. This thesis has limitations, including the predominant analysis of healthy controls and the absence of self-contempt measurement in our second empirical study. Our results should be replicated and extended to further examine the pertinence and feasibility of assessing emotional processing and self-contempt, especially in clinical populations and in EMA designs. This may lead towards a robust assessment of self-contempt. Having a reliable measure of self-contempt may be useful for therapists, who would have more information on their patients' negative emotions and specifically self-contempt, as well as an opportunity to adapt treatment accordingly. Patients, in turn, may benefit from potentially reducing their self-contempt through working on it in psychotherapy.

RÉSUMÉ

Contexte: Les émotions et le traitement des émotions jouent un rôle central dans la vie quotidienne ainsi qu'en psychothérapie. L'auto-mépris est une sorte d'émotion inadaptée dans laquelle une personne s'évalue comme inférieure à son idéal. L'auto-mépris pourrait être un phénomène fréquent mais négligé, associé à un certain nombre de problèmes psychologiques tels qu'une moindre résilience, des symptômes plus intenses, plus de tristesse et plus de honte.

Le traitement des émotions est important dans diverses psychopathologies et l'auto-mépris interfère avec le traitement productif des émotions.

Objectifs : L'objectif de cette thèse est d'étudier l'auto-mépris à l'aide d'une méthodologie multimodale. Notre premier travail empirique vise à développer une échelle de Likert en 5 points pour évaluer l'auto-mépris exprimé et à étudier la fiabilité de cette échelle dans trois échantillons et contextes différents. Notre deuxième étude empirique vise à explorer le traitement des émotions dans la vie quotidienne par le biais de l'évaluation écologique momentanée (EMA) et à le comparer au traitement des émotions évalué par la Classification of Affective Meaning States (CAMS) lors d'une séance analogue à une session de psychothérapie impliquant un dialogue à deux chaises auto-critique. Enfin, le but de notre troisième étude expérimentale est d'explorer la validation d'une évaluation neurocomportementale de l'auto-mépris combinant l'échelle développée précédemment et l'imagerie par résonance magnétique fonctionnelle (IRMf).

Méthodes : Dans l'ensemble de nos études empiriques, une séance analogue à une session de psychothérapie visait à imiter une séance de psychothérapie chez des contrôles sains. Cela peut être utile pour avoir une idée de ce qui pourrait se passer en psychothérapie et c'est une façon d'imiter la psychothérapie chez des individus qui n'en suivent pas actuellement. Dans la séance analogue à une session psychothérapie, nous avons utilisé un dialogue auto-critique à deux chaises comme tâche suscitant des émotions, ce qui pourrait augmenter l'expression de contenu émotionnel auto-méprisant. Pour notre premier objectif, nous avons utilisé l'échelle d'évaluation de l'auto-mépris nouvellement développée sur trois groupes de participant-e-s qui étaient des contrôles sain-e-s (N=20), des patient-e-s avec un trouble de la personnalité borderline (N=21) et des patient-e-s avec un trouble dépressif majeur (N=20). Pour notre deuxième objectif, N=42 contrôles sain-e-s ont participé à une séance analogue à une session de psychothérapie comprenant un dialogue à deux chaises auto-critique et ont répondu à une

évaluation écologique momentanée (EMA) durant une semaine en utilisant un smartphone. Nous avons comparé les auto-évaluations EMA de la vie quotidienne et les résultats évalués avec la CAMS par l'observateur-trice de la session analogue à une session de psychothérapie pour comparer le traitement des émotions dans les deux contextes. Pour notre troisième objectif, N = 28 contrôles sain-e-s ont participé à deux séances analogues à des sessions de psychothérapie incluant un dialogue à deux chaises auto-critique, duquel des stimuli auto-méprisants individualisés ont été extraits, puis ont participé à deux séances d'IRMf au cours desquelles ces mêmes stimuli auto-méprisants individualisés leur ont été présentés.

Résultats : Les résultats de notre première étude empirique ont montré que l'auto-mépris exprimé était plus élevé dans le groupe de contrôles sain-e-s, qui était dans un contexte de dialogue à deux chaises auto-critique, que dans les groupes de patient-e-s qui étaient tous deux dans une première session de psychothérapie. Les résultats de notre deuxième étude empirique montrent que plus les participant-e-s faisaient état de peur et de solitude dans leur vie quotidienne, plus ils ou elles étaient capables de passer des expressions de détresse générale précoce à des expériences émotionnelles transformatrices plus profondes lorsqu'ils ou elles participaient à un dialogue à deux chaises auto-critique. Les résultats exploratoires de notre troisième étude empirique ont montré une activation tendancielle dans l'insula lorsque l'auto-mépris exprimé dans la séance analogue à une session de psychothérapie a été utilisé dans l'analyse des données de l'IRMf.

Discussion : L'évaluation de l'auto-mépris exprimé à l'aide de notre nouvelle échelle est mieux utilisée dans le cadre d'un dialogue à deux chaises auto-critique. Le traitement des émotions peut être évalué dans la vie quotidienne à l'aide de l'EMA et comparé au traitement des émotions dans une session analogue à une session de psychothérapie, spécifiquement dans un dialogue à deux chaises auto-critique. Une évaluation neurocomportementale associée à une session analogue à une session de psychothérapie comportant un dialogue à deux chaises

fournissant des stimuli individualisés est faisable et semble prometteuse d'un point de vue méthodologique pour explorer et mieux comprendre l'auto-mépris. Notre approche multi-méthodes pourrait apporter de nouveaux éléments et de nouvelles connaissances dans la recherche sur les émotions, car le mépris de soi est encore une émotion peu étudiée. En effet, l'exploration du traitement des émotions et de l'auto-mépris à travers les trois travaux empiriques de cette thèse tend à montrer que, d'une part, l'auto-mépris est utile à évaluer et à travailler en psychothérapie ; d'autre part, l'extension de l'utilisation de l'évaluation de la vie quotidienne est également prometteuse en ce qui concerne l'évaluation du traitement des émotions. Cette thèse contribue principalement au développement, à la validation et à l'exploration d'outils et de design prometteurs pour l'évaluation de l'auto-mépris. Cette thèse a des limites, notamment l'analyse prédominante de contrôles sains et l'absence de mesure de l'auto-mépris dans notre deuxième étude empirique. Nos résultats devraient être reproduits et étendus afin d'examiner plus avant la pertinence et la faisabilité de l'évaluation du traitement des émotions et de l'auto-mépris, en particulier dans les populations cliniques et dans des designs utilisant l'EMA. Cela pourrait conduire à une évaluation robuste de l'auto-mépris. Disposer d'une mesure fiable de l'auto-mépris pourrait être utile aux thérapeutes, qui disposeraient de plus d'informations sur les émotions négatives et spécifiquement l'auto-mépris de leurs patient-e-s ainsi que la possibilité d'adapter le traitement en conséquence. Les patient-e-s, à leur tour, pourraient bénéficier d'une réduction potentielle de leur auto-mépris en le travaillant en psychothérapie.

CHAPTER 1: INTRODUCTION

Recently, self-contempt as a maladaptive emotion has gained interest in psychotherapy and emotion research (Kramer & Pascual-Leone, 2016; Kramer, Renevey, et al., 2020; Sallin et al., 2021; Whelton & Greenberg, 2005, p. 32). In emotion research, different theories exist, in particular a categorical and a dimensional approach. We will briefly review them in order to lay the foundations of emotion theory. This will allow us to move towards a better definition of self-contempt as a maladaptive emotion in the rest of this work. Indeed, in order to be able to state that self-contempt is a maladaptive emotion, it may be wise to first look at how emotions may be defined. We will also explore where contempt and self-contempt stand in these theories, which will be useful to better situate and define self-contempt in a second step.

According to the *categorical* theory, there are six universal basic emotions: surprise, fear, disgust, anger, happiness and sadness, whose facial expression and recognition are an important research interest (Ekman & Friesen, 1986, 2003). Basic or discrete emotions are sometimes referred to as primary affects; they involve direct reactions to a situation, which derive from evolutionary as well as social learnings (Ekman & Cordaro, 2011). Secondary emotions or affects, thus, are reactions to a basic, primary or discrete emotion (Rodríguez-Torres et al., 2005). In the categorical theory, contempt appears in Tomkins and McCarter's study from 1964 in a category called "contempt-disgust", listed alongside "interest-excitement", "enjoyment-joy", "surprise-startle", "distress-anguish", "fear-terror", "shame-humiliation" and "anger-rage" (Tomkins & McCarter, 1964). Contempt is a basic emotion, according to the categorical theory, because it entails facial expressions that are universal (Ekman & Friesen, 1986; Matsumoto, 1992).

According to the *dimensional* theory, emotions present dimensions including valence and arousal (Russell, 1980), pleasantness – unpleasantness, calm – excitement, relaxation – tension (Wundt, 1924) or attention – rejection and sleep – tension (Schlosberg, 1952, 1954) to name a few. Arousal, for example, refers to the continuum of intensity to which emotion is felt, whereas valence refers to whether a situation or stimuli is pleasant or not on a continuum from pleasant to unpleasant (Bradley & Lang, 1994). Emotions are thus experienced on different continuums, ranging from mild to strong (e.g. mild anger might be frustration and strong anger might be rage) (Izard, 1991; Watson, 2000). These continuums are sometimes considered to be independent and sometimes not (Russell, 1980), which implies that emotion dimensions may be interrelated and can overlap. For example, Russell (1980) presents a circumplex model of emotions in which happiness and anger can be placed somewhere on the continuum ranging from relaxed to tense (Russell, 1980). Likely, happiness may be closer to relaxed and anger to tense. In the dimensional theory, contempt is not a basic emotion because it is rather a blend of disgust and anger (Prinz, 2007) or derives from them (Gervais & Fessler, 2017; Lazarus, 1991a). Furthermore, contempt's social and moral intrinsic aspects make it difficult to classify as basic emotion (Sander & Scherer, 2009). Self-contempt could be defined as a self-reflexive emotion, that develop later than basic emotions because they require higher cognitive functions (Lewis, 2000), though it is thought that self-reflexive emotions are not identifiable by facial expressions (Sander & Scherer, 2009) which remains to be established for self-contempt. Indeed, because facial expressions of contempt are identifiable (Ekman & Friesen, 1986), there is no reason to assume that facial expressions of self-contempt are not. Indeed, self-contempt as a tendency to push the despicable or immoral self away (Greenberg & Iwakabe, 2011; Kramer, Beuchat, et al., 2020) might be a form of harsh, rejecting anger towards the self (Kramer & Pascual-Leone, 2016; Pascual-Leone, 2018) whose facial recognition may be possible.

Both the categorical and dimensional approaches are of interest and are possible to combine. Indeed, Scherer (2005) “decided to arrange a number of frequently used and theoretically interesting emotion categories in a two-dimensional space” (Scherer, 2005, p. 722). This two-dimensional space intends to be less arbitrary than purely categorical theories by assessing the intensity of emotions or related feelings, yet still using reference to basic emotions (Sacharin et al., 2012; Scherer, 2005). This approach might be slightly complex but can improve sensitivity in emotion measurement and understanding. Of note, a third major emotion theory in emotion, usually referred to as *appraisal theories* postulates that emotions derive from our appraisals (i.e. evaluations) of events by relating features of both external situations and internal resources (Scherer et al., 2001). This one also may be combined to the categorical and dimensional approaches.

As for any emotion, or even the concept of emotion itself, defining self-contempt is not an easy task. What we know, though, is that self-contempt plays a role in several aspects of life, be it daily life or clinical context. Indeed, self-contempt is higher in students with an elevated score of criticism, who also seem less resilient to their criticism (Whelton & Greenberg, 2005), it is associated with borderline symptomatology (Sallin et al., 2021), predicts suicidality (Rüsch et al., 2019) and more self-stigma (Rüsch et al., 2014). Patients with major depressive disorder show more self-contempt, but less contempt towards others (Green et al., 2013; Zahn et al., 2015). Self-contempt seems to be important also in eating disorders (Lázaro et al., 2011; Trallero et al., 2005).

For the rest of this thesis, we will consider self-contempt as an emotion. Specifically, we will define self-contempt as an emotion related to an intense feeling of self-deficiency implying anger and disgust towards the self as well as a self-rejection associated with emotional, cognitive and potentially biological activations and repercussions. In self-contempt, the self may be perceived or treated as disgusting and unworthy. This in turn may

negatively impact self-esteem or self-compassion for instance, which suggests intra as well as interpersonal difficulties and accounts for the potential clinical importance of self-contempt as well as its importance in psychotherapy research. The diverse structural and functional aspects of self-contempt in our definition contribute to the argument of assessing self-contempt in a multi-method manner. This is in line with the definition by Kramer, Renevey et al. (2020) to whom the “rejecting anger towards oneself” (Kramer, Renevey, et al., 2020, p. 210) that is self-contempt should be assessed using a plurality of methods (Kramer, Renevey, et al., 2020). Self-contempt may play a role in emotional processing. Emotional processing in this thesis will refer to “how emotion productively changes” (Pascual-Leone, 2018, p. 166). Specifically, we will consider emotional processing as the process inside which an emotion turns into another emotion and as a potential “causal mechanism of change in psychotherapy” (Pascual-Leone, 2018, p. 179). Even more specifically, because we conceptualize self-contempt as a maladaptive emotion, we will argue that the emotional processing of self-contempt towards a more adaptive emotion may be a mechanism of change in psychotherapy.

In light of the previously discussed points, this thesis aims to explore self-contempt - and thus emotional processing as self-contempt might interfere with emotional processing - with diverse and multiple methods. Precisely, the first aim of this thesis is to present the development of the *expressed self-contempt rating scale*, a 5-point Likert scale that we developed from a previous 3-point one (Kramer & Pascual-Leone, 2016). This scale, used on three different groups of participants that are healthy controls, patients with borderline personality disorder and patients with major depressive disorder, is useful in the assessment and evaluation of self-contempt. Having a reliable measure of self-contempt is important, be it in research or in clinical work. It should be noted that the two-chair dialogue (Greenberg, 1979), an emotion-inducing experiential task, is used in one of the three groups (healthy controls) to enhance emotional processing and self-contemptuous words as well as to produce

an *analogue psychotherapy session* to mimic a psychotherapy session given that healthy controls are not undergoing psychotherapy. Given that self-criticism is associated with self-contempt (Whelton & Greenberg, 2005), using a self-critical two-chair dialogue seems relevant as it may enhance self-contempt.

The second aim of this thesis is to explore emotional processing by comparing an analogue psychotherapy session, using a self-critical two-chair dialogue and the Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005), with daily life, in which emotional responses are assessed using an ecological momentary assessment (EMA). This aims to investigate whether it is theoretically possible to compare an analogue psychotherapy session and daily life on the one hand and on the other, whether EMA is an adapted tool to use as a complement in clinical work or prevention / intervention programs related to emotional processing. Specifically, we aim to explore the use of EMA concerning emotional processing and its comparison with emotional processing in an analogue psychotherapy session. It is important to explore whether emotional processing may be assessed in daily life and compared with an analogue psychotherapy session in a satisfactory manner. This might be useful in order to be able to extend this to self-contempt, as self-contempt may be part of emotional processing.

The third aim of this thesis is to add to previous work that explores self-contempt in an integrated neurobehavioral design. Again, the two-chair dialogue is important in this third aim as it used in an analogue psychotherapy session with healthy controls to elicit individualized self-contemptuous stimuli (words) and later project them to the healthy controls in a functional magnetic resonance imaging (fMRI) environment. fMRI is a method of measuring brain activity by detecting changes in blood flow, specifically by using a blood-oxygen-level dependent (BOLD) contrast. An increase in BOLD contrast reflects an increase in neural activity (Logothetis et al., 2001), which means that there is an increase in blood flow to a

region of the brain when it is used. Our objective is thus to observe neurofunctional activation when healthy controls are confronted to their individualized self-contemptuous stimuli extracted from a self-critical two-chair dialogue. We specifically aim to analyse neurofunctional activation by comparing the neurofunctional activation when healthy controls are exposed to their individualized self-contemptuous stimuli in the fMRI scanner with when they are exposed to non-individualized negative stimuli. In the framework of the exploration of self-contempt as an emotion and its role in emotional processing, a higher activation in brain regions associated to emotions when healthy controls are exposed to their individualized self-contemptuous stimuli compared to non-individualized negative stimuli is interesting to investigate. We also aim to do the same comparison with the addition of expressed self-contempt scores, coded with our scale in the two-chair dialogue, to the fMRI data analysis. This may prove useful to investigate whether the level of expressed self-contempt in an analogue psychotherapy session may be related to an increase in neurofunctional activity when healthy controls see their self-contemptuous individualized stimuli in the fMRI assessment. A higher level of expressed self-contempt in an analogue psychotherapy session may be associated to a greater neurofunctional activation in brain regions associated to emotions, which we will describe in section 2.3, when healthy controls see their own individualized self-contemptuous stimuli as compared to when they see non-individualized negative stimuli. This would contribute to our knowledge concerning self-contempt as an emotion. Furthermore, our design combining an analogue psychotherapy session including a two-chair dialogue and an fMRI may prove useful for future psychotherapy research on emotions and in clinical populations by establishing a possible link between what happens in a self-critical two-chair dialogue in an analogue psychotherapy session and brain activation. Comparing individualized self-contemptuous stimuli to non-individualized negative ones may also provide information on the pertinence of using individualized stimuli in neurobehavioral

psychotherapy research. By doing this, we thus also aim to provide a proof of concept of our neurobehavioral design in the investigation of self-contempt.

This thesis exists in the framework of a larger research project that will be described in the methods (chapter 4). This project, which focuses on borderline personality disorder, is ongoing in the context of psychotherapy research, in which this thesis takes place. The main idea of this thesis is to investigate emotional processing, self-contempt and change thereof in psychotherapy research, with a slight focus on borderline personality disorder, as it is our theoretical group of interest. Interestingly, the newest revision of the international classification of diseases (11th ed.; ICD-11; World Health Organization, 2019) includes an “inadequate, disgusting, contemptible view of the self” (Bach & First, 2018; World Health Organization, 2019) as part of the borderline personality disorder symptomatology, which emphasizes the relevance of studying self-contempt in this population. In order to investigate clinically significant elements in self-contempt and emotional processing, we use a broad and complete methodology including a scale, EMA and fMRI. Our multi-modal and innovative methodology might allow us to collect informative content on diverse dimensions of self-contempt, yet, it is quite complex and new. This implies that exploring and validating part of it in a non-clinical population is important as a first step of investigation.

A theoretical background will follow this introduction, which is chapter 1. Chapter 2, thus, will explore emotions, their definitions, their measurements, their neuroscientific substrates, their expressions, as well as mechanisms of change and emotional processing. In chapter 2, we will also briefly review contempt, which will lead us to self-contempt. We will then present our aims and hypotheses in chapter 3 and our methods in chapter 4. Our first empirical study will be presented in chapter 5, followed by our second empirical study described in chapter 6. Then, we will detail our third empirical study in chapter 7. We will

discuss the results, limitations and future perspectives in chapter 8, while we will conclude this thesis in chapter 9.

CHAPTER 2: THEORETICAL BACKGROUND

2.1 Different models and theories of emotions

To date, while we have seen that self-contempt as an emotion is gaining interest in psychotherapy research, self-contempt may not be fully established as an emotion either in the scientific literature or in the general population. When someone is asked what sadness or anger is, they are likely to automatically respond "an emotion". This may not be so obvious about self-contempt. However, if the same person is asked to define what an emotion is, they are not likely to answer with such ease. This means that defining emotions is not an easy task. We should note that the concept of emotion does not have one single definition. Interestingly, what is intrinsic to emotion's definition is its dynamic nature. Etymologically, emotion comes from the French word *émouvoir* which itself comes from the old French word *motion*, which means movement (Larousse, n.d.); it was defined in the 17th century as an extraordinary movement which agitates the body or mind and which disturbs the temperament or state of mind (Robert, n.d.). This thesis will also consider emotions as dynamic and in interaction with cognition as well as with environmental and personal experience.

It is possible that emotions' dynamic and fluid nature has added to the difficulty of defining them and grasping exactly what characterises and composes them. Since we will consider self-contempt as an emotion in the rest of this work, it seems important to review the different models and theories of emotions that exist. This will allow us to have a better idea of what emotions are, what they consist of, and how self-contempt could be one of them. Furthermore, exploring the diverse definitions and models of emotions is relevant in the

framework of this thesis because of our focus on multimethod evaluation of self-contempt. The richness of the historical (and partly contemporary, as it is not entirely resolved today) debate on defining what emotions are and where they come from could be a reflection of the fact that emotions are complex and dynamic, which adds to the difficulty of defining them. In turn, this adds to the difficulty of evaluating and assessing emotions. Exploring and reviewing how emotions imply diverse processes and components historically discussed in several different manners may also be important towards defining an appropriate way of evaluating and assessing them in a multimodal manner.

Historically, emotions have been argued to be an expression with a purpose of survival and a functional role linked to evolution and natural selection (Darwin, 1872; Hess & Thibault, 2009). For behaviourist and psychology professor Nico Frijda, emotions may be defined as being part of a process which output is the expression of emotions (Frijda, 1986). As it includes specified psychological mechanisms that consist of identifying and processing stimuli, the process is therefore psychological (Frijda, 1986; Frijda & Zeelenberg, 2001). How the human or animal coordinates these stimuli with actions is important in that emotions are “changes in action readiness” (Frijda, 1986, p. 5). Emotions are action tendencies, which themselves are the tendencies to express or suppress a behaviour according to a situation and become action readiness when a situation which requires a reaction occurs (Frijda, 1986; Lazarus, 1991b). There are different modes of action readiness which do not apply to each and every emotion, but only to basic emotions (which involve direct reactions to a situation as opposed to secondary emotions which are themselves reactions to basic emotions) and involve dimensions such as pleasantness and unpleasantness (Frijda et al., 1989). For behaviourist psychologist Richard Lazarus, emotions also imply goals and appear in a relevant manner towards these goals (Lazarus, 1991a): for instance, contempt implies rejection as a mode of action readiness, as can other emotions; but “it is the object that

provides the specificity of contempt” (Frijda, 1986, p. 73). This means that several emotions may imply rejection as their mode of action readiness, including anger or disgust for example, but in a different manner than contempt, more enduring over time for example. This furthermore means that emotions involve several elements that influence their expression as well as the feelings that may be associated with them, which in turn may influence how we define and categorize emotions.

For experimental psychologist and philosopher William James and physiologist Carl Lange, emotions find their origin in body changes (James, 1884, 1894; Lange, 1885). To James and Lange, emotions derive from a bodily reaction, itself deriving from a stimulus (James, 1884; Lange, 1885). This bodily reaction, in turn, induces an emotion (Hegarty et al., 2015; James, 1894; Lange, 1885). The *James-Lange theory* named after its two creators postulates that emotions are induced by bodily sensations and specifically by variations in the peripheral nervous system, which is why this model is called “peripheral” (Sander & Scherer, 2014). For physiologist Walter Cannon, emotions come from the processing of a stimuli in the thalamus (Cannon, 1987), in which case “the quasi-emotional behaviour consists of both somatic and visceral activities [...]. Both appear to be the result of the activation of intimately related central mechanisms; they are not separable and together form an integrated reaction” (Bard, 1928, pp. 509-510). This implies that, to them, bodily changes (specifically visceral changes) contribute to emotions, but not as principal determinant as was postulated by James and Lange. Cannon and Bard’s model is called “centralist” because it assumes that emotions come from the central nervous system (Coppin & Sander, 2016). This first debate on the somatic origin of emotions is interesting in that it shows the historical complexity of defining emotions, where they come from and how they may function.

Another element that may be complex to establish is the difference between emotions and feelings. Differentiating emotions from feelings may seem difficult from a semantic point

of view as both terms are commonly used together (e.g. saying that someone *feels* sad or angry), emotions may be considered as “a shorthand for *feeling of emotion*” as stated by neurologist and psychologist Antonio Damasio (Damasio, 2000, p. 15). On the contrary, psychology professor Lisa Barrett argues that emotions are constructed *by feelings* through sensory inputs and past experiences (Barrett, 2017). In the first case, individuals directly feel an emotion, meaning that they directly embody the experience, whereas in the second case a feeling may induce an emotion, meaning that bodily sensations play a role in determining which emotion may occur in a specific situation. For psychology professor Paul Ekman, emotions also derive from the body, but from facial expressions (Ekman et al., 1983) rather than bodily or visceral changes. Concerning the link between emotions and cognitions, Damasio (2006) states that the perception of emotion is at the core of what humans have called the soul, or the spirit, for centuries (Damasio, 2006). He also states that “emotion is integral to the processes of reasoning and decision making, for worse or for better” (Damasio, 2000, p. 13). This implies that emotions and feelings may be of prime importance in cognitive processes. Social psychologist Robert Zajonc, on the contrary, states that “affect and cognitions are under the control of separate and partially independent systems” (Zajonc, 1980, p. 151), clearly separating emotions and cognitions, whereas the opposite view, or the fact that “cognition and emotion are usually fused in nature” (Lazarus, 1982, p. 1019) has also been supported. Concerning this last argument, we will follow Emotion-focused therapy’s framework in which emotions derive from both biological and cognitive learnings and are thus associated to one another as well as being adaptive and connected to human needs (Greenberg, 2015; Pascual-Leone & Greenberg, 2020).

We will furthermore argue that personality, personal experience, cognitions, or the person’s state at a precise moment may influence emotions as well as their expression. For example, ruminations can prolong emotions and depressive episodes, and they are correlated

with intensity and duration of emotions (Nolen-Hoeksema, 1991; Verduyn & Lavrijsen, 2015). Thus, we will also argue that emotions fluctuate, change in intensity, turn into other emotions, and can be different depending on the person and the context. While this may apply to other emotions, we will use anger as an example: what makes someone angry does not necessarily apply to others. It also seems difficult to establish whether this anger is felt similarly across individuals or whether each individual has its own idea of what anger is according to what they have associated it with. Then, this anger may also be expressed differently depending on the person expressing it, their personality, the context in which this anger is expressed and to whom it is directed. It is likely that a person will not express anger in the same way in a private setting as in a professional setting, just as it is likely that a person will not express anger in exactly the same way as another person. This is important to highlight because of our multimethod evaluation of self-contempt, as it implies that knowing exactly what is measured when diverse emotions are felt or expressed by different persons and in different contexts may prove difficult and probably requires special attention. What we learned from these previous debates is that emotions seem crucial in life, be it animal or human, in daily life or in a clinical context. Yet, they are difficult to define and above all seem constituted of diverse elements that may interplay and should be considered when defining emotions as well as when measuring them.

The major (i.e., categorical, dimensional and appraisal) theories of emotions agree on one aspect of defining emotions, which is that emotions comprise multiple components (Coppin & Sander, 2016). These components are listed by Coppin & Sander (2016) as expression, action tendency, bodily reaction, feeling, and appraisal; and the authors state that they appear to be useful in both defining and measuring emotions (Coppin & Sander, 2016; Mauss & Robinson, 2009; Sander et al., 2005). Each of these components is associated with organismic subsystems and specific function of emotion, as explained by Sander et al. (2005).

Expression is associated to the *action* sympathetic nervous system (SNS) and serves a function of communication and behavioural intention; action tendency is associated to the *executive* central nervous system and serves a purpose of preparation of actions (Sander et al., 2005). Bodily reaction serves a purpose of system regulation and is associated with the *support* systems including the central nervous system (CNS), neuro-endocrine system (NES) and autonomic nervous system (ANS) (Sander et al., 2005). Feeling is associated with the *monitor* system of the CNS and plays a role in monitoring the interaction between organism and environment. Finally, appraisal is associated with *information processing* in the CNS and serves a function of evaluating objects and events in cognitive terms (see Sander et al., 2005 for a complete discussion on components. Take a look at Table 1, p.318 in their work, for an explanatory table of relationships between components of emotion, their functions and associated subsystems). Emotions thus seem to include components that are motor (expression), motivational (action tendency), regulatory (bodily reaction), subjective monitoring (feeling) and cognitive evaluation (appraisal). While emotional expressions can be measured with observer reports and experience with self-reports, which are valid measures in spite of their biases, certain components such as action tendency are more difficult to measure and this is where neurobehavioral assessments can be of great assistance (Sander et al., 2005). Coppin & Sander (2016) precise that, in addition to this, emotions are rather quick and limited in time (Coppin & Sander, 2016). This may also be important to consider when measuring emotions, in order to know what we measure more precisely. Overall, what Coppin & Sander (2016), Mauss & Robinson (2009) and Sander et al. (2005) put forward is the importance of considering emotions as consisting of various elements which must be considered when measuring emotions (Coppin & Sander, 2016; Mauss & Robinson, 2009; Sander et al., 2005). This thesis, by investigating diverse methods related to emotion measurement and their validation, participates in this effort.

2.2 Measurement of emotions

Because part of this thesis concerns the validation of an expressed self-contempt rating scale, it seems useful to review pertinent tools to measure emotions. We have seen that properly establishing what emotions are and where they come from is not that easy, which implies that their measurement may not be either. Interesting tools exist and are important to mention. In the framework of this thesis, we will only briefly explore tools that may be relevant to our study. For an extended work on emotion measurement, see Meiselman (2016). Across the three empirical studies constituting this thesis we used our expressed self-contempt rating scale that includes evaluating verbal, para-verbal and non-verbal expressions of emotion as well as fMRI and EMA assessments, which is why we will focus on these methods specifically and mention other methods when they may be necessary for contextualisation.

2.2.1 Facial expressions

Historically, emotions were first measured through the analysis of facial expressions. The Facial Action Coding System (FACS; Ekman & Friesen, 1978) allows describing facial expressions of basic emotions by measuring facial movement in muscular terms as well as the strength, repetitive patterns and voluntary or involuntary expression of said emotion (Ekman & Friesen, 1978). The FACS allowed Ekman and Friesen to assert that a facial expression of contempt exists and is universally recognized (Ekman & Friesen, 1986; Ekman & Heider, 1988), making it an emotion *per se*. The FACS is an observer-rated technique based on video analysis and rating, allowing discreet observation; the FACS estimates the symmetry and asymmetry of emotional expressions, meaning that the FACS might be more relevant for certain emotions (such as contempt) whose asymmetrical expression is important. Another method what may be used to measure facial expressions of emotions is Electromyogram (EMG). EMG measurement is interesting because it allows measuring facial expressions even

when they are not observable with the naked eye, though placement of required captors on the face might disturb facial movements (Coppin & Sander, 2016). EMG allows discriminating emotions in a precise manner and can help identifying relevant muscles activation related to emotions (Fridlund et al., 1984), such as the *corrugator supercilli*, *zygomaticus* and *levator labii superioris* (Coppin & Sander, 2016; Vrana, 1993). For example, it seems that smiles can mask other emotions, including contempt in which activation of the *levator labii superioris* can be masked by activation of the *zygomaticus* (Inzelberg et al., 2018). To address limitations linked to facial EMG, specifically the intrusiveness of face captors, alternative methods appeared. An alternative method to assess facial expressions of emotions argued to be as efficient as EMG but without the constraint of applying captors to the subject's face is automated facial expression analysis, which uses computer vision on coding systems such as the FACS (Cohn & Kanade, 2007). The Automated Facial Expression Recognition System (AFERS; Ryan et al., 2009) for instance, is based on the FACS and is able to analyse seven universal emotions that are disgust, fear, anger, contempt, sadness, surprise and happiness in an efficient and objective manner (Ryan et al., 2009). While computer techniques such as the AFERS may have certain advantages in measuring facial expressions such as consistency and objectivity in rating, human experience, especially if well trained, may still be useful and able to discriminate elements that computer may not be able to, based on clinical knowledge for example, or sensitive interpretation of context and situations. Besides facial expressions, emotions also come through vocal characteristics, such as vocal tone, volume, vibration; as well as through the verbal content expressed, both vocal and verbal characteristics being accurate in identifying emotions (Jacob-Dazarola et al., 2016). Because our empirical studies partly use both our expressed self-contempt rating scale and the Classification of Affective-Meaning States (CAMS; Pascual-Leone & Greenberg, 2005 see section 2.2.4) that use verbal, non-verbal and para-verbal manifestations of emotions, we will now briefly discuss these.

2.2.2 Verbal, non-verbal and para-verbal manifestations

Feeling an emotion induces a modification in vocal qualities, which is perceived and interpreted by the listener (Sander & Scherer, 2014). Indeed, humans adapt their vocal behaviours according to which emotions they are feeling and expressing, and other humans are able to interpret these adaptations quite successfully (Johnstone & Scherer, 2000). The EMOvoice (Vogt et al., 2008) framework, for instance, allows recognizing emotions based on emotional speech by deconstructing speech qualities and analysing its features such as intensity, pitch and frequency (Jacob-Dazarola et al., 2016; Vogt et al., 2008). Body movement as well as postures can also convey meaning in what regards emotions. Posture, for example, seems to be part of the emotion behaviour relevant to expressing and recognizing pride, which is rather difficult to identify with facial expressions only (Stepper & Strack, 1993; Tracy & Robins, 2004a, 2004b). Tools exist to investigate body movement and postures related to emotional expressions, such as computer-generated mannequin figures used to explore whether individuals can recognize emotions from postures (Coulson, 2004), or a software inspired by psychology, character animation and speech recognition capturing movement to identify emotions (Bernhardt, 2010). Importantly, Jacob-Dazarola et al. (2016) draw attention to the fact that these methods usually take place in a controlled environment, which tends to limit body movements and imply stereotypical expressions of emotions rather than spontaneous ones that could be observed in a more ecological environment (Bernhardt, 2010; Jacob-Dazarola et al., 2016). Our expressed self-contempt scale (see chapter 5) uses verbal, non-verbal (e.g. facial expressions) and para-verbal (i.e. change in voice pattern) elements to assess self-contempt. The CAMS (Pascual-Leone & Greenberg, 2005), that we will briefly discuss in the next section also uses these elements (for example, in Pascual-Leone & Greenberg (2005)'s CAMS manual, “covering face with hands” and “disruption of vocal pattern” may be part of the evaluation of specific fear or shame emotional state

(Pascual-Leone & Greenberg, 2005, p. 16)). While verbal (i.e. semantic), non-verbal (i.e. facial or bodily) and para-verbal (i.e. vocal) expressions of emotions are usually measured with observer-reports methods, self-report measures may also be important in measuring emotions as they may represent the subjective evaluation of the individual being assessed.

2.2.3 Self-reports and observer-reports

While self-reports aim at assessing the subjective description of emotions, they may be influenced by bias, such as social desirability or alexithymia (Lane et al., 1997; Mauss & Robinson, 2009). Note that not all individuals may be able to access and be aware of their emotions, let alone report them, which can be problematic in self-reports (Mauss & Robinson, 2009). Note also that self-reports do not necessarily use verbal elements, they can also use visual representations of emotions (Jacob-Dazarola et al., 2016) such as the self-assessment manikin (SAM; Bradley & Lang, 1994). Many self-report questionnaires exist, and we may note that self-reports seem to be more valid when administered shortly after an emotional experience rather than distantly in time (Robinson & Clore, 2002). Emotional self-reports may refer to different knowledge according to the time passed between the emotion happening and the reporting, as it is discussed that short time frames may refer to episodic knowledge, whereas long time frames may refer to semantic knowledge (see Robinson & Clore, 2002, for more details). This also concerns online evaluation of emotion, which seems to be more valid when assessed at the time of the occurring event or shortly after than self-reports concerning events in the past (Mauss & Robinson, 2009; Robinson & Clore, 2002). Furthermore, self-reports of emotions may be more biased in individuals who score high on emotional regulation scales (Ciuk et al., 2015). It may be difficult to know what self-reports actually measure and we should remember that “self-reports should not be viewed as synonymous with experience, at least not under all circumstances or reporting conditions” (Sander & Scherer, 2009, p. 360). Caution is therefore called for when analysing self-reports.

Nonetheless, self-reports, despite their biases, are important in that the answers reflect what the individual believes to be true (Wallbott & Scherer, 1989). This means that even though it might not be an absolute truth, as an inherently subjective method, self-reports' answers pertain knowledge about how the responder feels and evaluates his or her state, which should not be underestimated either. An alternative (or better complementary) method is observer reports, which usually should be done by a trained observer using a valid scale, possibly increasing objectivity of measurement. For instance, in order to identify and measure emotion states in psychotherapy, the CAMS (Pascual-Leone & Greenberg, 2005) may be particularly useful. The CAMS is an observer-report process rating system, specifically developed to code emotional states and their process continuously (Pascual-Leone & Greenberg, 2005). In order to address biases of accuracy due to the subjectivity of self-reports, we may imagine pairing self-reports evaluations with observer reports (see Kramer, 2016, for a discussion and review on observer-rated methods concerning emotions in clinical practice). To address biases of accuracy due to the time passed between the experience of emotion and its evaluation methods and because ecological assessment may allow to better grasp emotions on the moment (Mahlke et al., 2006), we may imagine pairing the evaluation with ecological momentary assessment (EMA).

2.2.4 Ecological momentary assessment

Ecological momentary assessment (EMA), then, is a very interesting tool to use in emotional measurement. EMA consists of questions asked to a participant using digital techniques, such as a smartphone application, several times throughout a given period of time that can be several times a day during a week, for example. It allows an evaluation in real-life situations, which enhances ecological validity (Shiffman et al., 2008; Stone & Shiffman, 1994) and in real-time, which minimizes retrospective bias (Ebner-Priemer & Trull, 2009). EMA can be a very interesting source of information across multiple psychopathologies, such

as substance use and associated cravings (Morgenstern et al., 2014; Serre et al., 2015; Shiffman, 2009), though compliance in this field may remain complicated (Jones et al., 2019). EMA may be useful in investigating suicide (Davidson et al., 2017) and depression (Armeij et al., 2015; Colombo et al., 2019; Sedano-Capdevila et al., 2021; Yim et al., 2020) or mood disorders (Aan het Rot et al., 2012; Ebner-Priemer & Trull, 2009) including borderline personality disorder (Santangelo et al., 2014). Eating disorders are also investigated (Engel et al., 2016; Smyth et al., 2001), as well as anxiety disorders (Alpers, 2009; Walz et al., 2014), and psychotic disorders (Bell et al., 2017; Oorschot et al., 2009), including schizophrenia (Granholm et al., 2008; Mote & Fulford, 2020). EMA may also prove useful in somatic pathologies (e.g. chronic pain; see May et al., 2018) but also in the healthy population, to assess mood (Kanning & Schlicht, 2010), physical activity (Dunton, 2017; Kanning & Schlicht, 2010; Marszalek et al., 2014), or sleep (Jacquemettaz, 2022).

EMA represents a unique method to complement existing ones by being fundamentally idiographic (Trull & Ebner-Priemer, 2009) and also being more sensitive to change thanks to the multiple data points (Moskowitz & Young, 2006). The idea is not as revolutionary as we might think at first, as it resembles the diaries long used in clinical work (Stone et al., 2007). As a self-report technique, bias of social desirability may still occur and should be kept in mind when designing or analysing EMA studies and data. We have argued that emotions are dynamic processes, as is emotional processing by definition. This adds to the complexity of its assessment, and this is where EMA might prove to be essential (Colombo et al., 2020). Adherence to EMA seems high, but technical problems may also occur and there are limitations in use related to the cost of devices and missing data (Santangelo et al., 2014) amongst others (see Burke et al., 2017, for a practical guide to address technological challenges in EMA). Furthermore, EMA may be quite time-consuming for participants (Santangelo et al., 2014). Nonetheless, EMA may be meaningful in clinical

research or as complement to clinical work as they seem applicable to a wide range of psychiatric disorders (Moskowitz & Young, 2006).

In self-contempt, very few studies have used EMA to our knowledge. In fact, we know of only one by Jacquemettaz (2022), who investigated self-contempt (using a previous version of our scale of expressed self-contempt) as part of her EMA evaluation of sleep, symptom intensity and anger-type emotions in university students. Jacquemettaz (2022) found non-significant (but close to being significant) negative correlations between sleep quality, expressed self-contempt and rejecting anger (Jacquemettaz, 2022) which is important for us because it may account for a role of self-contempt in daily life and quality of life. We thus believe that EMA allows an important gathering of information and represents a method worth using in investigating daily life and real-time measure of emotions in context, from which the investigation of self-contempt may benefit. As complement to the previously discussed measures, brain activity may be useful in emotion and psychotherapy research to explore brain regions or neural networks activations associated with emotions.

2.2.5 Brain activity measures

Brain activity measures, including Electroencephalography (EEG) and functional Magnetic Resonance Imaging (fMRI) amongst others, can be used to investigate emotions. EEG presents an excellent temporal resolution, but a rather weak spatial resolution, which implies a good indication of when the brain activity occurs, but not where (Dale & Sereno, 1993; Gevins et al., 1994; Jacobs et al., 2012; Mauss & Robinson, 2009); and fMRI presents the opposite qualities. Indeed, it has an excellent spatial resolution but a poorer temporal resolution, yet it also measures entire brain activity, whereas EEG measures cortical activity (Jacobs et al., 2012; Logothetis, 2008). Precisely, fMRI measures the oxygen uptake in the blood (i.e. Blood oxygen-level-dependent functional magnetic resonance imaging, BOLD fMRI); an indirect measure of neuronal activity in which blood flow is assumed to indicate

activation (Caballero-Gaudes & Reynolds, 2017; Celeghin et al., 2017; Jacobs et al., 2012; Mauss & Robinson, 2009). Thus, it seems difficult to establish causality between brain blood flow and emotions. Furthermore, it is a rather difficult assessment to conduct as it is costly and requires training. Nonetheless, fMRI studies were able to come up with very enlightening results concerning emotions until now that we will partly review in the next sections (see sections 2.3 and 2.6.3) and is even argued to be “the best tool we have for gaining insights into brain function and formulating interesting and eventually testable hypotheses” (Logothetis, 2008, p. 877). Indeed, fMRI seems useful in establishing brain structures and regions supposedly associated with emotions, and is promising to further reveal neural correlates of emotions and associations of specific brain patterns and emotions (Jacobs et al., 2012; Mauss & Robinson, 2009).

2.2.6 Measurement of emotional processing and self-contempt

We will here present the measures we use in this thesis to rate emotional processing and self-contempt. While the first sub-section concerns the two-chair dialogue, which is not a measure, we will present it here. This is because across our three empirical studies, we measure self-contempt or emotional processing in healthy controls undergoing a two-chair dialogue, which is thus inherently linked to our measures. Indeed, the two-chair dialogue acts as the context in which our measures take place when healthy controls are involved. Then, we will present how the CAMS, the expressed self-contempt scale and the two-chair dialogue are used together in this thesis.

2.2.6.1 The two-chair dialogue

The two-chair dialogue, initially adapted from Gestalt therapy to Emotion-focused therapy to work on intrapsychic conflict (Greenberg, 1979), allows the expression of criticism by one part of the personality, sitting on one chair and addressed to the other part of the personality imaginarily sitting on another chair in front of the first one (Greenberg, 1979;

Greenberg & Webster, 1982). This allows the expression of feeling towards the self-criticism by the second part of the personality, which resulted in a greater mood change and a softening of the criticism, clinically relevant as allowing an experiential resolution of conflicts within the self (Greenberg, 1979; Greenberg & Webster, 1982; Paivio & Greenberg, 1995). In our three empirical studies, we used the two-chair dialogue as an emotion-eliciting task, which we used to evaluate expressed self-contempt and emotional processing.

2.2.6.2 The Classification of Affective Meaning States

The Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005) is an observational method corresponding to the sequential model of emotional processing (Pascual-Leone & Greenberg, 2007) that we will present in a following section (see figure 1, section 2.6.2). The CAMS assesses 10 affective states that are global distress, specific maladaptive fear and shame, generic rejecting anger, negative evaluation anger, existential need, specific self-soothing, specific and adaptive assertive anger, specific and adaptive grief and hurt, relief, and finally acceptance and agency (Pascual-Leone & Greenberg, 2005). The CAMS allow to rate and code emotion states relevant to the model of emotional processing, specifically to track the emotional flow, step by step, from maladaptive emotions to more adaptive ones (Pascual-Leone & Greenberg, 2005). Emotion states are evaluated on distinct facets, addressing the emotional tone (emotion or action tendency), involvement (expression of emotion, e.g. non-verbal behaviour) and meaning of the emotion (stance or adaptivity and specificity) (Pascual-Leone & Greenberg, 2005). Importantly, while the CAMS involves the coding of emotion categories, its use combined with the sequential model of emotional processing allows the CAMS codes to be organized in an ordinal manner ranging from 1 to 9 (Pascual-Leone, 2018). The CAMS is thus a very complete tool to measure both emotion states and their process.

2.2.6.3 *Self-contempt scale*

An expressed self-contempt rating 3-point Likert-type scale developed by Kramer and Pascual-Leone (2016) as an addendum to the CAMS (Pascual-Leone & Greenberg, 2005). was developed specifically to explore self-contempt as an elaboration of rejecting anger (Kramer & Pascual-Leone, 2016; Pascual-Leone & Greenberg, 2005). This “coding scheme measuring contemptuousness” (Kramer & Pascual-Leone, 2016, p. 319), as they define it, was used both in Kramer and Pascual-Leone (2016; used as a validation study) and in Sallin et al. (2021). The 3-point scale presented with sufficient validity and reliability (Kramer & Pascual-Leone, 2016; Sallin et al., 2021). Yet, Sallin et al. (2021), who were the first to use the scale on a clinical population of patients with borderline personality disorder, highlighted the fact that the 3 points may be too restrictive to measure a concept as complex as self-contempt (Sallin et al., 2021). We therefore decided to create a 5-point Likert-type scale based on the 3-point one. Of note, Sallin et al. (2021) used the scale on patients with borderline personality disorder undergoing psychotherapy while we used the 5-point one in a self-critical two-chair dialogue setting. While the use of the scale to assess expressed self-contempt in a psychotherapy session has the advantage of being closer to a potential use in psychotherapy as usual, using it in a two-chair dialogue, especially self-critical, makes sense. Indeed, because a self-critical two-chair dialogue is an emotion-eliciting task, it may be an adequate setting to explore self-contempt as an emotion, while self-contempt may not appear as easily in a regular psychotherapy session. On a practical note, our three empirical studies used a self-critical two-chair dialogue, which might allow us to draw interesting conclusions at the end of this thesis, but also allowed us to investigate expressed self-contempt in healthy controls. Finally, because the two-chair dialogue actually is also a therapeutic task, it may also be used to explore self-contempt in psychotherapy with patients – for both research and clinical investigation.

2.2.6.4 Combination of main measures in this thesis

Our three empirical studies use a self-critical two-chair dialogue with healthy controls for eliciting emotions, specifically self-contempt. Note that we use our expressed self-contempt scale to rate the level of expressed self-contempt in all of our healthy controls samples, yet we do not analyse it in our second empirical study using EMA because it is not part of the design, which focuses on emotional processing and EMA. Jacquemettaz (2022) did measure self-contempt using our scale in her EMA study that uses our data, and this is why we may refer to her work when relevant. The self-critical two-chair dialogues we conduct across our three empirical studies follow the same pattern (see section 4.3.2): first, participants imagine a failure situation on the first chair, which we may call the *experiential* chair. Then, they change to a chair in front, which we may refer to as the *critical* chair, on which participants embody the critical voice associated with the failure situation. On the critical chair, they thus express their self-criticism and this is when we use our self-contempt scale to measure expressed self-contempt in our first and third empirical studies. In our second empirical study, we use the CAMS to measure emotional processing while participants are on the experiential chair. Our samples of healthy controls underwent a self-critical two-chair dialogue in the context of what we will refer to in this thesis as an analogue psychotherapy session. We use the terminology “analogue psychotherapy session” because this is the closest way we found to mimic a psychotherapy session in healthy controls, who are not undergoing any. Furthermore, given that the larger project in which this thesis takes place also uses a self-critical two-chair dialogue as emotion-eliciting task in patients with borderline personality disorder (presented in chapter 4), this may be useful for future comparisons. Concerning the extraction and use of the *individualized self-contemptuous stimuli*, the procedure for our third empirical study is as follows. We analyse the video recordings of the two-chair dialogue and extract all self-critical words pronounced while the participant is on the critical chair, such as “you are ugly”, before

transforming them into images. For the sake of conformity with the other stimuli, that are non-individualized negative words (Kherif et al., 2011) such as “rain”, we only keep the word itself, in this case “ugly”, which we will refer to as individualized self-contemptuous stimulus. The individualized self-contemptuous stimuli are projected in the fMRI one week later (see figure 5, in chapter 4).

While the two-chair dialogue and the CAMS seem adapted in giving us an insight on cognitive appraisal and feeling of emotions, due to participants expressing what their critical voice thinks in our paradigm and then how they feel about it, our expressed self-contempt scale may permit to investigate both cognitive evaluation and expression of emotions. Our fMRI assessment may help in addressing bodily reaction and action tendency. Both the CAMS and our expressed self-contempt scale specifically rate verbal, non-verbal and para-verbal *expressions*. Therefore, we will now briefly review what expressing emotions may imply, and we will later discuss this more specifically for contempt (section 2.8.1) and self-contempt (section 2.9.3), as it may allow a more precise conceptualization of expressing self-contempt. First, we will non-exhaustively discuss potential neuroscientific substrates of emotions which will be useful for our neurobehavioral investigation of self-contempt.

2.3 Neuroscientific substrates of emotions

Interest in emotions in neuropsychiatry (Fontenelle et al., 2015), neurobiology (Damasio, 2004), neurosciences (Lane & Nadel, 2002) and psychotherapy studies, including fMRI assessments (Kramer et al., 2018; Kramer, Renevey, et al., 2020; Matsuda et al., 2013) has grown. Identifying the neural mechanisms linked to psychotherapy and psychopathology may serve interesting purposes: understanding clinically important processes in brain functions may be useful to psychotherapists, as they might adapt their clinical work to new knowledge and consequently propose a more refined, individualized treatment to their patients (Linden, 2006). Understanding these neural mechanisms might also be important to

psychotherapy researchers as it may enhance the understanding of both mechanisms underlying treatment and outcome by identifying brain functions patterns and markers associated to treatment and success thereof (Fournier & Price, 2014). Thus, identifying patterns associated with successful therapy and their relation to how and why psychotherapeutic treatments work may be useful for future clinical and research work. Prior to doing that, though, we need to investigate neural correlates of emotions, in our case self-contempt, in healthy controls. While we will not extensively explore the neuroscientific substrates of emotions for this would exceed the framework of this thesis, we will briefly and non-exhaustively review neuroscientific substrates of emotions (this section) and emotional processing (section 2.6.3). It seems appropriate in the context of our theoretical knowledge of self-contempt, given that we will also explore self-contempt in a neurofunctional environment.

In neuroscience, the substrate for the representation of emotions can be theorized as “a collection of neural dispositions in a set of brain regions located in brainstem, hypothalamus, basal forebrain, amygdala, ventromedial prefrontal cortex and cingulate cortex” (Damasio, 2000, p. 20). Neuroscience has not been spared from the debate concerning what emotions are, where they come from and how we may define them, which raises the question of what exactly is measured in neuroscience of emotions (LeDoux, 2012). We will take the example of fear, as it was widely researched in emotional neuroscience. While historically, specific brain regions have been associated to certain basic emotions such as fear being associated with activation in the amygdala, it seems that nowadays emotions in the brain may be better conceptualized as neural circuits (Barrett, 2017; Sander & Scherer, 2009). This means that amygdala and fear may not be causally and directly associated, but rather that the neural circuitry of fear may *involve* the amygdala (LeDoux, 1996; Sander & Scherer, 2009). The amygdala still seems to play a critical role in fear (LeDoux, 2003), but together with other

structures. For instance, it seems that the hippocampus may be particularly involved in maintaining and encoding memory related to fear (Chaaya et al., 2018; Kim & Cho, 2020) while the dorsal prefrontal cortex may be important in the expression of conditioned fear (Gunduz-Cinar, 2021). While we will not investigate further the neuroscientific substrates of fear, as this is not the main subject of this thesis, this is interesting as it shows how complex neuroscientific substrates are concerning emotion and emotional processing given the interrelation between involved brain structures and neural pathways. As explained by Pessoa (2018), it may be more appropriate to consider neural networks rather than brain structures to understand structure-mapping of the brain, given that neural processes are dynamically interacting across brain regions (Pessoa, 2018). This does not mean that exploring brain regions related to a specific emotion has no interest, as specific regions may be involved in neural networks, given that data from neuroimaging studies tend to show that emotion categories may be represented in neural activity in systems spanning cortical and subcortical regions (Kragel & LaBar, 2016; Saarimäki et al., 2018). This implies that certain emotion states may have distinct neural bases in partly overlapping regions (Saarimäki et al., 2018). The brain regions commonly associated with emotions though, such as the amygdala, insula, anterior cingulate cortex (ACC), prefrontal cortex (PFC) or ventral striatum for instance, seem to be involved in several different psychological processes and different aspects of emotions and emotional processing (Davidson et al., 2000; Saarimäki et al., 2018; Sander & Scherer, 2009). Saarimäki et al. (2018) observed that “negative emotions such as guilt, contempt, anger, and despair clustered together, potentially reflecting their social dimension and interpersonal aspects of their self-conscious nature” (Saarimäki et al., 2018, p. 479) which is interesting towards our investigation of self-contempt. Indeed, about self-contempt, we may thus anticipate brain activations in all regions and networks associated with emotions, but more specifically the amygdala whose activation may be associated with both the processing

of negative emotions and of moral violations (Harenski & Hamann, 2006; Silvers et al., 2014; Spohrs et al., 2018). The insula may also be of interest, as its activation may be associated with processing social emotions and facial expressions of disgust (mainly the left insula) as well as with consciousness, specifically co-activated with the ACC (Gasquoine, 2014; Lamm & Singer, 2010; Tippet et al., 2018). Concerning the “self” part of self-contempt, it seems that the activity in the medial prefrontal cortex (MDFC) and posterior cingulate cortex (PCC) may be particularly important in self-reflection and self-reference (Heatherton, 2011; Whitfield-Gabrieli et al., 2011).

2.4 Expressing emotions

The expression of certain emotions can be intentionally produced or suppressed, in a conscious or unconscious agreement with the social situation or communication purpose (Frijda, 1986). A distinction exists between “true” expressions not intentionally produced and intentionally produced expressions, or rather expression-like behaviours called gestures (Ekman & Friesen, 1969; Frijda, 1986). Vocalization is also involved and changes according to emotion (Scherer et al., 2003). Expressions of emotions can be adaptive in that they can serve a high communicative function (Darwin, 1872; Hess & Thibault, 2009). Congenitally visually impaired babies express more facial expressions of emotions than others (Fulcher, 1942), but on a smaller range (Fraiberg, 1971) and not on demand (Dumas, 1932). This presupposes that a social component of learning facial emotion expressions concerns its inhibition under certain circumstances. For example, if someone feels that a specific emotion might be inappropriate in regards to the situation or might induce negative consequences such as being negatively judged or offending someone else, inhibiting this expression may be useful. This is important in the framework of this thesis, as the ability to inhibit the expression of emotions should thus be considered while measuring emotions.

We should note that gender differences may exist in emotion expression both in children and adolescents and in adults, verbally and non-verbally (Brody, 1993; Chaplin & Aldao, 2013; Timmers et al., 1998). While this is a broad subject that we will not deeply investigate as it does not directly concern the framework of this thesis, it may be important to mention given that our participants are mostly women, as we will see in the methods section. Gender differences may exist in emotions, though most studies stating that women are more emotional than men usually concern the expression of emotions (Locke, 2011). The evaluation of emotion expression and the meaning attributed to it might be biased by gender stereotypes (Hess et al., 2004). It seems important to consider that the expression of emotions and its gender differences seem related to diverse and multiple elements, including social factors such as the situation, personality, age, culture and social roles of the persons that are considered; but also biological, genetic, and hormonal factors (Brody, 1993, 1999; Chaplin, 2014). We should note, as it is part of our theoretical framework, that the newest revision of the international classification of diseases states that elevations on negative affectivity are more common among women than men, in the section on personality disorders which includes borderline personality disorder (11th ed; ICD-11; World Health Organization, 2019). For a broad exploration of gender differences related to emotions in terms of expression, biological differences and the role of family environment, cultural origins and consequences of gender differences, see Brody (1999) or several studies by professor of emotions and affective processes in social psychology Agnetta Fischer (Fischer, 1993; Fischer, 2000; Fischer et al., 2018). An interesting meta-analysis to look at on this matter is the one by Else-Quest et al. (2012) as it focuses on the expression of self-conscious emotions (shame, guilt, pride) and complements other studies focusing more on basic emotions (Else-Quest et al., 2012). The expression of emotions and the factors on which it depends are rather complex, which is why we should consider them with caution. Yet, these elements are interesting to

evoke in this study as part of general knowledge and understanding of emotions. While there may be gender differences related to expressing or interpreting emotions that may be interesting to discuss, we will consider for the remaining of this thesis that emotions and their expressions are important in daily life and in psychotherapy no matter the gender of an individual.

2.5 Emotions in psychotherapy

Emotions are crucial in psychotherapy and emotional problems are an integral part thereof. Because “reason has never succeeded in controlling passion” (Greenberg & Paivio, 2003, p. 4), one needs to gain access to emotion and its meaning in order to address emotional problems (Greenberg & Paivio, 2003). While emotions may be important in every approach of psychotherapy, an approach that seems perfectly fitted to investigate is Emotion-focused therapy, in which the framework is that emotions are adaptive and connected to human needs, biologically inherited for one part and cognitively learned for another, making the interaction between emotions and cognitions of utmost importance (Greenberg, 2015; Pascual-Leone & Greenberg, 2020). We will follow this framework, as well as its definition of emotions. In Emotion-focused therapy (EFT), Kramer and Ragama (2015) focused on the commonalities of different definitions of emotions and were able to pull out five concepts shared by emotion theories. First, emotions are adaptive and, as such, are necessary to humanity’s survival (Darwin, 1872; Ekman & Friesen, 1975, 2003; Frijda, 1986; Kramer & Ragama, 2015). Then, they specify that emotions can be classified as distinct categories that derive from individuals’ subjective experiences, meaning that each emotion is experienced differently by every individual (Greenberg, Ford, et al., 1993; Kramer & Ragama, 2015). This idea is similar to that of Sander and Scherer, according to whom personality and emotions interact and influence one another (Sander & Scherer, 2014). The third contribution that Kramer and Ragama (2016) bring is the idea that emotions can be modelled into generic dimensions and

classified according to continuous and objective criteria (Kramer & Ragama, 2015). This means that specific dimensions of emotion are primordial in allowing us to understand our way of perceiving the world and how to adapt ourselves to it; mostly when combined with a categorical approach, this might allow a better understanding of emotions (Harmon-Jones et al., 2017; Kramer & Ragama, 2015). Kramer and Ragama (2015) explain that emotions include several processes distributed in a parallel manner, with a plurality of ways to interpret emotions. This dynamic view of emotion is very important in order to understand emotional activity which results from an interaction of cognitive and emotional processes (Greenberg & Pascual-Leone, 1995; Kramer & Ragama, 2015). Finally, Kramer and Ragama (2015) underline the fact that emotions are dynamically time-driven and sequentially organized in time phases (Kramer & Ragama, 2015). The importance of time in the course of emotions is also present in Frijda (2009)'s work, as he writes that "time goes to the heart of emotional phenomena" (Frijda, 2009, p. 1448). Frijda (2009) further explains that the time course of emotion might play a role in helping distinguish impulsive actions from deliberate ones, enlightening the role motivation might play in behaviours and emotions (Frijda, 2009). What is particularly valuable in Kramer and Ragama (2015)s' work is its innovative focus on what different theories have in common rather than on what separates them as it is often done. This contributes to having a better idea of what emotions are, rather than what they are not. Furthermore, their work emphasizes the fundamental adaptive nature of emotions as well as the fact that they may be conceptualized both as distinct subjective entities and as objective dimensions (Kramer & Ragama, 2015). This is particularly important, again, because it partly addresses historical debates on defining emotions: rather than choosing whether emotions should be categorized dimensionally or categorically, or whether they come from somatic experience or rather create it; maybe all arguments have their own benefits and should be considered for the study of emotions. In this thesis, this is important towards our goal of

measuring self-contempt: we need to know what we measure, which implies that we should know what emotions consist of in order to measure self-contempt as an emotion. In order to investigate self-contempt's importance in therapy, we will explore its potential implication in change through emotional processing in psychotherapy.

Emotion-based psychotherapy aims to provide a unifying framework to address problematic emotional processing and its associated symptoms (Magnavita, 2006). In psychotherapy, it is important that the therapist be able to distinguish different types of emotions and act accordingly, for all emotions do not necessarily serve the same function (Greenberg, 2008). In psychotherapy, emotions hold a potential of therapeutic change (Greenberg & Pascual-Leone, 2006; Greenberg & Safran, 1989). Emotion awareness or regulation can be addressed through emotional work in psychotherapy, which itself may lead to improvement in certain psychological problems (Greenberg & Pascual-Leone, 2006). Emotion-focused therapy distinguishes primary emotions, appearing right after a trigger, from secondary emotions, which are reactions to the primary emotions (Timulak & Pascual-Leone, 2015) and adaptive from maladaptive emotions. Emotions have an adaptive function but they can become maladaptive through negative associations and social learning (Greenberg, 2004). A maladaptive emotion can be changed through therapy into a more adaptive one by activating the maladaptive emotion and its associated feelings and accessing the adaptive emotions instead (Greenberg, 2004). These elements naturally drive us to look further into emotional processing and its role in psychology, or psychopathology, and psychotherapy.

2.6 Emotional processing

Emotional processing is a set of operations on emotions in which emotional disturbances are absorbed and decline to the point that other emotional experiences and behaviours continue uninterrupted (Rachman, 1980). Emotional processing in psychology was

first studied in fear and also defined as “the modification of memory structures that underlie emotions” (Foa & Kozak, 1986, p. 20). Psychologist and psychology professor Stanley Rachman (1980), who first defined emotional processing, describes a sequence that follows this path: “emotional experience → processing begins → interruption → signs of incomplete processing persist → corrective facilitatory factors introduced → decline in sign of incomplete processing” (Rachman, 1980, p. 59). In the fourth step, *signs of incomplete processing* include nightmares or ruminations for instance, and can be addressed by therapeutic interventions such as relaxation or habituation, which will reduce the persisting disturbing elements (Rachman, 1980). This idea is similar to that of psychologists Leslie Greenberg and Jeremy Safran, from the field of Emotion-focused therapy that is the theoretical framework we will focus on in this thesis. Indeed, they explain that “the complete processing of specific emotional experience can lead to the emergence of new, more adaptive responses” (Greenberg & Safran, 1989, p. 23) while blocking it may induce impaired problem solving (Greenberg & Safran, 1989). The relevance of improving emotional processing in psychotherapy is thus elevated, as it appears that a successful emotional processing in psychotherapy is associated with a better ability to regulate affective experience (Greenberg & Safran, 1989; Samoilov & Goldfried, 2000; Watson & Bedard, 2006) which may be useful in psychopathologies, specifically ones that are affected by emotion dysregulation. In the context of this thesis, we will do a brief and non-exhaustive overview of emotional processing that can be helpful in investigating self-contempt in this framework. While we will not deeply investigate the role of impaired emotional processing in each psychopathology, we will now present a few psychopathologies in which emotional processing seems to be involved. This may be useful in exploring the wide range of psychopathological domains that may be important to consider related to emotional processing and its impairment. For the purposes of this thesis, this will prove useful towards for our aim of investigating self-contempt and its

role in emotional processing, as well as highlighting the importance of investigating and assessing emotional processing in daily life and in psychotherapy.

2.6.1 Emotional processing in psychopathologies

Emotional processing seems to play an important role in diverse psychopathologies. Emotional processing is impaired in persons with schizophrenia, mostly emotional experience, expression and recognition (Kohler & Martin, 2006). Social cognitive and emotional processing are impaired in anorexia nervosa (Oldershaw et al., 2011) and patients with anorexia nervosa show lower levels of emotional awareness and expression than healthy controls (Jänsch et al., 2009). Patients with panic disorders have more difficulties in emotional processing than control participants and emotional processing difficulties could be a vulnerability factor for panic attacks (Baker et al., 2004). There is a deficit in emotional processing in posttraumatic stress disorder (Litz et al., 2000; Miller & Litz, 2004) as well as in bipolar disorder (Wessa & Linke, 2009) including during euthymic phases (Mercer & Becerra, 2013). Recent results argue towards the presence of two subgroups of patients with bipolar disorder in which the first group shows similar results in emotional processing as healthy controls, whereas the second group does not (Szmulewicz et al., 2020). Indeed, the second group of patients presents higher rates of childhood trauma, lower intelligence quotient (IQ), education, psychosocial functioning and cognitive performance than the first group, which could thus be responsible for difficulties in emotional processing (Szmulewicz et al., 2020). In depression, it appears that “depression results, in part, from incomplete processing of emotional experience” (Pos et al., 2003, p. 1008). Furthermore, emotional processing is associated to (depressive) symptomatology and self-esteem (Pos et al., 2003).

In personality disorders, emotional processing is problematic in borderline and antisocial personality disorders (Herpertz, 2003; McMMain et al., 2013). Borderline personality disorder is associated with impaired emotional processing and interpersonal recognition of

emotions (Mitchell et al., 2014) and improving them through therapy seems associated with better outcomes in terms of symptom distress and interpersonal functioning (McMain et al., 2013). This adds to the relevance of investigating emotional processing in psychotherapy.

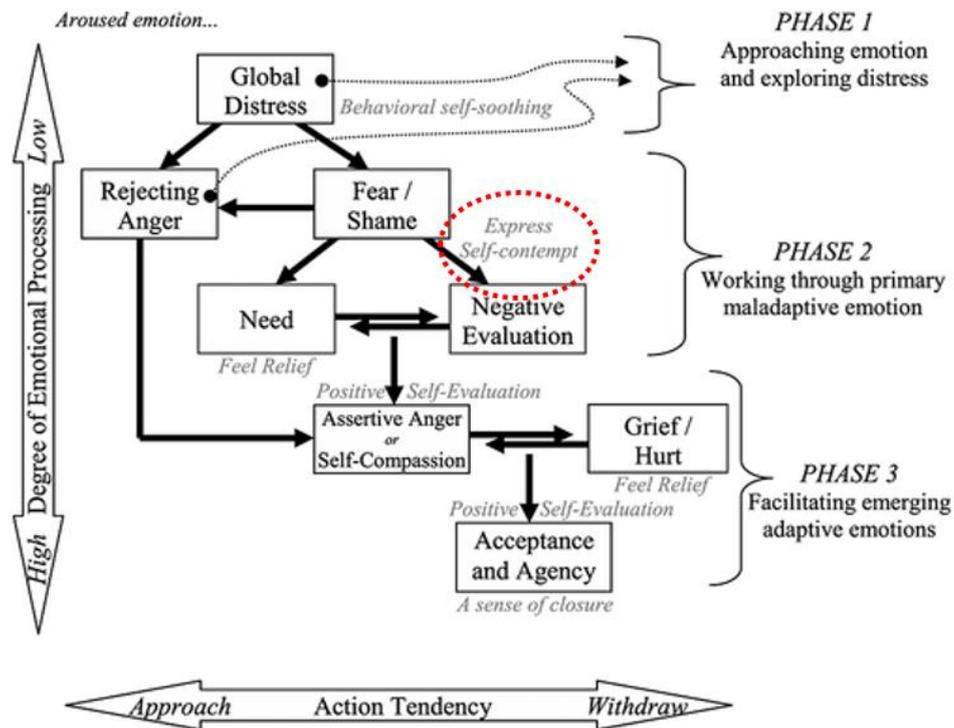
2.6.2 Emotional processing in psychotherapy

Emotional processing includes several aspects, specifically four principles put forward by Greenberg and Pascual-Leone (2006) in the framework of emotion focused therapy that we will focus on. The first aspect of emotional processing is *Emotion Awareness and Arousal*, in which awareness refers to approaching and accepting emotions (Gratz, 2007; Greenberg & Pascual-Leone, 2006), while arousal mediates emotional processing (Greenberg & Pascual-Leone, 2006). The second aspect of emotional processing in psychotherapy is *Emotion Regulation*, which aims to gain psychological distance from overwhelming feelings and develop self-care skills by recognizing, enabling and tolerating emotions (Berking et al., 2008; Greenberg & Pascual-Leone, 2006). The third aspect of emotional processing put forward by Greenberg and Pascual-Leone (2006) is *Reflection on Emotion*, which is related to emotional awareness in the sense that it aims to make sense of emotion, or to symbolize emotion to promote reflection on the emotional experience in order to give it a new meaning (Angus & McLeod, 2004; Greenberg & Pascual-Leone, 2006). Finally, the fourth aspect of emotional processing is *Emotion Transformation*, which aims to change emotion through emotion (Greenberg & Pascual-Leone, 2006; Pascual-Leone & Greenberg, 2007). Greenberg (2012) later specifies that there are six emotional change processes: emotional awareness, expression, regulation, reflection, changing emotion with emotion and corrective emotional experience (Greenberg, 2012, p. 703). Emotional arousal plays a central role in everyday emotional processing and is related to emotion regulation difficulties (Deckert et al., 2020). Emotional arousal, thus, is essential in psychotherapeutic success, especially when combined with reflection on emotion (Greenberg, 2012). Emotional transformation, “probably the most

important way of dealing with emotion in therapy” (Greenberg, 2012, p. 704) is also central. Emotion regulation, interestingly, involves diverse processes that represent a continuum from rapid and automatic processes, to slower, harder ones (Sander & Scherer, 2014). Pascual-Leone and Greenberg (2007) explain that clients usually need more than one session to go through all the steps of emotional processing, following a “two steps forward, one step backward” (Pascual-Leone & Greenberg, 2007, p. 880) pattern. Emotions, thus, are rather dynamic, as is emotion construction and emotional processing (Greenberg, 2012; Pascual-Leone, 2009). The sequential model of emotional processing (Pascual-Leone, 2009; Pascual-Leone & Greenberg, 2007; Timulak & Pascual-Leone, 2015) is important to illustrate the pathway of transforming emotions in psychotherapy: Expressing self-contempt may help in the process of emotional processing from maladaptive emotions to more adaptive ones during the second phase of the model, working through primary maladaptive emotions (Timulak & Pascual-Leone, 2015; Figure 1).

Figure 1

Expressed self-contempt in the sequential model of emotional processing



Note. Slightly modified to highlight expressed self-contempt. From “New developments for Case Conceptualization in Emotion-Focused Therapy,” by L. Timulak and A. Pascual-Leone, 2015, *Clinical psychology & psychotherapy* 22(6), p.621 (<https://doi.org/10.1002/cpp.1922>). Copyright 2015 by John Wiley & Sons, Ltd.

This model, formulated in concrete clinical terms of clients’ emotional experiences, is still theoretically very enlightening in that it shows which direction emotions can follow towards a meaningful experience. Indeed, the first step is global distress, an unprocessed state that has a low meaningfulness but a high emotional arousal, whereas the last one, supposed to be reachable through helpful therapy, is acceptance and agency; a processed state that has a

high degree of meaningfulness and a lower emotional arousal (Berthoud et al., 2017; Pascual-Leone & Greenberg, 2007; Timulak & Pascual-Leone, 2015). It is important to note that the authors specify that this model does not classify emotions as healthy or unhealthy, for all of them promote healing at their level, including unpleasant or painful ones (Pascual-Leone & Greenberg, 2007; Timulak & Pascual-Leone, 2015). Rather, this model shows how emotions, even unpleasant ones, are useful when processed in the right setting and towards more meaningful and productive emotions (Berthoud et al., 2017; Pascual-Leone, 2009, 2018; Pascual-Leone & Greenberg, 2007). Rachman (1980) listed elements that either promote or impede satisfactory emotional processing. The promoting or facilitating elements are, for example, engaged exposure, habituation training, extinction trials, repeated practice; whereas the impeding elements are avoidance of disturbing stimuli, inability to talk about them, irregularity of stimulation or absence of perceived control, amongst others (Rachman, 1980). This is rather in line with the sequential model of emotional processing as it seems that working through unprocessed emotional states, such as global distress by working on emotions, may be productive. While developing the ability to talk about emotions by repeatedly practicing it in therapy could help going through emotional processing, emotional processing may be even more productive by experientially accessing emotions. Experientially accessing emotions seems particularly useful in order to be in the emotion and to develop the ability to use it to make new experiences and meanings of emotions. Accessing emotion and its meaning may be necessary, because it may allow the activation of core emotion structures while the individual experiences the emotion, which in turn may allow the integration of the emotional information and make the exploration and change of the maladaptive components of the emotion structure available (Greenberg, Rice, et al., 1993; Paivio, 1999). It is possible that reflecting on emotion may help in highlighting the active role one may have as an agent of change and insight concerning one's emotions (Pascual-Leone, Paivio, et al., 2016). As an

example, it appears that the ability to label or put emotions into words may both attenuate negative emotional experiences (Wilson & Schooler, 1991) and be associated with a reduced activity in the amygdala, as observed in fMRI studies on labelling emotions (Lieberman et al., 2007; Torre & Lieberman, 2018).

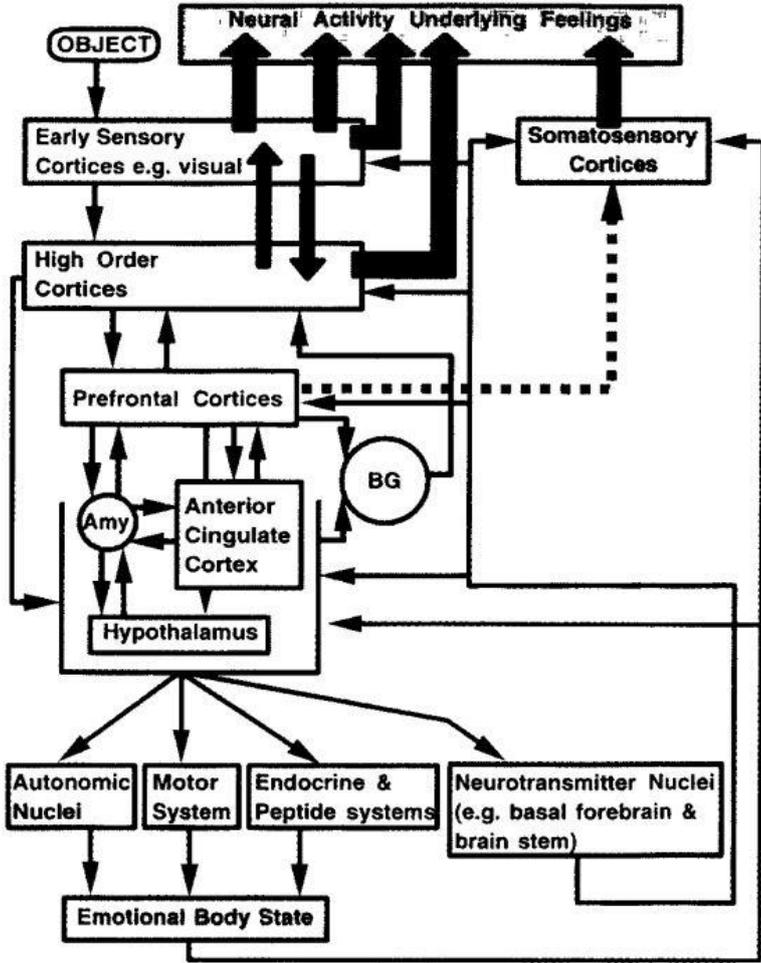
2.6.3 Neuroscientific substrates of emotional processing

According to Pascual-Leone and Greenberg (2020), two pathways of emotion processing exist in the brain: the first one, fast and short, sends automatic signals to the brain and body which induce a bodily reaction; this is the amygdala pathway; whereas the second one, slow and long, produces emotions that derive from cognitive evaluation and integration (Pascual-Leone & Greenberg, 2020). This implies that it is important to consider both emotions and cognitions in emotional processing in the neuroscience of emotions (Pascual-Leone & Greenberg, 2020; Pessoa, 2008; Phelps & LeDoux, 2005). Damasio (1995) proposed hypothetical key neural structures and processes involved in the neurobiological basis of emotions in 1995 (Damasio, 1995; Figure 2). While these processes and structures are not exhaustive and may have changed, since Damasio himself partly modified his hypothesis (see LeDoux & Brown, 2017), Damasio (1995)'s hypothesis is important as one of the first proposition for a neurobiological structure of feeling an emotion. In a simplified way, what Damasio (1995) hypothesises is that when confronted to an emotional stimulus, a cognitive evaluation is made implying the sensory cortices, while networks in the prefrontal cortex respond unconsciously and involuntarily (Damasio, 1995). The prefrontal responses are then signalled to limbic structures (amygdala, anterior cingulate cortex and parts of the basal ganglia), which in turn induce an activation of the autonomic nervous system, motor system, endocrine system and neurotransmitter nuclei in the brain stem and basal forebrain, which in turn release their chemical message to the cerebral cortex (Damasio, 1995). Finally, representations from both body changes and brain networks changes create the conditions for

a feeling to occur; while it should be associated with consciousness and subjectivity for feeling of an emotion to be possible (Damasio, 1995; Damasio, 2006). It is interesting to note that the complexity of neural processes involved in emotions is not new, and that several main structures discussed by Damasio in 1995 are still amongst the most discussed in the neuroscience of emotions almost thirty years later, as we will now briefly explore.

Figure 2

Key neural structures and main processes first hypothesised to be involved in the neurobiological basis of emotions



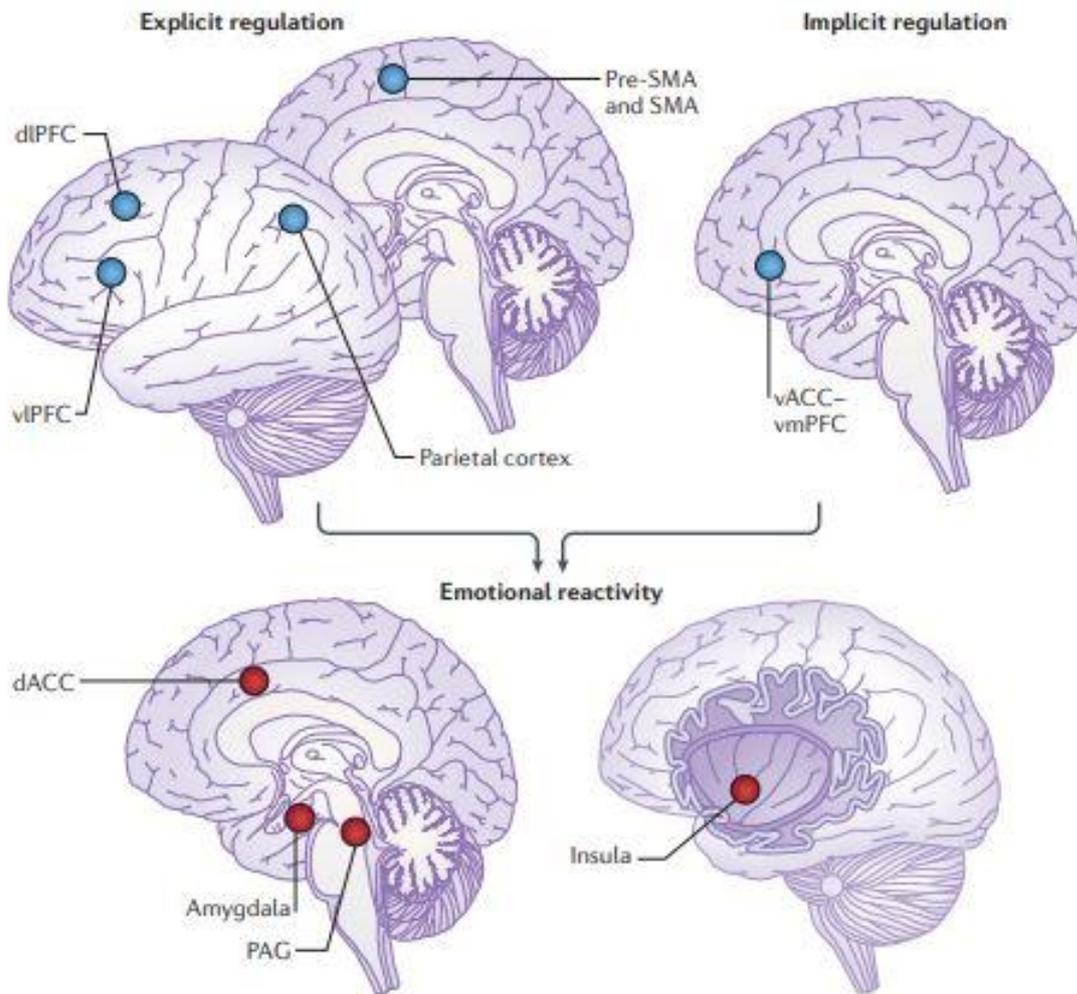
Note. Depictive image of hypothesized neural structure and processes involved in emotions in 1995 by Antonio Damasio. Amy = amygdala, BG = Basal Ganglia. From “Toward a Neurobiology of Emotion and Feeling:

Operational Concepts and Hypotheses,” by A. R. Damasio, 1995, *The Neuroscientist* 1(19), p. 22
(<https://doi.org/10.1177/107385849500100104>). Copyright 1995 by Williams & Wilkins.

We should note that emotional processing may vary greatly in neurofunctional activity across individuals, which underlies the importance of using individualized stimuli and subjective ratings of emotional experiences (Hamann & Canli, 2004). Generally, emotional processing may occur “in a neural network that includes limbic and cortical regions” (Okon-Singer et al., 2013, p. 488) including the pulvinar, amygdala, anterior cingulate cortex (ACC) and dorsolateral prefrontal cortex (DLPFC). Yet, this is modulated by the emotional value of the stimulus as well as its relevance, attention and individual differences (Okon-Singer et al., 2013). The medial prefrontal cortex and anterior cingulate cortex seem to be more activated by negative emotional stimuli (Etkin et al., 2011). Etkin et al. (2015) highlight regions implicated in emotional processing as well as whether they may rather be implicated in emotional regulation or reactivity (Etkin et al., 2015; Figure 3).

Figure 3

Regions implicated in emotional processing



Note. Shown in blue, the dorsolateral prefrontal cortex (dlPFC), ventrolateral PFC (vlPFC), parietal cortex and supplementary motor areas (SMA) may be implicated in explicit emotion regulation, which supposedly requires conscious effort, while the central anterior cingulate (vACC) and ventromedial PFC may be implicated in implicit emotion regulation, whose unconscious completion supposedly derives directly from a stimulus (Etkin et al., 2015). Shown in red, the dorsal ACC (dACC), amygdala, periaqueductal grey (PAG) and insula, supposedly involved in emotional reactivity (Etkin et al., 2015). From “The neural bases of emotion regulation,” by A. Etkin, C. Büchel and J.J. Gross, 2015, *Nature Reviews Neuroscience*, 16(11), p. 695 (<https://doi.org/10.1038/nrn4044>). Copyright 2015 by Macmillan Publishers Limited.

The amygdala may be involved in emotional processes; emotional learning, emotional memory and modulation of memory, emotional influences on attention and perception, emotional social behaviour, emotion inhibition and emotion regulation (Phelps & LeDoux, 2005). The amygdala may be particularly involved in positive as well as negative emotional regulation, as it shows an increased activation to negative stimuli compared to neutral ones, but also to responses that connote threat, and generalized negative affect (Davidson et al., 2000; Spohrs et al., 2018). The same has been observed concerning emotional processing in borderline personality disorder, which particularly involves the amygdala, insula and prefrontal regions, that may be hyper reactive compared to healthy controls' (Donegan et al., 2003; Herpertz et al., 2018; Koenigsberg et al., 2009; Schmahl et al., 2014). Limbic hyper reactivity, as well as deficient recruitment of brain regions contributing to cognitive-emotional interaction may be linked to emotional processing disturbances in borderline personality disorder including impulsivity and interpersonal difficulties (Krause-Utz et al., 2014; Scherpiet et al., 2014; Schnell & Herpertz, 2018). Emotional regulation involves several areas, including the dorsolateral and ventral areas of the prefrontal cortex, the amygdala, the hippocampus and the insula (Ochsner & Gross, 2014; Schmahl et al., 2014). The left amygdala and posterior cingulate cortex show an increased activation in patients with borderline personality disorder compared to healthy controls when processing negative emotional stimuli (Schulze et al., 2016). Both the amygdala and insula seem to be hyper responsive to negative emotional stimuli in patients with borderline personality disorder (Bertsch et al., 2013; Bertsch et al., 2018; Lischke et al., 2017). Evidence suggests that there may be an exaggerated sensitization of activity in the neural salience network, including the amygdala, anterior insula, and dorsal anterior cingulate cortex, in borderline personality disorder (Denny et al., 2018; Herpertz & Bertsch, 2015; Schmahl et al., 2018). Scherpiet et al. (2014) also observed an enhanced activation in the posterior cingulate cortex in women with

borderline personality disorder exposed to ambiguous stimuli, which they interpret as a possible higher autobiographical reference in borderline personality disorder (Scherpiet et al., 2014). This is particularly important to us as it drives towards the exploration of “self” elements involved in emotional processing, including self-contempt, which has been under-examined, in this context, to our knowledge. All these elements are important in thinking of and designing a study using fMRI technology in psychotherapy. Because our theoretical framework involves studying borderline personality disorder, we will briefly review emotional processing in borderline personality disorder.

2.6.4 Emotional processing in borderline personality disorder

In borderline personality disorder, emotion dysregulation is a core feature of symptomatology (Glenn & Klonsky, 2009; Rosenthal et al., 2008). Indeed, it appears that difficulties in emotional processing in borderline personality disorder are a key problem, as affective dysregulation is an important psychopathological element of borderline symptomatology (Schmahl et al., 2014). These difficulties consist of diverse elements such as emotion sensitivity, heightened negative affect, deficient regulation strategies and maladaptive regulation strategies (Carpenter & Trull, 2013) or maladaptive emotion-related cognitive processes such as negative beliefs about oneself and biased interpretations of ambiguous stimuli (Baer et al., 2012). Furthermore, patients with borderline personality disorder have difficulty managing their emotions, especially anxiety and anger, and have a lower level of emotional awareness, poorer performance in recognizing facial expressions of emotion and more intense responses to negative emotions than healthy controls (Levine et al., 1997).

When asked to identify emotions from photographs of basic emotions, hospitalized women suffering from borderline personality disorder are less accurate than healthy control women, and they have higher levels of self-reported intensity of affective experience (Bland

et al., 2004). Patients with borderline personality disorder confronted to emotional pictures show a deficit in emotion recognition along with a negative bias towards neutral faces (Fenske et al., 2015). A recent literature review by Bertsch et al. (2018) states that women suffering from borderline personality disorder seem to present a more negative emotional processing of faces than healthy control women, be it with neutral, ambiguous or positive faces across several studies (Bertsch et al., 2018). In another meta-analysis assessing the associations between borderline personality disorder and emotional awareness, Derks et al. (2017) were able to establish that patients with borderline personality disorder seem to present difficulties in identifying and describing emotions as well as a low emotional awareness (Derks et al., 2017). Thus, investigating problematics of emotional processing and assessing related changes in borderline personality disorder seems important from a clinical point of view as well as a research one.

In fact, emotional processing in borderline personality tends to improve with psychotherapy, which seems in turn to improve treatment outcome (McMain et al., 2013; McMain et al., 2009; Neacsiu et al., 2010). Berthoud et al. (2017) used Greenberg and Pascual-Leone's sequential model of emotional processing of distress (Pascual-Leone & Greenberg, 2007; Figure 1) along with the Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005) to investigate emotional change during psychotherapy with patients suffering from borderline personality disorder (Berthoud et al., 2017). They observed that global distress significantly decreases between intake and the penultimate session, whereas self-compassion and assertive anger increase during the same period (Berthoud et al., 2017). These results are important to us for several reasons. Firstly, they highlight the importance of working on emotional processing in psychotherapy with patients suffering from borderline personality disorder, as it seems to play a role and to change along therapy. Secondly, Berthoud et al. (2017)'s study is the first to use the

sequential model of emotional processing and the CAMS in a population suffering from borderline personality disorder, and their study tends to show that they are useful and valid in this context.

2.7 Mechanisms of change

In psychotherapy research, mechanisms of change represent the process accounting for therapeutic change, how and why psychotherapy leads to change (Kazdin, 2009; Kramer, 2019). Understanding how psychotherapy works is clinically pertinent (Lipsitz & Markowitz, 2013) and mechanisms of change are not only useful in therapy but also in daily life, as these mechanisms could be generalized for the understanding of human functioning on a broader spectrum (Kazdin, 2009). There are conditions described by Kazdin (2009) required to conclude that a mechanism of change really is one, listed hereafter. First, the process should be linked to the evolution of symptom: *association* should be demonstrated between the psychotherapy and the hypothesized mediator, as well as between the mediator and therapeutic change (Kazdin, 2009; Kramer, 2019). Then, the modification of the mechanism should be complete before the effectiveness of the outcome is measured and thus be *time sensitive* (Kazdin, 2009; Kramer, 2019). In addition to this, theory should predict the change and its role in outcome, which would make it *plausible*, and the change observed should be sufficiently *specific* and differentiated from other construct (Kazdin, 2009; Kramer, 2019). Furthermore, the amount of change in the mechanism should refer to the amount of symptomatic change in a *gradient* manner (Kazdin, 2009; Kramer, 2019). Finally, results should be *consistent* across different studies and change should hold true under controlled *experimental conditions and manipulation* (Kazdin, 2007, 2009; Kazdin & Nock, 2003; Kramer, 2019). For further elaboration on these conditions, see Kazdin (2009).

The importance of understanding mechanisms of change in psychotherapy is high, as it may help therapists increase responsiveness by addressing the core problematics of each therapy in an informed way (Kramer, 2018). Mechanisms of change might be different according to which disorder is involved. For example, behavioural activation is argued to be a mechanism of change in pathologies that imply reduced activity such as chronic pain, depression, schizophrenia, but also personality disorders (Dimaggio & Shahar, 2017). Emotion regulation might be a mechanism of change because it addresses diverse emotional difficulties across several forms of psychopathology (Gratz & Tull, 2010) such as self-harm (Gratz, 2007; Gratz & Roemer, 2008), anxiety (Roemer et al., 2009) depression (Pos et al., 2003) or borderline personality disorder (Bland et al., 2004; Gratz et al., 2006; Levine et al., 1997). This is particularly true for pathologies that are known to be associated with emotional difficulties such as personality disorders (Kramer, Beuchat, et al., 2020).

In general, modifying negative emotions and regulating them is a common mechanism of change in psychotherapy (Moyal et al., 2015). Self-compassion, which consists of understanding, accepting and forgiving oneself in order to let go of self-blame and move forward towards doing better in the future, can also be a mechanism of change when it is developed or emphasized (Baer, 2010). Self-compassion is a primary adaptive emotional response to self-criticism widely used in Emotion-focused therapy and compassion-focused interventions such as compassionate mind training and mindful self-compassion programs, whose results are relevant also in non-clinical populations in increasing self-compassion and reducing self-criticism (Halamová et al., 2021). Self-compassion, that we will not directly study in this thesis, is important because it is an adaptive strategy that can facilitate therapeutic change (Vráblová et al., 2021), yet self-contempt might be a hindrance in accessing it. In light of these elements, the mechanism of change may be the pathway from self-contempt to self-compassion, which should explain good therapy outcome. This leads us

back to investigating self-contempt, but first, we will briefly look at what contempt is in order to be able to make a better differentiation of the two, which will be helpful towards our conceptualization and contextualization of self-contempt. Now that we have presented different theoretical perspective of emotions and established that they involve diverse components and are fundamentally dynamic, as well as their neuroscientific substrates, we will explore specifically self-contempt. Indeed, we have also seen that self-contempt may be involved in emotional processing from maladaptive emotions to more adaptive ones, which leads us to explore what self-contempt may be in itself, but first, we will take a brief diversion to explore contempt, as this may be useful towards understanding self-contempt.

2.8 Contempt

Contempt may be considered to be part of a triad of emotions; that is, the “moral emotions” triad including contempt, anger and disgust and referred to as the *hostility triad* (Rozin et al., 1999; Sander & Scherer, 2009). In this dimensional view, contempt is a fundamentally social emotion “elicited by the violation of social norms and its function is to enforce social norms” (Sander & Scherer, 2009, p. 100). Indeed, Bell (2013) states that contempt is “the best response to a range of faults that have the potential to impair our personal and moral relations” (Bell, 2013, p. 3) and that it is a very important part of our everyday moral statements (e.g. “he is such a loser”) (Bell, 2013). Bell (2013) furthermore argues that contempt offers an apt way to respond to vices that could impair our moral relations (Bell, 2013); by putting distance with a threatening individual, and thus protect ourselves (Hutcherson & Gross, 2011). The moral function of contempt has been described, together with anger and disgust, as “guardians of the moral order [who] motivate people to change their relationship with moral violators” (Haidt, 2003, p. 859). Contempt, in this view, might be related to disapproval or feeling superior, but also involved in maintaining social hierarchy and political order (Hutcherson & Gross, 2011; Rozin et al., 1999). Mason (2003)

goes even further, asking whether properly focused contempt could be something humans morally owe to themselves (Mason, 2003).

Interestingly, both the philosopher Bell (2013) and social psychologist Haidt (2003) put forward the fact that contempt was first considered as a variant of disgust by Ekman and Friesen (1975) until they found out that the expression of contempt seemed to be reliably distinguished from anger and disgust (Bell, 2013; Ekman & Friesen, 1986; Haidt, 2003). Only after that did they suggest considering contempt as a basic emotion (Bell, 2013; Ekman & Friesen, 1986, 2003; Haidt, 2003). This point of view is not consensually admitted; on the one hand some argue that contempt is, depending on the cultural context, a blend of anger and disgust (Sander & Scherer, 2009, p. 100). On the other hand though, certain authors argue that anger and contempt are different with regard to their social relationships in that anger attacks another person whereas contempt excludes another person from one's social network (Fischer & Roseman, 2007). The reason is that when one is angry with someone, he or she still has hope that this person might change, whereas this hope is lost when contempt is concerned (Fischer, 2011). While contempt may be a basic emotion, self-contempt may be part of social-moral emotions that differ from other moral emotions, such as shame, in their relationship to the self, which does not play the same role in these two emotions (Higgins, 1987; Keltner, 1996; Mulligan, 2009; Sander & Scherer, 2009). The moral emotions are the ones that "arise in the context of events that are perceived to have a moral component or that serve to motivate an agent toward actions (or inactions) that carry a moral component" (Kroll & Egan, 2004, p. 352). Moral emotions support humans' motivation to avoid wrongdoing, and help them act in the interest of society or other people (Haidt, 2003; Kroll & Egan, 2004; Tangney et al., 2007). Moral emotions seem to activate the same regions, including the amygdala and thalamus, than basic emotions in an fMRI study (Moll et al., 2002). Certain emotions commonly considered as basic such as anger may be moral, for example as it may sometimes

respond to contextual cues of harm and intent, which implies that anger sometimes may be secondary to norm violations (Russell & Giner-Sorolla, 2011) and that anger may be morally motivated (Lindebaum & Geddes, 2016). This implies that, while moral emotions may be different from basic emotions, they may also share common characteristics. In Emotion-focused therapy, moral emotions are not a specific focus, but emotions may be moral in the sense of being elicited by moral transgression, such as guilt (Greenberg & Paivio, 1997). Furthermore, in Emotion-focused therapy all emotions are seen as “foundational in the construction of the self and [...] key determinant of self-organization” (Greenberg, 2010, p. 32), which we will argue to include contempt and self-contempt. An argument towards an emotion being basic is its expressions. Indeed, contempt is supposedly basic because its expression seems universal (Ekman & Friesen, 1986; Ekman & Heider, 1988; Matsumoto, 1992) Note that recently, the universality of emotions’ facial expressions and recognition has been questioned as they may be influenced by cultural bias; see Caldara (2017). Note also that even if contempt may be a basic emotion, it also seems to be a moral one, given that expressing it, which we will explore in the next section, has social consequences.

2.8.1 Expressing contempt

Expressing contempt “may irreparably damage the relationship between individuals or between groups, without achieving anything in terms of social control or social standing” (Fischer & Manstead, 2008, p. 457). This tends towards a rationale of not expressing contempt in certain situations, unless one wants to exclude another person from his or her social environment (Fischer & Roseman, 2007). In some feminist theories for instance, expressing contempt is argued to be “a more fitting response to sexist oppressors than anger or bitterness” (Bell, 2005, p. 83) because it addresses injustice and bears witness to it (Bell, 2005). This is interesting as it illustrates how contempt can fulfil a productive function. On the other hand, expressing contempt is a predictor of divorce (Gottman, 1993) and is also

associated with physical assault perpetration in heterosexual couples (Sommer et al., 2019). This implies that while expressing contempt may serve a certain and usually specific purpose of either putting distance with someone or signify a cold disagreement; it may also entail negative consequences, which should be taken into account.

The deleterious consequences of expressing contempt may be multiple for the person expressing it. After having rejected and excluded people, social support decreases towards the contemptuous person, whereas stress and social isolation increase (Mason, 2018). This is interesting as it illustrates that being contemptuous towards others may induce others to be contemptuous towards the first person. Furthermore, expressing contempt might reflect a low self-esteem and the need to improve it; people who express contempt might be trying to boost their self-image, which implies that this latter is problematic (Fischer & Giner-Sorolla, 2016). Indeed, contemptuous attitudes are more likely when one's self-esteem is low or under threat (Roseman, 2018). Contempt can induce pleasure (in the sense of "*Schadenfreunde*; pleasure at the misfortune of others" (Smith, 2000, p. 189)) in that it boosts self-enhancement, because noticing the inferiority of another person may help someone think that he or she, after all, is "not so bad" (Smith, 2000, p. 189). On the one hand, these elements may influence someone to express contempt with a purpose of either putting distance with this person, or to express strong disagreement with someone. On the other hand, one might want to limit his or her expressions of contempt in order to not fall into the "low self-esteem contemptuous person" category.

Expressing contempt can induce different social consequences depending on different factors. For example, Micheli & Castelfranchi (2018) differentiate basic or non-moral contempt, characterized by the meanness of the person feeling or expressing this contempt (Miceli & Castelfranchi, 2018). This non-moral contempt consists of despising weak or unfortunate people and the effects are only deleterious on the despised person. In contrast,

moral contempt addressed towards someone who is morally despicable (cheating, coward, arrogant, unfair; for example) can be “an apt punitive response” (Miceli & Castelfranchi, 2018, p. 224) to wrongdoings (Miceli & Castelfranchi, 2018). This idea is similar to that of Bell (2005) for whom contempt may serve a purpose. This is important in what regards social consequences of expressing contempt: we can easily imagine that other persons present may negatively perceive someone expressing contempt in certain social situations, for example towards someone else’s weakness. Furthermore, expressing contempt in such an unmoral way may even hold consequences because it can violate existing social norms. Imagine someone making fun of another person who fell off the sideways: other persons around may be outraged and even offended because this could be interpreted as violating the social norm of respect that we owe to other persons. Of course, the interpretation depends on the situation, and our perception of the event would vary depending on the two persons’ relationship: whether they are two friends laughing together or two strangers. One of them (supposedly the one who fell) could be an elderly person, which could enhance the feeling of disrespect or injustice.

Yet, what this implies is that there are social norms associated to the expression of emotion and specifically contempt, and interestingly, the perception of these social norms may be disturbed in certain psychopathologies. In a neural and behavioural investigation, King-Casas et al. (2008) discovered that the perception of social gestures seems to be perturbed or absent in borderline personality disorder (see King-Casas et al., 2008). Thus, we may imagine that a distorted perception of social norms may induce unexpected reactions in terms of emotions, be it about emotional processing, emotional reaction (feeling, expression), or interpretation. Now, if social and moral emotions (including contempt) are closely related to society and the continuation of values and norms, yet also imply social consequences, investigating what this means regarding self-contempt seems appropriate.

2.9 Self-contempt

While we define self-contempt as a negative maladaptive emotion based on our framework of Emotion-focused therapy, its definition is not completely established yet and may vary across disciplines. For the sake of contextualizing self-contempt, we will briefly review how self-contempt may have been discussed in other disciplines than psychotherapy. Of note, we will only review other disciplines' studies that mention self-contempt under this name and not related concepts such as self-hate, self-loathing or self-disgust, before getting back to self-contempt in our framework through its potential social and moral components, as we explored about contempt. Then, we will discuss possible implications of expressing self-contempt, which is important in regards to the fact that in our three empirical studies we conceptualized self-contempt as expressed in the framework of a self-critical two-chair dialogue. We will finally briefly review studies investigating self-contempt in psychotherapy before concluding this chapter.

2.9.1 Self-contempt in an interdisciplinary view

In a sociological view, self-contempt might not only appear in individuals, but also in minorities, especially groups persecuted for their ethnicity or religion as they may integrate their oppressors' hate and criticism, which may causally induce self-contempt (Glenn, 2006; Losurdo, 2000). Low self-esteem, including when induced by oppressors' brainwashing and constant criticism, may induce self-contempt but other factors should be considered and causal relation between minorities and self-contempt may be too simplistic (Charles, 2003; Okazawa-Rey et al., 1987). While Charles (2003), Okazawa-Rey et al. (1987), Glenn (2006) and Losurdo (2000) share the idea that oppressors' brainwashing of minorities holds deleterious consequences that may lead to self-contempt, their definition of self-contempt and its potential causes seem to differ. In addition, these points of view embody the fact that self-contempt seems associated with self-esteem and interrelated with social norms.

Self-contempt's social component as a moral emotion also seems relevant in Christian theology as self-contempt seems to derive from pride, which Christian tradition usually sees pride as a problem of trying to control reality egocentrically, therefore ignoring God (Cooper, 2003; White, 2016). Contempt in Christianity may be dangerous, not in itself but because its objects are nature, body, and reality, which might entail an unproductive self-contempt (Alfano, 2018). Cooper (2001) also associates self-contempt with self-esteem and highlights the fact that challenging low self-esteem and the pride system of patients is relevant in therapy (Cooper, 2001). In Buddhism, self-contempt could be either a conceit of inferiority or of laziness (in the sense of resignation) associated with a false understanding of the self, which entails cognitive errors and affective content and might be a hindrance to moral and spiritual growth (Heim, 2009; McRae, 2018). Thus, overcoming self-contempt may be necessary to forgive oneself and to seek a higher self, once self-contempt has served its purpose of addressing the wrong that one may have done (Alfano, 2018; Holmgren, 1998). In this view, self-contempt might be useful in helping someone to work through the process of responding to his or her wrongdoing, serving a purpose of eliminating what is unworthy of the self and keeping what is worthy (Alfano, 2018; Holmgren, 1998). Yet keeping it after this process would be debilitating, which is why one needs rather to forgive him or herself, which is "a key for genuine positive change" (Enright, 1996, p. 117). This highlights the importance of self-contempt again as a moral guardian, but also, its potential as part of a productive process of change.

Self-contempt may also be a pure social and group construct, as described for example by Marxist sociologist Losurdo (2000) and Greek philosopher Kostantaras (2005). To them, self-contempt appears when an adherent to a political or social party changes his mind after a defeat (Losurdo, 2000) or should emerge out of passivity towards an oppressor (Kostantaras, 2005); making of self-contempt both a consequence of inaction and a social source of action.

Not believing enough in the ideology or not taking enough actions towards sociological change, thus, may induce self-contempt.

It seems that there is no consensus across disciplines regarding a “good ratio” of self-contempt, if such a thing exists. Loving oneself is important, but too much may imply arrogance and inappropriate pride; nevertheless, self-contempt may be useful as a tool discriminating what is good to keep or not for ourselves, as we will see in the next sections, and can induce change. Interestingly, what we may take from other disciplines is that self-contempt may derive from self-elements, but could also be influenced by groups and social dynamics, and might also be useful in a potential productive process of change.

2.9.2 Self-contempt as a socio-moral yet personal emotion

If contempt is such a socio-moral emotion, one might find difficult to conceptualize self-contempt. We will argue that self-contempt appears when “one evaluates oneself, or more precisely one’s perceived *actual* self, as much below the standards upheld by one’s *ideal* self” (Miceli & Castelfranchi, 2018, p. 224), in relation to social norms. One important argument towards self-contempt being an emotion (and not a feeling or a behaviour) is the fact that it seems to be *observable* due to facial expression, the latter including unilateral lip corner tightening (characteristic of contempt, (Ekman & Friesen, 1978; Matsumoto, 1992)) and head gaze down (Keltner, 1996).

When analysing emotional reactions to involuntary psychiatric hospitalization and comparing shame and self-contempt as stigma-related stress, Rüscher et al. (2013) discovered that “both emotions were equally strongly associated with the perception of stigma as more harmful; but only self-contempt, not shame, was related to fewer perceived resources to successfully cope with stigma” (Rüscher et al., 2019, p. 41). This leads the authors to develop the idea that self-contempt plays a greater role in undermining the confidence needed to cope with external challenges (Rüscher et al., 2019), highlighting self-contempt’s importance in

clinical work as well as its crucial social component; as stigma is always socially anchored. When considering body and weight image for example, someone saying “I’m fat” or “too fat” usually refers to a social norm that he/she does not perceive to fit in. For adolescents with eating disorders, self-contempt related to body weight and to social considerations seems to be crucial (Trallero et al., 2005).

2.9.3 Expressing self-contempt

As an emotion, self-contempt may be expressed through verbal, non-verbal, implicit or explicit elements. If expressing contempt serves a purpose of putting distance with someone else, the same is harder to imagine when expressing self-contempt. If we remember that anger, disgust and contempt are guardians of the moral order inducing motivation to change when confronted with one of these emotions (Haidt, 2003), the same could be true for self-contempt on an intrapersonal rather than interpersonal level. Contempt towards others may “turn into self-contempt” (Reich, 1960, p. 230) due to the re-emergence of inferiority feelings when expressing contempt (Reich, 1960). Mason (2003) argues that the existence of self-contempt proves that expressing contempt towards someone else does not necessarily mean that the person acting this way thinks of him or herself as superior (Mason, 2003). On the one hand, it might be possible to express self-contempt and still consider oneself as superior to someone else regarding another subject. On the other hand though, it seems true that expressing contempt or self-contempt does not necessarily imply a lack of respect; it depends on the standards by which someone is judged with contempt (Roseman, 2018). Indeed, expressing contempt may be un-respectful, but contempt expressed on a specific occasion towards a person that one does have respect for, with a purpose of helping this person improve, is not un-respectful *per se* (Roseman, 2018). While this applies to interpersonal contempt, it might be applicable to self-contempt depending on how we define and conceptualize the latter. In a broader interpretation, self-contempt can be problematic and

hinder self-esteem, self-compassion and personal development; however, feeling self-contempt does not necessarily imply the absence of respect all together. One might feel self-contempt about a failure in his or her past but still be conscious of his or her other strengths and abilities. This implies that self-contempt probably exists – can be felt, expressed, or both - in different shades and intensities.

About expressing self-contempt, it appears that ambivalence about expressing emotions is related to self-criticism in the sense that self-criticism correlates with a higher ambivalence and also with higher levels of depression (Mongrain & Zuroff, 1994). Conflicts or ambivalence about emotional expression is linked to psychological distress: Not expressing an emotion is detrimental when a desire to express it exists but is prevented from happening (Mongrain & Zuroff, 1994). Furthermore, active inhibition of an emotion (-i.e. the person knows about the emotion and actively represses it-) is linked to higher level of arousal and this process, when chronic, can lead to negative affective states (King & Emmons, 1990; Lesser, 1981; Mongrain & Zuroff, 1994; Pennebaker et al., 1987). Ambivalence about expression relates to symptomatology, especially general distress and anxious arousal (Barr et al., 2008; King & Emmons, 1990). Expressing self-contempt often involves self-criticism, and Whelton and Greenberg (2005) showed that self-critical people express more self-contempt than controls in that they attack themselves verbally more violently (i.e. with more insults, which are “words with an inherent loading of contempt” (Whelton & Greenberg, 2005, p. 1593). Furthermore, people who express more self-contempt are less resilient towards it and seem to accept it with more submission than controls (Whelton & Greenberg, 2005). Thus, it appears that the more self-contemptuous someone is, the more difficult it is for this person to react in a productive manner. Furthermore, expressing self-contempt is more likely to happen in anger-prone individuals, as they express more contempt while criticizing themselves and this self-contempt predicts maladaptive anger-rumination problems (Kramer & Pascual-

Leone, 2016). We have seen that contempt might serve a purpose of “guardian of morality”, yet this is not certainly true concerning self-contempt. So far, self-contempt has been defined as a rather maladaptive emotion, the “embodiment of a harsh negative self-evaluation” (Kramer, Renevey, et al., 2020, p. 210) that predicts an increased risk of suicidality (Rüsch et al., 2019). These elements make of self-contempt a very important study objective in emotion research but also in psychotherapy, which we will review in the next section.

2.9.4 Self-contempt in psychotherapy

Self-contempt may be a central but overlooked phenomenon in certain psychological disorders (Kramer, Renevey, et al., 2020), which makes it relevant to explore in psychotherapy research. In psychotherapy, emphasising assets may help the patients feel pride towards themselves, which may help in reducing self-contempt (Browne, 1964). Psychotherapy may help highlighting inner resources, with the ultimate goal of transitioning from self-contempt to self-compassion (Browne, 1964). However, it is important to note that Stevens (1971) argues that self-contempt may be maintained in psychotherapy, rather than reduced, in the event that the therapist embodies contempt towards the patient because of stereotypes the therapist may (un)consciously endorse, thus unconsciously (we presume) reinforcing self-contempt in the patient (Stevens, 1971). While we can only hope that therapists’ stereotypes maintaining self-contempt only apply to a limited number of therapies, and that progress was made on this matter since 1971, it still appears to be of uttermost importance that the therapists be aware of their own social conditioning and associated biases (Wesley, 1975). Furthermore, the idea of maintaining self-contempt through the eyes of the therapist highlights the fact that even if self-contempt seems to be a very personal process, other persons and social norms may influence it, often unintentionally and sometimes much more than we could imagine. Indeed, it seems that self-evaluation may be derived, at least partly, from evaluation by others (Gilbert & Irons, 2009).

Self-contempt might be central in borderline personality disorder because of known problematics of instability in interpersonal relationships, affects, self-image as well as self-aversive behaviours and affects (Brown et al., 2009; Gunderson, 2011; Sallin et al., 2021; Winter et al., 2017). The newest revision of the international classification of diseases (11th ed; ICD-11; World Health Organization, 2019) includes a disturbed view of the self, characterized by self-contempt, as a required feature of severe personality disorder (World Health Organization, 2019). Specifically for borderline personality disorder, high negative affect, emotional instability and an unstable self-image, specifically a view of the self as inadequate, bad, guilty, disgusting and contemptible are part of the borderline personality pattern specifier (World Health Organization, 2019). Furthermore, it appears that individuals with a traumatic background might have a higher sense of threat – both from other persons and from themselves - which induces self-contempt (Gilbert & Tirsch, 2009), and traumatic experience is common in borderline personality disorder patients (Yen et al., 2002; Zanarini & Frankenburg, 1997). Sallin et al. (2021) investigated self-contempt in patients with borderline personality disorder and observed that expressed self-contempt is associated with a weaker alliance when the latter is rated by the patients, but with a higher one when rated by the therapists, as well as with borderline symptomatology at the beginning of therapy (Sallin et al., 2021). This relates to the findings of Muntigl et al. (2020) who showed that therapists react differently to self-critical talks according to the *type* of self-criticism used. Self-criticism, for Muntigl et al. (2020), can be either a strong self-condemnation implying a negative evaluation of the self or a more self-reflective evaluation, which does not imply the same negative evaluation (Muntigl et al., 2020). What is particularly important in their study is that they focused on showing how optimistic responses from therapists can help change self-critical talk into a more productive and positive way (Muntigl et al., 2020). Indeed, it appears that the self-contempt that accompanies self-criticism is a main factor in maintaining

self-critical beliefs (Kannan & Levitt, 2013). These results highlight the possible implication of expressed self-contempt on several dimensions of psychotherapy as well as its potential role in a productive process of change from maladaptive to more adaptive emotional states.

2.9.5 Self-contempt as a mechanism of change

Self-contempt seems to induce feelings of worthlessness and feeling inferior, and potentially derives from experiencing primary maladaptive shame, whereas secondary shame derives from chronic self-contempt and negative self-evaluation (Greenberg & Paivio, 1997). Secondary shame differs from primary shame in that primary shame “is more situation-specific and less chronic” (Greenberg & Paivio, 2003, p. 231). Thus, self-contempt may play an important role in chronicity of shame feelings. The restructuring of maladaptive beliefs underlying secondary shame aims to turn self-contempt into acceptance and self-soothing, often using the two-chair dialogue that accesses the emotional schemes and helps highlight the cognitive content of the message but also the self-contempt and self-disgust, which produce a painful reaction (Greenberg & Paivio, 2003). The process of emotion transformation consisting of becoming more self-accepting, and rejecting or re-evaluating the negative evaluations about the self, may help patients change self-contempt into pride (Greenberg & Paivio, 2003) and potentially increase self-compassion. The two-chair dialogue is particularly adequate to help express self-contempt in order to address low self-esteem and shame feelings and to raise self-compassion (Barnard & Curry, 2011; Greenberg & Paivio, 1997), ultimately helping emotional processing towards adaptive emotions. Thus, self-contempt may play an important role in a dynamic pathway moving from self-contempt to self-compassion in psychotherapy.

An interesting study on this matter is that of Kramer et al. (2018), which used individualized stimuli to investigate self-contempt combining a psychological assessment and an fMRI. Kramer et al. (2018) discovered that self-contemptuous words are associated to

higher emotional arousal than neutral and negative words (Kramer et al., 2018; Kramer, Renevey, et al., 2020), highlighting the importance of self-contempt as a maladaptive emotion. Furthermore, Kramer et al. (2018) observed a higher amount of neural activity change when participants were presented with self-contemptuous words rather than negative words (Kramer et al., 2018). There is a need for further research into the validity of these assessments individually (Kramer, Renevey, et al., 2020); and this thesis is part of this effort. As of now, it appears that changing maladaptive self-contempt into a less maladaptive emotion might be a potential mechanism of change in psychotherapy, being part of an emotional transformation from maladaptive to more adaptive emotions. Indeed, expressing self-contempt in psychotherapy and working on it may help diminish it or even change it into a more compassionate emotion towards the self. Note that this does not imply that individuals need to become self-contemptuous before they can become more self-compassionate and have a successful therapy. Instead, expressing self-contempt in a controlled environment may actually contribute to enhance self-compassion, which potentially may be helpful to patients as well as healthy controls and even to individuals that may not seem particularly self-contemptuous.

CHAPTER 3: AIMS AND HYPOTHESES

So far, most studies investigated self-contempt as a complementary variable amongst others and not as the main variable of interest. Self-criticism has benefited from a rather broad interest, and we believe that self-contempt, which we conceptualize as the more emotional side of self-criticism (Pascual-Leone et al., 2013), deserves special attention considering the importance of emotions in psychotherapy as well as in daily life. We assume that self-contempt is a negative and maladaptive emotion that may play a role in the emotional processing change pathway from self-contempt to self-compassion. We assume that this may be true in daily life and in healthy controls, but this also may be especially meaningful in borderline personality disorders research, which is an important part of our theoretical interest. Furthermore, we believe that multi-methods investigations account for a greater number of information, especially on a rather “new” concept as is self-contempt in psychotherapy research. Our design, which we will present in the following methods chapter, includes various methodologies. Our main aim is to explore self-contempt as a negative maladaptive emotion and as a variable of great interest in emotion and psychotherapy research. In order to accomplish this, our main aim can be specified into three specific aims, each of them being part of a separate empirical study that we will describe in the next sections and chapters. We will present each specific aim and related hypotheses in relation with each empirical study.

3.1 First empirical study – Evaluation of expressed self-contempt in psychotherapy: An exploratory study

3.1.1 Aims

In this framework, the **first specific aim** of this thesis was to develop an expressed self-contempt rating scale in the form of a 5-point Likert-type scale based on the assumption that the 3-point Likert one presented before may lack sensitivity (Kramer & Pascual-Leone, 2016; Sallin et al., 2021). The intention behind this aim was to develop a reliable measure of expressed self-contempt based on the only existing one, to our knowledge, which is the 3-point one (Kramer & Pascual-Leone, 2016). Thus, our first aim was to adapt the 3-point scale into a 5-point one, with the secondary aim to increase sensitivity and be able to better capture and understand expressed self-contempt. In order to do that, we used our scale on different participants groups and in different contexts.

3.1.2 Hypotheses

Given that having a reliable and valid method to evaluate expressed self-contempt seems fundamental to study self-contempt, both with clinical and research perspectives, our first empirical study aimed to create a 5-point Likert-type scale and to use it across different populations and contexts to test it. As our scale is an observer-report one, we developed a manual to train the persons who would use it. We used our scale on audio and video recordings to rate expressed self-contempt on three different participants groups. The groups consist of two patient groups, one of participants with borderline personality disorder and one of participants with major depressive disorder in order to allow comparison between diverse psychopathologies. The third group comprised healthy controls participants. The two patient groups were in the early stages of psychotherapy whereas the healthy control group was in an analogue psychotherapy session including a self-critical two-chair dialogue. Our hypothesis

concerning this empirical study were as follows. **First**, we hypothesized that self-contempt expressed in the borderline personality disorder group would relate to symptom intensity, in agreement with previous findings from Sallin et al. (2021). **Second**, we hypothesized that there would be a difference in expressed self-contempt between patients groups and the healthy controls group. We assumed that self-contempt would be higher in patients than in healthy controls. **Third**, based on the fact our 5-point Likert-type scale of expressed self-contempt is based on a previous one (Kramer & Pascual-Leone, 2016), whose validity and reliability were sufficient, we assumed that the validity and reliability of ours would be satisfactory as measured with internal consistency and interrater reliability.

3.2 Second empirical study – Ecological momentary assessment of emotional processing: An exploratory analysis comparing daily life and a psychotherapy analogue session

3.2.1 Aims

The **second aim** of this thesis was to explore the ecological momentary assessment in what regards its potential in clinical work in the context of emotional processing in general, as self-contempt may play a role in it as well as in daily life. This seems relevant in relation with Jacquemettaz (2022)'s results, which suggested a potential role of self-contempt in daily life and in quality of life as measured related to sleep quality and level of rejecting anger (Jacquemettaz, 2022). To our knowledge, no study had directly compared an analogue psychotherapy session and an EMA to investigate emotional processing, at the time we decided to conduct this study. Indeed, emotional processing was widely studied in different psychopathologies, as we have seen, but not using an EMA method. For this purpose, the CAMS (Pascual-Leone & Greenberg, 2005) seemed ideal to adapt in an EMA environment as it allows to assess emotional processing step by step. Our EMA items were designed

according to the CAMS (Pascual-Leone & Greenberg, 2005), which means that theoretical correspondence should be excellent.

3.2.2 Hypotheses

For the EMA investigation, given that we created our EMA items (presented in section 6.4.2) directly based on the CAMS (Pascual-Leone & Greenberg, 2005), our **first** assumption was that the reliability of our EMA items would be good and represent distinct emotional states as measured with the internal consistency of our EMA items and inter-rater reliability of our CAMS codes. Our **second** hypothesis was that we expected a significant positive correlation between an individual's preponderance of emotional states observed in daily life thanks to the EMA investigation and the preponderance of the emotions categories observed during the two-chair dialogue of the analogue psychotherapy session. Finally, our **third** hypothesis concerning our second empirical study was that we expected the intensity of symptoms of general distress (measured with the OQ-45 (Lambert et al., 1996)); borderline symptomatology (measured with the BSL-23 (Bohus et al., 2009)); and interpersonal problems (measured with the IIP (Horowitz et al., 1988)) to be associated with the number and frequency of early expressions of distress (Pascual-Leone & Greenberg, 2007). The early expressions of distress, which include global distress, rejecting anger and fear or shame from the sequential model of emotional processing (Pascual-Leone & Greenberg, 2007), were measured both in daily life and in the self-critical two-chair dialogue of the analogue psychotherapy session.

3.3 Third empirical study – From a self-critical two-chair dialogue to individualized self-contemptuous stimuli in an fMRI: an investigation of self-contempt in a neurobehavioral paradigm

3.3.1 Aims

The **third aim** of this study was to investigate the relationship between the level of expressed self-contempt in the self-critical two-chair dialogue with the neural activation during the visualization of individualized self-contemptuous stimuli measured with fMRI. Given that individualizing assessments seems valuable and worthy both in emotional processing (Ellsworth & Scherer, 2003; Speed et al., 2020) and in borderline personality disorder (Kuo et al., 2014), our design, using individualized stimuli, aimed to evaluate self-contempt expressed in psychotherapy as well as its effects in neurobiological terms, as we projected individualized self-contemptuous stimuli in the fMRI assessment. Note that this study was also conducted on healthy controls, as was the EMA one, yet on different ones. Healthy controls who came for our EMA study came to only one analogue psychotherapy session, whereas healthy controls for our fMRI study came to two analogue psychotherapy sessions and to two fMRI assessments. For our third empirical study, we also aimed to evaluate the change of expressed self-contempt between two points in time, which theoretically correspond to before and after therapy. This would allow us to use our third empirical study as proof of concept for later studies in clinical populations as well as investigate change in expressed self-contempt, which would build on self-contempt as a mechanism of change as discussed in the theoretical framework of this thesis. Importantly though, our third empirical study only analyses the first time point as the second one is planned to be used in a future study.

3.3.2 Hypotheses

Our **first** hypothesis was that being exposed to individualized self-contemptuous stimuli with high emotional meaning as defined in the theoretical background would result in a significantly higher activation than being exposed to non-individualized negative stimuli in brain areas such as the insula, related to emotional processing or to emotions conceptually close to self-contempt. Following this idea, our **second** hypothesis was that the level of expressed self-contempt observed in the analogue psychotherapy session would also be linked to a higher neural activity in “emotional brain regions” (presented in chapter 2) when exposed to individualized self-contemptuous stimuli. Indeed, we assumed that individuals expressing more self-contempt might react more strongly to their own individual contemptuous stimuli. This may conceptually be wrong, as this idea does not account for the possible habituation of individuals that express high levels of self-contempt. We used self-esteem self-reports questionnaires as well as symptoms questionnaires of borderline symptomatology alongside the evaluation of expressed self-contempt during the analogue psychotherapy session.

Using both time points data, we also used Pearson correlations to examine whether the levels of expressed self-contempt measures with the ESCS were related to either (1) the borderline symptomatology measured with the ZAN-BPD or (2) any of the measures of state self-esteem measured with the SSES.

Furthermore, there were two analogue psychotherapy sessions corresponding to before and after therapy theoretically, each followed by an fMRI assessment. Yet, participants were healthy controls.

This chapter thus introduces the three empirical studies conducted in the framework of this thesis. In this chapter, we review the aims and hypotheses, before presenting the methods in chapter 4. Then, we will present our empirical studies in the form of three papers. We will present our first paper in chapter 5, the second in chapter 6, and the third in chapter 7. Then, a

general discussion will summarize the findings of these three papers in chapter 8, followed by a general conclusion in chapter 9.

CHAPTER 4: METHODS

Before diving into the methods, we will briefly present the larger project in which this thesis takes place as it partly justifies parts of our methodology. The larger project within which this thesis takes places aims to investigate change in emotional processing and socio-cognitive processing in borderline personality disorder. Patients with borderline personality disorder are currently being recruited in an outpatient clinic. Patients are randomly attributed to either a treatment as usual condition (TAU) or good psychiatric management (GPM), which is a recognized treatment in borderline personality disorder (Gunderson, 2014). Research appointments for the behavioural assessment are scheduled 4 times along the treatment (beginning, middle, end, follow-up) and twice for the fMRI assessment (after the first and third behavioural assessments). Consistent with what we presented in the framework of this thesis, patients with borderline personality disorder (and healthy controls) undergo a self-critical two-chair dialogue during the behavioural assessment, for their self-contemptuous stimuli to be extracted and presented in the fMRI one week later. This project aims to investigate emotional processing and mechanisms of change, one of which may be self-contempt, in a neurobehavioral design, specifically in borderline personality disorder and psychotherapy research. Explaining the framework of this thesis and the larger project in which it takes places may allow a better understanding of certain methodological decisions in the three empirical studies presented in this thesis, to which we will now get back.

4.1. Participants and recruitment

Participants are not the same across our three empirical studies. Across all samples, a common inclusion criterion was the age limit, which was between 18 and 65 years old.

Another shared inclusion criterion was speaking French. We also excluded for healthy controls the presence of a psychiatric disorder or medication. All participants agreed for their data to be used and signed a consent form in the presence of a member of the research team.

4.1.1 First empirical study

For our **first empirical study**, the validation of an observer-report scale of expressed self-contempt, N=61 participants were distributed across three groups of N=20 healthy controls, N=21 patients with borderline personality disorder (BPD) according to the DSM-5 (5th ed; DSM-5 American Psychiatric Association, 2013) and N=20 patients with a major depressive disorder (MDD) according to the DSM-5 (5th ed; DSM-5 American Psychiatric Association, 2013). The healthy controls were university students who we recruited at the University of Lausanne. They are part of the participants who initially came for our second study, the EMA investigation. We video recorded them while they underwent a self-critical two-chair dialogue. Concerning the two patients groups, we did not recruit them ourselves but reanalysed the data. The data for the borderline personality disorder group comes from a previous study by Kramer et al. (2014), and is the same data that Sallin et al. (2021) used (Kramer et al., 2014; Sallin et al., 2021). This group consisted of patients undergoing psychotherapy and video recordings of their first clinical sessions were available. The third group consisted of patients with major depressive disorder undergoing psychotherapy. Their data comes from a study by de Roten et al. (2017) comparing psychodynamic psychotherapy to pharmacological treatment (de Roten et al., 2017). For this group, audio recordings of therapy sessions were available. The mean age of all 61 participants in our first empirical study was $M = 37.8$ years old ($SD = 16.46$). In the healthy controls group, the mean age was $M = 23.05$ years old ($SD = 1.85$), whereas the mean age in the patients with borderline personality disorder group was $M = 32.43$ years old ($SD = 6.86$). The mean age of the patients with major depressive disorder group was higher, $M = 57.68$ years old ($SD = 10.53$), which

we have taken into account in our statistical analyses by controlling for age. In terms of gender, females were more numerous across all three groups ($n = 44$, 72%) together as well as separately; there were more women in the healthy controls group ($n = 15$, 75%), as well as in the group of patients with borderline personality disorder ($n = 16$, 76%) and the group of patients with major depressive disorder ($n = 13$, 65%). To specify the diagnosis of participants, the MADRS (Montgomery & Åsberg, 1979) was used in the patients with major depressive disorder group and BSL-23 (Bohus et al., 2009) for the patients with borderline personality disorder group. This is presented in section 4.3.2 and table 2 as well as in our second empirical study, section 5.5.2 and table 3.

4.1.2 Second empirical study

Concerning our **second empirical study**, comparing emotional processing in daily life and in an analogue psychotherapy session, we recruited $N = 42$ participants. They were healthy controls that we recruited at the University of Lausanne in undergraduate classes of psychology whose mean age was $M = 22.43$ ($SD = 2.86$) and female were more numerous ($n = 35$, 83%). Data from the analogue psychotherapy session was missing for three participants due to problems with video recording. Two participants required technical assistance after dropping the smartphone on which EMA questions appeared. We were able to help them immediately and data collection was not impacted.

4.1.3 Third empirical study

For our **third empirical study**, investigating self-contempt in an analogue psychotherapy session and in an fMRI assessment, $N = 28$ healthy control participants were recruited at the University of Fribourg in undergraduate classes of psychology. The mean age of participants was $M = 22.29$ ($SD = 2.65$) and all of them were female. We only recruited females in order to increase homogeneity of the sample, because this sample is a control group in an ongoing study investigating borderline personality disorder in an fMRI

environment, for which the decision was taken to only accept females to the fMRI part of the study to avoid gender bias in the neurobehavioral assessment. We had to exclude two participants from the fMRI part of the assessment because of issues related to the fMRI machine environment (claustrophobia and anxiety (1) and high sensitivity to noise (1)). Data from two other participants for the fMRI assessment was lost due to a technical problem.

Table 1 presents the mean and standard deviations of age across the samples in our three different empirical studies, and the gender distribution across our three empirical studies.

Table 1

Means (M) and standard deviations (SD) of participants' age and gender distribution of participants across our three empirical studies

	1 st empirical study		2 nd empirical study		3 rd empirical study	
Age	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
All	37.80	16.46				
HC	23.05	1.85	22.43	2.86	22.29	2.65
BPD	32.43	6.86				
MDD	57.68	10.53				
	n	%	n	%	n	%
Gender						
Female	44	72	35	83	28	100
Male	17	28	7	17	0 ^a	0 ^a

Note. HC = healthy controls, BPD = patients with borderline personality disorder and MDD = patients with major depressive disorder.

^a In our third empirical study, males were excluded a priori by design.

4.2 Procedure

4.2.1 First empirical study

For our first empirical study, healthy controls came to an analogue psychotherapy session, during which we conducted a self-critical two-chair dialogue. For the two patient groups, who did not undergo the two-chair dialogue, we analysed the first session of psychotherapy. This was relevant with our assumption that self-contempt may be higher at the beginning of the treatment rather than at the end of it. We also assumed that this would allow a better comparison with healthy controls, given that they did not receive any treatment, so it may be used as baseline measure without the potential influence of psychotherapy on self-contempt. Our first empirical study thus consisted in analysing one session per participant. Video recordings were available for the patients with borderline personality disorder group and the healthy controls while audio recordings were available for the patients with major depressive disorder group. Interviews were conducted at the Department of Psychiatry of the Lausanne University Hospital, Switzerland.

4.2.2 Second empirical study

Our second empirical study also consisted of a unique analogue psychotherapy session in which a two-chair dialogue was conducted with healthy controls. At the end of the analogue psychotherapy session, the participants received a smartphone on which they were asked to answer to the EMA questions 4 times a day for 7 days. Another appointment was scheduled 7 days after for the participants to return the smartphones. Interviews were conducted at the Department of Psychiatry of the Lausanne University Hospital, Switzerland.

4.2.3 Third empirical study

Our third empirical study consisted of two analogue psychotherapy sessions, of which we analysed the first, conducted in the same way as in the other empirical studies. Healthy controls came to the Psychiatry Department of the Lausanne University Hospital for an

analogue psychotherapy session with a two-chair dialogue. They also took the self-report state self-esteem (SSES; Heatherton & Polivy, 1991) questionnaires before, during and after the two-chair dialogue. One week after their first analogue psychotherapy session, participants came to an fMRI assessment at the Laboratory of Research in Neuroimaging of the Lausanne University Hospital. During this fMRI assessment, participants were exposed to individualized self-contemptuous stimuli extracted from the self-critical two-chair dialogue. Four months after the first analogue psychotherapy session, participants came a second time to follow the same session including the two-chair dialogue, followed by an fMRI assessment one week after.

4.3 Measures

4.3.1 Clinical measures

The two-chair dialogue (Greenberg, 1979, 2015) is based on Gestalt therapy and is widely used in Emotion-focused therapy to work on emotions and emotional processing, allowing to address self-criticism (Whelton & Greenberg, 2005). We used the two-chair dialogue paired with a state self-esteem questionnaire (SSES) in the following way.

1. *Participants fill in a state self-esteem questionnaire*
2. **Instruction:** We ask the participants to relive, as vividly as possible, a situation of failure that they lived. We insist that the feeling of failure should be about themselves, that it was *their* failure. We also precise that the situation should be meaningful for the participants. We ask them to embody this feeling, to relive the situation by remembering what happened, what they felt in the situation, what was said – by them or others – regarding the failure situation. We propose that participants close their eyes to help them relive the situation as precisely as possible.
3. *Participants fill up a state self-esteem questionnaire*

4. Instruction: We ask the participants to change chair and to sit on the one that is in front of them (which we will call the second chair, as opposed to the first one). Once they are seated, we give them the following instruction: *“Now, on this chair, you are no longer you. You now embody the critical voice that all of us humans have in our heads during failure situations. What I am going to ask you to do is to imagine that you never left the first chair, only the critical voice did. Please try to picture yourself on the first chair. Now, as the critical voice, what I will ask you to do is to tell you – on the chair in front of you – what the critical voice thinks of you during the failure situation. I will ask you to say it out loud, whenever you are ready.”*
5. The participants, embodying the critical voice, start – usually – criticizing themselves. We intervene only if requested or necessary. If we intervene, we pay attention to remain as neutral as possible to avoid influencing the participants in any way. Our interventions could consist of asking if there is something else they would like to say, for example.
6. Instruction: We ask the participants to change chairs again and to go back on the first one. We tell them: “Ok, now you are you again – how do you feel?” We let the participants answer, and then ask if they would like to answer to the critical voice, now that they are themselves again. In order to do that, we ask them to imagine that the critical voice is still sitting on the second chair.
7. *Participants fill up a state self-esteem questionnaire.*

Our instructions during the two-chair dialogue, implying the use of a critical voice, enhance the apparition of self-criticism. We conceptualize self-contempt as the emotional side of self-criticism (Pascual-Leone et al., 2013). In this sense, the two-chair dialogue, which may enhance self-criticism, seems to be a good mean to observe self-contempt that may appear in

the background of self-criticism. Note that the two-chair dialogue was used in our three empirical studies, as presented in table 2.

4.3.2 Self-report measures

Outcome questionnaire (OQ-45; Lambert et al., 1996) : 45 items self-report questionnaire that assesses the symptomatic level, this is a widely used questionnaire to assess outcome of a psychotherapeutic treatment, in the form of a 5-point Likert-scale ranging from 0 (never) and 4 (most of the times). The overall score ranges between 0 and 150, where higher scores signal greater distress and the clinical threshold is 64 on the total score. Internal consistency is excellent ($\alpha = 0.93$) as well as test-retest (0.84). The scale has been translated and validated in French (Emond et al., 2004) which was used in the present study OQ-45 data was available for our participants with borderline personality disorder in our first empirical study.

Borderline Symptom List (BSL 23; Bohus et al., 2009) : 23 items self-report questionnaire specific borderline symptomatology using 23 items (brief version), for which excellent psychometric properties have been reported, internal consistency is high (α 0.94 – 0.97) (Bohus et al., 2009). The items are assessed using a Likert-type scale ranging from 0 (absent) to 4 (clearly present); an overall mean score is calculated (0-4); the French version has excellent psychometric properties (Nicastro et al., 2016). There is no clinical threshold for the BSL-23, but a proposition is 1.5 (Kleindienst et al., 2020). Data was available for our group of patients with borderline personality disorder in our first empirical study.

Inventory of Interpersonal Problems (IIP; Horowitz et al., 1988) is a self-report questionnaire encompassing 64 items assessing a range of interpersonal problems; a general score is computed based on the mean of all items. Problems are rated on a 5-point Likert-type scale ranging between 0 (not at all) and 4 (very much). The IIP demonstrates high internal

consistency ($\alpha = 0.82$ to 0.93) and test-reliability is high (0.81 to 0.98) as well as discriminant validity (Horowitz et al., 1988). This widely used scale has been translated into French.

State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991) : 20 items self-report scale which measures a participant's self-esteem at a given time. The whole scale has a high degree of internal consistency ($\alpha = 0.92$) The 20 items are divided in three self-esteem sub-components: performance, social and appearance. All items appear in the form a 5-point Likert type scale. We do not know of any clinical threshold for this scale. We used the SSES as manipulation check with the two-chair dialogue. Data was available for participants in our third empirical study.

Table 2

Summary of measures and methods used across our three empirical studies

	1 st empirical study			2 nd empirical study		3 rd empirical study
	HC	BPD	MDD	HC	HC	
2-chair	yes	no	no	yes	yes	
OQ-45	yes	no	no	no	no	
BSL-23	no	yes	no	no	no	
IIP	no	no	no	yes	no	
SSES	yes	no	no	no ^b	yes	
MADRS	no	no	yes	no	no	
ZAN-BPD	no	no	no	no	yes	
CAMS	no	no	no	yes	no	
ESCS	yes	yes	yes	no ^a	yes	

Note. HC = healthy controls; BPD = patients with borderline personality disorder; MDD = patients with major depressive disorder. 2-chair = two-chair dialogue; OQ-45 = Outcome questionnaire; BSL-23 = Borderline Symptom List; SSES = State self-esteem scale; MADRS = Montgomery-Åsberg Depression Rating Scale; ZAN-

BPD = Zanarini borderline symptomatology; CAMS = Classification of affective meaning states; ESCS = Expressed self-contempt scale.

^a Work by Jacquemettaz (2022)

^b Work by Kramer (2022)

4.3.3 Hetero-observations measures

Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979): assesses depression symptomatology; this is a depression rating scale comprising 10 items, widely used and validated, and internal consistency is satisfactory ($\alpha = 0.84$). The maximum score is 60 points and higher scores mean greater depressive symptomatology. Clinical threshold may be at 7 (mild depression) and goes further up gradually, but there is no consensus about this (Müller et al., 2003). Data was available for our participants with major depressive disorder in our first empirical study.

ZAN-BPD (Zanarini, 2003): a semi-structured clinician administered interview evaluating the nine criteria of borderline symptomatology in a dimensional way. The ZAN-BPD is a validated and widely used borderline symptomatology clinical scale, ranging from 0 to 36. Clinical threshold is set at 12. Internal consistency is high ($\alpha = 0.85$). Data was available for our healthy control group in our third empirical study.

4.3.4 Measures of emotions

4.3.4.1. Measure of emotional processing

Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005): The CAMS is a process-rating system which allows identification and measurement of emotional states in psychotherapy sessions. According to the authors' manual, the CAMS is designed to track changes in the "flow of emotions" (Pascual-Leone & Greenberg, 2005, p. 1) in order to measure which emotions appear when. The theoretical framework of the CAMS is Emotion-focused therapy and includes the idea that certain emotional experiences may be

more productive than others (Greenberg & Paivio, 1997; Pascual-Leone & Greenberg, 2005). The CAMS allows the evaluation of diverse emotional states ranging from unspecified early expressions of distress to specified advances meaning-making expressions. As we have seen in figures 2 and 4, the emotional states are global distress, fear and shame, rejecting anger, negative evaluation, existential need, assertive anger or self-soothing, grief and hurt, and acceptance and agency. Note that self-soothing relates to self-compassion. As seen in figure 1, expression of self-contempt is thought to happen during phase 2 (working through primary maladaptive emotion), which follows phase 1 (approaching emotion and exploring distress) and precedes phase 3 (facilitating emerging adaptive emotions). We can imagine that expressing self-contempt during phase 2 may help in the process of changing feelings of fear, shame and maybe disgust into negative evaluation, which may change into self-compassion at a later stage. This highlights the pathway from very emotional states to rather cognitive ones, such as negative evaluation that may lead to self-compassion.

4.3.4.2 Measure of self-contempt

Expressed self-contempt rating scale: In order to evaluate expressed self-contempt based on the existing 3-point Likert-type scale, we defined and used the 5 points of the improved expressed self-contempt rating scale using a quotation manual. The manual functions as a decision tree (see figure 4). The rater needs to evaluate verbal and non-/paraverbal manifestations of expressed self-contempt ranging from 1 (no expressed self-contempt) to 5 (extreme expressed self-contempt). See our first empirical study, section 5, for precise reports on this scale.

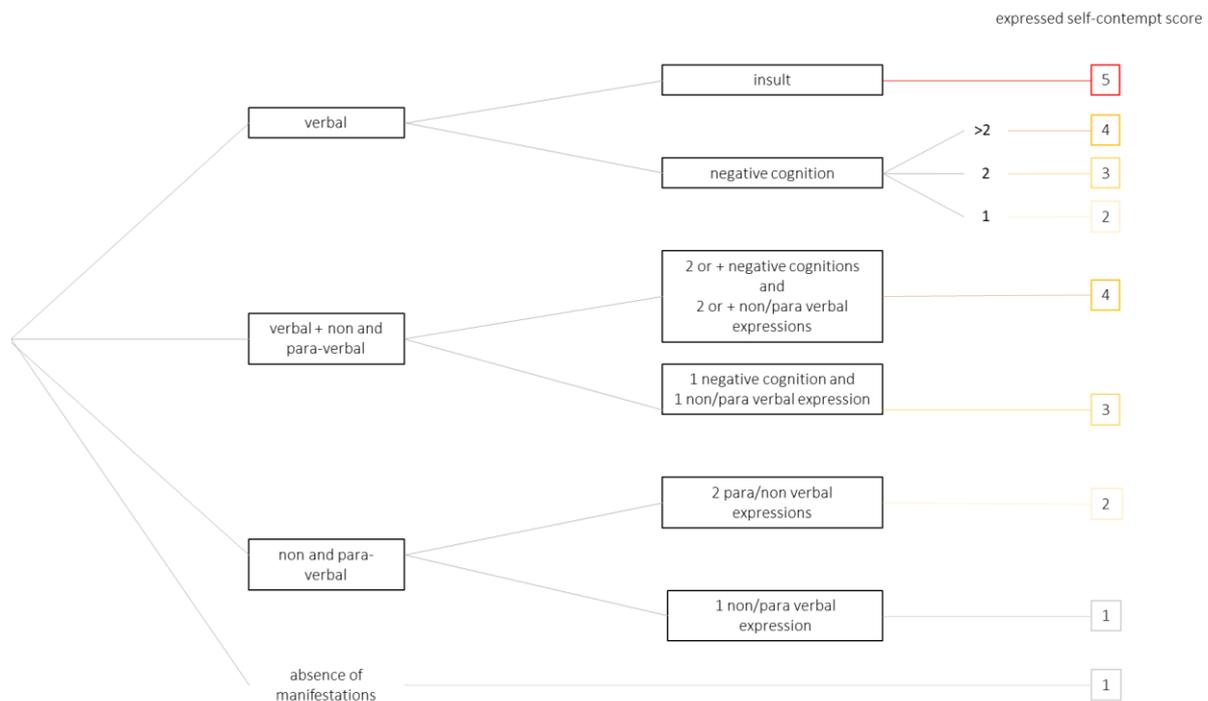
- In absence of any manifestation, the expressed self-contempt score will be rated 1.
- In presence of 1 non-/paraverbal expression, the score will also be 1.
- In presence of verbal and non-/paraverbal expression, two decisions are possible for the rater to choose:

- Either 1 negative cognition and 1 non-/paraverbal expression lead to a score of 3;
- Alternatively, 2 or more negative cognitions and 2 or more non-/paraverbal expressions lead to a score of 4.
- If only verbal expressions are presents, without any non-/paraverbal expressions, the possibilities are multiple:
 - Either only negative cognitions are expressed, which will be quantified as follows:
 - 1 negative cognition leads to a score of 2,
 - 2 negative cognitions lead to a score of 3,
 - 3 or more negative cognitions lead to a score of 4.
 - Or an insult is present which will lead the score to be of 5.

Coders can be easily trained using both the decision tree and a coding manual developed for this purpose.

Figure 4

Decision tree for the quotation of expressed self-contempt on 5 Likert points



4.3.5 functional Magnetic resonance imaging (fMRI)

4.3.5.1 fMRI data acquisition

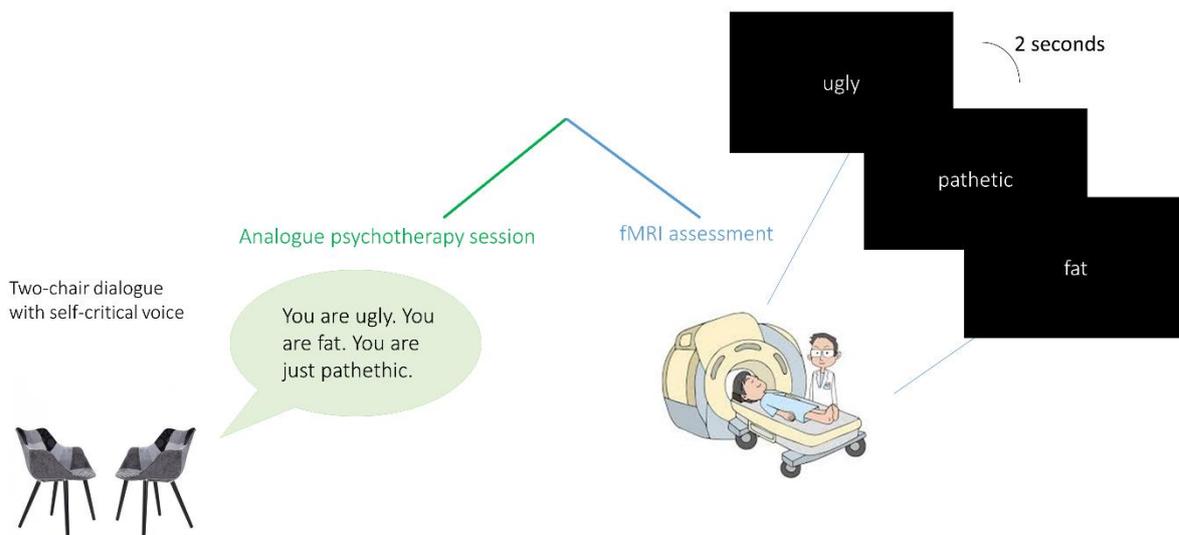
The fMRI data was acquired on a 3-T MRI scanner with a 64-channel head coil using a 2D EPI sequence. The acquisition parameters were as follows: voxel size $3 \times 3 \times 3$ mm³, (slice thickness = 2.5mm with a distance factor of 20% that makes it = 3mm); 45 slices; slice TR = 80 ms; volume TR = 80ms x 45 = 3.6s; TE = 17.4 ms; phase oversampling = 12%; flip angle = 90°; BW = 260Hz/Px; GRAPPA with acceleration factor = 2 along phase direction. The structural MRI data consisted of T1-weighted MPRAGE images (TR = 2,000 ms; TI = 920 ms; TE = 2.39ms; $\alpha = 9^\circ$; BW = 250 Hz/Px; read-out in inferior–superior direction; FoV = 256 × 232 mm; 176 slices) at 1 mm resolution; GRAPPA with acceleration factor = 2 along phase direction. A whole-brain analysis was used.

4.3.5.2 Experimental paradigm

While in the fMRI, participants were presented with pictures (800x600, white text on black background, text in arial 48). The pictures included one word taken from the two-chair dialogue, thus one individualized self-contemptuous stimuli such as “lame”. 20 stimuli were presented, each two times, in a pseudo-randomized order. Figure 5 depicts the relationship between the analogue psychotherapy session and a block-design fMRI assessment.

Figure 5

Relationship between the two-chair dialogue from the analogue psychotherapy session and the fMRI assessment. Extraction and use of the individualized self-contemptuous stimuli.



Note. Image of the two chairs (left) retrieved from shorturl.at/knwFS. Image of the fMRI scanner (right) retrieved from shorturl.at/oBEJV.

4.4 Data analyses

4.4.1 Behavioural data analysis

All statistical analyses were done using the Statistical Package for the Social Sciences (SPM12; IBM SPSS Statistics, Version 27, Armonk, NY, USA).

4.4.1.1 Behavioural analyses for our first empirical study

For our first empirical study, we first used Pearson correlations to examine whether the level of expressed self-contempt was associated with either the borderline symptomatology measured with the ZAN-BPD in the borderline personality group or the depressive symptomatology measured with the MADRS in the major depressive disorder group.

We then investigated the inter-rater reliability of self-contempt's measurements by calculating intraclass correlation coefficients (ICC) estimates based on a mean rating ($k=2$), two-way mixed-effects model with 95% confident intervals. This was important to assess consistency of expressed self-contempt scores across the two observers. Then, we calculated Cronbach's alpha coefficients to test the internal consistency across the items of our scale.

We investigated the normality of self-contempt results in our three groups (healthy controls, patients with borderline personality disorder and patients with major depressive disorder). To do so, we did a Kolmogorov-Smirnov's test of normality. Then, we conducted a 1 factor intergroup analysis of variance (ANOVA) to test the difference between healthy controls, patients with borderline personality disorder and patients with major depressive disorder on their score of expressed self-contempt. We also conducted a one-way analysis of covariance (ANCOVA) to test the difference between groups in their score of self-contempt but controlling for age, as mean age differences across the three groups seemed important. Finally, we conducted an Honest Significant Difference test (Tukey's HSD) to find out which groups' means of expressed self-contempt were different.

4.4.1.2 Behavioural analyses for our second empirical study

For our second empirical study, we calculated the internal consistencies of each subscale measured by EMA using Cronbach's alphas. We used kappa coefficients to assess inter-rater reliability of the CAMS observers' ratings of the analogue psychotherapy session.

Because not all variables were normally distributed, we used Pearson and Spearman correlations to compare the frequency of each of the three CAMS-code phases (early expressions of distress, intermediate, advanced meaning making) observed in the analogue psychotherapy session with the frequency of each of the eight CAMS-EMA codes. To explore emotional change during the analogue psychotherapy session, we calculated a transformation score ranging from 1-9, and calculated Pearson and Spearman correlations with the CAMS-EMA codes means. We also used Pearson and Spearman correlations to examine whether the intensity of self-reported symptoms was associated with (1) the intensity or early expressions of distress in the CAMS-EMA or (2) in the observed CAMS rating of the analogue psychotherapy session.

We computed linear regression analysis to investigate explicative or predictive relationships between observer rated-CAMS codes rated in the self-critical two-chair dialogue of the analogue psychotherapy session and self-report symptom level. We also computed two linear regression analyses to investigate the relationship between early expressions of distress in daily life measured with the CAMS-EMA items and the severity of general problems and symptoms measured with the OQ-45, IIP and BSL-23.

4.4.1.3 Behavioural analyses for our third empirical study

For our third empirical study, we conducted paired t-tests to examine the means difference between the first analogue psychotherapy session and the second one, with regard to (1) the level of expressed self-contempt measured with our expressed self-contempt scale (ESCS) (2), the borderline symptomatology measured with the ZAN-BPD, and (3) the level of self-report state self-esteem (SSES, measured before, during and after the two-chair dialogue).

Using both time points data, we also used Pearson correlations to examine whether the levels of expressed self-contempt measures with the ESCS were related to either (2) the

borderline symptomatology measured with the ZAN-BPD or (2) any of the measures of state self-esteem measured with the SSES.

4.4.2 fMRI data analysis

4.4.2.1 fMRI data preprocessing

The pre-processing and statistical analyses of the MRI data were performed with a Statistical Parametric Mapping fMRI software (Wellcome Trust Centre for Human Neuroimaging, <http://www.fil.ion.ucl.ac.uk/spm>) running on MATLAB R2021a (Mathworks, <http://www.mathworks.com>). EPI images were realigned to the subject's average image across runs, corrected for spatial distortions using the SPM field-mapping tools (Hutton et al., 2002). The parameters of registration to standardised Montreal Neurological Institute (MNI) space were calculated on the anatomical image and the default settings of the 'unified segmentation' framework followed by the diffeomorphic registration algorithm DARTEL (Ashburner, 2007). The spatial registration parameters were applied to the functional time series co-registered to the corresponding individual's anatomical scan. Prior to statistical analysis, a spatial smoothing with a Gaussian kernel of 8 mm full-width at half-maximum was applied.

4.4.2.2 fMRI data analysis

For the statistical analysis of our fMRI data, we compared being exposed to individualized self-contemptuous stimuli with being exposed to non-individualized negative neutral stimuli in the fMRI scanner. A t-contrast (1 -1) was applied to our data at the subject level of analysis (1st level). The conditions (individualized versus non-individualized) were coded by onset time. At the second level, group-level analyses, whole-brain statistical *t*-maps based on our contrast of interest (1 -1) were generated individually. For all our second level analyses, we used a $p < 0.001$, FEW corrected threshold to see the most accurate results first. Given the absence of significant results with these conditions, we changed them to an uncorrected threshold of $p < 0.001$ for exploration purposes.

We first conducted a paired sample t-test to investigate the difference between being exposed to individualized self-contemptuous stimuli and being exposed to non-individualized negative stimuli. Then, we did the same analysis but added the expressed self-contempt scores from the analogue psychotherapy session for each participant as a covariate, to see whether the level of expressed self-contempt in the analogue psychotherapy session could be linked to a difference in neural activation. Then we did the same analysis, with the level of expressed self-contempt from the analogue psychotherapy session as a covariate, to see whether this might play a role.

4.5 Ethics

For the patients with borderline personality disorder group of our first empirical study, the original research was approved by the responsible ethic board (registration number 254/08; registered in ClinicalTrials.gov database NCT01896024 and was funded by the Swiss National Science Foundation grant numbers SNSF 100019_152685 and 100014_134562/1 (see Sallin et al., 2021).

For the patients with major depressive disorder group of our first empirical study, the original research was approved by the Ethics Committee of the University of Lausanne (12/04/2010) and the trial is registered at the Australian New Zealand Clinical Trial Registry (ACTRN12612000909820). It was funded by the Swiss National Science Foundation (Grant 32003B_135098/1) (see Ambresin et al., 2012; de Roten et al., 2017).

For the healthy controls in our second empirical study, the original research was approved by the institutional ethics review board number 2018–02064 and funded by the Fondation Chuard Schmid and the Swiss National Science Foundation (Grant SNSF100014_179457/1).

For the healthy controls in our third empirical study, the original research was approved by the responsible ethics board and is registered in ClinicalTrials.gov database NCT03717818 and was funded by the Swiss National Science Foundation (Grant SNSF100014_179457/1).

CHAPTER 5:

FIRST EMPIRICAL STUDY

Evaluation of expressed self-contempt in psychotherapy: an exploratory study

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5.1 Abstract

Background: Self-contempt may be a frequent but overlooked clinical emotional phenomenon, associated with a number of psychological problems such as less self-resilience, more intense symptoms, increased sadness and shame. It was shown that self-contempt interferes with productive emotional processing. Because verbal, para- and non-verbal components co-determine the emotional expression, the use of an observer-rated approach is justified. We thus aim to develop and use our 5-point Likert type scale of expressed self-contempt in this study.

Objectives: We aim to develop an expressed self-contempt rating scale in the form of a 5 points Likert-type scale . The intention behind this aim is to try and develop a valid and reliable measure of expressed self-contempt given that the previous 3 points version may be too restrictive In order to do that, we used our scale on different participants groups and in different contexts.

Methods: Video-taped clinical interviews and audio-taped interviews were analysed in order to develop the 5 points of the Likert-type scale and determine the quoting criteria. This first explorative phase of this validation study focuses using our newly-developed scale on a sample of N=61 participants divided in 3 groups. Our samples include N=20 healthy controls undergoing experiential two-chair dialogues, N= 21 patients with a diagnosis of borderline personality disorder undergoing psychotherapy and N=20 patients with a diagnosis of major depressive disorder undergoing psychodynamic psychotherapy.

Results: We compare the three groups described above with each other. Reliability of the instrument is analysed using an inter-rater reliability and internal consistency, which are sufficient The level of expressed self-contempt in psychotherapy sessions is not related to

symptom intensity. In our study, patients with borderline personality disorder do not express more self-contempt than patients with major depressive disorder nor than controls.

Discussion: Self-contempt conceptualized as a dynamic emotion reflecting how an individual treats him/herself holds a promising role for understanding emotional processing in psychotherapy. A valid and reliable measure of expressed self-contempt may be an important and useful tool to clinicians and psychotherapy researchers. While our scale validity is not established, reliability is satisfactory.

5.2 Background

5.2.1 Emotions in psychotherapy

A recent meta-analysis exploring the association between therapist and client expression of emotion and psychotherapy outcome evidenced the fact that expressing affect in therapy is correlated to psychotherapy outcome (Peluso & Freund, 2018). This result, which concerns clients' expression of affect as well as therapists', allowed the authors to state that "affect in session is associated with and predictive of client progress" (Peluso & Freund, 2018, p. 469). Emotions are an important part of personality disorders' problematic, specifically "affectivity, i.e. diversity, intensity, lability and adequacy of the emotional response" (APA, 2016, p. 283).

Emotional disturbances are important in personality disorders, particularly in borderline and anti-social personality disorders for which emotional dysfunction is a well-established concept (Herpertz, 2003). Emotional processing, which consists of the progressive awareness of emotion, as well as working through, regulating and integrating emotion (Greenberg & Pascual-Leone, 2006), has been identified as a potential *mechanism underlying change* in psychotherapy in personality disorders (Kramer, Beuchat, et al., 2020). In depression, maladaptive emotional schemes play an important role and are sometimes considered as the source of depression (Greenberg, 2017). Problematic emotions can also be associated to eating disorders, as it has been observed that patients with acute anorexia nervosa presented more difficulties in emotion regulation when compared to controls (Brockmeyer et al., 2012). Patients with bulimia nervosa are also affected (Meule et al., 2021). A review of the empirical literature suggests that patients' emotion dysregulation appears to be common to both anorexia nervosa and bulimia nervosa (Lavender et al., 2015).

5.2.2 Self-contempt

Self-contempt, or contempt towards the self, can be understood as a secondary emotional process in response to a deeper one (Greenberg & Paivio, 1997), a kind of maladaptive emotion (Kramer & Pascual-Leone, 2016) that could be an expression of rejecting anger towards the self (Kramer, Renevey, et al., 2020; Pascual-Leone, 2009; Pascual-Leone et al., 2013). It is conceptualized as a special sort of contempt in which a person evaluates the perception of his/her real self as significantly lower than the standards supposed by his/her ideal self (Miceli & Castelfranchi, 2018) and could thus be understood as the emotional process underlying potentially destructive criticism of the self. Its study becomes of central clinical relevance as it seems to be an important feature of psychopathology and is possibly highly overlooked.

In a study evaluating patients' self-contempt related to having a mental illness, Rüsçh et al. (2019) used a scale adapted from a previously established shame measure. They observed that self-contempt for having a mental illness is a predictor of suicidality in participants with mental illness; mostly affective disorders, anxiety spectrum disorders and schizophrenia-spectrum disorders (Rüsçh et al., 2019). Rüsçh et al. (2019) note that the effect of self-contempt was significant after adjusting for hopelessness, which suggests a direct pathway from self-contempt to suicidality; they also point out that self-contempt, or the emotional consequence of self-stigma, should be taken into account by clinicians (Rüsçh et al., 2019, p. 1057). What we know is that emotions are essential in psychotherapy (Greenberg & Paivio, 2003; Magnavita, 2006) because they are at the core of the therapeutic process (Greenberg, 1979). Working on emotion in psychotherapy is believed to be beneficial across several models of psychotherapy (Greenberg & Pascual-Leone, 2006).

5.2.3 Self-contempt in psychotherapy research

Peluso and Freund (2018)'s meta-analysis on the association between emotional expression and treatment outcome provided support that "external observational coding can often yield superior results" (Peluso & Freund, 2018, p. 468). This argument has also been supported by others (Kramer, 2016) and probably applies to self-contempt. Whelton and Greenberg (2005) observed the process of self-criticism as well as its effect on the self. Their objective was to test Greenberg et al.'s (1990) hypothesis that self-contempt would be greater among individuals who were self-critically vulnerable to depression rather than controls. They studied sixty psychology students that were taken out of a pool of 507 psychology students who were screened with the Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976). The sixty students that Whelton and Greenberg (2005) chose represented the extremes high and low on the subscale of the DEQ "Self-Critics"; the low Self-Critics were separated into two groups: the high and low Dependents. Their results show that both Self-Critics and controls presented self-critical thoughts; yet self-critics expressed them with greater contempt and were less self-resilient to them. Whelton and Greenberg's study also allowed them to observe that, in addition to attacking themselves in a more virulent manner; i.e. with more insults, Self-Critics responded to criticism in a more submissive way, with more sadness, shame, and difficulty to distance themselves from the internal critic in an angry or proud way than the controls (Whelton & Greenberg, 2005). Their results are particularly enlightening in showing that the Self-Critics' selves seem to be more prone to disorganization when facing criticism and also, as they perfectly stated, in suggesting that "what has been internalized is not just the content of the criticism but its emotional tone of contempt and disgust" (Whelton & Greenberg, 2005, p. 1593). The main limitation of this study, according to its authors, is the student-only population that should be extended and replicated in more diverse and clinical

populations in order to be able to investigate diverse forms and functions of self-criticism in a more refined manner (Whelton & Greenberg, 2005).

More recently, Kramer and Pascual-Leone (2016) examined the role of emotion in the self-critical process of individuals with anger problems. They compared 23 anger-prone under-graduate students to 22 control students on process indices of emotions that were contempt, fear, shame, anger and global distress through personalized self-critical content. They used the two-chair imaginal dialogue task in order to study moment-by-moment the process of working through self-criticism. Their objective that is the most relevant to us was to examine the process of self-hate which states that individuals with maladaptive anger use more contempt when expressing self-criticism than controls. Kramer and Pascual-Leone (2016) developed a coding scheme measuring contemptuousness of the self-criticism in this purpose, which consisted of an independent 3-point Likert-type scale measuring the degree of contempt from 0 to 2. Thanks to all these elements, they were able to confirm that anger-prone participants expressed more contemptuousness than controls during the self-criticism part of their investigation. The authors were thus able to state that anger-prone participants, when compared to controls, “expressed more self-hate in the form of contemptuousness” (Kramer & Pascual-Leone, 2016, p. 326), which is a very important result in that it establishes a crucial link between anger, hate, contempt and elements of the self. According to Kramer and Pascual-Leone (2016), the main limitation of their study is that it was not conducted in a clinical context, which is why they recommend that further similar studies should be extended to clinical populations (Kramer & Pascual-Leone, 2016).

Even more recently, Sallin et al. (2021) examined the role of expressed self-contempt in therapy for borderline personality disorder (BPD). Their objective was to investigate the association between self-contempt and core symptoms of BPD as well as to study the progression of expressed self-contempt during treatment and its effect on the alliance and the

outcome of the treatment. Sallin et al. (2021) analysed fifty patients from an ambulatory outpatient center. The data was taken from a previous treatment trial by Kramer et al. (2014) of patients with a diagnostic of BPD. Sallin et al. (2021) analysed video and audio recordings of sessions; per each patient, three sessions were coded: at the beginning, middle and end of treatment. The scale used to evaluate self-contempt was the one developed by Kramer and Pascual-Leone (2016) mentioned above. Sallin et al. (2021) found an association between the intensity of expressed self-contempt and the level of borderline symptoms at baseline, which confirmed their first hypothesis. They did not see any change in self-contempt along treatment, but they found out that expressed self-contempt negatively predicts the working alliance as evaluated by patients, while it positively predicts the working alliance as evaluated by therapists (Sallin et al., 2021). Finally, the authors observed no association between self-contempt measures and outcome in their sample. Sallin et al. (2021) shed light on new very interesting findings and brought forward important elements for the understanding of self-contempt. Their study presents limitations: the authors point out that the 3-point Likert-type scale of expressed self-contempt might be too restrictive to be able to grasp all the complexity of a clinical phenomenon, namely, self-contempt. They also point out that the absence of control group in their study is a limitation that should be addressed in future studies (Sallin et al., 2021), which we aim to contribute to.

5.3 Present study

In order to have a valid and reliable measure of expressed self-contempt and after having considered the previous studies and their limitations, we decided to develop a 5-point Likert scale that could perhaps “fill the gaps” of the 3-point one mentioned above. We believe that developing a 5-point Likert scale might allow an increase in sensitivity in comparison with the 3-point Likert scale previously developed. We also hope that the 5-point scale will capture self-contempt elements with an increased precision. Additionally, we decided to use

our 5-point scale it in three different groups: patients with a borderline personality disorder, patients with a major depressive disorder and control participants. In the control group we used the two-chair dialogue task, particularly prone to enhance emotional expression while the two other groups, patients groups, were in a first session of psychotherapy.

5.4 Hypotheses

Hypothesis 1: We assume that the validation coefficients of the improved version of the expressed self-contempt rating scale are sufficient.

Hypothesis 2: We assume that the level of self-contempt expressed in psychotherapy sessions is related to symptom intensity.

Hypothesis 3: We also assume that patients with borderline personality disorder express more self-contempt than patients with major depression disorder and healthy controls.

5.5 Methods

5.5.1 Participants

Three groups of participants took part in the study. First, N=20 students have been recruited as healthy controls, to be compared with N=21 patients with a diagnosis of borderline personality disorder and N=20 patients with a diagnosis of major depressive disorder. The data for the healthy controls comes from a recent study comparing daily life and an analogue psychotherapy session through an ecological momentary assessment of emotional processing (Beuchat et al., 2021). The data for the patients with borderline personality disorder group comes from the previously described study by Sallin et al. (2020), which was taken from a previous study by Kramer and Pascual-Leone (2014) itself (Kramer et al., 2014; Sallin et al., 2021). Finally, the data for the patients with major depressive disorder group comes from a study estimating the efficacy of adjunctive psychodynamic psychotherapy

compared to the usual psychiatric and pharmacological treatment (de Roten et al., 2017). The setting was different across groups as the healthy controls were undergoing a self-critical two-chair dialogue while patients with borderline personality disorder and major depressive disorder groups were in a first session of psychotherapy.

Across groups, the participants were on average 37.8 years old ($SD = 16.46$) and were mostly females (72%, $n = 44$). Interestingly though, there were notable differences among groups in terms of age. Healthy controls were, on average, 23.05 years old ($SD = 1.85$). Patients with borderline personality disorder were on average 32.43 years old ($SD = 6.86$) and patients with major depressive disorder were 57.68 years old ($SD = 10.53$) on average. Healthy controls were mostly females (75%, $n = 15$); as well as patients with borderline personality disorder (76%, $n = 16$) and patients with major depressive disorder (65%, $n = 13$). The mean level on the borderline symptom list (BSL; Bohus et al., 2009) was 1.76 ($SD = .93$), this data was only available for the patients with borderline personality disorder. The mean level on the Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979) was 30.65 ($SD = 5.90$) and this data was only available for the patients with major depressive disorder. The mean level on the Global Assessment of Functioning (GAF; American Psychiatric Association, 1994, pp. 143-147) was 49.82 ($SD = 12.34$) for the patients with borderline personality disorder and major depressive disorder groups together, respectively 57.66 ($SD = 8.14$) for patients with borderline personality disorder and 41.16 ($SD = 10.25$) for patients with major depressive disorder. These numbers are reported in Table 4.

Table 4*Demographics and symptoms scales*

	HC	BPD	MDD
Gender	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Female	15 (75%)	16 (76%)	13 (65%)
Age	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>
	23.05(1.85)	32.43(6.86)	57.68(10.53)
BSL		1.76(.93)	
MADRS			30.65(5.9)
GAF		57.66(8.14)	41.16(10.25)

Note. HC = healthy controls; BPD = patients with borderline personality disorder; MDD = patients with major depressive disorder

5.5.2 Measures*Assessments*

Outcome questionnaire (Lambert et al., 1996) : 45 items self-report questionnaire that assesses the symptomatic level, this is a widely used questionnaire to assess outcome of a psychotherapeutic treatment, in the form of a 5 points Likert-scale ranging from 0 to 4.

Borderline Symptom List (BSL 23; Bohus et al., 2009) : 23 items self-report questionnaire that assesses specific borderline personality disorder symptoms in the form of a 5 points Likert-scale ranging from 0 to 4.

Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979): Assesses depression symptomatology; this is a depression rating scale comprising 10 items, widely used and validated.

Global assessment of functioning Scale (Goldman et al., 1992): A procedure to measure overall severity of psychiatric disturbances rating patients' functioning on a scale ranging from 0 to 100.

Expressed self-contempt rating scale: We defined and used the 5 points of the improved expressed self-contempt rating scale using a quotation manual (see figure 4). The manual functions as a decision tree: the rater needs to evaluate verbal and non-/paraverbal manifestations of expressed self-contempt. In absence of any manifestation, the expressed self-contempt score will be rated 1. In presence of 1 non-/paraverbal expression, the score will also be 1. In presence of verbal **and** non-/paraverbal expression, two decisions are possible for the rater to choose: either 1 negative cognition and 1 non-/paraverbal expression that lead to a score of 3; or 2 or more negative cognitions and 2 or more non-/paraverbal expressions that lead to a score of 4. If only verbal expressions are presents, without any non-/paraverbal expressions, the possibilities are multiple: either only negative cognitions are expressed, which will be quantified; 1 negative cognition leads to a score of 2, 2 negative cognitions lead to a score of 3, more than 2 (3 or more) negative cognitions lead to a score of 4. Finally, in presence of an insult, the score will be 5. Coders were master and PhD students in psychology who were trained using both the decision tree and a coding manual developed for this purpose.

5.5.3 Procedure

The 5 points of the expressed self-contempt Likert scale were defined based on the 3 points Likert scale previously developed by Kramer and Pascal-Leone (2016). The objective was to create a more sensitive scale, so we added two points. Whereas the previous scale was constituted of three points that were: 0 = no self-contempt; 1 = moderate self-contempt and 2 = high self-contempt, the new scale was defined as follows: 1 = no expressed self-contempt; 2 = low expressed self-contempt; 3 = moderate expressed self-contempt; 4 = high expressed

self-contempt; 5 = extreme expressed self-contempt. Attribution of a self-contempt score was made by observing verbal (insults or negative cognitions) and nonverbal elements (e.g. raising an eyebrow, or according to Ekman and Friesen (2003), tightening one side of the lip corner (Ekman & Friesen, 2003)) as well as their occurrences.

We gathered video-taped interviews for the borderline personality disorder group as well as for the control group. We gathered audio-taped interviews for the major depressive disorder group. Two independent raters coded 20 interviews for each group. This allowed us to compare heterogeneous designs because the groups were in different settings (two-chair dialogue experiential task for the control group, psychotherapy sessions for the borderline personality disorder and the major depressive disorder groups). Both raters attributed a score – from 1 to 5 – to each participant. For the statistical analysis, we used these individual scores as well as the means of expressed self-contempt for each participant.

Two-chair dialogue

Of note, the two-chair dialogue was only implemented to assess the control participants in this study. The two chair-dialogue (Greenberg, 2015) is a task derived from the empty chair work (Greenberg, 1979) that was first developed for an interpersonal psychotherapeutic use. In our setting, we used it as an intrapersonal task in which the participants had to picture themselves in the other chair rather than a relative of theirs. As Greenberg (1979) puts it, “the therapeutic task [promotes] experiencing in the one chair and criticisms and projections in the other chair” (Greenberg, 1979, p. 319). In order to achieve this, in the control group, the interviewers first asked the participants to remember and relive as vividly as possible a situation of failure that they felt towards themselves. The interviewers then asked them to change chair in order to incarnate the self-critical voice they might have “heard” during the reliving of the failure situation and to picture themselves on the opposite chair. The interviewers asked them to say aloud, *while incarnating* the critical voice, what the critical

voice thought or felt about them in the failure situation. Finally, the interviewers asked the participants to respond to the self-criticism. This emotion-evoking procedure served to code the self-contempt for the moments of the task when the participants were on the critic chair.

5.6 Results

5.6.1 Preliminary analyses

Kolmogorov-Smirnov's test of normality was significant for control participants ($p = .000$) and for patients with major depressive disorder ($p = .049$) but not for patients with borderline personality disorder ($p = .094$). This means that only the borderline personality disorder patients' group had a normal distribution of results.

Reliability analysis: Intraclass Correlation Coefficients and Cronbach's Alphas

ICC estimates and their 95% confident intervals were calculated using SPSS based on a mean-rating ($k=2$), absolute agreement, two-way mixed-effects model. ICC (2,2) for the control group was .733 with a 95% confidence interval ranging from .334 to .896 ($F(18,18)= 4.009, p>.001$) with a very good internal consistency, Cronbach's alpha =.74. For the borderline personality disorder group, ICC (2,2) was .576 with a 95% confidence interval ranging from .434 to .688 ($F(166,166)= 2.35, p<.000$) with a good internal consistency, Cronbach's alpha =.56. For the major depressive disorder group, ICC (2,2) was .668 with a 95% confidence interval ranging from .537 to .762 ($F(139,139)= 3.07, p<.000$), with a good internal consistency, Cronbach's alpha = .66. For all three groups together, ICC (2,2) was .720 with a 95% confidence interval ranging from .653 to .775 ($F(325,325)= 3.57, p<.000$) with a very good internal consistency, Cronbach's alpha =.71 (see table 5).

Table 5*Psychometric properties and validation coefficients of the expressed self-contempt scale*

	n	M	SD	95% CI	ICC	α
HC	20	4.30	1.08	.334-.896	.733	.74.
BPD	21	1.95	.68	.434-.688	.576	.56
MDD	20	1.81	.56	.537-.762	.668	.66
All	61	2.08	1.37	.653-.775	.720	.71

Note. HC = healthy controls; BPD = borderline personality disorder; MDD = major depressive disorder

Hypothesis 1: The internal validity and reliability of the improved version of the expressed self-contempt rating scale seem to be sufficient across all three study populations. This tends to confirm our first hypothesis.

5.6.2 Analyses

Pearson correlations between the mean level of expressed self-contempt and symptoms questionnaires were not significant (see table 6); we found no link between general functioning and the level of expressed self-contempt in the borderline personality group $r = .120, p > .05$ and we found no link between general functioning and the level of expressed self-contempt in the major depressive disorder group either $r = .055, p > .05$. For the borderline personality disorder group, we found no link between borderline symptomatology and the level of expressed self-contempt $r = -.293, p > .05$ nor between outcome and the level of expressed self-contempt $r = -.040, p > .05$. Finally, for the major depressive disorder group, we found no link between depressive symptomatology and the level of expressed self-contempt $r = -.388, p > .05$. Results are presented in table 6.

Table 6*Pearson correlations between clinical questionnaires and level of expressed self-contempt*

	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
WAI_T	38	4.29	0.63	-								
WAI_P	38	4.86	0.95	-.018	-							
GAF	40	49.82	12.33	.457**	-.119	-						
MADRS	20	30.65	5.90	-.339	.072	-.477*	-					
BSL	21	1.75	0.93	.203	-.423	-.004	x	-				
OQ45	21	88.14	32.36	.248	-.352	.000	x	x	-			
SC MDD	20	1.81	0.57	.291	.216	.055	-.388	x	x	-		
SC BPD	21	1.95	0.67	.304	-.038	.120	x	-.040	x	x	-	
SC CONT	20	4.30	1.08	x	x	x	x	x	x	x	x	-

Note. WAI_T = Working Alliance Inventory_Therapist; WAI_P = Working Alliance Inventory_Patient; GAF = Global Assessment Functioning; MADRS = Montgomery Asberg Depression Rating Scale; OQ45 = Outcome Questionnaire 45; SC MDD = level of expressed self-contempt in participants with major depressive disorder; SC BPD = level of expressed self-contempt in patients with borderline personality disorder; SC CONT = level of expressed self-contempt in control participants. x = missing data. * $p < .05$. ** $p < .01$.

Hypothesis 2: The level of expressed self-contempt in psychotherapy sessions is not related to symptom intensity. This tends to disprove our second hypothesis

Comparison of the means with one-way ANOVA

Control participants, participants presenting a borderline personality disorder and participants presenting a major depressive disorder vary in their average score of expressed self-contempt as expressed by 1 factor intergroup ANOVA $F(2,58) = 60.792$; sig = .000 which

showed a significant difference between the means. A one-way ANCOVA conducted to compare the score of expressed self-contempt whilst controlling for age showed the same result $F(2,57) = 32.354$; sig = .000.

Post hoc analyses (Tukey HSD) showed that the control group ($M = 4.30$, $SE = .24$), $p = .000$ has a superior mean than the borderline personality disorder group ($M = 1.95$, $SE = .14$), $p < .05$ and the major depressive disorder group ($M = 1.81$, $SE = .13$), $p < .05$. However, borderline personality disorder and major depressive disorder groups do not significantly differ between themselves, $p = .831$.

Hypothesis 3: In our study, patients with borderline personality disorder do not express more self-contempt; neither than patients with major depressive disorder nor than healthy controls. Our third hypothesis is not confirmed as we observed that in our study, healthy controls expressed more self-contempt than patients with borderline personality disorder and patients with major depressive disorder.

5.7 Discussion

The present study explores the validity and reliability of an observer-rated scale assessing expressed self-contempt using verbal and non-verbal elements in a more sensitive manner than it had been previously done. The objective is to allow a better differentiation between various intensities of self-contempt. Our scale is easy to use and does not require a long training. It is not necessary to couple it with other scales; though we think that it could be – and that doing so would lead to interesting results. There are methodological implications related to the validation of this scale: having a reliable and internally valid measure of expressed self-contempt could help understand several clinical elements of psychological difficulties associated with self-contempt. While of course evaluating psychological difficulties often mostly relies on the clinician's appreciation and experience, having a

validated tool to measure self-contempt represents a potential gain of information and a valuable help. Since it has been defined that “emotion is not just an everyday life concept – it can be defined and studied scientifically” (Coppin & Sander, 2016, p. 21), it is important that we develop tools in order to understand and evaluate emotions to the best of our abilities. In this line of thought, it is also crucial to consider emotional processing as a potential mechanism of change in psychotherapy (Peluso & Freund, 2018). As explained by Pascual-Leone (2018), “the mechanisms of emotional processing represent an important puzzle in understanding human change processes and the role psychotherapy can have in facilitating this change” (Pascual-Leone, 2018, p. 178).

Because self-contempt appears to be a maladaptive emotion, one could argue that there is a potential to make it change into a more adaptive emotion; especially if we consider emotional processing as “how emotion productively changes” (Pascual-Leone, 2018, p. 166). Indeed, we need to consider Pascual-Leone (2018)’s model of emotion transformation: self-contempt is not explicitly included in this model. However, one adaptive emotion is *self-compassion*; we argue here that self-contempt represents the fact (or act, when it is expressed) of treating the self harshly and could therefore be the maladaptive reverse side of self-compassion. We could imagine that actively working on self-contempt when it is problematic could help access self-compassion or at least open a door towards improving it; maybe solely by bringing it up. Self-contempt may be an important clinical manifestation as part of the cluster of anger emotions, but it may often be overlooked by clinicians and researchers. In order to capture this fluid manifestation, it is necessary to zoom in correctly and be able to observe the process as it unfolds (Greenberg, 1999).

We aimed to capture more elements of expressed self-contempt than what a 3-points Likert scale allowed and amongst more diverse settings and groups than had been done before. Our results brought new elements to the knowledge and understanding of expressed

self-contempt. Firstly, our hypothesis 1 is validated: the improved version of the expressed self-contempt rating scale is sufficient; ICC measures show that inter-rater reliability is good, which is a promising result and internal consistency was also good. Secondly, our hypothesis 2 was invalidated: in our study, the level of expressed self-contempt in psychotherapy is not related to symptom intensity. This is a surprising result that certainly needs further exploration; what is interesting about it is that it tends to imply that if self-contempt is not linked with symptom intensity, self-contempt is important in the general population and not only in clinical settings. In our opinion, this does not change the fact that self-contempt is important in clinical work. Thirdly, hypothesis 3 was also invalidated: this is the most surprising of our results; patients with borderline personality disorder do not express more self-contempt than patients with major depression disorder nor healthy controls. This could be explained by the setting difference between the groups. Conversely, the two-chair dialogue task, which we used as an experiential task and that evokes emotions, may have enhanced the apparition of expressed self-contempt in healthy controls, which had the higher mean of expressed self-contempt across our three groups with a mean of 4.30, whereas the patients with borderline personality disorder had a mean of 1.95 and the patients with major depressive disorder group of 1.81. This means that the fact of undertaking an experiential task, namely, the two-chair dialogue that enhances self-critical elements, probably also enhances the expression of self-contempt.

Though one could say the problem is methodological, we believe that this allows us to assert that using a 5-point Likert-type scale for observer ratings of expressed self-contempt might be, for now, best used in a two-chair dialogue setting. In other words, what our study shows is that it might be better to use our expressed self-contempt rating scale in a context of assessment that is experiential.

In regards to assessing expression of emotions, it has been noted that self-reported questionnaires were rather difficult to validate, which is why a number of observer-rated instruments measuring emotion expressions have been developed (Kramer, 2016). In observer-rated study of emotion, the essential role of non-verbal and/or paraverbal elements has been discussed. Indeed, it appears that on the one hand, understanding facial expressions can be problematic “because most of the time people do not watch each other’s faces” (Ekman & Friesen, 2003, p. 14), at least not in an analytic way. On the other hand though, we do know that people are able to judge emotions correctly when looking at others’ faces when the six basic emotions are concerned (Ekman & Friesen, 2003); what seems important is to include multiple methods of measuring emotions because “methods that focus on one aspect are limited by principle” (Jacob-Dazarola et al., 2016, p. 118). Considering these elements, we believe that our scale, which allows to evaluate verbal, nonverbal and paraverbal elements, is a valuable tool, which offers a perspective for the study of expressed self-contempt in psychotherapy (see also Kramer, Renevey, et al. (2020)). We insist that our scale evaluates *expressed* self-contempt because it is an observer-rated scale; which of course allows us to implement the behavioural and externally visible elements, as opposed to the subjective experience of self-contempt.

Nonetheless, we did not observe any difference in the mean of expressed self-contempt when we compared patients with borderline personality disorder with patients with major depressive disorder, despite the fact that the ratings for the borderline personality disorder group have been made on video recordings, whereas ratings for the major depressive disorder group have been made on audio recordings only. This questions the relevance of behavioural elements’ analysis in our expressed self-contempt scale; yet we will argue that behavioural features, or face expressions, in expressed self-contempt may still be of prime

importance, but our study should be replicated in clinical populations undergoing the two-chair dialogue to be able to draw further conclusions about this.

5.7.1 Limitations

Our study has certain limitations that must be discussed. The setting of the assessment was different in what regards the recording method between the three groups. The control group and the borderline personality disorder group were video-recorded, whereas the major depressive disorder group was audio-recorded. This was a choice we made according to the data we had at our disposal, and we made it because we had no video-recordings for the major depressive disorder group. We decided to use this as an opportunity to compare video and audio recordings when analysing self-contemptuous elements.

Also, the choice we made of analysing a first session of psychotherapy might be changed in future studies. Indeed, first sessions of psychotherapy often investigate patients' lives, history and background, allowing little space for self-contempt to be expressed.

5.8 Conclusion

The validation coefficients of this scale are, amongst different groups, moderate to good, which is a satisfying result for an exploratory study aiming to validate a rating scale. This implies that this scale may allow a greater understanding and observation of expressed self-contempt across researcher and clinicians; possibly after further improvements (two-chair dialogue setting in all groups, mostly) as discussed above.

Self-contempt may be conceptualized as an affective dynamic process of treating the self and holds a promising role for understanding emotional processing as mechanism of change explaining the effects of psychotherapy. Yet, it is often overlooked. A potentially valid and reliable observer-rated measure of self-contempt is an important and useful tool to clinicians and psychotherapy researchers. The first results of this validation study are

promising. Thanks to the heterogeneous design, we observed that the context has an impact on the sensitivity of the scale. Indeed, it appears that self-contempt is more easily observed in a two-chair dialogue setting rather than in an early session of psychotherapy; it even seems that expressed self-contempt is present more intensively in these settings.

Therefore, our scale should be used in a more homogeneous and controlled design for future comparisons. We thus aim to do a similar study with a homogenous design and compare our healthy controls with patients with borderline personality disorder undergoing the two-chair dialogue. We also intend to explore whether expressed self-contempt changes over the course of therapy and, if so, whether this change is related to outcome. It would also be necessary to replicate our results with another patient population, for example patients with narcissistic features, or with various eating disorders.

CHAPTER 6:

SECOND EMPIRICAL STUDY

Ecological Momentary Assessment of Emotional Processing: An Exploratory Analysis Comparing Daily Life and a Psychotherapy Analogue Session

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6.1 Abstract

Background. Emotional processing has been studied in psychotherapy as state-dependent, sequential process of change. So far, no studies have applied this conceptualization of emotional processing to assessments of emotion in daily life. This is particularly important in light of the pertinence of day-by-day fluctuations of emotions for understanding mental health and for monitoring the impact of prevention and psychotherapy programs. This study examined the internal and ecological validity of a state-dependent conceptualization of emotional processing in daily life, in comparison with an experiential-psychodynamic psychotherapy analogue session.

Methods. In total, $N=42$ university students participated in an experiential-psychodynamic session, completed symptom measures and responded to a one-week period of ecological momentary assessment (EMA) using a smartphone. Emotional processing in the session was assessed using the valid observer-rated measure Classification of Affective Meaning States (CAMS) and emotional responses in daily life were assessed using newly developed theory-consistent items self-rated via an interactive smartphone program.

Results. Internal validity was generally satisfactory across the sub-scales used in EMA. Correspondence between EMA and in-session emotional processing was generally low, but specific relationships were found between self-rated fear, rejecting anger, hurt/grief or loneliness and the observer-rated productive emotions in the psychotherapy analogue session. Relationships between maladaptive emotional processing and intensity in symptoms were found.

Conclusions. This is the first study to have examined the validity of a state-dependent conception of emotional processing in daily life, in direct comparison with a psychological

session. We recommend using this assessment schedule to develop or complement integrative prevention or intervention programs.

6.2 Introduction

Emotions guide our decisions, behaviours, thoughts, motivations and intentions. They are goal-oriented experiences that play a central role in helping the individual know what is important, what to do next, and how to act in interpersonal situations. While theoretical conceptions on emotions differ between authors, the fundamentally adaptive potential of emotions has been widely acknowledged (Coppin & Sander, 2016; Frijda, 1986; Greenberg & Goldman, 2019). In addition, researchers in clinical settings tend to agree on a differentiation between adaptive versus less adaptive emotional experiences and states, the latter of which are likely to contribute to the development and maintenance of mental disorders that require psychotherapeutic treatment (Fosha, 2000; Greenberg & Paivio, 1997).

Emotional processing in psychotherapy classically denotes “a process whereby emotional disturbances are absorbed, and decline to the extent that other experiences and behaviour can proceed without disruption” (Rachman, 1980, p. 51). It is important to note that there is reference here to a process, or a mechanism, that absorbs emotional experience, but also a different experience or behaviour that emerges in place of the “absorbed” emotion. Although its definition remains ambiguous, it may fall under what Pascual-Leone and Greenberg (2006; 2007) referred to as emotion transformation. Emotion transformation in psychotherapy was first studied in experiential approaches for depression and interpersonal injuries, and it was shown that a specific sequence of emotional experiences was characteristic of good psychotherapy process (Pascual-Leone & Greenberg, 2007), and that it followed a saw-toothed pattern of change: two steps forward and one step back (Pascual-Leone, 2009). Other studies have demonstrated that the self is related with good process and

outcome across psychotherapy approaches (Kramer & Pascual-Leone, 2016; Kramer, Pascual-Leone, et al., 2016; Kramer, Pascual-Leone, et al., 2016). A common means to assess these different steps of emotion transformation within the therapy hour is the Classification of Affective Meaning States (CAMS, Pascual-Leone & Greenberg, 2005), a validated observer-rated measure. This line of results, together with others (Pascual-Leone, 2018), speak towards a state-dependent conception of emotional processing as a step-by-step, fluctuating and fluid, complex process moving the individual towards productive change. Such a conceptualization underlies the notion of emotion transformation and is at the very heart of understanding change in psychotherapy.

While a state-dependent conceptualization of emotional processing has been used to explain the core change of psychotherapy, it remains to be applied to daily life. An important target for research on mental health is to explain which state-dependent emotional experience is at the root of problems in everyday life, outside of psychotherapy. It addresses health research concerns upstream from where clients might later present for treatment. For example, knowing the state-dependent dynamics of emotions that may explain addictive behaviours and urges of self-harm (Scala et al., 2018), impulsive decisions (Reisch et al., 2008; Tomko et al., 2014), and interpersonal problems, are of highest relevance not only for scientific research, but ultimately to contribute to personalized interventions (Fisher & Boswell, 2016), self-care, and the prevention of serious mental health problems.

State-dependent emotional processing may be assessed in daily life using ecological momentary assessment (EMA). With regard to the development of emotional awareness in daily life, Lane (2020; Lane & Schwartz, 1992) developed an assessment tool that is able to grasp different levels of emotional awareness based on the assumption of its momentary fluctuating nature. For patients with borderline personality disorder, where fluctuating states represent a particular clinical and research challenge (Levy et al., 2010), several studies have

shown that a state-dependent conception of emotion in daily life is promising. Scala and colleagues (2018) demonstrated that the clarity of an individual's self-concept and identity, and its changes in daily life, has a buffering effect against self-injurious urges when they emerge. Harpøth, Hepp et al. (2019) showed that positive affect and their fluctuations were related with decreases in symptoms in daily life, while the same authors (Harpøth, Kongerslev, et al., 2019) showed that positive affect was also related over time with ego-strength and quality of life for clients presenting with borderline personality disorder. These variables explained outcomes on the following day, even when the researchers controlled for negative emotions on the day of the first assessment. Links et al. (2007) were able to show that the daily fluctuations in negative affectivity in borderline personality disorder predicted self-reported suicide ideation and the number of suicidal behaviours. These studies have been feasible thanks to recent technological developments that allow ecological momentary assessment via smartphone applications and devices. Ecological momentary assessment (EMA) allows the assessment of a phenomenon that one presumes to be fluid and fluctuating, even if such dynamic changes are unobservable when using fixed assessment points (e.g., weekly, or pre/post intervention). Furthermore, as compared to the more common retrospective self-reports, using momentary assessment reduces potential recall bias (Stone & Shiffman, 1994). Such repeated measurement schedules may contribute to personalize assessment and develop new idiographic models of explaining psychopathology and change in psychotherapy (Fisher, 2015; Fisher et al., 2011). EMA thus allows particularly sensitive assessments, as well as a large and detailed measure of affect, mood, or behaviour (Moskowitz & Young, 2006). Looking forward, the use of mobile phones in research may also subsequently enable the increased availability and dissemination of assessment and treatment programs (Axelson et al., 2003) as well as represent a promising option for monitoring symptoms, affect, or behaviour (Clough & Casey, 2015).

The potential precision and validity of items used in EMA have been a point of criticism, in that quality criteria are underdeveloped for these items, and more research is needed to calculate reliability, validity and sensitivity to change for specific EMA sampling schedules (Santangelo et al., 2014; Solhan et al., 2009) so they can be used widely and confidently by researchers and clinicians. The present study aims to contribute to these questions in the domain of daily-life assessment of emotional processing as state-dependent phenomenon. We also think that having internal consistency coefficients would help and will therefore calculate them for each of the scales used in EMA.

Studies have previously connected in-session experiences to outside session changes and experiences (Owen et al., 2012; Quirk et al., 2018). Establishing a link between in-session emotional experience and outside session emotional experiences is not simple. We still aim at extending the notion of emotion transformation that has already been validated in the context of in-session experiential-psychodynamic process and explore it in the context of daily life by using items that are consistent with the validated assessment approach used in psychotherapy process research (CAMS, Pascual-Leone & Greenberg, 2005). In order to do this, our study explores the validity of new items measuring each of the CAMS categories within a structured ecological momentary assessment. Rather than focusing on different emotions, this study will be more exploratory and focus on exploring all different links between CAMS and EMA items. Specifically, this study examines internal consistency and ecological validity, as well as convergent validity with an experiential-psychodynamic therapy session and with self-reported symptom measures.

6. 3 Hypotheses

For the present validation study, we hypothesize that acceptable convergent validity will be achieved for coefficients of the sub-scales (i.e., representing distinct emotional states)

measuring emotional processing in daily life. We further hypothesize that there is a correspondence between the preponderance of an individual's set of emotional states observed in daily life with the preponderance of the emotions observed in sessions of experiential-psychodynamic psychotherapy analogue. Finally, we hypothesize that the observed intensity of (self-reported) symptoms will be associated with the frequency of maladaptive emotional states, also called the early expressions of distress, measured both in daily life and in the experiential-psychodynamic session. We predict a correspondence between EMA and CAMS because we developed the EMA items based on the CAMS. Indeed, EMA items were elaborated based on previous observations of CAMS in session. We therefore have a perfect theoretical correspondence between the evaluations in session and in daily life, which we wish to explore empirically.

6.4 Methods

6.4.1 Participants

A total of 42 participants took part in the study, including 35 (83%) women and with an age range from 20 to 33 years ($M = 22.43$, $SD = 2.86$). Participants were all university students who were recruited via the participant pool for an undergraduate degree in psychology in French-speaking Switzerland. All participants agreed for their data to be used for research and scientific publication and the study was approved by the institutional ethics review board (number 2018-02064).

6.4.2 Assessments and measures

Self-report questionnaires. The Outcome Questionnaire (OQ-45) is a self-report questionnaire that includes 45 items to assess treatment levels of distress (Lambert, 2004), including an overall score and three subscale scores: symptomatic level, interpersonal relationships and social role. Problems are rated on a Likert-type scale ranging between 0

(never) and 4 (most of the times). The scale has been translated and validated in French (Emond et al., 2004) which was used in the present study. The Borderline Symptom List 23 (BSL 23) is a self-report questionnaire that assesses specific borderline symptomatology using 23 items (brief version), for which excellent psychometric properties have been reported (Bohus et al., 2009). The items are assessed using a Likert-type scale ranging from 0 (absent) to 4 (clearly present); an overall mean score is calculated (0-4); the French version has excellent psychometric properties (Nicastro et al., 2016). The Inventory of Interpersonal Problems (IIP; Horowitz et al., 1988) is a self-report questionnaire encompassing 64 items assessing a range of interpersonal problems; a general score is computed based on the mean of all items. Problems are rated on a Likert-type scale ranging between 0 (not at all) and 4 (very much). This widely used scale has been translated into French. We used the OQ45 and IIP as main problem measures and the BSL 23 for exploratory purposes, because we consider that borderline symptoms represent particularly important emotional dimensions to be explored.

Single-session psychotherapy analogue. In order to be able to observe the participant's emotional processing they were invited to participate in a single analogue session of psychotherapy. The analogue treatment session was integrative in nature and represented intervention experiences borrowed from emotion focused therapy. During the session analogue, we conducted an experiential two-chair dialogue focusing on self-criticism (Whelton & Greenberg, 2005). The total time of the single-session analogue was 45 minutes. The single-session psychotherapy analogue experiential-psychodynamic session was conducted by a trained PhD student in clinical psychology, and was video-recorded.

Experiential two-chair dialogue focusing on self-criticism. The two chair-dialogue focusing on self-criticism is based on Gestalt-therapy, and more recently Emotion-focused therapy principles (Greenberg, 2015; Kramer & Pascual-Leone, 2016; Watson & Greenberg, 2017; Whelton & Greenberg, 2005) and has been used as a single-session intervention in

other studies (Shahar, 2014; Shahar et al., 2012). The current study did this using standard instructions in a guided-imagery and semi-structured interview-style task, which was given verbally by the researcher using the following steps: (1) The participant is invited to imagine a situation of failure from his/her own life; (2) The participant is encouraged to imagine the situation in detail for 5 minutes, giving special attention to his/her bodily reactions, action tendencies, thoughts, feelings, and intentions; (3) After this imagery step is completed (in silence), the participant is asked to change chairs (e.g., T: now, please come sit on this chair right across from where you are). Once seated in the new chair, the participant receives the following instruction: “imagine you are the self-critical part in you, sitting in this chair. Be that part of yourself. What do you say from over here, in this chair?” At this point, the participant is given time and encouraged to enact his/her negative or self-critical voice, speaking the criticisms out loud as if telling someone; (4) The participant is then invited to change chairs, returning again to his/her first position, and receives the instruction: “What’s it like to be on the receiving end of this criticism? How do you react internally? Can you speak about what it’s like for you?” Once again, the participant is given time and supported in elaborating on his/her immediate experience of having been criticized; (5) Finally, about a third of participants had more to say from the critic position (e.g., yes, but...; well, actually the real problem is...). In these cases, and in order to avoid having a critical voice from the first chair, a second round of changing chairs was proposed to the participant. The second round used similar prompts as those in steps 3 and 4, while participants repeated and often further refined the meaning of both the criticism and their response to it.

Coding observed emotion. Both part of the analogue psychotherapy session served as the basis for rating using the Classification of Affective Meaning States (CAMS; Pascual-Leone & Greenberg, 2005), a method that is used to observe the presence of emotion states and to code emotion events when individuals are emotionally aroused and engaged. This

observer-rated coding system is well-established in psychotherapy research, in particular in terms of its' inter-rater reliability as well as content, substantive, and predictive validity (Pascual-Leone, 2018). This observer-rated coding system is designed to track the changing “flow of emotion” and the data it yields allows one to describe emotion categories nominally but also in terms of an ordinal scale reflecting the degree to which a state suggests emotional processing has occurred (e.g., degree of transformation). Emotion codes were applied to the experiential-psychodynamic session using time-based coding with 1-minute bins. All 45 minutes of the interview were coded, if applicable. In total, 10 distinct affective-meaning states are coded: global distress, rejecting anger, fear/shame, negative self-evaluation, unmet existential need, relief, assertive anger, self-compassion, psychological hurt/grief, and acceptance and agency. In keeping with earlier work on the CAMS (Pascual-Leone, 2018) and in order to save power related to the reduction of multiple testing, we re-grouped the CAMS-codes from the psychotherapy analogue session in three levels. First, “Early Expressions of Distress” encompassed: global distress, rejecting anger and fear/shame. Second, the “Intermediate level” encompassed: negative self-evaluation, unmet existential need, and relief. And third, “Advanced Meaning Making states” encompassed: assertive anger, self-compassion, hurt/grief and acceptance and agency. Finally, in keeping with Pascual-Leone (Pascual-Leone, 2009), after coding the clinical material using the CAMS, we used the CAMS-transformation score calculated on an ordinal scale emotion transformation from global distress (0) to acceptance and agency (9).

Ecological Momentary Assessment (EMA). After the end of the single psychotherapy analogue session, each participant was given a mobile phone and was asked to respond to a catalogue of newly created items (Pascual-Leone & Kramer, 2018) four times a day, during seven consecutive days (programmed times were for each day 08h01am, 12h07pm, 04h10pm, 08h50pm). The following gate question was used “Since the last

assessment have you had a difficult interpersonal experience or an interpersonal stress?” (yes/no). If the participant responded “yes”, the full assessment was administered by asking with whom the experience occurred (partner, family, friends, colleagues, acquaintance or neighbour, stranger or other). The participant was then invited to only consider his/her *emotional* reaction (i.e., *inner* emotional experience) to this event (not the behaviour, nor what was outwardly expressed) when responding to subsequent questions.

Two additional preliminary gate questions were given. One question (gate A: emotion predominance) asked for the predominant inner emotional experience among the following: sadness, anger, shame/guilt, fear/anxiety, hope or satisfaction. Another question (gate B: emotion intensities) offered a series of visual analogue scales to probe for the intensity of each of the following emotional experiences as a result of the event: sadness, anger, shame, anxiety. Sets of questions then followed based on an interactive decision tree algorithm intended to assess the participant’s presenting emotional states according to the same conceptualization that had been used by observers using the CAMS.

Based on the results of these two preliminary gate questions (predominance, and intensities), the application delivered specific follow-up questions: if “sadness” was predominant (gate A), or if “sadness” was rated over 40% in intensity (gate B), 15 specific items pertaining to the categories of global distress, hurt/grief and anxiety were administered to the participant. If “anxiety/fear” was predominant (gate A) or if “anxiety” was rated over 40% in intensity (gate B), then 8 specific items from to the categories of fear, anxiety, and loneliness were administered. If “shame/guilt” was predominant (gate A) or if “shame” was rated over 40% in intensity (gate B), 11 specific items pertaining to the categories shame, anxiety and loneliness were administered. If “anger” was predominant (gate A), or if “anger” was rated over 40% in intensity (gate B), then 14 specific items related to categories of rejecting anger and assertive anger were administered. Finally, all participants received 6

specific items pertaining to the category of self-compassion which ended the ecological momentary assessment. Consistent with CAMS, the following emotion categories were assessed through the EMA schedule: global distress (7 items, e.g., “I feel vague intense pain”), hurt/grief (6 items, e.g., “I feel wounded by this person or this situation”), anxiety (4 items, e.g., “I cannot stop worrying”), loneliness (6 items, e.g., “I feel lonely”), fear/shame (6 items, e.g., “I wish I could hide”), rejecting anger (8 items, e.g., “I hate this person”), assertive anger (6 items, e.g., “I want to fight for something and I know I deserve it”) and self-compassion and (6 items, e.g., “I deserve to treat myself gently”). These new categories (referred to as “CAMS-EMA”) designate the coding of emotion that results from this interactive self-report within a moment of assessment (as opposed to CAMS which denotes the *observer*-rated scale based on the analogue psychotherapy session by a trained researcher).

Before ending, two closing items in each assessment schedule asked participants if any of the prior questions about how they felt may have influenced or changed their emotional experience itself, and if so how (i.e. with three options: a) intensity of emotional experience went up, compared with before the assessment, b) intensity stayed the same, and c) intensity went down).

6.4.3 Procedure

Recruitment took place in French-speaking Switzerland; in undergraduate classes in psychology where the objective of the study and the inclusion criteria (good health, French-speaking, between 18 and 35 years old) were presented by the researchers. Upon contacting the researchers by email or by phone to fix an appointment for the meeting, the participant gave his/her written consent to participate in the study. The analogue psychotherapy session occurred before the collection of EMA data. The CAMS was coded from both parts of the psychotherapy analogue session.

At the end of the single psychotherapy analogue session, the participants received a smartphone Samsung Galaxy J3 on which the assessment schedule was programmed as well as the self-reported questionnaires in paper and pencil format to fill in at home (OQ-45, BSL-23, IIP-64). The researcher gave instructions on how to use the phone, explained the content of the assessment and described the assessment timing. Participants were asked to keep the mobile phone turned on during the entire week and immediately call a research team member of the study if any problem occurred with the device. Two participants experienced problems requiring such technical assistance.

A second appointment was scheduled for the participant one week later to bring the mobile phone and the completed questionnaires back to the investigators. The participant received the equivalent of \$50 USD compensation for his/her participation in the study.

6.4.4 Statistical analyses

Internal consistencies of each sub-scales measured by EMA were computed using Cronbach's alpha statistics. Inter-rater reliability for the Classification of Affective Meaning States applied to the analogue psychotherapy sessions was computed using kappa coefficients. In order to test the first hypothesis on correspondence of emotion categories between the analogue psychotherapy session and the ecological momentary assessment, we used Pearson's and Spearman's correlations to link the frequency with which each of the three CAMS-code levels (early expressions of distress; intermediate; advanced meaning making) were observed, or a given CAMS-transformation score (ranging from 1-9), -- each observed during the psychotherapy analogue session --, with the frequency of each of the eight CAMS-EMA codes. In order to test the second hypothesis, we used Pearson's and Spearman's correlations to link the intensity of self-reported symptoms (general distress, borderline, and interpersonal problems) with the intensity of early expressions of distress as represented, first in the CAMS-

EMA, and second in the observation-based CAMS rating (based on the analogue session).

Linear regression analyses were computed where appropriate.

6.5 Results

6.5.1 Sample for the analyses

Out of the 42 participants, three had a technical problem with the video recording of session assessments and therefore no CAMS data were available for these participants. Out of the 42 participants for EMA, 30 (71% of the entire sample) responded at least once “yes” to at least one of the initial gate questions related with a difficult interpersonal situation (12 responded “no” at all time points). This means that 12 participants never reported experiencing a difficult interpersonal situation over the week and 30 participants reported at least one difficult situation. Concretely, this means that 30 participants responded “yes” when opening the phone and seeing the question “did you experience a difficult interpersonal situation” at any time point. The entire data set represents a total of $N = 86$ effective answers over the course of 28 possible assessment points, distributed over the seven days (i.e., four possible assessment points per day). This represents a response rate of 7.8% from the total possible number of solicitations for data, which is rather low. Out of all 30 participants who provided at least one point of data, 27 of them (90% of $n = 30$) provided data at two or more time points; of these 15 (56%) provided data at three or more time points; and of those, 6 (20%) provided data at least four times over the seven days period. In other words, this means that out of 42 participants, 30 reported an interpersonal difficult situation at least once during the week: this could be at any time point of any day. Out of the same 30 participants, 27 reported experiencing at least a second difficult situation (at any other time point, any other day of the week than the one previously reported) and out of those 27, 15 reported experiencing at least a third difficult situation; and so on. Importantly, when we state that a participant answered four times, it could be that this participant answered four times on the

same day, one time every day during four days, two times on two different (consecutive or not) days, three times on the first day and one on the seventh; etc. Here, we are talking about general response rate at *any* given time point.

6.5.2 Preliminary analyses

For data extracted from the psychotherapy analogue session: inter-rater reliability for CAMS ratings was computed for $n = 15$ participants (50% reliability sample) and yielded a mean kappa of .78, which is considered very good to excellent agreement above chance and comparable to prior research (Pascual-Leone, 2018).

For data regarding the EMA procedure: In order to reduce experimental fatigue, we counted the number of occurrences per day (i.e., first day of assessment, second day, and so forth, until the seventh day) and were able to show that for the 30 participants who responded at least once to the EMA protocol, the number of responses were randomly distributed across the seven days. The total of 86 observations were distributed as follows: 12 observations on the first day, then 15, 11, 9, 13, 14, and 12 on the last day. We conclude that there has been no experimental fatigue effects over the course of data collection events.

Out of the 86 interpersonal stress events (coded from 30 participants), 22 (26%) took place with an intimate partner, 15 (17%) with a family member, 11 (13%) with a colleague, 11 (13%) with a stranger, 6 (7%) with a friend, 6 (7%) with an acquaintance or neighbour, and 15 (17%) events fell under the category “other.”

Inter-rater reliability for CAMS ratings (for the clinical assessment) was computed for 15 participants (a 50% reliability sample) and yielded a mean kappa of .78. Across the 30 participants CAMS frequencies were as follow: Early expressions of distress (EED) had a mean of 10.13 in the session, whereas intermediate mean score was 0.17 and advanced meaning making (AMM) 0.09.

Finally, the closing items in each assessment had asked participants if rating their experience may have changed the feeling itself. Overall, 28% (24/86) of data collection events showed that participants felt the schedule may have influenced the nature of their emotional experience. For 11 (12.8%) of these events, participants reported that the intensity of their emotion was more intense than in the beginning of the assessment, for 12 (14%) events, participants reported that the intensity of their emotion was less intense than in the beginning of the assessment (1 event was reported as “the same”).

Means, standard deviations, and internal consistencies for each sub-scale in ecological momentary assessment

Internal consistencies were computed using Cronbach alphas on the first occurrence in time of each of the emotion categories. Several sub-scales, as measured with ecological momentary assessment, had adequate internal consistencies, for Global distress (7 items): $\alpha = .81$ ($m = 3.69$; $sd = .1.45$), Hurt/Grief (6 items): $\alpha = .78$ ($m = 4.38$; $sd = 1.46$), Loneliness (3 items): $\alpha = .84$ ($m = 2.67$, $sd = 1.54$), Fear (3 items): $\alpha = .81$ ($m = 1.98$; $sd = 1.14$), Rejecting Anger (8): $\alpha = .61$ ($m = 3.00$; $sd = 0.99$), Self-compassion: $\alpha = .63$ ($m = 3.88$; $sd = 1.22$), Anxiety (3 items): $\alpha = .66$ ($m = 4.51$; $sd = 1.64$) and Assertive anger (6 items): $\alpha = .67$ ($m = 3.89$; $sd = 1.17$). For Shame, there were not enough occurrences to compute internal consistencies for this sub-scale (therefore, we excluded this subscale from further analyses).

Comparison between emotional processing in daily life and in an experiential-psychodynamic psychotherapy analogue session

We hypothesized that the predominant emotion categories assessed in daily life would correspond to the emotion categories observed in a psychotherapy analogue session. In order to test this, we defined emotion predominance as the CAMS code that is (a) observed most frequently (most frequent 1-minute bins of codes) in a psychotherapy analogue session, or (b)

rated most frequently in the EMA protocol across assessment points over the week of monitoring. Correlations on the mean of all responses in EMA were computed (Table 6). We found moderate relationships between the self-reported intensity of EMA sub-scale “fear” and the observer-rated CAMS transformation score in the psychotherapy analogue session ($r = .40$), as well as with the frequency of advanced meaning making components in the psychotherapy analogue session ($r = .45$). This means the more intensely participants typically identified feeling maladaptive fear in their daily lives, the more transformative the emotional experience was in a session. Conversely stated, when people did not report having much maladaptive fear during the difficult encounter in their daily life, they seemed to also have characteristically less productive therapy sessions, from the perspective of emotion transformation.

We found a moderate relationship (ranging between $r = .32$ and $.40$) between the observer-rated CAMS transformation score in the psychotherapy analogue session and the self-reported intensity of EMA sub-scales of “loneliness” and “hurt/grief”, and also between observer-rated CAMS advanced meaning making states, the CAMS early expressions of distress on the one hand and the self-reported intensity of EMA sub-scale “rejecting anger” on the other hand. Similar to the findings reported on fear, this suggest that the more intensely participants explicitly identified feeling grief, loneliness, or rejecting anger in their daily interpersonal conflicts, the more transformative the emotional experience was in session.

Predicting emotional processing from the person’s symptom level

We hypothesized that the intensity of early expressions of distress (in daily life and in psychotherapy analogue sessions) were linked to the intensity of symptoms (e.g., general distress, borderline symptoms and interpersonal problems). Table 5 reports on these findings. In addition, two linear regression models predict the intensity of global distress ($F(2, 16) = 3.92; p = .04; R^2 = .40$) and rejecting anger ($F(2, 20) = 3.25; p = .03; R^2 = .31$) in daily life,

from the baseline intensity of their interpersonal problems and difficulty in social roles. Specifically, we found that when people reported feelings of global distress and rejecting anger in daily life within the context of an interpersonally stressful event, it was predicted by the severity of their general problems and symptoms (but not by specific interpersonal or borderline symptoms).

We also explored the link between observer-rated CAMS codes based on the psychotherapy analogue sessions and self-reported symptom levels (see Table 6). Here we found that expressions of rejecting anger within the single session was predicted by the baseline intensity of general and specific (borderline) symptomatology ($F(2, 29) = 3.34; p = .05; R^2 = .20$).

6.6 Discussion

The present study aimed to examine the internal validity of a state-dependent conceptualization of emotional processing, as self-assessed in daily life. Establishing validity of a dynamic conception of emotional processing in daily life may contribute to solidify the centrality of emotion in mental health and psychotherapy (Fosha, 2000; Frijda, 1986; Greenberg & Goldman, 2019). We hypothesized that the self-assessment of emotional processing in the context of a personally-relevant interpersonal stress in the daily life may correspond to an individual's core real-time emotional reactions during a single analogue session of psychotherapy. We hypothesized that the newly created assessment schedule would demonstrate sufficient internal validity and that the most frequent emotional state, self-assessed via an interactive personalized smartphone program, would correspond to the most frequently observed emotional state in an analogue session experiential-psychodynamic psychotherapy. We also wanted to examine if maladaptive emotional states are linked with

the intensity of symptoms and problems experienced in everyday life. These hypotheses were partially supported.

Overall, for the responding participants, 90% of the 30 participants responded at least twice during the week to gate questions over the subsequent assessment, yielding a total of 86 observations and with an absence of experimentation fatigue. We believe this indicates the EMA protocol was highly accessible and useable by participants. When examining each subscale, we observed that this specific EMA schedule was characterized by high internal validity. While this conclusion was true for almost all subscales (global distress, rejecting anger, fear, loneliness, hurt/grief and self-compassion, assertive anger, anxiety), one subscale did not have enough data points for calculation (shame). Across the CAMS-EMA categories represented from all three clusters (early expressions of distress; intermediate; advanced meaning making states), we found to have internal consistencies that were acceptable, on average. As for the absence of results related to the shame subscale, we believe that the explicit endorsement of feeling ashamed may be culturally mediated and inhibited (Greenberg & Iwakabe, 2011), which would explain its very low base rate. While we observed a low response rate concerning shame in the daily life responses, maybe because of the self-reported design of EMA, we do want to explore if shame is observed in session and thus hetero-reported. Indeed, we believe that shame might be less accessible via EMA; or rather less prone to be expressed when participants are not directly experiencing it or reliving a situation involving it. Thus, no conclusion can be drawn so far in regard to the psychometric adequacy of items related to shame that we used in the present study but we still consider it an interesting aspect to explore.

Contrary to our hypotheses, the overall correspondence between emotional processing in a psychotherapy analogue session and in ecological momentary assessment was low. Interestingly however, our hypothesis tended to be partially confirmed specifically for the

intermediate CAMS-EMA codes of fear and loneliness, as well as for rejecting anger and hurt/grief. This means that the more participants reported fear and loneliness in interpersonally stressful situations from their daily life, the more they were able to move through early expressions of distress toward deeper transformative emotional experiences when they participated in a two-chair dialogue and explored anecdotes about relational episodes. Fear and loneliness (and, in theory, shame) are evoked by interpersonal stressors in many individuals. Interpersonally conflictual situations can activate specific self-organizations, which prepares the individual for action (be it adaptive or less adaptive). Fear, loneliness and perhaps shame, as defined in the present study, are understood as potentially (primary) maladaptive emotion states (Greenberg & Goldman, 2019): they are understood as self-organizations that represent “familiar bad feelings” or capture the “same old story” (Angus & Greenberg, 2011). Being able to self-report on rather intense experiences of rejecting anger (as part of an early expression of distress) is also related with the depth of in-session emotion transformation: rejecting anger experience in interpersonal conflicts may serve as a stepping stone to these individuals for further deepening and productive work. The association between (self-reported) rejecting anger and (in-session) early expressions of distress speaks to the relevance of our first hypothesis: it seems these undergraduate students reported consistently components of their secondary emotions with their experience in the psychotherapy analogue session. Similarly, the association between self-reported hurt/grief and the frequency of any advanced meaning making components in the experiential-psychodynamic session (of which the in-session experience of hurt and grief is part) is in line with our hypothesis and thus, represents a consistent, and to some extent probably accurate reporting on a primary adaptive experience both in- and outside of a psychotherapy analogue session in this student sample.

Our results suggest that participants who are aware of these specific emotional states in their experienced conflictual relationship also tend to be the ones who are more capable (with the help of a clinical interviewer) in accessing adaptive emotional states. These results may have two implications: (a) awareness of emotional schematic processing in daily life prepares the foundation for a productive in-session transformation process (Lane, 2020; Pascual-Leone, 2018), and (b) deepening and transforming a distressing experience may be better done in the context of a specific therapy context. This argument is supported by the general observation that there is a low general level of correspondence between the emotional predominance in daily life and that observed in a single session: these are related, but not identical, processes. As such, the state-dependent ecological momentary assessment may complement the in-session assessment and intervention focused on working with emotion.

Our data collection in the context of the EMA method involved sets of question that were presented to participants based on an interpersonal context. The notion of “identifying emotion” is relevant here because it also suggests the process of an emergent emotional awareness, and goes beyond endorsing an emotional state per se. Helping people to identify and label their emotion using content (i.e., EMA items here), can have an impact on the feeling itself (Torre & Lieberman, 2018). A study by Kassam and Mendes (2013) showed that self-reports of emotional processes impacted the latter: in particular, these authors observed a reduction in the autonomic responses related to emotions (i.e., heart rate and peripheral resistance). Even so, although rating one’s emotion has been shown to affect the physiological intensity of the emotion itself, the reduced physiological response associated with that feeling is not typically reflected in participants’ subjective self-reports (see Torre & Lieberman, 2018). So, although participants in our sample do not indicate the assessment schedule itself produced changes, we can only conclude it did not impact their conscious and subjective experience, but it may still have impacted them physiologically. In short, the possibility

remains that the CAMS-EMA was not only an assessment, but may have served as a minimal intervention, changing to some degree the feelings in question.

In keeping with the empirical literature showing links between early expressions of distress and symptoms levels in psychotherapy, we also found specific links with symptom levels (Kramer & Pascual-Leone, 2016; Whelton & Greenberg, 2005). Interestingly, global distress and rejecting anger (but not fear) measured in daily life is associated with a large effect for general symptom distress (i.e., r 's ranging between .45 and .57), although no links were found for the specific (borderline and interpersonal) problems. When looking at relationships between in-session CAMS codes and symptom levels, only rejecting anger related with several aspects of symptomatology (intensity of global symptoms and borderline symptoms). While the overall picture is consistent with our final hypothesis and supports ecological validity of the early expressions of distress assessed in the CAMS-EMA module, it sheds more light on how the core mechanism of emotion may explain symptoms. While there may be an issue of shared variance (both the CAMS-EMA and the symptom scales are self-reported scales), the strong correlations speak to a convincing effect of unproductive emotional processing – related to secondary emotional experiences (Greenberg & Goldman, 2019) – on distress and symptom levels (of note, given the correlational nature, the effect may be reversed meaning that symptoms may affect or produce the secondary emotional experiences). While this is important for the validity of the items tested, it may also be of future relevance for the use of EMA-based assessment and the related prevention of problematic behaviours in daily life, personality-related problems (Wright et al., 2019), such as addictive or self-harming behaviours (Scala et al., 2018), interpersonal problems, and impulsive behaviours (Tomko et al., 2014). The items used here may be adequate for the assessment of the effectiveness of interventions intended to prevent such problematic health behaviours.

We need to acknowledge a number of limitations of the present study. The fact that we chose to focus on correlating CAMS in session and CAMS based items in EMA on a general level rather than focusing on specific emotions is understandable because this study is exploratory. Nonetheless, we think that this would be very important to do in a future study, we thus aim to do another study with more refined hypotheses regarding the relationship between in-session emotional processing state and post-treatment daily emotional state. The absence of pre- and post- outcome information, due to our study investigating only one session, is a methodological design decision that we think should be reconsidered for further studies. Indeed, having pre- and post- outcome information would strengthen our study and symptom measure should be examined before the session as well. Another limitation that this study has is the fact that, because we examined a single session with healthy control participants, we have no information on alliance. In a future study, we surely will include this information. Furthermore, the design involving a therapy session analogue *before* the ecological momentary assessment may run the risk of the former influencing the results on the latter. Because of the high intra-individual fluctuations (see the sd's per category) observed over the EMA assessment week, we can assume that this influence was kept negligible. The overall response rate may appear small, with a 7.8% response rate over 1090 observations that were theoretically possible, and 12 participants did not report any interpersonally stressful event during the entire week. However, this may simply speak to the base rate of noteworthy interpersonal difficulties that might be reported among a population of undergraduate students. While the results were sufficient for the purpose of the present validation study, it may prove problematic for further inquiries due to self-selection bias. The current design may have optimized selection of data from a general healthy control population, selecting participants who are more distressed or more easily unsettled than healthier or emotionally-resilient individuals. Alternatively, it is possible that the wording used for the gate question

may have been too narrow and that other descriptions for identifying events may have produced other results, such as “no matter how minor the interpersonal stress may seem to you” or similar formulations. We think that our gate question might have been too restrictive, which could explain the response rate. Should one wish to collect data from a broader spectrum of the population, following this suggestion may increase the number of responses necessary for non-biased ecological momentary assessment. So far, we have not taken into account the longitudinal nature of the data, because our aim focused on an initial validation of the subscales used; future research should establish sensitivity to change of this assessment schedule, and its potential impact on day-by-day changes in emotion awareness. Relatedly, it may be important to consider an assessment module that may be activated by the participant in the actual situation of interpersonal stress. Such a state-dependent emotion-focused assessment may be particularly helpful for prevention or intervention programs. Nevertheless, for this particular validation study of these items, we chose to have a more controlled and regular assessment schedule to maximize the number of theoretically possible assessment points. Because sample sizes were small, we decided to interpret also correlations higher than .30 even if they were not significant. This is because we think that our correlations, even when non-significant, are interesting and could benefit from a bigger sample size in a future study.

We can tentatively conclude that the validity of a state-dependent conception of emotional processing can be extended from the psychotherapy analogue context to daily life. The focus on relational stress may be recommended for further inquiry. In addition, we recommend that the assessment schedule be considered for examining the effectiveness of prevention programs that aim to reduce problematic health behaviours (e.g., impulsive and addictive behaviours, self-harming behaviours). We found that the participant’s awareness of his/her intermediate – primary maladaptive (Greenberg & Goldman, 2019)– emotional states

(i.e., fear, loneliness, but also rejecting anger and hurt/grief) assessed in the context of an interpersonal stressor in daily life are positively linked with productive in-session emotional processing. Therefore, it may be helpful to use the EMA schedule as a “day to day” complement to an emotion-focused intervention, preparing the individual for in-session access of the relevant underlying primary emotions which will then lead to lasting change in psychotherapy.

Table 7

Inter-correlations (Spearman's) between CAMS-EMA categories and in-session CAMS

CAMS-EMA subscales	CAMS Transform	CAMS EED	CAMS Intermediate	CAMS AMM
“Global Distress”	.26 (ns)	.19(ns)	.08(ns)	.19(ns)
“Rejecting Anger”	.40*	.32(ns)	.25(ns)	.00(ns)
“Fear”	.40*	-.21(ns)	.17(ns)	.45*
“Loneliness”	.09(ns)	-.03(ns)	-.23(ns)	.33(ns)
“Anxiety”	.25(ns)	.20(ns)	-.03(ns)	-.02(ns)
“Assertive Anger”	.23(ns)	.24(ns)	-.17(ns)	.16(ns)
“Self-Compassion”	.11(ns)	-.05(ns)	.29(ns)	.10(ns)
“Hurt/Grief”	.27(ns)	.20(ns)	.03(ns)	.37(ns)

Note. EMA: ecological momentary assessment. CAMS: Classification of Affective Meaning States; EED: Early Expressions of Distress; AMM: Advanced Meaning Making.

* $p < .05$

Table 8

Inter-correlations (Pearson's) between early expressions of distress in daily life (self-assessed within EMA) and symptom intensity (n = 30)

	EMA- Global distress	EMA- Rejecting Anger	EMA- Fear
OQ-Symptom Distress	.45 (ns)	.51*	.17 (ns)
OQ-Interpersonal Relations	.50*	.51*	.48 (ns)
OQ-Social Role	.57*	.08 (ns)	.21 (ns)
OQ-total	.51*	.51*	.32 (ns)
Borderline Symptom List	.37 (ns)	.41 (ns)	-.04 (ns)
Inventory Interpersonal Problems	.29 (ns)	.36 (ns)	.27 (ns)

Note. EMA : Ecological momentary assessment ; * $p < .05$

Table 9

Inter-correlations (Spearman's) between early expressions of distress in sessions (assessed with CAMS) and symptom intensity (n = 39)

	Global Distress	Rejecting Anger	Fear/ Shame
OQ-Symptom Distress	-.09 (ns)	.42*	.17 (ns)
OQ-Interpersonal Relations	-.26 (ns)	.32 (ns)	.29 (ns)
OQ-Social Role	-.27 (ns)	-.04 (ns)	-.11 (ns)
OQ-total	-.17 (ns)	.32 (ns)	.09 (ns)
Borderline Symptom List	-.06 (ns)	.29 (ns)	.26 (ns)
Inventory Interpersonal Problems	-.21 (ns)	.34 (ns)	.03 (ns)

Note. CAMS : Classification of Affective Meaning States; * $p < .05$

CHAPTER 7:

THIRD EMPIRICAL STUDY

From a self-critical two-chair dialogue
to individualized self-contemptuous
stimuli in an fMRI: an investigation of
self-contempt in a neurobehavioral
paradigm

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7.1 Abstract

Background: Self-contempt, a negative maladaptive emotion, may be important in psychopathology but also in daily life, which has been little studied to this day. This work will explore the use of individualized self-contemptuous stimuli extracted from a self-critical two-chair dialogue into an fMRI scanner in order to investigate the potential implications of self-contempt in a neurobehavioral paradigm in order to potentially use it as a proof of concept for further studies in clinical populations.

Objectives: We assume that being exposed to individualized self-contemptuous stimuli will result in a greater neural activation in the amygdala, insula and prefrontal regions than being exposed to non-individualized negative ones. We also wish to examine the link between self-contempt expressed in a psychological session and neurofunctional activation when looking at the individualized self-critical stimuli in the fMRI. Ultimately, we aim to investigate our innovative neurobehavioral design investigating expressed self-contempt with individualized stimuli in order to use it as a proof of concept for further studies in clinical populations.

Methods: We recruited N= 28 female control participants to participate in a psychological investigation, which included questionnaires and a self-critical emotion-eliciting two-chair dialogue followed by an fMRI assessment one week later. During the fMRI, individualized stimuli extracted from the two-chair dialogue were presented to the participants. We observed the neurofunctional activation during this task and compared neural activation during the exposition to self-critical individualized stimuli versus negative non-individualized stimuli.

Results: The fMRI data analysis showed no significant difference in activation between the first and second fMRI assessments. We found no significant activation when comparing the neural activation between the exposition to self-contemptuous individualized stimuli and non-individualized negative stimuli. Exploratory analyses indicate a subthreshold activation in the

central operculum, insula, temporal gyrus and fusiform gyrus when self-contempt from the analogue psychotherapy session was added to the analysis as a covariate.

Conclusion: Our neurobehavioral design seems promising as proof of concept in combining an analogue psychotherapy session and an fMRI session to investigate expressed self-contempt in healthy controls in that it is feasible and contains interesting exploratory results. The absence of significant results in neural activation during the exposition to individualized self-contemptuous stimuli as opposed to non-individualized self-contemptuous stimuli may result from our participants being healthy controls, but we should replicate this study with a larger sample to establish it. Using this design in clinical populations seems feasible and may be important in clinical populations known for emotional difficulties such as borderline personality disorder. This would also add to our results concerning healthy controls

7. 1 Introduction

Investigating self-contempt with individualized self-contemptuous stimuli in a neurobehavioral paradigm

Self-contempt is a maladaptive negative emotion --- that may be central in diverse psychopathologies and in psychotherapy (Kramer, Renevey, et al., 2020; Sallin et al., 2021), as many psychopathologies imply difficulties in emotional processing and regulation - but also in daily life and quality of life (Jacquemettaz, 2022), which may also concern healthy controls. Self-contempt may have been overlooked in psychotherapy and emotion research . Our neurobehavioral design, using individualized self-contemptuous stimuli extracted from a two-chair dialogue in an fMRI assessment, aims to extend our knowledge of self-contempt. Self-contempt may be measured with an expressed self-contempt scale, which may be best used in a self-critical two-chair dialogue (Kramer & Pascual-Leone, 2016; Kramer, Renevey, et al., 2020; Sallin et al., 2021).

Potential brain regions to investigate related to self-contempt

It seems interesting to look at specific brain regions potentially involved in emotion and maybe in self-contempt. While brain regions should not be solely considered as responsible for an emotion or its processing, as neural pathways and their interactions may be more relevant (Pessoa, 2008, 2018; Schmahl et al., 2018). It still may be useful to review specific regions involved in the neural pathways of emotions yet keeping in mind that they may overlap and interact (Saarimäki et al., 2018; Schmahl et al., 2018).

Self-contempt may be associated with an activation in prefrontal regions, for instance the medial prefrontal cortex (mPFC), because it appears to be commonly activated during emotional tasks and may be associated with self-awareness or the dorsolateral PFC (dlPFC) that may be associated with emotion regulation (Phan et al., 2002; Phan et al., 2004; Schmahl

et al., 2018). The orbitofrontal PFC (OFC) also referred to as ventromedial (vmPFC) may play a role in social and emotional behaviour, maybe through its projections to the amygdala and anterior cingulate cortex (ACC) while this latter and other parts of the cingulate cortex may be important in emotional processing (Schmahl et al., 2018). In the insular cortex, the insula whose activation seems to be associated with the experience and processing of negative emotions such seeing facial expressions of disgust (Calder et al., 2001; Phillips et al., 1998; Schmahl et al., 2018) may be relevant to investigate in self-contempt. Concerning subcortical regions, we may pay attention to the amygdala, whose activation is frequent amongst several types of emotional stimuli, specially disgust and threat, which may imply a role in salience detection via the processing of arousing stimuli, both positive and negative (Costafreda et al., 2008; Fitzgerald et al., 2006; Schmahl et al., 2018; Sergerie et al., 2008). Another subcortical region we may be interested in in self-contempt may be the ventral striatum, whose activation seems to be associated with emotional intensity and stimuli self-relatedness (Phan et al., 2004; Schmahl et al., 2018). The hippocampus, also subcortical, seems to play a crucial role in emotional memory (Bouton et al., 2006; Ji & Maren, 2007; Milad et al., 2007; Schmahl et al., 2018).

While emotional regulation refers to the way individuals manage emotions in terms of experience and expression, emotional processing refers to the way in which individuals experience and make meaning of emotions (Peluso & Freund, 2018; Rachman, 1980; Teasdale, 1999). Emotional processing is important to assess as candidate for mechanism of change in psychotherapy because it has been associated with better treatment outcomes (Town et al., 2017) and adaptive changes in therapy (Peluso & Freund, 2018; Whelton, 2004). Certain emotions, specifically, relate with outcome, while others do not (see Pascual-Leone, 2018), which pleads in favour of investigating emotions separately.

Changes in emotional processing are an important part of psychotherapeutic treatment, as was shown for example in borderline personality disorder in the pilot study to this one (Kramer et al., 2018); we thus consider it as a promising mechanism of change to keep an eye on in psychotherapy research. It is interesting to note that most studies on emotional processing do not compare emotional processing between patients in therapy and healthy controls. The present paper aims at contributing to fill this gap of knowledge by investigating self-contempt, which we believe to be part of emotional processing as the emotional part of self-criticism, potentially leading to an increase in self-compassion when addressed in therapy. Self-contempt may thus be a good operationalization of emotional processing. Using healthy controls may help benchmark expected effects in later clinical studies. Note that this design was used in a pilot study including patients with borderline personality disorder (Kramer et al., 2018) and we aim to investigate it in a non-clinical population (healthy controls) as a first step in our investigation of self-contempt.

We will thus focus on self-contempt, which is associated to borderline symptomatology (Sallin et al., 2021), but also include self-esteem and borderline symptomatology. Self-esteem plays a moderating role in emotional regulation as individuals with lower self-esteem seem to react defensively to threat of failure (Shafir et al., 2017). Borderline personality disorder seems to be associated with instability in self-esteem and negative emotions (Hochschild Tolpin et al., 2004; Zeigler–Hill & Abraham, 2006) which are highly correlated and linked to psychopathology (Santangelo et al., 2017). Furthermore, patients with borderline personality disorder are prone to negative emotions related to the self, such as self-disgust and low self-esteem (Winter et al., 2017). Self-contempt thus, being a negative emotion related to the self, seems to fit well into this framework.

Emotions are complex and involve diverse dimensions of life, be it daily life or therapy. Self-contempt seems to be observable and measurable in a multi-method inclusive

neurobehavioral design, which allows an individualized and multi-methodological assessment (Kramer, Renevey, et al., 2020). This implies that self-contempt may be successfully assessed using an individualized neurobehavioral approach, to which we aim to contribute.

Individualizing assessment of emotions and emotional processing

Theoretically, certain authors argue that there is an important individual variability in the way individuals live and react to their emotions. For example, appraisal theorists believe that emotions come from our evaluations of situations and events, which cause different reactions in individuals: emotional reactions to the same event differ according to the person living it because this person evaluates and interprets it subjectively (Ellsworth & Scherer, 2003). The rationale then is that if individuals evaluate events differently, they might experience emotions in diverse manners, some of which may be associated with emotional disturbance (Ellsworth & Scherer, 2003). Pascual-Leone et al. (2016) have established guidelines that research should follow in the process of individualizing stimuli. They state that stimuli should be individualized, either by using individualized stimuli targeting specific emotional processes in a comparative manner; or by controlling the context of stimuli elicitation to enhance comparability and by using stimuli that have a high meaning for each participant personally, which can be established by self-report ratings checks (Pascual-Leone, Herpertz, et al., 2016). Furthermore, researchers should make sure that stimuli correspond to what they are supposed to measure by investigating the validity and reliability of the stimuli and, finally, by using observational criteria in video or audio recordings to complete self-reports (see Pascual-Leone, Herpertz, et al., 2016; for the complete guidelines of individualizing stimuli). In psychotherapy research, individualizing assessment may help keep research linked to clinical work which could be particularly relevant for emotions study (Kramer, 2020). Doubtlessly, emotional reactions, expressions and experiences are difficult to

generalize and can be of great importance towards clinical work in an individualized manner, ultimately towards inducing productive change in psychotherapy.

Indeed, in psychotherapy, certain authors discovered that in borderline personality disorder, idiographic stimuli are more effective in eliciting emotional reactivity compared to stimuli that are not; mostly specific emotions such as anger and sadness (Kuo et al., 2014). This implies that “one broad limitation of prior emotion regulation studies is that they have primarily relied on standardized emotional words” (Speed et al., 2020, p. 2), whereas the self-relevance of a stimulus influences the intensity of the resulting emotion, which likely impacts the success of the regulation attempt” (Ellsworth & Scherer, 2003; Speed et al., 2020, p. 2). In light of these previous findings, individualizing the assessment of emotional processing is relevant (under the conditions highlighted by Pascual-Leone, Herpertz, et al., 2016), which implies that the same may be true for self-contempt. Specifically using self-contemptuous individualized stimuli extracted from a two-chair dialogue into an fMRI assessment, Kramer, Renevey et al. (2020) evidenced that neural activation linked with self-contemptuous individualized stimuli may be associated with treatment effect in patients with borderline personality disorder, as well as a decrease in self-contempt before and after treatment associated with symptom decrease (Kramer, Renevey, et al., 2020).

7.2 Present study

Our design combines a psychological assessment and an fMRI to evaluate self-contempt in healthy controls. Psychotherapy research studies including fMRI data and neurobehavioral assessments increased in the recent past, for example in borderline personality disorder research (Kramer et al., 2018; Kuo et al., 2014; Winter et al., 2016). The elements we wish to explore are the relevance of individualizing the assessment of emotional processing, with a focus on expressed self-contempt, and neurobehavioral activations in healthy controls exposed to their individualized self-contemptuous stimuli. Our study is the

first, to our knowledge, to use individualized stimuli related to self-contempt and produced with a clinical method close to psychotherapy reality in healthy controls.

7.3 Hypotheses

We assume that being exposed to individualized self-contemptuous stimuli with high emotional meaning results in a greater neural activation in brain regions associated with emotions, mainly the amygdala, insula, anterior cingulate cortex (ACC) or prefrontal cortex (PFC) than being exposed to non-individualized stimuli in control participants. We also assume that a higher level of expressed self-contempt in an analogue psychotherapy session may be linked to a higher neural activity when exposed to individualized self-contemptuous stimuli in an fMRI task. We expect this to take place in brain regions associated with either emotions (e.g., as the insula or amygdala) or to the self (e.g., as the medial prefrontal cortex, the insular cortex or the insula).

7.4 Methods

7.4.1 Participants

Female undergraduate students (N=28) (to avoid gender bias (see Wrase et al., 2003)) aged between 19 and 31 years old ($M = 22.29$; $SD = 2.65$), were recruited in undergraduate university classrooms in French-speaking Switzerland. All of them agreed to participate and have their data used for research. Inclusion criteria were being aged between 18 and 23 years old and speaking French while exclusion criteria were either having psychiatric symptoms / diagnosis and associated medication. Participants underwent two analogue psychotherapy sessions including a self-critical task (two-chair dialogue). Out of the 28 participants, $n = 24$ were able to participate in two fMRI assessments, in which the self-critical words from the previous task (the individualized stimuli) were presented along with non-individualized

negative stimuli (Kherif et al., 2011). This research was approved by the competent institutional ethics board (254/08).

Measures

We assessed participants' self-contempt using the expressed self-contempt scale which evaluates expressed self-contempt on a range from 1 (no expressed self-contempt) to 5 (extreme self-contempt), rated by a previously-trained user observing verbal as well as non-verbal elements. Because expressed self-contempt may be associated with lower self-esteem, we evaluated self-esteem using the state self-reported self-esteem scale (SSES, (Heatherton & Polivy, 1991)). Because because self-contempt is important in borderline personality disorder, we also evaluated borderline symptoms using the ZAN-BPD (Zanarini, 2003) a semi-structured clinician administered interview evaluating borderline symptomatology..

7.4.3 Procedure

7.4.3.1 Psychological measures

Participants came to two psychological assessments, 4-month apart. During these assessments, that were analogue psychotherapy sessions, participants underwent a self-critical two-chair dialogue (Greenberg, 2015), conducted as follows:

First, the interviewer asked the participant to imagine as vividly as possible a personal situation of failure and to try and relive it as precisely as she could. Then, the interviewer asked the participant to change chair, and on the other chair, to embody her critical voice towards herself; the voice that was present during the failure situation, and to say out loud what this voice would say to herself (i.e., in the form of "you are ..."). The interviewer then asked the participant to go back to the first chair and be herself again. Finally, the interviewer asked how the participant was feeling and gave her the occasion to answer to the critical voice, if she so desired. Note that the self-esteem questionnaire was filled at the very beginning of the task (before the imagination task), after the imagination task (right before

changing chair for the first time) and after the two-chair dialogue was finished (after having answered to the critical voice). Psychological assessments were video recorded. After the psychological assessments, we used our observer-rated self-contempt scale to rate expressed self-contempt from 1 to 5 in the self-critical two-chair dialogue. Importantly, while participants came to two analogue psychotherapy sessions and two fMRI, we did not investigate the difference between the two fMRI measures in this study, which we will address in a future study.

7.4.3.2 fMRI measures

Participants came to two fMRI assessments one week after the analogue psychotherapy sessions during which they underwent the self-critical two-chair dialogue. Prior to the fMRI appointment, the interviewer watched videos of the psychological assessment and extracted 20 self-contemptuous words that came out during the two-chair dialogue (for example, “dumb”, “ugly” etc.). These words were projected during the fMRI in a block design. Each block contained ten images, each image containing one of the twenty words was projected for 2 seconds. 20 non-individualized negative words (Kherif et al., 2011) were also presented in another block for later comparison. The 20 blocks were pseudo-randomized and the design was repeated two times in order for the twenty images in each category to be projected. In this study, we focus on the comparison between individualized self-contemptuous stimuli and non-individualized negative stimuli.

7.4.4 Data acquisition and pre-processing

The fMRI data was acquired on a 3-T MRI scanner with a 64-channel head coil using a 2D EPI sequence. The acquisition parameters were as follows: voxel size $3 \times 3 \times 3$ mm³, (slice thickness = 2.5mm with a distance factor of 20% that makes it = 3mm); 45 slices; slice TR = 80 ms; volume TR = 80ms x 45 =3.6s; TE = 17.4 ms; phase oversampling = 12%; flip angle = 90°; BW =260Hz/Px; GRAPPA with acceleration factor = 2 along phase direction.

The structural MRI data consisted of T1-weighted MPRAGE images (TR = 2,000 ms; TI = 920 ms; TE = 2.39ms; $\alpha = 9^\circ$; BW = 250 Hz/Px; read-out in inferior–superior direction; FoV = 256 × 232 mm; 176 slices) at 1 mm resolution; GRAPPA with acceleration factor = 2 along phase direction. A whole-brain analysis was used.

EPI images were realigned to the subject's average image across runs, corrected for spatial distortions using the SPM field-mapping tools (Hutton et al., 2002). The parameters of registration to standardised Montreal Neurological Institute (MNI) space were calculated on the anatomical image and the default settings of the ‘unified segmentation’ framework followed by the diffeomorphic registration algorithm DARTEL (Ashburner, 2007). The spatial registration parameters were applied to the functional time series co-registered to the corresponding individual's anatomical scan. Prior to statistical analysis, a spatial smoothing with a Gaussian kernel of 8 mm full-width at half-maximum was applied. Our experiments used the methodology of blood oxygen level-dependent (BOLD) imaging. The pre-processing and statistical analyses of the MRI data were performed with Statistical Parametric Mapping (SPM12) fMRI software (Wellcome Trust Centre for Human Neuroimaging, <http://www.fil.ion.ucl.ac.uk/spm>) running on MATLAB R2021a (Mathworks, <http://www.mathworks.com>).

7.5 Results

7.5.1 Psychological assessment

We found no mean difference in borderline symptomatology between the first psychological assessment ($M = 2.14$, $SD = 1.880$) and the second ($M = 1.46$, $SD = 1.774$), $t(27) = 1.778$, $p = .087$. There was no mean difference either in expressed self-contempt between the first psychological assessment ($M = 4.058$, $SD = .674$) and the second ($M = 3.905$, $SD = 1.014$) $t(27) = .914$, $p = .369$. Self-esteem measured before the two-chair dialogue was higher at the second psychological assessment ($M = 3.939$, $SD = .486$) than at the first

psychological assessment ($M = 3.721$, $SD = .591$), $t(27) = -3.246$, $p = .003$. Self-esteem measured after the imagination task of the two-chair dialogue was also higher at the second psychological assessment ($M = 3.580$, $SD = .752$) than at the first psychological assessment ($M = 3.263$, $SD = .851$), $t(27) = -3.493$, $p = .002$. Finally, self-esteem measured after the two-chair dialogue was not significantly different between the first psychological assessment ($M = 3.545$, $SD = .682$) and the second psychological assessment ($M = 3.700$, $SD = .688$) but very close to significance $t(27) = -2.048$, $p = .050$.

There is a positive link between the level of expressed self-contempt at the first analogue psychotherapy session and the level of borderline symptomatology at the second analogue psychotherapy session $r = .40$, $p < 0.05$.

7.5.2 fMRI data

Neural activation in control participants was not higher when exposed to their self-contemptuous individualized stimuli compared to non-individualized negative stimuli: using whole brain analysis, to control for $p < 0.05$ FEW corrected, the applied threshold was $T = 5.65$ and no suprathreshold clusters were found. For exploration purposes, we did the same analysis with uncorrected $p < 0.001$. The applied threshold was $T = 3.48$. Suprathreshold clusters were found as shown in table 10 and figure 6.

Table 10

Suprathreshold clusters following one-sample t-tests on all participants comparing individualized self-contemptuous words and non-individualized negative stimuli.

<i>Cluster (Voxels)</i>	<i>Region (Label)</i>	<i>Location of Maxima</i>	<i>Z</i>	<i>T</i>
<i>k_E</i>		<i>(x y z, mm)</i>		
10	Right Cerebellum White Matter	+21 -58 -31	3.39	3.91
5	Left AnG	-48 -55 +38	3.26	3.72
2	Right MTG	+63 -28 -16	3.14	3.14

Note. $k = 22.743$, $p < 0.001$ uncorrected for FWE.

AnG = Angular Gyrus; MTG = Middle Temporal Gyrus

Again, contrary to our hypothesis, the level of expressed self-contempt in a psychotherapy analogue session was not linked to a higher neural activation during the condition in which participants were exposed to individualized self-contemptuous stimuli. The level of expressed self-contempt was introduced as a covariate during 2nd level analysis. Using whole-brain analysis, to control for $p < 0.05$ FEW corrected, the applied threshold was $T = 5.75$ and no clusters survived this threshold. For exploration purposes, we did the same analysis with uncorrected $p < 0.001$. The applied threshold was $T = 3.50$. Suprathreshold clusters were found as shown in table 11 and figure 7.

Table 11

Suprathreshold clusters following one-sample t-tests on all participants comparing individualized self-contemptuous stimuli and non-individualized negative stimuli with expressed self-contempt as a covariate

<i>Cluster (Voxels) k_E</i>	<i>Region (Label)</i>	<i>Location of Maxima (x y z, mm)</i>	<i>Z</i>	<i>T</i>
10	Left Cerebral White Matter (21.3% Left CO, 14.8% Left AIns)	-42 +5 +11	3.68	4.39
16	Left AIns (Anterior Insula)	-33 +20 +5	3.62	4.28
15	Right Cerebral White Matter (3.5% Right TTG, 2.9% Right PIns)	+33 -25 +23	3.57	4.21
12	Right OFuG	+24 -91 -10	3.35	3.88
5	Left Cerebral White Matter (38.4% Left MCgC; 7.2% right MCgC)	+15 -88 -10	3.35	3.88
5	Left Cerebral White Matter	-21 -34 +26	3.35	3.88
8	Left Cerebral White Matter (5.4% Left Putamen and 2-3% AIns)	-27 +5 +17	3.32	3.84
1	Left Lateral Ventricle	-24 -43 2	3.25	3.73
2	Left Cerebral White Matter	-21 -88 -7	3.15	3.59
1	Right Cerebral White Matter (23% AIns)	+30 +23 +5	3.12	3.54
1	Left SFG	-27 +56 +29	3.10	3.52

Note. k = 21.577, p < 0.001 uncorrected for FWE.

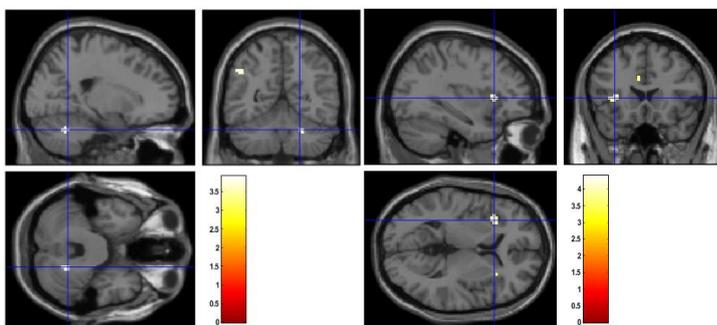
CO = Central Operculum; AIns = Anterior Insula; TTG = Transverse Temporal Gyrus; PIns = Posterior Insula; OFuG = Occipital Fusiform Gyrus; MCgC = Middle Cingulate Gyrus; SFG = Superior Frontal Gyrus.

Figure 6 (left)

Suprathreshold clusters following one-sample t-tests on all participants comparing individualized self-critical contemptuous stimuli and non-individualized negative stimuli, thresholded here at $p < 0.001$ uncorrected for FEW for visualization purpose.

Figure 7 (right)

Suprathreshold clusters (activation in Left Anterior Insula) following one-sample t-tests on all participants comparing individualized self-critical contemptuous stimuli and non-individualized negative stimuli, using expressed self-contempt as a covariate.



Note. Thresholded here at $p < 0.001$ uncorrected for FEW for visualization purpose.

7.6 Discussion

The present study explored neural activations of healthy controls when confronted to their individualized self-contemptuous words, extracted from personalized emotion-eliciting paradigm, specifically the two-chair dialogue (Greenberg, 1979), a valid tool for the elicitation and measure of self-contempt. Previous studies were able to establish neural correlates of disturbed emotion processing in borderline personality disorder, specifically an increased activation of the left amygdala and posterior cingulate cortex compared to healthy controls when confronted to negative emotional stimuli (Schulze et al., 2016). Psychotherapy alters neural activation and connectivity of regions responsible for emotion regulation in borderline personality disorder (Marceau et al., 2018). Specifically, activity decreases in the insula and anterior cingulate cortex after therapy (Schmitt et al., 2016).

hypothesized that being exposed to self-contemptuous stimuli with high emotional meaning would result in a greater neural activity than being exposed to non-individualized negative stimuli, based the fact that individualized self-contemptuous stimuli might be relevant to participants (Fischer, 1979; Kramer, Renevey, et al., 2020; Sales & Alves, 2016). Our exploratory results indicate that this might not be as true in control participants as it can be in psychiatric patients, as no difference in neural activation was found between self-contemptuous individualized stimuli and non-individualized negative ones. Indeed, the small clusters we observed that survived a $p < 0.001$ uncorrected threshold were the left angular gyrus (Left AnG), mostly responsible for semantic, words and number processing: comprehension, spatial and social cognition, memory retrieval and attention (Seghier, 2013), and the right middle temporal gyrus (MTG), mostly responsible for language functions, reading and word processing (Acheson & Hagoort, 2013). Interestingly, the same analysis with expressed self-contempt as a covariate, though it was non-significant with a threshold of $p < 0.05$ corrected, showed different trends with a $p < 0.001$ uncorrected threshold. Indeed, areas such as the left anterior insula (AIns) associated to emotional regulation and processing (Kitayama et al., 2013) and negative emotions such as disgust (Corradi-Dell'Acqua et al., 2011) showed suprathreshold clusters. This was also the case for the right posterior insula (PIns), associated with intensity of emotional reporting and whose activations have been reported when confronted to emotional stimuli (disgusting or sad pictures for example) (Uddin et al., 2017). This implies that, even though our results are trends and even if the association is feeble, the insula could be a major hub for the treatment of self-contempt.

This study contains limitations, mostly the fact that we did not perform region of interest (ROI)'s analyses to test specific a priori on regions of interest, such as the amygdala or insula. Whole-brain analysis was done because this study is exploratory, but we should consider performing ROI's in future studies. Establishing clear ROIs would also allow us to

make correlations between neural activation and our expressed self-contempt scale in order to investigate activation in a specific region. Another limitation is our small sample size, and the fact that we compared only two stimuli categories – individualized versus non-individualized. Comparing these categories with other, such as positive stimuli or symbols, to control for visual activation, would be useful. It would have been particularly useful, for example, towards our exploratory result of activation in the MTG, who seems involved in the processing reading (Acheson & Hagoort, 2013) and in visual recognition of emotion (Pourtois et al., 2005).

Nonetheless, our exploratory trend result of insula activation when self-contempt scores from the self-critical two-chair dialogue are used as covariate in fMRI data analysis is coherent with existing literature. Indeed, activation in the insula appears to be associated with emotions, including social emotions (Davidson et al., 2000; Gasquoine, 2014; Lamm & Singer, 2010; Sander & Scherer, 2009; Tippett et al., 2018). Activation in the insula seems specifically associated with negative emotions, including disgust (Phillips et al., 1998). Furthermore, the insula is known for bodily felt sensations, which also seems coherent with self-contempt as an emotion (Kramer, Renevey, et al., 2020) This exploratory result, though, is to be considered with extreme caution, as it is only a trend. The fact that we observed no activation in other brain regions commonly associated with emotions, especially negative emotions such as the amygdala for example, which is also supposed to be activated with emotional stimuli (Schmahl et al., 2018), also accounts for considering our absence of results with caution.

Nonetheless, our study is important in that it shows that using individualized self-contemptuous stimuli in an fMRI is feasible. The two-chair dialogue seems to work very well in eliciting self-contempt in healthy controls, as almost everyone had high scores of self-contempt. We compared self-contemptuous words from the self-critical two-chair dialogue

(i.e., “dumb”; “worthless”) and negative words (i.e., “pain”; “suffering”). This is important to highlight because they are closely related in that they both are negative words categories. Thus, we can exclude the fact that our trend results are due to a difference between negative and positive meaning of words, for example. Still, we plan to extend our analyses to compare all words categories. Even though certain studies use healthy controls as control groups, a majority of studies in psychotherapy use patient groups (one disorder as main and other problematics as control groups). Patient groups often present a lot of comorbidities, which is considered as a limitation (Marceau et al., 2018) and highlights the importance of doing studies with healthy controls. As such, this study acts as a role of concept towards using individualized self-contemptuous stimuli in a neurobehavioral design.

7.7 Conclusion

Our study is the first to explore expressed self-contempt and assess it in a neurobehavioral design in healthy controls. While this study yields no significant result towards its hypotheses, exploratory results are interesting as they suppose a potential activation in the insula associated with individualized self-contemptuous stimuli. This may lead to an exploration of the insula, specifically, as a potential neural substrate involved in the processing of self-contempt, which should be further addressed in future studies in healthy controls and in clinical populations. The innovative method we used of generating individualized stimuli in an analogue psychotherapy session involving a self-critical two-chair dialogue paradigm and use them in an fMRI is promising, as feasibility is now established. To address certain limitations, and because our paradigm works, we aim to replicate this study using a clinical population such as borderline personality disorder. The link we found between expressed self-contempt during the first analogue psychotherapy session and borderline symptomatology at the second analogue psychotherapy session builds on this and highlights the potential psychopathological importance of expressed self-contempt. Indeed, borderline

personality disorder is an interesting candidate because of the predominance of negative affects and self-criticism in this population. Our methodology would be relevant in light of the previous results found in borderline personality disorder concerning individualized assessment and self-contempt. This exploration will be possible thanks to this study, which may serve as proof of concept for future studies as well as establish the methodology for future studies on clinical populations. Given that expressed self-contempt is critical in psychopathology across several psychological problems, the exploration of emotional processing – and brain activity measure of self-contempt - is important and should be continued.

CHAPTER 8: GENERAL

DISCUSSION

Now that we have finished presenting the empirical studies, we will discuss our results and their implications. We will first sum up our results and present and discuss them one by one, in section 8.1, before elaborating more on our findings and discuss their interpretation in section 8.2. In section 8.3, we will discuss the limitations that are part of this thesis, which will lead us to future directions in section 8.4. We will conclude this thesis in the next chapter, which is 9.

We conceptualized self-contempt as the emotional side of self-criticism. Precisely, we defined self-contempt as an emotion related to an intense feeling of self-deficiency implying anger and disgust towards the self as well as a self-rejection associated with emotional, cognitive and potentially biological activations and repercussions. Given the importance of emotional processing in Emotion-focused therapy and in certain psychopathologies such as borderline personality disorder, we aimed to investigate whether the pathway moving from self-contempt to self-compassion could be considered as a potential mechanism of change to study in psychotherapy research and to use in psychotherapy. Indeed, this question was not directly addressed in this thesis, but it will be a follow-up question for later. We thus aimed to investigate it in order to create a solid basis of reflection towards this aim. Our use of a self-critical two-chair dialogue in our healthy controls samples is theoretically relevant for several reasons and may be a strength of this thesis. First, the fact that self-contempt is associated with self-criticism (Whelton & Greenberg, 2005) supposes that a self-critical two-chair dialogue may be a fitting setting to evaluate expressed self-contempt. Second, the fact that

self-contempt may be involved in emotional processing from maladaptive emotions to more adaptive ones (Timulak & Pascual-Leone, 2015) supposes that it may be important to investigate both emotional processing and self-contempt. Using a self-critical two-chair dialogue was relevant also in our second empirical study, which does not directly investigate self-contempt, but widely uses the CAMS, which itself is associated with the sequential model of emotional processing, of which one version includes self-contempt (Timulak & Pascual-Leone, 2015).

In our second empirical study, we evaluated emotional processing while healthy controls were sitting on the opposite chair as when we coded expressed self-contempt. We coded emotional processing, with the CAMS, when participants were sitting on the experiential chair, which seems particularly adapted to evaluate emotional processing (Berthoud et al., 2015; Kramer, Pascual-Leone, et al., 2016; Pascual-Leone, 2009; Pascual-Leone & Greenberg, 2007).

In our third empirical study, the use of a self-critical two-chair dialogue was particularly fruitful in that it allowed us to extract individualized self-contemptuous stimuli to be presented in an fMRI. This innovative methodology developed by Kramer, Renevey et al. (2020) to use with patients with borderline personality disorder (Kramer, Renevey, et al., 2020), had not been used with healthy controls. Overall, the aim of this thesis was to investigate self-contempt with a multimodal methodology, specifically to examine how emotional processing and specifically self-contempt may be relevant to study in psychotherapy research using a multimodal methodology. Indeed, self-contempt may interfere with emotional processing and be a hindrance towards accessing self-compassion. This implies that self-contempt may be an important emotion to consider in a clinical setting of psychotherapy and in daily life.

To investigate whether we could efficiently measure expressed self-contempt, the first aim of this thesis was to develop and present a scale to rate expressed self-contempt with the scope of having a sensitive and reliable measure of self-contempt. Thus, we aimed to investigate the validity and reliability of our scale. This may prove useful in both future psychotherapy research and clinical psychotherapy aiming to investigate self-contempt. The second aim of this thesis was to investigate emotional processing in daily life, using ecological momentary assessment, and comparing it to emotional processing in an analogue psychotherapy session. In order to do this, we aimed to examine the internal validity of dynamic, self-assessed emotional processing items in daily life. This would theoretically be useful, as it may imply that emotional processing assessment in daily life may be interesting to collect informative and relevant data for emotion and psychotherapy research on the one hand and be a precious complement to use in psychotherapy on the other. Because we conceptualize self-contempt as potentially part of emotional processing, it seems appropriate to investigate emotional processing. This idea is in line with that of Timulak and Pascual-Leone (2015), who included self-contempt in their model of sequential emotional processing (Timulak & Pascual-Leone, 2015) that we presented in chapter 2. Finally, the third aim of this thesis was to explore self-contempt in an integrated multi-method assessment including an analogue psychotherapy session and an fMRI. Specifically, we aimed to evaluate our design to be able to use it as proof of concept. In this study, we aimed to evaluate self-contempt's potential link with self-esteem and the severity of borderline symptomatology in healthy controls. We also aimed to evaluate the relevance of using individualized self-contemptuous stimuli in an fMRI assessment, and determine whether this would have an impact on neural activation.

In this chapter, we will summarize the key findings of each empirical study in relation to our aims. We will discuss these findings in relation to existing literature in order to imagine

future studies and clinical implications that could build upon our work. We will also discuss limitations regarding our empirical studies, which could be useful to address in future studies.

8.1 Summary of findings

With the aim of investigating self-contempt and emotional processing using a multi-modal methodology, we explored the validation of tools and designs that may be helpful in assessing both of them. We collected or used data from healthy controls (first, second and third empirical studies), as well as patients with borderline personality disorder and major depressive disorder (first empirical study). Our data included psychotherapy sessions (first empirical studies; patients groups), analogue psychotherapy sessions (first, second and third empirical studies), ecological momentary assessment (second empirical study) and neurobehavioral design (third empirical study). We explored (1) an expressed self-contempt rating scale in our first empirical study, (2) emotional processing measured with the CAMS in an analogue psychotherapy session and CAMS-based EMA items in daily life in our second empirical study and (3) a neurobehavioral design of self-contempt in healthy controls and associated neural activation in our third empirical study. Table 12 summarizes our results based on the hypotheses we presented in chapter 3 and provides a simplified answer as to whether this hypothesis has been refuted (x), refuted but shows a trend towards confirmation (*), partially confirmed (**) or confirmed (***)).

Table 12*Summary of results in terms of hypotheses validation or refutation*

Hypothesis	Chapter	Result
1. validity and reliability of the 5 points expressed self-contempt rating scale are sufficient	5	**
2. the level of expressed self-contempt is linked to symptom intensity	5,7	**
3. the level of expressed self-contempt is higher in patients with BPD than in patients with MDD or in HC	5	x
4. expressed self-contempt is observable during a two-chair dialogue with healthy controls	5	***
5. EMA subscales based on the CAMS represent distinct emotional states	6	***
6. predominant emotion categories in daily life are also predominant in an analogue psychotherapy session	6	**
7. maladaptive emotional states are associated with symptom intensity	6	**
8. neural activity is higher in emotion regions when exposed to individualized self-contemptuous stimuli than to non-individualized negative stimuli	7	*
9. the level of expressed self-contempt in an analogue psychotherapy session is linked to neural activity when individualized self-contemptuous stimuli are presented	7	*
10. borderline symptomatology, expressed self-contempt and self-esteem do not change between two time points in HC	7	**
11. neural activity when exposed to individualized self-contemptuous stimuli does not differ between two time points in HC	7	***

Note. x = refuted hypothesis; * = trend result towards hypothesis confirmation; ** = partially confirmed

hypothesis = ***confirmed hypothesis

8.1.1 Validity and reliability of the 5-point Likert-type scale of expressed self-contempt

In our first empirical study, we developed a 5-point Likert-type observer-rated scale of expressed self-contempt. We aimed to improve the sensitivity of the scale by using 5 Likert points rather than the 3 points that the previous version included (Kramer & Pascual-Leone, 2016; Sallin et al., 2021). We used our 5-point Likert-type scale on three different populations and in three different contexts to evaluate its reliability and explore its validity. Jacquemettaz

(2022) used it paired with an EMA. Because our scale is based on a similar existing one, which was validated, we hypothesized that validity and reliability of ours would be sufficient as well. Indeed, the previous validation of the 3-point Likert-type self-contempt scale already implied that self-contempt is valid as an observable concept and thus, measurable. Reliability of our self-contempt scale seems sufficient, as internal consistency is good and intraclass correlation coefficients range from good to excellent. This implies that the raters had a good to excellent agreement in using the scale to evaluate expressed self-contempt. The fact that two independent raters were able to use our expressed self-contempt scale to rate video and audio recordings with good internal consistency suggests that (1) our scale seems to be sufficiently easy to use after a short training and (2) self-contempt may be observable through verbal and non-verbal elements. In terms of validity, our scale seems to be valid in a specific setting of self-critical two-chair dialogue based on the fact that self-contempt is associated with self-criticism (Whelton & Greenberg, 2005). The fact that our scale yields similar results in our three empirical studies and in Jacquemettaz (2022)'s study is promising. Yet, we have no significant results sufficient to assess that our scale is valid. Content validity, because our scale is based on a pre-existing and very similar one, should be sufficient but needs to be empirically established. This should also be explored in clinical populations; specifically borderline personality disorder as self-contempt seems particularly involved in it and because the previous version of the scale was used in borderline personality disorder (Sallin et al., 2021). Because we have state self-esteem (SSES) measures in all of our two-chair dialogues, we should compare scores between self-esteem and expressed self-contempt to investigate discriminant validity.

8.1.2 Level of expressed self-contempt and symptom intensity

In our first empirical study, our second hypothesis, which was that the level of expressed self-contempt would be related to symptom intensity, was disproved. Indeed,

correlations between the mean level of expressed self-contempt and borderline or depressive symptomatology were not significant. Importantly, both groups of patients with borderline personality disorder and with major depressive disorder were in a first session of psychotherapy. Healthy controls were undergoing a self-critical two-chair dialogue in an analogue psychotherapy session. The mean level of expressed self-contempt was significantly higher in healthy controls than in both patients with borderline personality disorder and patients with major depressive disorder. While this is a surprising outcome, as we theoretically supposed that self-contempt would be higher in patients with borderline personality disorder based on previous results (Sallin et al., 2021), it could result from the fact that healthy controls were undergoing a self-critical two-chair dialogue, which elicits self-criticism (Shahar et al., 2012; Whelton & Greenberg, 2005) and may thus enhance self-contempt. This implies that, at this stage of knowledge, the assessment of expressed self-contempt with our expressed self-contempt scale may be better used in a self-critical two-chair dialogue. It could also imply that expressed self-contempt may be more important than we predicted in healthy controls, which we should assess in another kind of analogue psychotherapy session for comparison. In order to diversely mimic a first session of psychotherapy, which was the setting for both patients group, we could recreate the conditions of a first psychotherapy session with healthy controls without implementing a self-critical two-chair dialogue. The opposite possibility – patients groups undergoing a self-critical two-chair dialogue – would be interesting as well.

In our third empirical study we assessed borderline symptomatology using the ZAN-BPD in healthy controls undergoing a self-critical two-chair dialogue in an analogue psychotherapy session. The level of borderline symptomatology was generally low in both the first analogue psychotherapy session and the second one. Yet, we found a significant positive correlation between the level of expressed self-contempt in the first analogue psychotherapy

session and the level of borderline symptomatology in the second analogue psychotherapy session. This could mean that the level of borderline symptomatology, even under the clinical threshold, has a role to play in the expression of self-contempt in a two-chair dialogue in healthy controls. Again, this is in line with previous findings associating self-contempt and borderline personality disorder symptomatology (Sallin et al., 2021), but it is interesting that it may be true also in healthy controls. Yet, it appears difficult to interpret why the level of expressed self-contempt in the first analogue psychotherapy session would specifically be correlated with borderline symptomatology in the second analogue psychotherapy session. We should note there were no significant mean differences neither in borderline personality disorder symptomatology nor in expressed self-contempt between the two analogue psychotherapy sessions and that 4 months passed between them. It is possible, though, that there were non-significant differences in means when comparing variables between themselves (i.e. expressed self-contempt was slightly higher while borderline symptomatology was slightly lower in the first session than in the second one) that only reached significance compared to each other. One possible interpretation may be that there has been a habituation in healthy controls towards their critical voice in the self-critical two-chair dialogue. Considering that according to our instructions in the self-critical two-chair dialogue participants chose freely the situation of failure that they would be reliving; it is possible that participants picked the same situation twice, which would make habituation likely. Even if they did chose different situations, there may have been a habituation to the sole fact of undergoing a self-critical two-chair dialogue.

8.1.3 Level of expressed self-contempt in patients with borderline personality disorder

In our first empirical study, the means of expressed self-contempt were not significantly different between patients with borderline personality disorder and patients with major depressive disorder. This invalidates our third hypothesis, which was that patients with

borderline personality disorder would express more self-contempt than healthy controls and other patients. This hypothesis was based on previous findings (especially Sallin et al. (2021), who found a correlation between expressed self-contempt at baseline and specific borderline symptoms; but also previous findings that negative emotions, such as anger, and self-destructive behaviours are associated with borderline personality disorder (Gunderson, 2011; Winter et al., 2017). As discussed in the future subsection, the different setting may be part of the reason for this result. Yet, it does not seem to completely resolve this issue given the fact that there was no difference between patients with borderline personality disorder and patients with major depressive disorder even though both groups were in a first psychotherapy session. A possible explanation for this is that self-contempt may be more important in patients with major depressive disorder (as discussed previously with healthy controls) than we anticipated. Of note, self-contempt may be high in patients with depression, even after therapy, as well as predictive of suicide (Rüsch et al., 2019; Zahn et al., 2015) which could partly explain our results.

8.1.4 Level of expressed self-contempt in healthy controls undergoing a two-chair dialogue

In our first empirical study, the mean level of expressed self-contempt in healthy controls undergoing the two-chair dialogue was similar to the level of expressed self-contempt in healthy controls in our third empirical study, be it during the first analogue psychotherapy session or the second one. The levels of expressed self-contempt were rather high, around 4 (see first empirical study (section 5) and third empirical study (section 7)), whereas the maximum score on our scale is 5. This tends to suggest that our scale seems to be efficient in assessing expressed self-contempt, at least in healthy controls undergoing a self-critical two-chair dialogue, if we consider our third empirical study a replication of our first one. This argues towards a sufficient validity of our scale in the context of a two-chair

dialogue. While of course it needs to be replicated in clinical samples, this replicability result seems promising towards using our scale in patients with borderline personality disorder (or other psychopathologies) undergoing a self-critical two-chair dialogue. This may also imply that the emotion elicitation of the self-critical two-chair dialogue, including of self-contempt, works very well.

8.1.5 Validity of EMA CAMS-based subscales in representing distinct emotional states

In our second empirical study, we computed EMA items using emotions subscales based on the CAMS. To examine the validity of these subscales, we calculated the internal consistencies of each of these scales using Cronbach's alpha. Out of the 9 emotional states (global distress, hurt/grief, loneliness, fear, rejecting anger, self-compassion, anxiety, assertive anger and shame), 8 had adequate internal consistencies. For shame, there were not enough occurrences of responses to compute a result. We excluded this subscale. Our first hypothesis in our second empirical study, which was that acceptable convergent validity would be achieved for coefficients of the subscale, was thus confirmed. Based on this result, we may recommend that psychotherapy researchers use EMA when possible, as it seems to provide additional data that may not be accessible otherwise. When deciding on the EMA items, we would argue that having a solid theoretical framework relating the measure to the observed variable, as is the CAMS to the model of sequential emotional processing, is extremely useful towards a fruitful daily life – psychotherapy comparison.

8.1.6 Comparison between predominant emotion categories in daily life and in an analogue psychotherapy session

The second hypothesis of our second empirical studies was that predominant emotion categories in daily life and in an analogue psychotherapy session would correspond. This hypothesis was confirmed for maladaptive fear/shame, whose frequency in the EMA was significantly related to a higher transformation score (from maladaptive to more adaptive

experience) in the analogue psychotherapy session. The same result was found for rejecting anger. Furthermore, frequency of reports of maladaptive fear in daily life assessment was also significantly correlated with advanced meaning making states of the CAMS in the analogue psychotherapy session. Correlations were not significant, but almost so, concerning the association of loneliness and hurt-grief reported frequently in daily life and CAMS transformation (from maladaptive to more adaptive emotional states) or advanced meaning making states in the analogue psychotherapy session. The fact that the predominance of 2 (out of 8) emotional states rated in daily life corresponded to that observed in an analogue psychotherapy session implies that, while emotional processing in daily life and in an analogue psychotherapy session are comparable, the processes at stake in emotional processing may be different. A follow-up study on this same dataset established a link between state self-esteem measured three times during a self-critical two-chair dialogue and changes in primary maladaptive emotions assessed in daily-life (Kramer et al., 2022), which adds to our result. Specifically, Kramer et al. (2022) observed that low self-esteem after the imagination failure task of the self-critical two-chair dialogue was associated with an increase in loneliness in daily life while in-session decrease in self-esteem predicted a decrease of fear/shame in daily life (Kramer et al., 2022).

8.1.7 Association between maladaptive emotional states and symptom intensity

In our second empirical study, our third hypothesis was that the intensity of early expressions of distress (i.e., maladaptive emotional states, phase 1), both in daily life and in the analogue psychotherapy session, would be associated with the intensity of symptoms (general distress, borderline symptomatology and interpersonal problems). This hypothesis was confirmed for certain self-reported EMA early expressions of distress (global distress and rejecting anger) and subscales of the outcome questionnaire (OQ-45: symptom distress, interpersonal relations, social role and total). Note that EMA global distress was not

significantly correlated with OQ-45 symptom distress, nor EMA rejecting anger with OQ-45 social role. Yet, rejecting anger observed in-session was associated with the OQ-45 symptom distress subscale. Linear regression models allowed us to observe that the intensity of interpersonal problems and the difficulty in social roles predict the intensity of global distress and rejecting anger in daily life. Interestingly, this was not true for specific borderline symptomatology. Kramer et al. (2022)'s study using the same data in a self-esteem study showed that self-esteem assessed before and after the self-critical two-chair dialogue was correlated with symptoms (general problems, borderline symptoms and interpersonal problems) (Kramer et al., 2022). Interestingly, state self-esteem measured after the imagination task, supposedly the moment where self-esteem is at its lowest given that participants experience their failure situation during the imagination task, was not correlated with symptoms in their study (Kramer et al., 2022). Their interpretation is that it may be a reflection of participants' engagement and responsiveness in the experiential two-chair dialogue, which may mediate the drop in self-esteem measured after the imagination task (Kramer et al., 2022). This rationale is important also towards our results, as it accounts for the importance of considering that the level of experiencing in session may have an impact. Translated to our results, this adds to our result regarding assertive anger being predictive of general distress symptoms. Furthermore, their result showing an association between in-session self-esteem and changes in primary maladaptive emotions adds up to ours in that the latter may involve negative feeling about the self (Kramer et al., 2022).

8.1.8 Neural activity visualizing individualized self-contemptuous versus non-individualized negative stimuli in healthy controls

In our third empirical study, we first hypothesized that there would be a difference in neural activity in healthy controls visualizing individualized self-contemptuous stimuli in an fMRI assessment compared to visualizing non-individualized negative stimuli. We expected

this change to be visible in brain regions responsible for emotions, such as the amygdala and insula. This hypothesis was refuted, as our results were not significant. Nonetheless, there were trends in activations in the angular gyrus, which is argued to be associated with sentence-level topic meaning making and the process of sentence integration (Acunzo et al., 2022) and the middle temporal gyrus, supposed to play a role in audio and visual emotional recognition (Pourtois et al., 2005). This exploratory result is interesting because of the potential role of the middle temporal gyrus in visual emotional recognition, as it was more activated when healthy controls were exposed to their individualized self-contemptuous stimuli, which we assume to be emotional stimuli, than when they were exposed to non-individualized stimuli. While this is a trend activation, and thus an exploratory result that we should consider with caution, it seems to go in the right direction concerning the use of individualized self-contemptuous stimuli in a neurobehavioral design. Yet, it would be useful to be able to use meaningless symbols stimuli for comparison, in order to exclude activation by visual stimulation only.

8.1.9 Association between the level of self-contempt observed in an analogue psychotherapy session and neural activity visualizing individualized self-contemptuous stimuli in healthy controls

Following the previous hypothesis, in our third empirical study, we hypothesized that there would be an association between the level of expressed self-contempt in an analogue psychotherapy session and being exposed to individualized self-contemptuous stimuli, as opposed to non-individualized negative stimuli, in healthy controls. We expected differences in brain regions associated either to emotions or to the self. Specifically, we anticipated activation in regions supposedly important in emotions and emotional processing, such as the amygdala, insula, or anterior cingulate cortex for example, as based on previous empirical knowledge. We found no significant results and our second hypothesis for the third empirical

study was refuted. Yet, we observed trends in the insula, commonly associated with self-consciousness and discrimination thereof (Craig, 2009) as well as experience and recognition of emotions, including disgust (Uddin et al., 2017). While these are exploratory results that need to be both considered with caution and replicated (significantly) in future studies, this is promising in that insula is theoretically assumed to be activated in emotions, including negative, and emotional stimuli (Sander & Scherer, 2009; Schmahl et al., 2018). We observed trend results activations in regions which are not empirically discussed to be involved in emotions, such as the transverse temporal gyrus, but also in regions that are less known to be involved in emotions, such as the occipital fusiform gyrus, which may be involved in emotional valence (Geday et al., 2003; Sato et al., 2004). While the absence of significant results may be due to limitations of our study, that we will discuss in section 8.3, it appears that the methodologically innovative design combining an analogue psychotherapy session, specifically a self-critical two-chair dialogue, and an fMRI, is feasible.

8.1.10 Change of borderline symptomatology, expressed self-contempt and self-esteem in healthy controls between two analogue psychotherapy sessions

In healthy controls undergoing the two-chair dialogue, we did not find significant mean differences between the first and the second psychological assessments in borderline symptomatology nor expressed self-contempt. Self-esteem measured with the state self-esteem scale, on which a high score reflects a high self-esteem, was measured three times in our two-chair dialogue: before the two-chair dialogue (SSES 1), after the failure imagination task (SSES 2; peak), and after the two-chair dialogue (SSES 3). The level of state self-esteem before the two-chair dialogue (SSES 1) and after the imagination task (SSES 2) were higher at the second analogue psychotherapy session than at the first. The mean difference concerning self-esteem after the two-chair dialogue (SSES 3) between the first and the second session was not significant but almost so ($p = .050$). This may suggest habituation to self-criticism,

which may have less impact on self-esteem in a second analogue psychotherapy session than in the first one. This may also suggest a positive impact of experiencing self-criticism in a self-critical two-chair dialogue, which is in line with Kramer (2022)'s study which suggests that there is an impact of low in-session state self-esteem on specific primary maladaptive emotions (experienced in interpersonal situations; see Kramer et al., 2022). The link here is that primary maladaptive emotions may be of uttermost importance in emotional processing.

8.2 Interpretation of results

8.2.1 Use of the expressed self-contempt scale in healthy controls and patients undergoing a two-chair dialogue

The fact that our self-contempt scale seems to successfully evaluate the level of expressed self-contempt in healthy control undergoing a two-chair dialogue means that its use in this specific context is relevant. Indeed, since our most significant results take place in a two-chair dialogue, which we used as an emotion-eliciting self-criticism task, this may signify that self-contempt appears in this emotional context. In this rationale, it is not as surprising that expressed self-contempt is higher in the group that undergoes the two-chair dialogue task as opposed to the two groups that are in an early session of psychotherapy, even though these are patient groups. What this could mean is that the setting (two-chair dialogue versus early psychotherapy session) is a more determining factor in expressing self-contempt than psychopathology. This could also mean that these contexts – healthy controls undergoing the two-chair dialogue and patient groups in early psychotherapy sessions – are too different for a coherent comparison to be made. For this comparison to be more effective, we probably should use our scale on patient groups undergoing a two-chair dialogue and compare it with healthy controls in the same condition. Importantly, we should also note that the fact that *expressed self-contempt* is higher in healthy controls undergoing a self-critical two-chair dialogue, due to the nature of the task, does not mean that *actual self-contempt* may also be

high in other groups. It is possible that self-contempt was high in patients with borderline personality disorder and major depressive disorder but did not have the occasion to be expressed due to the nature of first sessions of psychotherapy, which are usually more discursive than emotional. Patients in therapy may also be, related to their pathology, more inhibited in expressing their self-criticism, so may need more time for this process. We have seen in the theoretical background that there are several elements at stake while expressing emotions, specifically contempt and self-contempt. While we used our expressed self-contempt scale based on the assumption that participants would not actively suppress their expression of self-contempt, partly because they did not know that it would be measured, this may have happened as part of inhibition processes or bias. Furthermore, the fact that the mean level of expressed self-contempt is not different between our patient groups, borderline personality disorder and major depressive disorder, in our first empirical study, may imply diverse elements. First, the expressed self-contempt means were rated with video recordings for one patient group (patients with borderline personality disorder) and audio recordings for the other (patients with major depressive disorder). This may imply that the use of non-verbal elements as well as verbal elements in coding criteria may be less important than we assumed in a first session of psychotherapy for these two patient groups. Second, and on a completely different note, this may also imply that self-contempt is more important than we expected in psychopathology in general (at least in major depressive disorder, as it is our comparative group) and not only in borderline personality disorder. Indeed, whereas we supposed that self-contempt may be higher in patients with borderline personality disorder than in patients with major depressive disorder, because of the predominance of negative affects known in borderline personality disorder in regards to the self, it is possible that it is also true in other psychopathologies and in healthy controls. The fact that we did not find any correlation between expressed self-contempt and borderline symptomatology in our first empirical study,

whereas Sallin et al. (2021) did, using the previous version of the expressed self-contempt scale, is difficult to understand, even more so because our data on patients with borderline personality disorder come from the same sample. Furthermore, we did find a similar result in healthy controls in our third empirical study, which makes this even more surprising. Thus, our absence of result in this matter in our first empirical study may be linked to the small size of our sample. In order to properly find out, what would be interesting to do is (1) replicate our study with a greater sample size and (2) use our scale on Sallin et al. (2021)'s sample and compare the results.

Our scale seems fitted to evaluate expressed self-contempt in a two-chair dialogue, which is promising towards using it in clinical populations. In addition, given that our scale is easy to teach, learn and use, and that the two-chair dialogue is an inherently therapeutic task from which patients may benefit, we will argue that implementing a self-critical two-chair dialogue and assess self-contempt therein may be productive.

8.2.2 Use of EMA CAMS-based items in combination to an analogue psychotherapy session to evaluate emotional processing

CAMS-based EMA subscales investigating emotional processing in daily life are valid and thus seem appropriate to use as a complement to investigate emotional processing in an analogue psychotherapy session with healthy controls. The fact that the intensity of maladaptive fear and rejecting anger reported in daily life with EMA corresponds to a higher transformation score in the analogue psychotherapy session may have several implications. Indeed, it implies that the more participants reported fear or rejecting anger in daily life, the more their emotional states went from maladaptive to adaptive in the two-chair dialogue of the analogue psychotherapy session. Results on loneliness and hurt or grief were not significant but going towards the same direction. This means that the more participants reported feelings of fear and anger (and potentially, loneliness and grief), the more their

experience of emotional processing in the psychotherapy analogue was transformative. One possible interpretation is that the participants who reported more maladaptive feelings in daily life had more “space” for improvement in emotional transformation. Now, further analyses would be useful to know whether this means that participants who report more their feelings in daily life are also the ones benefiting most from the transformative potential of the analogue psychotherapy session, supposedly because they are more insightful for example. This is in line with previous results stating that awareness of emotional processing in daily life is a productive step required to prepare for in-session transformation process of emotion (Pascual-Leone, 2018). We found a predicting association between self-reported measures of rejecting anger with general symptom distress but not with specific borderline symptomatology. It is important to note that, because the participants were healthy controls, symptom levels were low; it would thus be interesting to replicate our second empirical study with patients to investigate this further. The next step should also directly investigate expressed self-contempt and its pathway towards self-compassion in the emotional processing model. The assessment of emotional processing in daily life is important for psychotherapy research because emotional processing may be important in diverse psychopathologies, as we have seen, but also because it enables to explore the changes of real-life phenomena that may contribute to therapeutic change (Husen et al., 2016; Kramer et al., 2022). EMA may be used to assess mechanisms of change in psychotherapy, provided that researchers be careful and aware of the distinction between mechanism of change and process of change, which implies to differentiate therapists’ interventions, in-session processes and out-session mechanisms (Doss, 2004; Kramer et al., 2022).

8.2.3 Use of individualized self-contemptuous stimuli in a neurobehavioral assessment

In our third empirical study, we were able to investigate the use of individualized self-contemptuous stimuli, extracted from a two-chair dialogue in an analogue psychotherapy

session, in an fMRI environment. Our results were mostly “trend” results, probably because of our relatively small sample size. Nevertheless, our neurobehavioral design has proved to be feasible and worth the effort. Indeed, our trend results are coherent both with the literature and with our hypotheses. The fact that we observed trend neural activations in the angular and the temporal gyrus when comparing the exposition of individualized self-contemptuous stimuli and non-individualized negative stimuli is promising in that it tends to show that individualized self-contemptuous stimuli may induce meaning-making and emotional recognition processes, which should be explored by further neurobehavioral studies. While this first trend result was already promising in involving self-contemptuous stimuli, the next one, directly implying self-contempt, is just as well. Indeed, the fact that the mean level of expressed self-contempt in the analogue psychotherapy session (i.e., in the two-chair dialogue; measured with our expressed self-contempt scale) was associated with trend results in the insula is relevant towards our argumentation of self-contempt being an emotion, elicited by a self-critical two-chair dialogue. This result not only suggests that the validity of our expressed self-contempt scale is sufficient, but also that self-contemptuous individualized stimuli may involve emotional regions and processes, specifically the insula as suggested by our exploratory results. Evidently, these are only suggestions, and further research is needed to state that unequivocally. Furthermore, the fact that there were no differences in means of borderline symptomatology nor expressed self-contempt between the two psychological assessments was expected, as healthy controls do not receive any treatment between the assessments. This adds to the potential validation of our expressed self-contempt scale, which seems consistent (still in healthy controls in a two-chair dialogue). The fact that the level of self-esteem is higher in the second analogue psychotherapy session than in the first one, for two out of three measures of self-esteem, may imply a therapeutic effect of our analogue psychotherapy session, including a self-critical two-chair dialogue, even with healthy

controls. As discussed in the previous sections, a habituation to self-criticism may also be responsible for this and should be explored in future studies. Again, the next step for this empirical study is that it should be replicated on clinical populations.

8.3. Limitations

This thesis, as well as our three empirical studies, include limitations that we should address in this section. Because each empirical study discussed its own limitations, we will not dwell on them more than necessary. An important limitation to this thesis, while it may also be a strength in certain aspects, is the predominant use of healthy controls. While including healthy controls is important as a comparison, this thesis would have benefited from the inclusion of clinical populations, especially in a self-critical two-chair dialogue, but also in our EMA and fMRI studies. Because this thesis takes place in the framework of psychotherapy research, and of a larger project on borderline personality disorder, this would have been particularly relevant.

Sample sizes may also be limitations in this thesis, mainly in our neurobehavioral assessment, which is the smaller sample that we analyse. While our studies include several self-reports questionnaires, one important limitation towards investigating self-contempt is the fact that we did not have a self-report measure of self-contempt. In a future study, we should use a self-report self-contempt scale, providing that we or someone else create it in the meantime. Concerning our use of a self-critical two-chair dialogue, there are limitations concerning the fact that our instructions may have induced habituation. In our EMA design, we may have benefited from having two analogue psychotherapy sessions as measures as well as focusing on one specific emotion, in our case of course, self-contempt.

In our neurobehavioral study, which is our third empirical study, there are limitations mainly regarding fMRI data analysis. Because of time constraints, which is a limitation in this entire thesis, we could not perform ROI analyses, from which our study, and certainly this

thesis, may have benefited. Another limitation is the fact that we only analysed two conditions, whereas it would have been important and interesting to include others such as positive stimuli or symbols, to allow a better differentiation between our conditions. Indeed, our absence of significant results may also partly results from the fact that analysing negative words in our two conditions, though one is individualized and the other is not, may have hindered our results. We aim to address all of these limitations in future studies.

8.4 Future directions

While our results tend towards confirming that self-contempt may play a role in several dimensions of daily life and of psychotherapy, in healthy controls and probably in diverse psychopathologies; this latter remains unproven at this point in this thesis. Considering the difficulty of defining and measuring emotions, in general or in particular, this thesis mostly aimed at validating tools and designs for further studies to be as complete as possible. In this line of thought, our three empirical studies revolved a lot around healthy controls undergoing a self-critical two-chair dialogue. This allowed us to develop a multimodal method in a complementary way and discuss enlightening results on emotional processing and self-contempt. Yet, this also led to new questionings, which we aim to address. Fortunately, this thesis takes place in a larger project investigating mechanisms of change in psychotherapy.

We collected new insights on self-contempt, emotional processing in daily life and in analogue psychotherapy sessions including a self-critical two-chair dialogue, and in healthy controls. Across our three empirical studies, we have used self-reports of self-esteem, observer reports of expressed self-contempt, self and observer reports of emotional processing and an fMRI assessment. We have seen that measurements of emotions should include a plurality of methods in order to be as complete as possible and to investigate all modalities of

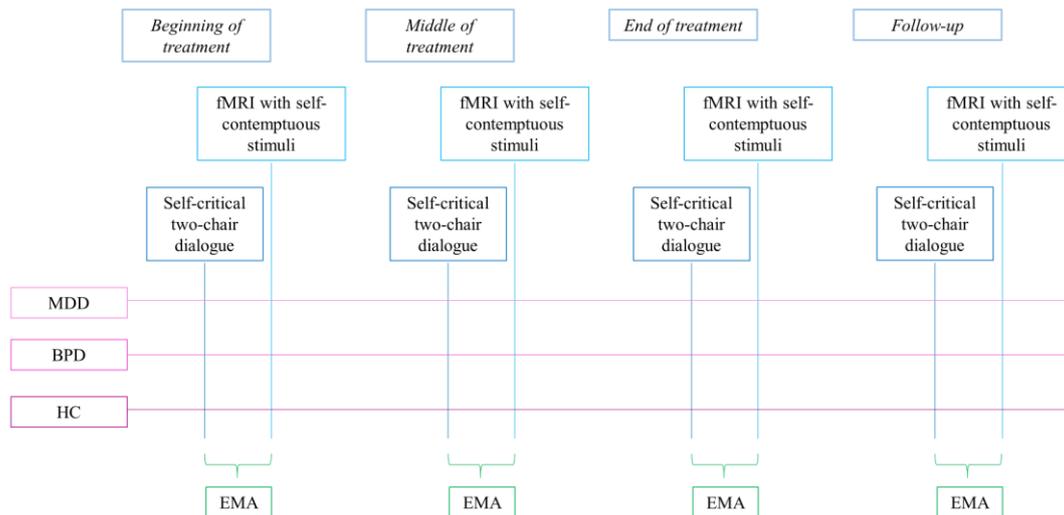
emotions and emotional processing. This thesis confirmed that, and this may be the most important learning to take out of it. We also learned the importance of investigating a variable of interest in healthy controls, which is sometimes overlooked in psychotherapy and fMRI studies. Thus, next studies on self-contempt should aim towards combining modalities even more than we did in the framework of this thesis. Indeed, our three empirical studies combined modalities, but not all of them in the same work.

This thesis tends to confirm the fact that using multiple methodologies and assessments is worth doing in psychotherapy research. A future “ideal design” would investigate self-contempt in three groups, as we did in our first empirical study, of patients with borderline personality disorder, patients with major depressive disorder and healthy controls. Participants would undergo a self-critical two-chair dialogue, from which individualized self-contemptuous stimuli would be extracted. Ideally, we would develop a self-report questionnaire of self-contempt to complete our observer-report scale. This may be important to have a subjective evaluation of self-contempt, as rated by the participant, to compare with observer-rated measures. Given that our design of neurobehavioral assessment seems promising, we would use it in the same manner. Indeed, our neurobehavioral paradigm appears to be worth using, as is EMA. This is important because neither self-reports nor observer reports may fully capture elements at stake in emotion and emotional processing in what regards the participants. We should try using self-reports, observer-reports, EMA and fMRI together for next studies. Our ideal design (figure 8) inspired and modified from the pilot study (Kramer et al., 2018), which we also recommend that psychotherapy researchers consider, could be as follows. At the beginning of a psychotherapy, a psychological assessment using a self-critical two-chair dialogue, self-reports and observer-reports of self-contempt would be conducted. We would also evaluate emotional processing by using the CAMS and extract self-contemptuous stimuli from the two-chair dialogue. This should be

followed by one week of EMA investigating emotional processing with the CAMS and self-contempt with a self-report questionnaire. Ideally, we should include specific questions about self-contempt in the EMA to investigate self-contempt in daily life as well as having a subjective self-report measure of it. After this, one fMRI session in which the self-contemptuous words would be presented and compared to non-contemptuous stimuli. At the middle of treatment, we should repeat all of this, which would allow us to investigate change. We would do a final assessment of all combined methods at the end of the treatment as well as a follow-up to explore which results would be maintained over time. This would allow us to investigate self-contempt's potential role in the pathway of emotional processing from self-contempt to self-compassion.

Figure 8

Imaginary depiction of our “ideal design” of investigation of self-contempt as a potential mechanism of change in psychotherapy.



Note. MDD = patients with major depressive disorder; BPD = patients with borderline personality disorder; HC = healthy controls.

What our three empirical studies tend to show is that both self-contempt and emotional processing are important to assess and to consider in psychotherapy as well as in psychotherapy research. While our first and third empirical studies tend towards the confirmation of self-contempt as a valuable variable of interest in psychotherapy research, our second empirical study tends to show the same for emotional processing. We have argued that self-contempt, specifically expressing self-contempt, may be part of a productive pathway in emotional processing from self-contempt to self-compassion (by way of negative evaluation) (Timulak & Pascual-Leone, 2015; see figure, chapter 2). We have also discussed the fact that self-contempt is measurable, in specific contexts, using our scale of expressed self-contempt. The specific context we explored, a self-critical two-chair dialogue, is pertinent to use as

emotion-eliciting task, which makes sense in the assessment of self-contempt. It may be interesting to use our scale in other contexts, specifically psychotherapy sessions. It is possible that our use of the expressed self-contempt scale in psychotherapy (first empirical study) could not show its full potential because we analysed first sessions of psychotherapy. In the first session of psychotherapy, the discourse often refers to general life and situation of the patient. Thus, we should try using our scale on different sessions distributed along psychotherapy treatment and compare levels of expressed self-contempt. This may also potentially help understanding if there is a moment in psychotherapy in which self-contempt pertains more sense than others, or a moment more suitable for self-contempt's expression. This may be an important information related to emotional processing and the potential process of change in psychotherapy, if we could identify critical moments in psychotherapy. The clinical implications of assessing and working on self-contempt in psychotherapy may thus be wider than increasing self-compassion, such as increasing alliance. Indeed, when having an interest on self-contempt, whether in research or in psychotherapy, we probably should also investigate alliance. In fact, the level of expressed self-contempt is associated with an alliance perceived as weaker by the patients (Sallin et al., 2021), whereas alliance has often been associated with good outcome (Flückiger et al., 2018; Horvath & Symonds, 1991; Martin et al., 2000). This implies that self-contempt may be a hindrance not only towards self-compassion, but also towards alliance and outcome. Significantly, high self-criticism also appears to be related to a weaker alliance (Whelton et al., 2007) and poor outcome (Löw et al., 2020) in psychotherapy, which suggests that the same may be true for its emotional side, i.e., self-contempt.

We also explored the fact that both CAMS-based EMA and in-session CAMS seem to allow a promising combined assessment of emotional processing. This study, namely, our second empirical study, investigated healthy controls and allowed us to validate our design of

EMA in assessing emotional processing, which had not been done before, to our knowledge. EMA may be particularly valuable in understanding the dynamics of emotional processing and its role in daily life. In terms of clinical implications, EMA may help by putting forward specific problematics to address in psychotherapy (Colombo et al., 2020). Our design combining the use of the CAMS in the analogue psychotherapy session and CAMS-based items in the EMA presents the advantage of allowing to compare the results from both assessments. It is even more relevant because our EMA items are theoretically consistent with the assessment of emotional processing in session, as they are based on the CAMS, which itself is based on the sequential model of emotional processing. This may be relevant for researchers, but also to therapists willing to individualize treatment and to give feedback on emotional processing to their patients. Ideally, EMA should be used as an informative complement to psychotherapy. Assessing specific emotions and emotional processing may be particularly interesting in EMA for several reasons. First, day-to-day evaluations may be specifically adapted to either emotional processing or specific emotions given the dynamic nature of emotions and associated processes, which can hardly be grasped by non-ecological assessments. Second, emotions and emotional processing appear to be particularly important in the process of psychotherapy (Pascual-Leone, 2018; Peluso & Freund, 2018). Third, EMA assessments can be relatively easy to implement in participants' daily lives. While our protocol included smartphones and a specifically designed smartphone application to present the questions to the participants, we could imagine sending automatic emails to participants' own computers or smartphones containing existing questionnaires. The assessment would thus be easy and inexpensive.

Finally, we have seen that expressed self-contempt in a two-chair dialogue during an analogue psychotherapy session may be associated with neural activations in regions associated with experience and recognition of emotions, meaning making and self-

consciousness. This, again, adds to the relevance of using multi-method investigation in emotions studies. While neurobehavioral designs have increased tremendously in the past twenty years, self-contempt has been somewhat neglected, at least from our point of view, as it is potentially central to psychotherapy and psychotherapy research. The fMRI assessment in our design accounts for physiological implications of self-contempt, being the only measure that is neither an observer nor self-rated one. This might add to the objectivity of our measures and allow a better theoretical understanding of self-contempt. Limitations in our third empirical study mainly concern the absence of a clinical group as well as the analysis of only two word categories (self-contemptuous individualized stimuli and non-individualized negative stimuli). In future studies, we would like to include other categories, such as symbols in order to control for brain activation related to vision. Furthermore, comparing healthy controls to clinical populations would be pertinent in investigating self-contempt's role in psychopathology as related to neural activations. Using fMRI assessment implies no access to personal signification of self-contempt, which is why it may be important to pair it with self-report and observer reports questionnaires of self-contempt.

CHAPTER 9: CONCLUSION

We were able to establish that self-contempt can be successfully measured using an observer-rater scale in a self-critical two-chair dialogue setting with healthy controls as well as in a neurobiological assessment, which is promising for future studies on clinical populations in psychotherapy research. We were also able to establish that theory-consistent ecological momentary assessment is a fruitful method to use in emotional processing in healthy controls, which is auspicious both for future studies on clinical populations and on the role of self-contempt specifically. Our multi-method investigation contributes to increasing knowledge on emotion measurement and on self-contempt as part of a potential mechanism of where the patient moves from self-contempt to self-compassion, which may be interesting both for psychotherapy research and for clinical practice. Specifically, our multi-method investigation highlights the fact that assessing a diversity of contexts, populations and components of emotions may be worth doing because multi-method designs seem to be both feasible and informative. Our results, whether statistically significant or not, pertain valuable information that contribute to establishing self-contempt and its multi-method assessment as variables of interest for future studies and their designs. On a more general point of view, this thesis enhances the importance of considering a diversity of elements when studying a phenomenon as complex as emotion. Not without their limitations, this thesis and the three empirical studies it comprises may be important sources of learnings and we hope to have contributed to increasing knowledge and insight on self-contempt, emotional processing, potential mechanisms of change in psychotherapy and emotion measurement.

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